

BRITISH TRAUMA SOCIETY

ANNUAL SCIENTIFIC MEETING

8TH & 9TH NOVEMBER 2017

7TH NOVEMBER INSTRUCTIONAL COURSE

Mercure Sheffield St Paul's Hotel and Spa



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1988

Dedicated to caring for the injured
www.bts-org.co.uk

Contents

page 3	Welcome from the BTS President – Stuart Matthews
page 4	Executive Board
page 5 - 6	Keynote Speakers
page 7 - 8	Sponsors
page 9	Floorplan
page 10 - 17	Programme Schedule
page 18 - 20	Poster Presentation Reference Guide
page 22 - 46	Wednesday Oral Presentation Abstracts
page 48 - 75	Thursday Oral Presentation Abstracts
page 83 - 150	Poster Presentation Abstracts



Message from the BTS President, Stuart Matthews

Dear Delegates and Members of the British Trauma Society

I am pleased to welcome you to the 2017 Annual Scientific Meeting being held at the Mercure Sheffield St Paul's Hotel in Sheffield on the 8-9 November 2017. On the 7 November we are running two educational courses, namely a medicolegal course supported by Irwin Mitchell Solicitors and one on emergency external fixation with a hands on workshop sponsored by DePuy-Synthes.

Sheffield is the city of steel whose name is derived from the river Sheaf which runs through the city and is historically part of the west ridding of Yorkshire now the county of South Yorkshire with a population of around 550,000 making it the UK's 8th largest city. Its steel industry in the 19th century made it the key player of the Industrial Revolution.

Sheffield boasts two universities and four main hospitals namely the Northern General which is the Major Trauma Hospital and the Royal Hallamshire with the Weston Park Hospital being its cancer hospital and of course the Sheffield Children's Hospital.







This is our 27th annual meeting and we have received some very exciting and interesting abstracts for presentation and posters and we also have keynote speakers who are leaders in their field and we are very much looking forward to their contribution. As each year beforehand we are awarding prizes for the best papers of clinical interest and scientific interest as well as medicolegal interest. There are also prizes for the best posters. Any medical speciality or profession allied to medicine including students and trainees who have something to say regarding the treatment of the injured are welcome to attend as delegates, submit their research for presentation and become members of the British Trauma Society that is now becoming affiliated to ESTES, The European Society of Trauma and Emergency Surgery.

As before we are gratefully supported by the trade without who we could not stage such a meeting and I would encourage delegates to inspect and discuss their innovations.




On behalf of the Executive board of the BTS I look forwards to welcoming you all in November.





Stuart Matthews FRCS
President and Trustee
The British Trauma Society

Executive Board

	<p>Stuart Matthews President and Trustee</p> <p>Highly and widely experienced Trauma Surgeon and Educator used to working in austere as well as in cutting edge environments with French as a Mother Tongue and medicolegal expert for Personal Injury since 1989 and Clinical Negligence since 1994. Stuart's medical interests include the management of multisystem trauma and complex fractures.</p>
	<p>AD Patel Immediate Past President</p> <p>My training in shoulder and upper limb surgery was at the Royal National Orthopaedic Hospital (RNOH) and on the South West Rotational Training Scheme. I spent one year as a fellow at Sunnybrook Medical Centre in Toronto learning about the management of multiply-injured patients and about pelvic and acetabular reconstruction.</p>
	<p>Prof Peter Giannoudis Scientific officer and President Emeritus</p> <p>I work as the Professor (School of Medicine, University of Leeds) and Honorary Consultant at Leeds General Infirmary (LGI), a major teaching hospital serving a population in the region of 3.5 million. It is a major trauma unit, accepting complex trauma through its busy Accident and Emergency Department and from other hospitals of the region.</p> <p>I have successfully completed an AO trauma fellowship in Hannover Germany and a Trauma fellowship at Louisville Kentucky, USA.</p>
	<p>Ansar Mahmood Treasurer</p> <p>I have always had an interest in Trauma since my pre-registration years. I secured a post as a Basic surgical trainee at University Hospital North Staffordshire (Now Midlands) due to it being the first level 1 Major trauma centre (MTC) in the UK and having an national reputation in Trauma. Following that I went down the Orthopaedic route as I noted the majority of the Polytrauma patients that came in had significant musculoskeletal injuries and the Orthopaedic Trauma Surgeons were always in the thick of it!</p>
	<p>Aurelie Hay-David Secretary</p> <p>Graduated from Barts & The London and inspired by the multidisciplinary care of polytrauma patients brought in by HEMS. Maintains a strong interest in injury prevention and the mechanism of injuries that takes her trackside to motorbikes, horseracing and horse trials.</p>
	<p>Alex Bolt Student Liaison Officer</p> <p>I graduated from Keele University and spent my core surgical training years within the West Midlands trauma network. I am privileged to be part of the Oswestry Stoke rotation, which is known for its exceptional training. I have a passion for teaching & trauma and hope to engage medical students in trauma care across specialties to develop their interest and skills in the management of trauma. My clinical interests are trauma, hand and upper limb surgery. Outside of medicine I am a keen martial artist holding a 5th dan black belt in Bujinkan budo taijutsu and I regularly boulder at my local climbing wall.</p>

Keynote Speakers 2017

 <p>Dr Robert Winter</p>	<p>Medical Director, East Midlands Ambulance Service NHS Trust</p>	<p>Medical Director at the East Midlands Ambulance Service NHS Trust and National Clinical Director for Critical Care, Emergency Preparedness Resilience and Response. Bob qualified from Nottingham in 1982 and was a Critical Care Consultant at the Queen's Medical Centre (QMC) in Nottingham for 22 years prior to taking up his current role. He still works clinically at the QMC.</p> <p>Bob is the promulgation lead for Advanced Trauma Life Support (ATLS) Europe and has introduced ATLS into seven countries within Region 15 of the American College of Surgeons (ACS). As a result of which, he was the 2015 holder of the International Meritorious Award of the ATLS Committee of the ACS and is a visiting Professor at the Nicolae Testemitanu School of Medicine and Pharmacy in Moldova.</p>
 <p>Mr Duncan Bew</p>	<p>Consultant Trauma and Acute Care Surgeon, Clinical Director of Major Trauma, Kings College Hospital</p>	<p>Duncan Bew trained in General, Cardiothoracic and Vascular surgery in London and Cape Town and is Clinical Director of Major Trauma at Kings College Hospital and the South East London Kent and Medway Trauma Network. He co-founded the children's charity "Growing Against Violence" which delivers a violence prevention and safeguarding curriculum in over 600 schools in London and Surrey. He is an advisor to the All Party Parliamentary group on youth violence and several global collaborations for Trauma prevention, major incident preparedness and Trauma Education. His charitable work has led to several accolades including a National Points of Light award in 2017.</p>
 <p>Professor Antonio Belli</p>	<p>Professor of Trauma Neurosurgery, Institute of Inflammation and Ageing, College of Medical and Dental Sciences, UK</p>	<p>Prof Belli graduated from Tor Vergata University in Rome with a degree in Medicine and Surgery in 1992 and moved to the UK in 1994. He trained as a neurosurgeon at King's College Hospital, Atkinson Morley's Hospital, The National Hospital for Neurology and Neurosurgery, Great Ormond Street Hospital, The Royal Free Hospital and Charing Cross Hospital. Between 2001 and 2003 he carried out a research fellowship in neuromonitoring at the Institute of Neurology in London.</p> <p>Tony Belli is the clinical lead for Neurotrauma at University Hospitals Birmingham and professor of Trauma Neurosurgery at the University of Birmingham. He leads of programme of clinical and translational research in neurotrauma, including a number of international clinical trials. He is an adviser on concussion to many UK sports authorities including the RFU, FA and GB Basketball. Prof Belli is the director of the NIHR SRMRC, a world-leading research centre on trauma funded by the National Institute for Health Research and the Ministry of Defence.</p>

 <p>Miss Sarah Phillips</p>	<p>Consultant Trauma and Orthopaedic Surgeon, Kings College Hospital</p>	<p>I qualified from King's College School of Medicine and Dentistry in 1986. I was appointed to the Orthopaedic Training Programme at King's in 1992. After fellowships in Trauma at The Alfred Hospital Melbourne, The Ilizarov Method at Lecco Hospital, Italy and Paediatrics at Great Ormond Street Hospital, I was appointed as Consultant at King's in 1998. My main areas of interest are trauma and post-traumatic reconstruction.</p> <p>I have been in the Army Reserves for over 30 years and deployed for Op Telic One (2nd Gulf War) in 2003.</p> <p>I am a trustee of 2 charities – Rebuild (www.rebuildcharity.org) and IDEALS (www.ideals.org.uk) I have undertaken charity work in Somaliland and more recently in Gaza.</p>
 <p>Mr Prakash Jayakumar</p>	<p>Orthopaedic Specialist Registrar / Fellow in Trauma & Orthopaedic Surgery, Oxford University Hospitals NHS Trust</p>	<p>Prakash is a Trauma & Orthopaedic specialist registrar based in London. He holds his medical degree from Kings College London with honours and a 1st class bachelors degree and Scales Medal in orthopaedics from University College London. Ranking no.1 in the national selection process, he has gained experience in level-1 trauma, university teaching hospitals and high volume regional centers. Prakash has generated over 75 scientific publications and presentations and has been a recipient of the European Society of Biomaterials Young Investigator Award. An active interest in health outcomes research has led to a scholarship from the Harvard T.H. Chan School of Public Health and a research fellowship at Massachusetts General Hospital, Hand and Upper Extremity Unit. This progressed to a PhD (DPhil) at Balliol College, University of Oxford studying patient outcomes following orthopaedic trauma to the upper extremity. He is also involved in value based health care initiatives and innovative projects in technology-based health care.</p>
 <p>Group Captain Jonathan Kendrew</p>	<p>Consultant Orthopaedic Trauma Surgeon. Royal Centre Defence Medicine, Queen Elizabeth Hospital Birmingham</p>	<p>Jon Kendrew qualified from UCL Medical School in 1996. Orthopaedic specialist training in Nottingham and Derby. Appointed as a Consultant Orthopaedic Surgeon at the Royal Centre of Defence Medicine Birmingham in 2009. Experienced in the acute and longer term surgical management and rehabilitation of military injuries including blast, gunshot and aircraft ejection patients. Surgical lead on the NHS Clinical valuation of Direct Skeletal Fixation</p>
 <p>Professor Fiona Lecky</p>	<p>Clinical Professor of Emergency Medicine at the Centre for Urgent and Emergency Care Research, The University of Sheffield</p>	<p>Fiona Lecky is Clinical Professor of Emergency Medicine at the Centre for Urgent and Emergency Care Research, School of Health and Related Research, University of Sheffield, holds an Honorary Chair at the University of Manchester and is an Honorary Consultant Emergency Physician at Salford Royal Hospitals NHS Foundation Trust. She is also Research Director of the Trauma Audit and Research Network - the largest European Trauma Registry (www.tarn.ac.uk), chaired the 2014 NICE Head Injury Guideline Development Group and is an investigator for "Collaborative European Neurotrauma Effectiveness Research in Traumatic Brain Injury (CENTER-TBI)" a multicentre 21 European Country Study to improve understanding of "the most complex disease in the most complex organ".</p>

EXHIBITING SPONSORS

BTS 2017 gratefully acknowledge the contribution that the sponsors below have made to make this event possible.

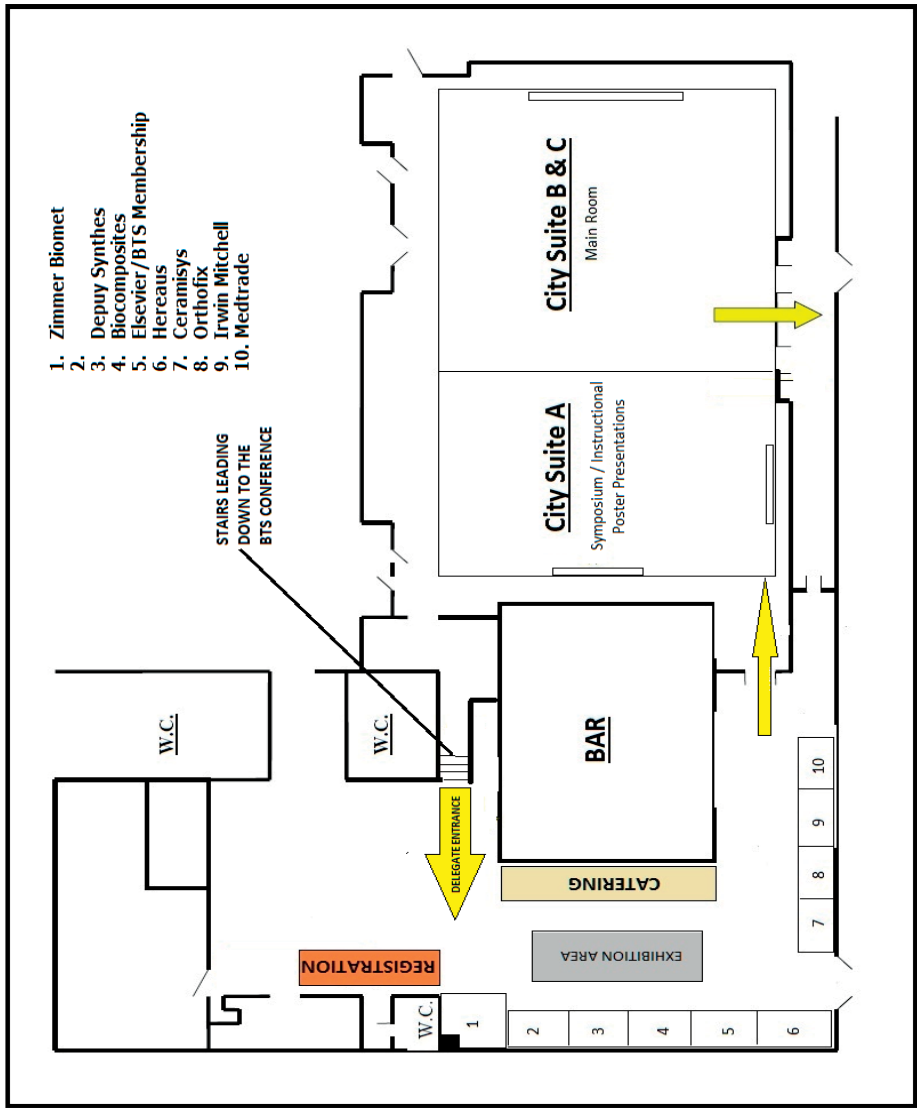
 <p>DePuy Synthes <small>part of the Johnson & Johnson family of companies</small></p>	<p>DePuy Synthes Companies of Johnson & Johnson is the largest, most innovative and comprehensive orthopaedic business in the world. DePuy Synthes Companies offer an unparalleled breadth and depth of technology, devices, services and programmes. Our broad array of inspired, innovative and high quality offerings help advance the health and wellbeing of people around the world.</p>
 <p>ZIMMER BIOMET Your progress. Our promise.</p>	<p>Founded in 1927 and headquartered in Warsaw, Indiana, Zimmer Biomet is a global leader in musculoskeletal healthcare. We design, manufacture and market orthopaedic reconstructive products; sports medicine, biologics, extremities and trauma products; office based technologies; spine, craniomaxillofacial and thoracic products; dental implants; and related surgical products. We collaborate with healthcare professionals around the globe to advance the pace of innovation. Our products and solutions help treat patients suffering from disorders of, or injuries to, bones, joints or supporting soft tissues. Together with healthcare professionals, we help millions of people live better lives. We have operations in more than 25 countries around the world and sell products in more than 100 countries. For more information, visit www.zimmerbiomet.com, or follow Zimmer Biomet on Twitter at www.twitter.com/zimmerbiomet.</p>
 <p>ceramisis</p>	<p>Ceramisis has extensive experience in the manufacture and development of advanced synthetic biomaterials for the repair and regeneration of bone. At the forefront of the company's mission is a commitment to providing premium quality products which meet the requirements of surgeons. All of Ceramisis' products are UK manufactured (Made in Sheffield) in its state-of-the-art facility and are approved in the majority of international markets.</p>
 <p>irwinmitchell</p>	<p>Irwin Mitchell Solicitors are one of the UK's most respected and successful law firms, with an independent recognised personal injury team. We support our clients and their families to help get them the best possible medical care and rehabilitation as we understand that compensation is only part of the story.</p>
 <p>Biocomposites®</p>	<p>At Biocomposites, we are distinct in that our team of specialists is singularly focused on the development of innovative calcium compounds for surgical use. With over 25 years' experience and an unrivalled dedication to quality, the products we research, engineer and manufacture are at the forefront of calcium technology.</p>

	<p>Heraeus Medical is a leader in the area of bone cements and biomaterials for surgical orthopaedics and trauma surgery. In the area of biomaterials, Heraeus Medical focuses on products for use in bone and joint surgery. The core product PALACOS® is considered the gold standard among bone cements and has repeatedly proven itself over five decades of clinical use. PALACOS® R+G - the first bone cement with antibiotics was developed over 45 years ago.</p>
	<p>Orthofix offers innovative and minimally invasive solutions for surgeons to help improve the quality of life of our patients. Our extremity fixation products are designed to address the lifelong bone-and-joint health needs of patients of all ages, helping them achieve a more active and mobile lifestyle. Our well-rounded product lines offer comprehensive solutions within both limb reconstruction and trauma specialties. Our orthopedic trauma products offer a simple approach and high performance in trauma settings. They are based on a philosophy of treatment that focuses not only on fractured bone, but also considers the long-term preservation of function and quality of life for the patient. Orthofix provides a wide range of solutions for specific anatomical areas taking into account each patients' needs.</p>
	<p>Celox™ haemostatic agents are products that control major haemorrhage including life-threatening bleeding. Simple and effective, Celox is adopted as standard by many emergency services and military medical corps around the world, with remarkable published results from the battlefield and in emergency medicine. Celox Rapid the latest generation haemostatic gauze stops life-threatening arterial bleeding with just 60 seconds of compression and has been demonstrated successfully in coagulopathic tests.</p>

A special thanks to the following for supporting and promoting BTS 2017:



Floorplan





Day 1 - Wednesday 8 th November 2017	
08:30 – 09:30	Registration & Refreshments
09:30 – 10:00	Conference Welcome by British Trauma Society, President Stuart Matthews <ul style="list-style-type: none"> City Suite B & C
10:00 – 10:30	Oral Presentations: Session 1 <ul style="list-style-type: none"> 4 x 5 minutes presentations, followed by 10 minutes discussion time City Suite B & C <p><i>"An Audit of the Wessex Major Trauma Network Booklet to assess the need for the development of a protocol to remove a Pelvic Compression Device"</i> Sabina Barbur, Megan Jones, Christopher Jack</p> <p><i>"An Assessment of Pelvic Binder Placement at a UK Major Trauma Centre"</i> Paul Nesbitt, Haris Naseem, Dominic Sprott, Anthony Clayson</p> <p><i>"A Pilot study to assess the need for the development of a protocol to remove a Pelvic Compression Device"</i> Sabina Barbur, Christopher Jack</p> <p><i>"Outcomes after Traumatic Hemipelvectomy: A review of the literature and presentation of case"</i> Taimoor Sehgal, Haider Sehgal</p>
10:30 – 11:00	Oral Presentations: Session 2 <ul style="list-style-type: none"> 4 x 5 minutes presentations, followed by 10 minutes discussion time City Suite B & C <p><i>"Clinical Complexity and Its Role in Trauma Care: Validation of AO Principles of Care."</i> Sunny Deo, Kareem Elsofarfy</p> <p><i>"Efficiency of Spine and Trauma Services at a Tertiary Centre. Is there a scope to reduce morbidity and reduce the length of stay?"</i> Sudhir Kannan, Han Hong Chong, Mr Omar Abdul Gabbar</p> <p><i>"Do clinical guidelines for whole body computerised tomography in trauma improve diagnostic accuracy and reduce unnecessary investigations? A systematic review and narrative synthesis."</i> Nicholas Hare, Alistair Macdonald, Maaz Younus, James Mellor, Hridesh Chatha, Ian Sammy</p> <p><i>"Spinopelvic Dissociation: a retrospective case-study and review of treatment controversies."</i> Daud Chou, Ibraheim El Daly, Arun Ranganathan, Alexander Montgomery, Paul Culpan, Peter Bates</p>
11:00 – 11:30	Refreshments & Exhibition



11:30 – 11:55	<p>Keynote Lecture – Dr Robert Winter - Medical Director, East Midlands Ambulance Service NHS Trust and National Clinical Director for Critical Care, Emergency Preparedness Resilience and Response, East Midlands Ambulance Service NHS Trust</p> <p>Presentation Title: “Lessons from Recent Terror Events.”</p> <ul style="list-style-type: none"> • 20 minutes and 5 minutes questions • City Suite B & C
11:55 – 12:25	<p>Oral Presentations: Session 3</p> <ul style="list-style-type: none"> • 4 x 5 minutes presentations, followed by 10 minutes discussion time • City Suite B & C <p>“Local flaps versus Free flaps for open lower limb fractures: effect of flap choice on healing time, complications and patient reported outcome.” Dilraj Bhullar, Saravana Vail Karupiah, Anand Pillai</p> <p>“Temporary internal fixation and plate-assisted intramedullary nailing of Grade III open diaphyseal tibial fractures: An orthoplastic approach to single-stage reconstruction.” Tim Fowler, Mike Kelly, Andy Riddick, Umraz Khan</p> <p>“A Comparison of Non-Operative Versus Operative Fixation of Humeral Shaft Fractures – A Five Year Experience at a Major Trauma Centre.” Imran Ahmed, Robert Jordan, Chetan Modi, Gev Bhabra, Tom Lawrence, Steve Drew</p> <p>“There is No Weekend Effect for Hip Fracture Surgery.” Hassaan Sheikh, Adeel Aqil, Fahad Hossain, Babawande Akinbamijo, Harish Kapoor</p>
12:25 – 12:50	<p>Keynote Lecture – Mr Duncan Bew – Consultant Trauma and Acute Care Surgeon, Clinical Director of Major Trauma and Acute Surgery, King's College Hospital, South East London Kent and Medway Major Trauma Network</p> <p>Presentation Title: “Is violence an epidemic disease? Public health approaches to trauma prevention and preparedness.”</p> <ul style="list-style-type: none"> • 20minutes and 5 minutes questions • City Suite B & C
12:50 – 13:50	<p>Lunch & Exhibition Lunchtime Symposia “New Developments in Trauma” – Sponsored by Zimmer Biomet - Meeting Room 5</p>
13:50 – 14:15	<p>Keynote Lecture – Professor Antonio Belli MD, FRCS, FRCS (SN) - Professor of Trauma Neurosurgery, Institute of Inflammation and Ageing - College of Medical and Dental Sciences, UK</p> <p>Presentation Title: “Biomarkers in brain injury with key papers.”</p> <ul style="list-style-type: none"> • 20 minutes and 5 minutes questions • City Suite B & C

14:15 – 14:45	<p>Oral Presentations: Session 4</p> <ul style="list-style-type: none"> • 4 x 5 minutes presentations, followed by 10 minutes discussion time • City Suite B & C <p><i>“Odontoid Type II Fractures in The Elderly - Morbidity and Mortality.”</i> Hassaan Sheikh, Arpan Doshi, Ashley Cole, Lee Breakwell, Neil Chiverton, Antony Louis Rex Michael, Michael Athanassacopoulos</p> <p><i>“Biomechanical Comparison of Cemented versus Non-Cemented Screw Fixation in Type II Odontoid Fractures in Elderly– A Cadaveric Study.”</i> Edward Jenner, Petr Rehousek, James Holton, Marcin Czyn</p> <p><i>“Thoracolumbar fracture fixations: Outcomes and complications of posterior fixations without anterior support.”</i> Matthew Hampton, Paul Brewer, James Tomlison, Ashley Cole, Neil Chiverton, Michael Athanassacopoulos, Lee Breakwell, Antony Louis Rex Michael</p> <p><i>“Non-Contiguous Spine Injuries - Can We Predict Them?”</i> Angus Fong, Mike Petrie, Michael Athanassacopoulos, Lee Breakwell, Neil Chiverton, Ashley Cole, Antony Louis Rex Michael, James Tomlison</p>
14:45 – 15:15	<p>Oral Presentations: Session 5</p> <ul style="list-style-type: none"> • 4 x 5 minutes presentations, followed by 10 minutes discussion time • City Suite B & C <p><i>“Radiation Exposure During Trauma – The Long and Short of It.”</i> Sophie Holland, Anil Dhadwal, Bhuvana Pandiya, Shane Leavesley, Stephen Duckett, Michael Grant</p> <p><i>“Femoral shaft fractures: Bone behaviour under high and low energy trauma in paediatric, adult and older populations.”</i> Khalid Al-Hourani, George Dixon, Henry Crouch-Smith, Ciaran Barlow, Elizabeth Dominguez, Robert Wallace, Hamish Simpson</p> <p><i>“The Lethal Necrotising Fasciitis: Our Experience of managing three cases in a District General Hospital in UK and review of literature. “</i> Devendra Chauhan, Adam Budgen, Anthony Maury, Simon Boyle</p> <p><i>“An audit of admissions to a UK Major Trauma Centre following deliberate self-harm and attempted suicide; prevalence, demographics, mechanism of injury and outcome.”</i> Karen Hardwick, Maggie Bellew</p>
15:15 – 15:45	<p>Refreshments & Exhibition</p>
15:45 – 16:10	<p>Keynote Lecture – Miss Sarah Phillips TD, BSc, FRCS(Orth) Consultant Trauma and Orthopaedic Surgeon, King's College Hospital</p> <p>Presentation Title: “The Challenges of Limb Reconstruction in The Middle East.”</p> <ul style="list-style-type: none"> • 20 minutes and 5 minutes questions • City Suite B & C



16:10 – 16:40	<p>Oral Presentations: Session 6</p> <ul style="list-style-type: none"> • 4 x 5 minutes presentations, followed by 10 minutes discussion time • City Suite B & C <p><i>“Improving the adequacy of consent in patients for surgery with fractured neck of femur.”</i> Gaj Thiru, Andrew McKean, Mohammed Iman, Abdel Hassan</p> <p><i>“Is there a need for Virtual Fracture Clinics for Children? Investigating the Parents’ perspective.”</i> Jennifer Barwell, Anish Sanghrajka</p> <p><i>“Virtual Fracture Clinics are Acceptable to Patients.”</i> Isobel Rothera, Charlotte Richardson, Pranai Buddhdev, Diana Back, Zameer Shah</p> <p><i>“Virtually Satisfied: A Service Evaluation of the Multiprofessional Fracture Clinic.”</i> Abbas See, Zaamin Hussain, Fiona Huang, Arham Qureshi, Karam Al-Tawil, Niel Kang</p>
16:40 – 16:50	CitizenAID
16:50 – 17:45	British Trauma Society AGM

Day 2 – Thursday 9 th November 2017	
08:30 – 09:30	Registration & Refreshments
09:30 – 10:00	Oral Presentations: Session 1 <ul style="list-style-type: none"> • 4 x 5 minutes presentations, followed by 10 minutes discussion time • City Suite B & C <p><i>“Plating for displaced mid-shaft clavicular fractures in Children.”</i> Riazuddin Mohammed, William Goude, Munawar Shah</p> <p><i>“How long is your clavicle? A prospective cadaveric study comparing the validity of ultrasound and manual measurement of clavicle length.”</i> Elmunzar Bagouri, Paul McCormack, Sheba Basheer, Manjit Bhamra</p> <p><i>“Proximal humerus fractures: Reliability of Neer versus AO classifications on plain radiographs and computed tomography.”</i> Khalid Al-Hourani, Oliver Pearce, James Smith, Phil McCann, Barnaby Sheridan</p> <p><i>“Reverse Total Shoulder Replacement for Shoulder Trauma.”</i> Madhavan C Papanna, Hassan Sheikh, Sally Spence, David Thyagarajan</p>
10:00 – 10:30	Oral Presentations: Session 2 <ul style="list-style-type: none"> • 4 x 5 minutes presentations, followed by 10 minutes discussion time • City Suite B & C <p><i>“Distal Biceps Tendon Ruptures: A Comparison of Outcomes Following Surgical and Non-Surgical Management.”</i> David George, Andrew Eyre, Kinjal Juthani, Victoria Schutzer-Weissmann, Islam Abdelrahman, Michael Thomas, Adam Pandit</p> <p><i>“Clinical Results for Distal Biceps Tendon Reconstruction using Endobutton and Screw Technique.”</i> Nikhil Gokhale, Sherri Curtis, James Blacknall, Marlies Schreuder, Jomy Kurian, Amit Bidwai, Nicola Lidstone</p> <p><i>“A Comparison of Computerised Tomography Arthrography and Magnetic Resonance Arthrography in the Assessment of Traumatic Anterior Shoulder Dislocations.”</i> Robert Jordan, Imran Ahmed, Chetan Modi, Gev Bhabra, Tom Lawrence, Steve Drew</p> <p><i>“Managing Traumatic Anterior Shoulder Dislocations – An Overview of Practice at a Major Trauma Centre.”</i> Robert Jordan, Imran Ahmed, Chetan Modi, Gev Bhabra, Tom Lawrence, Steve Drew</p>
10:30 – 11:00	Refreshments & Exhibition
11:00 – 11:25	Keynote Lecture – Mr Prakash Jayakumar - Orthopaedic Specialist Registrar / Fellow in Trauma & Orthopaedic Surgery, Oxford University Hospitals NHS Trust <p><i>Presentation Title: “Patient Outcomes following Orthopaedic Trauma to the Upper Extremity: A Paradigm Shift.”</i></p> <ul style="list-style-type: none"> • 20 minutes and 5 minutes questions • City Suite B & C



11:25 – 11:55	<p>Oral Presentations: Session 3</p> <ul style="list-style-type: none"> • 4 x 5 minutes presentations, followed by 10 minutes discussion time • City Suite B & C <p><i>“Paediatric supracondylar fractures of the humerus: a review of management across four centres and 136 patients.”</i> Matt Gray, William Fishley, Mark McMullan, Benjamin Drake, Ali Raza, Mark Webb, Nick Green, Will Eardley</p> <p><i>“TSF for Tibial Fractures in children and Adolescents – Major Trauma Centre Experience.”</i> Rajkumar Thangaraj, David Houghton, Mounir Hakimi, Emmanouil Morakis, Ibrar Majid, Farhan Ali</p> <p><i>“Characterising the incidence and management of paediatric forearm fractures in a UK Trauma Centre over a one-year period.”</i> Sandeep Deshmukh, Ben Marson, Kathryn Price</p> <p><i>“A systematic review investigating the effectiveness of surgical versus conservative management of ankle fractures in adults.”</i> Lugman Elgayar, Frances Arnall, JL Barrie</p>
11:55 – 12:25	<p>Oral Presentations: Session 4</p> <ul style="list-style-type: none"> • 4 x 5 minutes presentations, followed by 10 minutes discussion time • City Suite B & C <p><i>“Reducing pre-operative starvation on the plastic surgery trauma list.”</i> Tim Fowler, Andrew Davies, Ffion Dewi, Thomas Wright</p> <p><i>“Proximal femoral fractures: Is the anterior-posterior pelvis view all that is required? Do Surgeons and Radiographers agree on interpretation of these images?”</i> Laurence Collins, Abdul Aziz Madni, Asan Rafee</p> <p><i>“Violence and Smoking - Cape Town’s Orthopaedic Trauma.”</i> Jonathan P Simpson</p> <p><i>“Hind-foot nail as a salvage treatment option for patients with of ankle fractures.”</i> Geraint Morris, Saravana Vail Karuppiah, Anand Pillai</p>
12:25 – 12:50	<p>Keynote Lecture – Group Captain Jonathan Kendrew MB, BS, MRCS, FRCS(Tr&Orth) - Consultant Orthopaedic Trauma Surgeon. Royal Centre Defence Medicine, Queen Elizabeth Hospital Birmingham</p> <p>Presentation Title: “Osseointegration principles in trauma rehabilitation & outcomes.”</p> <ul style="list-style-type: none"> • 20 minutes and 5 minutes questions • City Suite B & C
12:50 – 13:50	<p>Lunch & Exhibition</p> <p>Lunchtime Symposia “Galaxy-Orthofix’s complete trauma external fixation solution” – sponsored by Orthofix – Meeting Room 5</p>

13:50 – 14:15	<p>Keynote Lecture – Professor Fiona Lecky MB Ch B, FRCS, DA, MSc, PhD, FCEM Clinical Professor of Emergency Medicine at the Centre for Urgent and Emergency Care Research, The University of Sheffield, SchARR, Health Services Research</p> <p>Presentation Title: “Silver Trauma - the new epidemic.”</p> <ul style="list-style-type: none"> • 20 minutes and 5 minutes questions • City Suite B & C
14:15 – 14:45	<p>Oral Presentations: Session 5</p> <ul style="list-style-type: none"> • 4 x 5 minutes presentations, followed by 10 minutes discussion time • City Suite B & C <p>“Silverback - A demographic study of spinal column injuries in elderly major trauma patients at a major trauma centre.” Angus Fong, Mike Petrie, Michael Athanassacopoulos, Lee Breakwell, Neil Chiverton, Ashley Cole, Antony Louis Rex Michael, James Tomlison</p> <p>“Acute Elderly Acetabular Fractures treated like a Revision THR Pelvic Discontinuity -A Radiostereometric Analysis Study.” Daud Chou, John Abraham, Stuart Callary, Bogdan Soloman, Donald Howie</p> <p>“Outcomes of Total Hip Replacement in Neck of Femur Fractures Across 5 Years.” Samir Abdalla, Benjamin Kapur, Janardhan Rao</p> <p>“Results of Internal Fixation of Intra Capsular Neck of Femur Fractures a 5 Year Data -A Completed Audit Loop.” Sudhir Kannan, Alwyn Abraham, Jason Wilson</p>
14:45 – 15:45	<p>Oral Presentations: Session 6</p> <ul style="list-style-type: none"> • 8 x 5 minutes presentations, followed by 20 minutes discussion time • City Suite B & C <p>“Vancouver B1 Peri-prosthetic hip fractures-Is Internal Fixation Adequate?” Sitaram Giri, Mahesh Thibaiiah, Serajdin Ajnin</p> <p>“Outcome and complication of Locked plating for supracondylar peri prosthetic femur fractures.” Serajdin Ajnin, Khaldon Wahab</p> <p>“Adult Distal Femoral Shaft Fractures in a Central London Major Trauma Centre: Five Years of Experience.” Akib Khan, Quen Tang, Dominic Spicer</p> <p>“Is IMN superior to SHS in fixing Intertrochanteric fractures?” Maimen Shyam, Manish Divekar</p> <p>“Identification of the medial femoral safe zone for drilling during dynamic hip screw side plate fixation: A CT Angiogram tracing of the profunda femoris artery.” Samer SS Mahmoud, Bessam Ahmed, Khalid Hamid, Paul Baker, Simon Milburn</p> <p>“Magnetic Resonance Imaging (MRI) for occult hip fractures: What do we find?” Matthew Hampton, Richard Gibson</p>



“Major Trauma: Does Weekend Attendance Increase 30-Day Mortality?”

Jordan Bethel, Zoe Little, Alex Trompeter

“The prevalence of chronic pain between 6-12 months post tibial diaphyseal fracture,

Francois Prinsloo, Matthew Prime, Alex Wickham, Shehan Hettiaratchy

15:45 – 16:15

**Announcement of Poster Prizes and Closing remarks by British Trauma Society
President Stuart Matthews**

- City Suite B & C

Conference Close

POSTER PRESENTATIONS - WEDNESDAY 9TH AND THURSDAY 10TH NOVEMBER		
POSTER NUMBER	POSTER TITLE	MAIN AUTHOR AND CO AUTHORS
1	'The results of using the Corial uncemented hemiarthroplasty in treating patients with intracapsular neck of femur fractures'	<i>Padmanabhan Subramanian, Sunil Shah, Stella Legge & Ali Fazal</i>
2	'Comparison of surgical outcomes after internal fixation of thoracolumbar fracture in groups wearing spine braces for different durations'	<i>Francois Okoroafor, Basel Alromhain, Manel Purcell & Calan Mathieson</i>
3	'Neck of femur fractures in the frail elderly: Should supportive care be prioritised?'	<i>Andrew Davies, Thomas Tilston, Katherine Walsh & Mike Kelly</i>
4	'The detection rates for neck of femur fracture in the emergency department using X-ray imaging: an audit of 1425 patients'	<i>Richard Unsworth, Bermardo Brandao & Martyn Lovell</i>
5	'Early surgery for Hip Fracture Patients Taking Direct Oral Anticoagulants: Matched Case-Control Study'	<i>Mohammed As-Sultany, Jennifer Bowden, Rosemary Finley & Nigel Donnachie</i>
6	'Un-cemented Hemiarthroplasty for Neck of Femur Fractures – A contrast to NICE Guidance?'	<i>Andrew Hart-Pinto, Riad Adam, Moin Durrani & Karthikeyan Lyengar</i>
7	'The most commonly cited articles in orthopaedic trauma over the past 48 years: A bibliometric analysis'	<i>Matt Gray</i>
8	'Junior doctor knowledge of hand and forearm nerve supply: Assessment and a Quality Improvement Project'	<i>Matt Gray, Will Eardley</i>
9	'A Retrospective 1 Year Review of all Shoulder Dislocations in a District General Teaching Hospital against BESS/BOA Patient Care Guidelines'	<i>Raymond McKenna, Jonathan Crean, Andrew Walls & Ronan McKeown</i>
10	'Audit of fracture clinic services against national standard; service improvement to meet increasing demands. (Fracture clinic services provision at a District General Hospital, a future vision for service improvement'	<i>Thomas Murphy, Zaid Al-Wattar, Kalon Hewage, Leslie Brown & Guy Selmon</i>
11	'Dual plating in tibial plateau fracture, when is it an option or necessity?'	<i>Serajdin Ajnin & Jamie Arbuthnot</i>
12	'The use of Woodcast as Primary Splintage for Distal Radius Fractures'	<i>Samir Abdalla, William Harrison, John Taylor & Kiran Saldanha</i>
13	'Discharge following hip hemiarthroplasty for acute hip fractures: the forgotten cohort?'	<i>Jamila Karim, Jennifer Reynolds, Omer Salar, Edward Davis, Sohail Quraishi, Mushtaq Ahmed</i>
14	'A systematic review investigating the effectiveness of open reduction and internal fixation versus conservative management of complex proximal humeral fractures in adults'	<i>Mohamed Yousef S Turkman, Lugman Elgayar, Walid Ben-Nafa Muthu Jeyam</i>
15	'Early weight bearing after plate fixation of tibia plateau fractures does not lead to loss of reduction or articular collapse'	<i>Aanchal Jain, Efthymios Iliopoulos, Wessam Eide, Alex Trompeter</i>
16	'Outcomes of periprosthetic fractures of the femur at a DGH: A 5-year review'	<i>Oluwatosin Taiwo, Andrew Stone, Ashwin Unnithan, Arshad Khaleel</i>
17	'The incidence of bucket handle tears in patients with tibial plateau fractures'	<i>Aanchal Jain, Efthymios Iliopoulos, Alex Trompeter</i>
18	'Fixing intracapsular fractures in a district general hospital, does the hip survive?'	<i>Alexander Overton, Andrew Stone, Arshad Khaleel</i>
19	'Significant Paediatric Fractures Requiring Surgical Intervention'	<i>Rashid Riaz, Mohammed Zafran & Mahesh Pimple</i>
20	Re-audit of neck of femur fracture prophylactic antibiotics'	<i>Chukwudi Uzoho, Dominic Davenport, Alina Corobana & Max Edwards</i>
21	'Evaluating the demand of major trauma on different surgical specialities in a UK Major Trauma Centre'	<i>Patrick Quinn & David Lockey</i>
22	Using Google Trends to Assess for Seasonal Variation in Knee Symptom Reporting In the United Kingdom'	<i>Varun Dewan & Hartej Sur</i>
23	'Closing the loop: Trauma Management Re-audit in Chelsea and Westminster Foundation Trust. How did the audit significantly guide our service to the right way?'	<i>Ihab Abdalaziz, Monica Popescu & Miriam Kadry</i>

24	'Improving Management of Paediatric Buckle fracture in Orthopaedic outpatients: A complete audit loop'	<i>Nouman Baig, Ali Tariq, Ciara Egan</i>
25	'IYAD WYAD YAG WYAG An Orthopaedic Fracture Clinic service audit: A complete loop'	<i>Nouman Baig, Ali Tariq, Ciara Egan</i>
26	'A review of epidemiological distribution of different types of fractures in paediatric age group in a county hospital'	<i>Nouman Baig & Robert Din</i>
27	How steep is the trauma learning curve? An objective measurement of trainees on a UK programme'	<i>Imran Ahmed, Robert Jordan, Gurdip Chahal, Peter Wall & Nicholas Smith</i>
28	'An audit of the management of surgical chest drains in the trauma and orthopaedics department'	<i>Daniel Ward, Cezery Kocilkowski & Barnaby Sheridan</i>
29	'Management of Acute Kidney Injury in Fractured Neck of Femur Patients: A closed-loop audit of NICE guidance'	<i>Joe Barrett-Lee, Jennifer Reynolds, Charlotte Somerville, Fouad Chaudhry & Rajeev Bansal</i>
30	'The impact of age on major orthopaedic trauma in the United Kingdom'	<i>Will Eardley, Jonathan Herron, Richard Hutchinson, Fiona Lecky, Antoinette Edwards & Omar Bouamra</i>
31	'Ipsilateral Peroneal Compartment Syndrome – It can easily be missed leading to long term morbidity'	<i>Sitaram Giri, Yaganti Saideah & Mahesh Thibbaiah</i>
32	'Divergent Elbow Dislocation with Ipsilateral Radial Shaft Fracture – Uncommon Complex Injury but Good Clinical Outcome'	<i>Sitaram Giri, Mahesh Thibbaiah & Serajdin Ajnin</i>
33	'Home, No Follow-up: Are we ignoring the significance of unplanned clinic attendances, re-admission and mortality in the first 12 months post-operatively in over 65 Year old hip fracture patients treated with DHS fixation?'	<i>Jamila Karim, Jennifer Reynolds, Omer Salar, Edward Davis, Sohail Quraishi & Mushtaq Ahmed</i>
34	'Evaluation of the Initial management of potential C-Spine injuries'	<i>Chiraag Pandya, Richard Gadd & Anthony Louis Rex Michael</i>
35	'Visual Screening in Hip Fracture Patients: Blindly Obvious?'	<i>Omer Salar, Mandeep Bedi, Fizza Mushtaq, Sairam Kumar, Garikapati Rao, Carl Meyer & David Ford</i>
36	'Should wires for fixation of lateral humeral condyle fractures in children be buried or left exposed?'	<i>Alistair Jones, Roshan Raghavan & Amitabh Dwyer</i>
37	'Using the Leap Motion hand gesture sensor for wrist fracture rehabilitation: A feasibility study'	<i>Tamsyn Clark, Diar Karim, Afia Masood, Rebecca Kearney, Andrew Metcalfe & Mark Elliott</i>
38	'Compliance with NICE Guidelines in CT cervical spine in trauma'	<i>Joseph Boktor & Ian Pallister</i>
39	'A retrospective study of the mortality of hip fracture patients at Airedale Hospital in 2016'	<i>Neelam Patel, Alex Witek, Peter Leggetter</i>
40	'The Adapted Clavien-Dindo in Trauma (ACDiT) score to aid with morbidity appraisal as part of a robust clinical governance mechanism'	<i>Alastair Beaven, David Naumann, Emma Toman, Iain Smith, Keith Porter & Mark Midwinter</i>
41	'Fractures in Congenital Insensitivity to Pain with Anhidrosis – Case analysis'	<i>Hyeonwook Ahn, Sung-Taek Jung, Tae-Min Lee & Chan-Jin Park</i>
42	'Rates of operative intervention for proximal humeral fractures at a major trauma centre. Has the PROFHER trial changed our practice?'	<i>Mark Gaden & John Geoghegan</i>
43	'A retrospective review of acute scaphoid fracture fixation'	<i>Richard Stevens, Kate Bennett-Brown, Meg Birks & Stephen Bostock</i>
44	'The epidemiology and morphology of tibial diaphyseal fractures presenting to a major trauma centre in the UK.'	<i>Francois Prinsloo, Mathew Prime & Shehan Hettiaratchy</i>
45	'Closed loop audit: Use of Consent Form 4 for in-patients requiring Operative Treatment for a Fractured Neck of Femur'	<i>Alex Witek, Neelam Patel, Steve Ross-Thriepland & Richard Pilling</i>
46	'THR vs Hemiarthroplasty in the management of intracapsular NOF fracture'	<i>Duaa Gumaa & Yathin Das</i>
47	'Improving trauma surgery outcomes – just a 'TAD''	<i>Anil Dhadwal, Michael Grant, Matt Philpott, Cefin Barton, David Machin & Nick Boyce Cam</i>
48	'Penetrating gluteal injury in hemodynamically unstable patient: how to manage?'	<i>Yaser Selim</i>
49	'How effective is consent training for new orthopaedic trainees?'	<i>Imran Ahmed, Robert Jordan, Nicholas Smith & Jayne Ward</i>

49	‘How effective is consent training for new orthopaedic trainees?’	<i>Imran Ahmed, Robert Jordan, Nicholas Smith & Jayne Ward</i>
50	‘Is the Mirels’ scoring system for impending pathological fractures reproducible?’	<i>Imran Ahmed, Gurdip Chahal & Peter Wall</i>
51	‘A retrospective comparison of total hip replacement and cemented hemiarthroplasty in the management of elderly patients with intracapsular hip fractures’	<i>Imran Ahmed, Peter Wall & Gurdip Chahal</i>
52	‘Addressing DNACPR (do not attempt cardio-pulmonary resuscitation) in patients with a fractured neck of femur who lack capacity. Challenges to delivering best practice within a legal framework.’	<i>Daniel Hill, Laura Nazar & Matthew Freudmann</i>
53	‘Skin closure following fractured neck of femur surgery: A survey of orthopaedic Surgeons practices.’	<i>Daniel Hill, Matthew Freudmann & Tim Board</i>
54	‘Is the management of patients with vertebral column trauma in units lacking onsite spinal services meeting national standards of care?’	<i>Daniel Hill & Hans Marynissen</i>
55	‘The use of fast-setting cement in hip hemiarthroplasty significantly reduces operating time without an increase in the rate of complications’	<i>Michael Smith, Philip Brown & Mark Webb</i>
56	‘Can We Predict a Second, Contralateral Hip Fracture – A Large Retrospective Cohort Study’	<i>Hassaan Sheikh, Adeel Aqil, Fahad Hossain, Babawande Akinbamiyo & Harish Kapoor</i>
57	‘Retrospective Analysis of the Outcomes of Open Ankle Fractures’	<i>Syed Naqib Ahmed & S S Ahmed</i>
58	‘Distal radius fractures – Time to surgery’	<i>K P Schoeman & Natasha Morrissey</i>
59	‘Skyline view of shoulder to visualize intraoperative joint penetration of humeral head screws’	<i>Jayadeep J S & Amit Sinha</i>
60	‘Epidemiological profile and tibia shaft fractures treatment in a Brazilian orthopaedic reference center’	<i>Alex Lima Santos, Conrado Nitta, Guilherme Boni, Gustavo Tadeu Sanchez, Eric Fernandes de Souza & Fernando Baldy dos Reis</i>
61	‘A late presentation of massive pelvic insufficiency following external beam radiotherapy (EBRT) for cervical cancer’	<i>Thomas Lloyd, Nnamdi Obi & Ben Davis</i>
62	‘Management of acute pretibial haematoma in elderly population’	<i>Fouad Chaudhry, Arshad Khan, Simon Wharton & Sohail Butt</i>
63	‘Mortality and Morbidity of Cervical Spine Fractures in elderly patients’	<i>Katie Jones, Alexandra Khoury, Arangan Lingham, Christopher Buckle & Kasetti Ravikumar</i>
64	‘Subtrochanteric Hip Fractures Treated with Cerclage Cables and Long Cephalomedullary Nails: A Review of 59 Consecutive Cases Over 9 Years’	<i>Lawrence Wengle, Olan Carmody & James Harty</i>
65	‘The use of Chemical VTE Prophylaxis in Ankle Fractures treated with open reduction and internal fixation in a trauma unit’	<i>Fouad Chaudhry, Howard Stringer & Qutab Qadri</i>
66	‘Tranexamic Acid and its effect on peri-operative blood loss in proximal femoral fractures’	<i>Andrew Walls, Lynsey Henderson, Adam Tucker, Clare Rowan & Graham Bailie</i>
67	‘Rare Hoffa fracture of the lateral femoral condyle with sagittal split: Case report with literature review’	<i>Akash Patel, Lily Li, Aallya Qureshi & Krisztian Deierl</i>
68	‘The Ortho-Plastic Management of Paediatric Open Lower Limb Fractures: Experience of a UK Level I Major Trauma Centre’	<i>Thomas Handley, A Khajuria, L Geoghegan, S Hettiaratchy & M Ives</i>

BRITISH TRAUMA SOCIETY

ORAL PRESENTATIONS

Wednesday 8th November 2017

ANNUAL SCIENTIFIC MEETING

8TH & 9TH NOVEMBER 2017

7TH NOVEMBER INSTRUCTIONAL COURSE

Mercure Sheffield St Paul's Hotel and Spa



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0189

An Audit of the Wessex Major Trauma Network Booklet to assess the need for the development of a protocol to remove a Pelvic Compression Device

Sabina Barbur, Megan Jones, Christopher Jack

Background:

PCD have been documented to cause serious complications if left in situ for more than 24 hours (NICE 2016). Unfortunately despite guidelines PCD have been found on patients 24 hours after admission. Concern relates to the timing that the binder was placed and the accuracy of the notes to allow for informed decision making regarding the removal of the binder pre leaving A&E.

Standards:

100% of high energy pelvic trauma will have a documented PCD application time, initial and A&E observations, a CT scan within 1 hour of admission and a treatment plan pre leaving A&E.

Methods:

Pelvic fractures coded by TARN between 2015-16 were viewed for high energy injury. Notes were examined for content relating to pelvic fractures. Specifically, the pre hospital alert, activation of the MHP, use of tranexamic acid, initial observations, application of a binder, time to CT and confirmation of a pelvic injury and plan for binder removal and treatment.

Results:

156 pelvic fractures were coded by TARN between of which 59 were deemed high energy injuries and included. 53% had a documented binder application time. 32% had no information about time it was applied. 20% had a documented plan and removal of binder in A&E, 59% did not have it removed and there was no plan in the notes regarding when it could be. 15% were discussed with the orthopaedic teams and decision was made to keep the binder on. 89% were scanned within 1 hour of admission however zero patients had full documentation regarding any of their vital clinical signs.

Conclusion:

Current use of the network booklet is failing standards set by this audit. Information boxes are available for all the require data collected. These boxes must be filled out to ensure adequate information is present for clinicians using the booklet to make an informed decision about the stability and treatment of a patient. Regarding the use of a PCD importance of acknowledging and documenting time of application and confirmation of pelvic fracture as well as initial and A&E observations are vital in assessing haemodynamic stability and understanding whether PCD can be removed.

0160

An Assessment of Pelvic Binder Placement at a UK Major Trauma Centre

Paul Nesbitt¹, Haris Naseem¹, Dominic Sprott¹, Anthony Clayson²

¹Salford Royal NHS Foundation Trust, Salford, United Kingdom ²Northwest Pelvic and Acetabular Surgery Unit, Wrightington Hospital, Wigan, United Kingdom

Introduction:

Pelvic binders are used to reduce the haemorrhage associated with pelvic ring injuries. Application at the level of the greater trochanters is required. We assessed the frequency of their use in patients with pelvic ring injuries and their positioning in patients presenting to a single Major Trauma Centre (MTC).

Materials and Methods:

A retrospective review of our trauma database was performed to randomly select 1000 patients for study from April 2012 to December 2016. Patients with a pelvic binder or a pelvic ring injury defined by the Young and Burgess classification were included. CT trauma scanograms were used to identify and measure pelvic binder placement.

Results:

140 patients were identified. 110/140 had a binder placed of which 54 (49.1%) and 56 (50.9%) patient had satisfactory and unsatisfactory placement, respectively. 30/67 (44.8%) patients with a pelvic ring injury had no binder applied of which 6 (20%) had an unstable injury. 9/67 patients died.

Discussion:

This is the first study assessing pelvic binder placement in patients at a UK MTC. Unsatisfactory positioning of the pelvic binder is a common problem and it was not used in a large proportion of patients with pelvic ring injuries. This may be placing patients at risk of further preventable harm.

0190

A Pilot study to assess the need for the development of a protocol to remove a Pelvic Compression Device

Christopher Jack, Sabina Barbur

Background:

PCD can cause serious complications if left in situ for more than 24 hours (NICE 2016). PCD should be removed and/or definitive fixation should take place within 24-48 hours of the injury. Concern relates to the complication of pressure necrosis. The importance of understanding when to use and remove the PCD is crucial to minimise long term adverse consequences.

Aims:

To assess the current knowledge in PCD practice in order to establish the need for additional support and guidelines for PCD removal.

Methods:

A pilot study questionnaire investigating whether there is a consensus in pelvic fractures and binder use was collected from a trauma meetings in 2016 as well as being sent to all members of the Orthopaedic Trauma Society, UK. The first 100 responses were tabulated to establish best common practise, exposure, personal preference and PCD complication observation.

Results:

100 questionnaire responses were collected of which 88 surgeons fulfilled requirements for oncall commitments. 40% worked in an MTC. 70% were not aware of any pelvic binder guidelines. 22% were aware of 'NICE 2016'. 75% felt confident to remove the binder pre discussing with a pelvic surgeon. 33% felt a PCD could be left in situ 15-24 hours followed by 24% for 4-6 hours. 63% felt that they had seen PCD left on longer than their preferred amount of time and 35% had reported seeing severe complications. Interestingly only 68% would obtain a pelvic x-ray post removal of the binder and 43% requested a protocol for ease of PCD removal in A&E. Other suggestions included training, access to clinical information and pelvic team support.

Conclusion:

Current knowledge in PCD practice is lacking across the country and guidance for removal is required. Using published evidence and the results, it can be stated that PCD should be removed by 6 hours due to ischaemic change at pressure points under the PCD and to prevent complications clearly published. Evidence suggest that clinical information regarding major trauma patients should be clearly documented so that the clock can start and plans can be made more easily with identification of the haemodynamically stable patients.

0206

Outcomes after Traumatic Hemipelvectomy: A review of the literature and presentation of case

Taimoor Sehgal, Haider Sehgal

Traumatic hemipelvectomy with avulsion of the sacroiliac joints and diastasis through the pubic symphysis is a rare and near lethal form of open fracture associated with a high energy mechanism. Few patients survive past the pre-hospital stage and initial resuscitation period. According to Beal and Blaisdell, the first reported survivor of a hemipelvectomy was in February 1915. The mechanism of injury is a hyperabduction coupled with an external rotation. Eighty percent of them are caused by motor vehicle accidents. As part of our literature review, we identified a total of 61 articles reporting on presentations of traumatic hemipelvectomies. We summarise the common injury patterns and described management by system, and predictive injuries leading to a poorer outcome.

Our patient is a young male who jumped off a moving train, resulting in bilateral leg amputations with injury to bladder, bowel, perineum and rectum in addition to severe traumatic brain injuries. After multiple laparotomy and craniotomy procedures the patient succumbed to his injuries on day 5 of presentation

0134

Clinical Complexity And Its Role In Trauma Care: Validation Of AO Principles Of Care.

Sunny Deo¹, Kareem Elsorafy²

¹great western hospital nhs foundation trust, swindon, United Kingdom ²leicester royal infirmary, leicester, United Kingdom

Introduction:

Complexity theory is based around the interaction of agents and factors to predict and quantify predictable and unpredictable events. Other features of complexity include non-linearity, feedback and scalability. This is contra-distinct to deterministic models focussing on 1 factor, reliance on average values and normal distributions. Interestingly, Orthopaedic Trauma practice has historically centred around the consideration of multiple factors, but this has been under-represented in peer-reviewed literature.

A key component of complexity involves the role of fractals, which have transformed the understanding of a range of natural science subjects, including cardiac, neural-network and cancer studies.

Method and patients:

Over the past 8 years we have undertaken a number of clinical projects centred on clinical complexity and the interaction between 2 principle factors namely local and systemic, generating a 4 part classification of clinical complexity.

This equates to “injury factors and patient factors” of traditional AO/ ASIF (Association for the Study of Internal Fixation) teaching. We further refined these by setting criteria for these factors being straightforward or complex, thereby creating a 2x2 matrix of clinical complexity, with C0 as the most straightforward type of case and C3 the most complex.

Presenting problem eg injury:	Simple	Complex
General patient status:		
Generally well ASA 1-2	C0	C1

Complex comorbidities; Charlson majors, ASA 3+	>3 C2	C3
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Results:

Our orthopaedic trauma research has thus far focussed on hip fracture patients and we have validated results over 2 centres, involving analysis of 717 patients with AO/OTA A31 and B31 fractures. We found statistically significant differences between the most complex groups and straightforward patients in a variety of parameters such as mortality rates at 30 days and 1 year ($p<0.001$).

Conclusions:

Stratification into the 4 clinical complexity groups seems to have almost universal applicability. It tends to validate the AO principles of injury, that injury and patient factors are key to patient outcomes.

We should look more closely at the principles of complexity science, as this may provide an alternative methodology, with greater efficacy at modelling healthcare delivery and outcomes and would demonstrate which additional data would need to be collected.

0010

Efficiency of Spine and Trauma Services at a Tertiary Centre. **Is there a Scope to Reduce Morbidity and Reduce the Length** **of Stay?**

Sudhir Kannan¹, Han Hong Chong, Mr Omar Abdul Gabbar

¹*University Hospitals Of Leicester, Leicester, United Kingdom*

Background:

Appropriately timed discharge is essential for optimal patient care and efficient functioning of services. NHS plan 2000- Income linked to activity. Recent articles showed that up to 50% of patients remain in hospital inappropriately (Ashby et al). We conducted a retrospective study at the university hospitals of Leicester, our aim was to evaluate the preoperative management of patient getting admitted with spine and trauma conditions and suggest a pathway to improve the current practice.

Methods:

We conducted a prospective study involving 100 patients from March to October 2016 admitted at Leicester royal infirmary. Our outcome variable was the rate of discharge, the length of stay and we recorded the post-operative morbidity scores(POMS). All statistical analysis was carried out using SPSS software. Level of significance was set at 0.05

Results:

100% of patients > 2 co morbidities stayed > 7 days.60- 63% of patients fit for discharge on day 3 stayed for > 7 days.40- 45% of patients had medical problem which persisted for > 5 days. Renal and pulmonary causes were most common post op morbidities. Multivariate analysis showed that pre-op morbidity (p 0.003) and day 3 POMS (0.004) had a significant correlation to length of stay in spine patients. Age was the only factor which had significant correlation to length of stay in trauma patients. (p0.001)

Conclusion(s):

Patients > 65 years with > 2 co-morbidities would benefit from orthogeriatric input before day 3. Patients with POMS score 0 should be discharged. Specialty input should be requested for all patients in whom the morbidity persists up to 48 hours

Implications:

We suggest a pathway for management of these patients, and, we believe this might improve the efficiency of patient care and reduce the length of stay in NHS services which already hard pressed.

0039

Do clinical guidelines for whole body computerised tomography in trauma improve diagnostic accuracy and reduce unnecessary investigations? A systematic review and narrative synthesis

Nicholas Hare¹, Alistair Macdonald¹, Maaz Younus¹, James Mellor¹, Ian Sammy², Hridesh Chatha²

¹University of Sheffield, Sheffield, United Kingdom ²School of Health and Related Research, Sheffield, United Kingdom

Introduction:

Whole body computerised tomography has become a standard of care for the investigation of major trauma patients. However, its use varies widely, and current clinical guidelines are not universally accepted. We undertook a systematic review of the literature to determine whether clinical guidelines for whole body computerised tomography in trauma increase its diagnostic accuracy.

Materials and methods:

A systematic review of Medline, Cinhal and the Cochrane database, supplemented by a manual search of relevant papers was undertaken, with narrative synthesis. Studies comparing clinical guidelines to physician gestalt for the use of whole body computerised tomography in adult trauma were included.

Results:

A total of 887 papers were identified from the electronic databases, and 1 from manual searches. Of these, seven papers fulfilled the inclusion criteria. Two papers compared clinical guidelines with routine practice: one found increased diagnostic accuracy while the other did not. Two papers investigated the performance of established clinical guidelines and demonstrated moderate sensitivity and low specificity. Two papers compared different components of established triage tools in trauma. One paper devised a de novo clinical decision rule, and demonstrated good diagnostic accuracy with the tool. The outcome criteria used to define a 'positive' scan varied widely, making direct comparisons between studies impossible.

Conclusions:

Current clinical guidelines for whole body computerised tomography in trauma may increase the sensitivity of the investigation, but the evidence to support this is limited. There is a need to standardise the definition of a 'clinically significant' finding on CT to allow better comparison of diagnostic studies.

0037

Spinopelvic Dissociation: a retrospective case-study and review of treatment controversies

Daud Chou¹, Ibraheim El Daly, Arun Ranganathan, Alexander Montgomery, Paul Culpan, Peter Bates

¹*Royal London Hospital, Bart's Health NHS Trust, London, United Kingdom*

Introduction:

Spinopelvic dissociation (SPD) is a rare injury resulting in discontinuity between the spine and pelvis. English language literature is reviewed and critical treatment controversies discussed. A series of SPD cases from a level-1 trauma centre is presented.

Methods:

Retrospective review of 18 consecutive cases treated operatively over a period of four years. Patient, injury and surgical demographics collected as well as clinical and radiographic outcome measures.

Results:

Twelve patients had associated injuries, five were intubated on arrival and six had neurological deficits at presentation. No patient had spinal decompression and all patients underwent closed reduction and percutaneous fixation. There were no cases of iatrogenic nerve injury, despite the use of partially threaded SI-screws and closed reduction techniques. Five patients showed progressive neurological improvement post-operatively. After reduction, eight patients (44%) had radiographic loss of sacrococcygeal angle at latest follow-up but correction of fracture translation was preserved in all.

Discussion:

SPD represents a heterogeneous group of injuries often in the context of polytraumatised patients with other injuries. Our closed reduction and fixation technique resulted in satisfactory outcomes. A treatment algorithm is presented for these rare injuries.

0177

Local flaps versus Free flaps for open lower limb fractures: effect of flap choice on healing time, complications and patient reported outcome

Dilraj Bhullar¹, Saravana Vail Karuppiiah¹, Anand Pillai¹

¹*University Hospitals of South Manchester, Manchester, United Kingdom*

Introduction:

The optimal type of flap cover for managing open lower limb fractures have been an area of debate. Most studies have been reported on surgical outcome but the impact on clinical outcome has not been reported.

The aim of this review was to determine whether there are differences in patient reported quality of life outcome between local flap versus free flap.

Materials and method:

All patients admitted with lower limb open fractures were retrospectively reviewed. Patient notes were assessed for demographics, time to fracture union, wound healing and patient reported quality of life with ED-5Q and ED-VAS.

Results:

A total of 32 flaps were used 20 local flap (Group A) and 12 free flap (Group B). Overall average follow-up 9.4 months (range 8 to 12months).

Group A – 9 revision of flaps (45%) and 13 with surgical complications (65%). Fracture union - 156days and wound healing 118days. Quality of life EQ-5D scores 0.534 and EQ-VAS scores 70.2 respectively.

Group B – 8 revision of flaps (66.7%) and 10 with surgical complications (83.3%). Fracture union - 186days and wound healing 158days. Quality of life EQ-5D scores 0.311 and EQ-VAS scores 39.8 respectively.

Aesthetic appeal - 50% Group A vs. 47% Group B. There was no statistical significant difference between the two groups, however, congestion was more common in free flaps ($p=0.049$). Individual rates of infection, haematoma formation, wound dehiscence and necrosis were similar with only minor differences between the flap groups ($p>0.05$).

Discussion:

Wound management of open fracture can be complicated and the type of flap is determined on the location of wound and amount of tissue loss. The results of this study shows local flap has a higher success rate however there is a lower time to fracture union as compared to free flaps.

Conclusion:

Whilst there are certain advantages of free flap, local flaps have better surgical outcome and patient-reported quality of life.

0143

Temporary internal fixation and plate-assisted intramedullary nailing of Grade III open diaphyseal tibial fractures: An orthoplastic approach to single-stage reconstruction

Tim Fowler¹, Andy Riddick¹, Umraz Khan², Mike Kelly¹

¹*Department of Trauma and Orthopaedics, North Bristol NHS Trust, Bristol, United Kingdom*

²*Department of Plastic Surgery, North Bristol NHS Trust, Bristol, United Kingdom*

Background:

The orthoplastic approach to the treatment of open lower limb fractures has become increasingly commonplace in the UK, where current guidelines dictate that management is planned and executed by experienced orthopaedic and plastic surgeons from the point of admission. This study reviews the outcomes of an orthoplastic approach to the single-stage reconstruction of Grade III open diaphyseal tibial fractures, following initial debridement and temporary stabilisation. Furthermore, it outlines two distinct strategies for: 1) temporary internal fixation with a plate (in-fix), in place of traditional external fixation, and 2) plate-assisted intramedullary nailing.

Methods:

Case notes and imaging were reviewed for 61 consecutive patients with a Grade III open fracture of the tibial diaphysis, with a mean follow-up of 2.1 years. All patients had definitive fixation and soft tissue coverage in a single-stage following initial debridement (+/- temporary fixation). We compared the rates of complications including: deep infection; non-union and flap failure in patients who had temporary internal fixation vs. temporary external fixation. Additionally, we reviewed the incidence of the same complications in patients who had plate-assisted intramedullary nailing following a second debridement.

Results:

An overall rate of complications of 9.8% was reported, with an infection rate of 4.9%. 46 patients had temporary fixation prior to definitive surgery (22 ex-fix, 24 in-fix). There were 3 complications (13.6%) recorded in the ex-fix group (1 deep infection; 1 non-union, and 1 flap failure) and 2 complications (8.4%) recorded in the in-fix group (1 deep infection and 1 flap failure). A complication rate of 10.8% was observed in 46 patients who underwent plate-assisted nailing, with higher rates in those who had the plate left *in situ* prior to soft tissue reconstruction. A flap survival rate of 95% was observed in the 40 patients who had soft tissue reconstruction with a free flap.

Conclusion:

Temporary internal fixation and plate-assisted nailing offer novel strategies to facilitate the acute reconstruction of open tibial fractures, when used in the context of an orthoplastic approach. The rate of complications was lower in patients who had temporary internal fixation with a plate, compared to those who had traditional external fixation.

0048

A Comparison of non-operative versus operative fixation of humeral shaft fractures – a five-year experience at a major trauma centre

Robert Jordan, Imran Ahmed, Chetan Modi, Gev Bhabra, Tom Lawrence, Steve Drew

Purpose:

The aim of this study was to analyse the union rate, union time and complications associated with both a non-operative and operative approach to humeral shaft fractures.

Methods:

A retrospective review of all humeral shaft fractures presenting to a level one major trauma centre between 1st February 2011 and 1st February 2016 was performed. Patient demographics, splinting used, union rate, complications and outpatient resources used were recorded.

Results:

During the study period 59 patients were treated at our centre; 24 non-operatively and 35 surgically. Those treated surgically were younger (43 vs 54 years), had slightly higher union rates (88% vs 83%) and quicker time to union (10 vs 13 weeks). In the non-operative group 74% were treated using a humeral brace, one required delayed fixation and two patients had an associated radial nerve palsy that recovered. The mean residual deformity was 14 degrees in the coronal and 7 degrees in the sagittal plane. In the surgical group 29% had a major complication; 11% had a post-operative radial nerve palsy that recovered, 12% had non unions and 6% had a peri-prosthetic fracture.

Conclusion:

Humeral shaft fractures were successfully managed using both modalities at our centre. Although plate fixation led to higher union rates and faster union, any potential benefit must be weighed against risks of surgery.

0120

There is No Weekend Effect for Hip Fracture Surgery

Hassaan Sheikh, Adeel Aqil, Fahad Hossain, Babawande Akinbamijo, Harish Kapoor

Aims:

There have been concerns raised that day of admission or surgery may adversely affect patient outcomes. However, there is growing evidence that this 'weekend effect' however is disease or even location specific. We aimed to investigate whether day of admission or surgery contributed to adverse outcomes in hip fracture patients.

Methods:

We retrospectively identified consecutive hip fracture patients from the National Hip Fracture Database over a three-year period from our large teaching hospital. Following exclusions of incomplete records, a total of 1361 patients remained. They were grouped into weekday/weekend admissions (Monday-Thursday and Friday-Sunday) and weekday/weekend surgery (Monday-Friday and Saturday-Sunday). We used x-ray, comorbidity and coding data to collect and adjust for pre-operative patient demographics, comorbidities, fracture type, admission source, and walking ability. We also collected and calculated the ASA grade and Charlson score for each patient. Our primary outcome measures were mortality (at 30, 90 and 365 days), and secondary outcome measures included time to surgery, and length of stay (LOS). Analysis was performed using Cox multivariate regression modelling.

Results:

A total of 577 patients were admitted over the weekend compared to 784 during weekdays, with 568 patients having their surgery during a weekend and 793 during the week. Neither the day of admission nor the day of surgery was significantly associated with increased mortality (at 30, 90 or 365 days). The following were significant predictors for 30-day mortality (all p-values <0.05): increasing age (risk ratio (RR) 1.06), male gender (RR 1.69), admission source (RR 1.41), Charlson score (RR 1.20), admission INR (RR 1.38), acute chest infection (RR 3.46) and liver disease (RR 5.67). Weekend admission or surgery did not significantly affect time to surgery (p-values 0.343 and 0.218, respectively) or LOS (p-values 0.237 and 0.510, respectively).

Conclusion:

Our results suggest that the 'weekend effect' phenomenon does not exist in this cohort of patients. Whilst our patient demographics resemble those of nationally published figures, further studies would be useful to assess whether our findings are corroborated in peripheral district general hospitals to assess for local variances in practice.

0065

Odontoid Type II Fractures in The Elderly - Morbidity and Mortality

Hassaan Sheikh, Arpan Doshi, Ashley Cole, Lee Breakwell, Neil Chiverton, Antony Louis Rex Michael, Michael Athanassacopoulos

Background:

Type II odontoid peg fractures are common spine injuries in the elderly. These patients are usually admitted under spine surgery although management tends to be non-operative. There is little in the published literature, however, about the short to medium term mortality following this injury.

Objectives:

We aimed to analyse the complications and management of this injury referred to our regional spinal surgery centre. Additionally, we evaluated the 30-day and 90-day mortality rates and causes of death in these patients.

Study Design & Methods:

Institutional board approval was gained prior to data collection. We retrospectively analysed prospectively collected data over a 6-year period to identify all consecutive patients aged above 60 years with a type II odontoid fracture. All patient images were reviewed as well as hospital databases and case notes. We collected data on treatment of the injury, other injuries, neurological status, date of death and cause of death. Concomitant injuries were coded into Injury Severity Score (ISS) to aid interpretation. Similarly, co-morbidity data was also coded to calculate a Charlson Co-Morbidity Score.

Results:

101 patients were included in this study. 91 were treated non-operatively in cervical orthotic and 10 were treated with operative intervention. 30-day mortality was 9.9% and 90-day mortality was 15.8%. Following statistical analysis, the only risk factor directly associated with both 30- and 90- day mortality was advancing age ($p=0.002$). Increasing Charlson score ($p=0.222$) and ISS ($p=0.100$) were non-significantly associated with early mortality. The commonest causes of death included pneumonia, acute coronary syndromes and malignancy.

Conclusions:

The mortality in this patient cohort is high and cause of early mortality tends to be medical co-morbidity. We therefore advocate a multi-disciplinary approach to their care with regular input from physicians during their inpatient stay and access to specialist rehabilitation.

0172

Biomechanical Comparison of Cemented versus Non-Cemented Screw Fixation in Type II Odontoid Fractures in Elderly– A Cadaveric Study

Edward Jenner¹, Petr Rehousek¹, James Holton¹, Marcin Czyn¹

¹*Royal Orthopaedic Hospital, Birmingham, United Kingdom*

Summary:

Odontoid peg fractures are the most common injuries of the cervical spine in the elderly. Anterior screw stabilisation of type 2 odontoid peg fractures improves survival and function in these patients but may be complicated by failure of fixation.

Aims:

To determine whether cement augmentation of a standard anterior screw provides biomechanically superior fixation of type II odontoid fractures in comparison to an uncemented standard screw.

Materials and Methods:

Twenty human cadaveric C2 vertebrae from elderly donors (mean age 83 years) were prepared. Anderson and D'Alonzo type IIa odontoid fracture was created by transverse osteotomy and fluoroscopy guided anterior screw fixation was performed. The specimens were divided into two matched groups. The cemented group (n=10) had radiopaque high viscosity polymethylmethacrylate cement injected via Jamshidi needle into the base of the odontoid peg. The other group was not augmented. A V-shaped punch was used for loading the odontoid in an antero-posterior direction until failure. The failure state was defined as screw cut-out or 5% force decrease. Mean failure load and bending stiffness were calculated.

Results:

The mean failure load for the cemented group was 352.1 ± 163.8 N compared to 198.2 ± 81.9 N for the uncemented group ($P=0.02$). The mean bending stiffness of the uncemented group was 153.2 ± 71.9 N/mm compared with 195.3 ± 76.5 N/mm for the cemented group ($P=0.159$).

Conclusion:

Cement augmentation of an anterior standard screw fixation of Type II odontoid peg fractures in elderly patients significantly increased load to failure under anterior posterior load in comparison to non-augmented fixation. This may be a valuable technique to reduce failure of fixation.

0142

Thoracolumbar fracture fixations: Outcomes and complications of posterior fixations without anterior support

Matthew Hampton¹, Paul Brewer¹, James Tomlison¹, Michael Athanassacopoulos¹, Lee Breakwell¹, Ashley Cole¹, Neil Chiverton¹, Anthony Louis Rex Michael¹

¹*Sheffield Teaching Hospitals NHS Foundation trust, Sheffield, United Kingdom*

Introduction:

The aims of surgical management in thoracolumbar fractures are to restore spinal stability, alignment and achieve bony union. Certain fracture patterns are thought to require both posterior and anterior instrumentation to achieve these goals. We report a large case series of thoracolumbar fractures treated with only posterior stabilisation.

Materials and methods:

All fractures surgically managed in a single major trauma centre within the UK between 2012 and 2016 were reviewed. All pathological fractures were excluded. Patient demographics, mechanism of injury, fracture classification (AO), fixation methods and complications including metal failure and re-operations were recorded.

Results:

108 fractures were included. 68 patients were male. Mean year of age was 48 (range 16-82). The most common mechanism of injury was high-energy road traffic collisions. The most common level of injury was at the thoracolumbar junction with 50 of the fractures occurring at the T12 or L1 vertebrae. The most common fracture classifications were AO A3/4 type unstable burst fractures or B1/2 type flexion distraction injuries. All patients were treated with posterior stabilisation only. 5 cases were performed using a minimally invasive technique, the rest were open. The number of levels instrumented depended on bone quality and fracture configuration. 58 patients had a single level above and below the fracture instrumented the rest had 2 levels instrumented above, below or both.

No patients required revision fixation or secondary anterior surgery in our series. 2 patients required re-operations, both for wound washouts. Metal failure was seen in 5 patients to include 2 pedicle screw cut outs, 2 distal rod disengagement and a single rod fracture, however none of these patients required further surgery.

Conclusion:

We conclude that unstable thoracolumbar fractures can be appropriately management with instrumented posterior stabilisation without the need for anterior support.

0191

Non-Contiguous Spine Injuries - Can We Predict Them?

Angus Fong¹, Mike Petrie¹, Michael Athanassacopoulos¹, Lee Breakwell¹, Neil Chiverton¹, Ashley Cole¹, Antony Louis Rex Michael¹, James Tomlison¹

¹*Sheffield Teaching Hospitals NHS Foundation trust, Sheffield, United Kingdom*

Introduction:

With spinal trauma a common injury in high energy blunt trauma, it was previously reported 10% of these were non-contiguous. However, there were no up-to-date studies of this cohort in this country nor that of linking non-contiguous spinal fractures to systemic injuries. We aim to identify association of non-contiguous injury with ISS, systemic injuries and the propensity of the region of spinal fractures.

Method:

A retrospective study of all major trauma patients with spinal fractures over one year at a major trauma centre. Data is collected from TARN database. This is then cross-referenced with radiological imagings from PACS and operation details through electronic theatre management system ORMIS. Further assessment of regions of spine injuries was recorded. Statistical analysis was performed to identify any association with non-contiguous injuries.

Results:

247 patients with spinal injuries are identified with 8 central cord syndromes excluded. Of the 239 patients, 64(27%) sustained non-contiguous multi-level spine trauma with another 64 being contiguous injury. 111(46%) sustained single level injury. 30% of the non-contiguous group underwent surgery vs 23% in the others. Severe trauma (ISS>15) has only a PPV of 0.34 but a NPV of 0.79. The sensitivity and specificity of this is 0.56 and 0.59 respectively. Likelihood ratio of positive test and negative test is 1.39 and 0.74. Associated systemic injuries are not suggestive of pattern of spine injuries. There is a trend of thoracic spine injuries being involved in the non-contiguous group.

Discussions:

Non-contiguous injuries are much more common than literature reported (27% vs 10%). There is no indication that a severely injured patient will more likely sustain a non-contiguous injury. However, if the patient has an ISS <15, it is less likely that they will sustain NCSI. There is a high proportion of thoracic spine involvement in the non-contiguous group which is different from literature. A TARN/BSR collaboration would allow an ideal epidemiological study to understand these injuries further and predict likely injury associations

0129

Radiation Exposure During Trauma – The Long and Short of It

Anil Dhadwal, Sophie Holland, Bhuvana Pandiya, Shane Leavesley, Stephen Duckett, Michael Grant

Background:

Intraoperative fluoroscopy is an integral part of orthopaedic procedures, providing real-time feedback of the position of bone and surgical tools. However, with the increased use of fluoroscopy comes an increased health risk to patients and theatre staff with regards to radiation exposure. Although low doses are used, adverse effects of radiation can be associated with cumulative exposure. Consequently, there has been a local drive to minimise the frequency of unnecessary images taken during insertion of a dynamic hip screw. This project aimed to audit the radiation exposure, with regards to time, for select core indicative procedures against local standards. Furthermore, due to the often-debated best mode of fixation of the 31-A2 fractures we aimed to aid decision making by identifying which implant gives less radiation exposure.

Methods:

Retrospective review of prospectively collated data between 1st February 2016 and 31st January 2017 using trust databases. Inclusion criteria: any patient where a dynamic hip screw (DHS), short intramedullary (IM) femoral nail, long IM femoral nail and IM tibial nail were implanted. Exclusion criteria: any patient with incomplete radiological exposure data. Primary outcome measure was radiological time. Secondary outcomes included radiological dose. Paired t-test used to test statistical significance between the implants used for 31-A2 fractures. Arbitrary compliance to standard set as 95%.

Results:

146 patients included with a mean age of 79 years old. 87% of patients met the standard. The least radiation exposure was encountered using a 2-hole DHS whilst the most was with a long nail. 49% of 31-A2 fractures treated with a DHS. Radiation time was significantly less when using a short nail as opposed to a long nail (t-test, $p < 0.002$) for 31-A2 fractures.

Conclusions:

The majority of procedures were within acceptable limits. Insertion of a short femoral nail for 31-A2 fractures is safer with regards radiation time in comparison to a long femoral nail.

Implications:

In patient's presenting with 31-A2 proximal femoral fractures there can be a justification on patient safety, with reference to radiological exposure time, for using a short nail over a long nail.

0155

Femoral shaft fractures: Bone behaviour under high and low energy trauma in paediatric, adult and older populations.

Khalid Al-Hourani, George Dixon, Henry Crouch-Smith, Ciaran Barlow, Elizabeth Dominguez, Robert Wallace, Hamish Simpson

Introduction

Femoral shaft fractures are potentially devastating injuries, with bone age due to varying remodelling behaviour influencing stress response. To further understand fracture biomechanics in humans, bone architecture in animal models has been extensively researched. However, clinical correlation is vital in demonstrating this research remains ethically and economically justifiable for these injuries. We aimed to evaluate and compare bone behaviour under high and low energy trauma in paediatric, adult and older patients.

Methods

Single-centre retrospective clinical study identifying diaphyseal femoral fractures between Feb 2014-Feb 2017. Any patient with a femoral shaft fracture was included into a secure database. Peri-prosthetic and pathological fractures were excluded. Patient demographics, mechanisms of injury and fracture patterns (transverse, oblique, spiral) were included. Patients were subdivided into groups 1 (paediatric, <16yo), 2 (adult, 17-55yo) and 3 (older, >55yo) to reflect immature, peak bone age and osteoporotic bone respectively. Statistical analysis was undertaken using SPSS with Chi-Squared analysis to assess significance of bone age to degree of comminution and fracture pattern. A p-value <0.05 was significant.

Results

A total of 237 femoral shaft fractures identified. Forty-six patients were excluded with 194 remaining. Group 1, 2 and 3 included 69, 37 and 88 patients respectively. Mean age 43.2 (SD 34.9) with male-to-female ratio of 1:1.2. A total of 145 fractures were simple and 65 comminuted. Groups 1 and 3 included majority simple fractures (57/69 and 54/88 respectively). Group 2 included more comminuted injuries ((31/37). Bone age to degree of comminution proved significant ($p<0.05$). Energy to fracture was only significant in group 2, where a high energy injury was associated with comminution ($p<0.05$). Fracture pattern was not significantly associated with any group regardless of energy.

Conclusion

Our study is the first to demonstrate an association between fracture comminution and bone age. Femoral shaft fractures showed a bimodal age distribution in paediatric and older patients with simple fractures being significantly associated with immature and osteoporotic bone regardless of mechanism energy. High energy mechanism trauma was directly related to fracture comminution at peak bone age.

0181

The Lethal Necrotising Fasciitis: Our Experience of managing three cases in a District General Hospital in UK and review of literature.

Devendra Chauhan, Adam Budgen, Anthony Maury, Simon Boyle

Objective:

We share our experience to increase the awareness of 'Necrotising Fasciitis' which, although rare, can be life threatening.

Introduction:

Necrotising fasciitis is an uncommon soft tissue infection that involves the skin, subcutaneous tissue and fascial planes. Undiagnosed in early stages has significant morbidity and mortality. It is more common in immune-compromised patients. A variety of pathogens including β -hemolytic streptococcus, Staphylococcus aureus, Klebsella pneumoniae and Clostridium species have been found as causative organisms. Current review of literature, promote broad spectrum antibiotics and early aggressive surgery.

Case Presentations:

Three patients with necrotising fasciitis were treated. The age ranged from 41-64 years (mean age 55.33 years) with female: male ratio of 2:1.

One patient presented as acutely unwell suspected from chest infection (had COPD) with only mildly tender thigh. She became hypotensive and tachycardic requiring inotropes.

The second patient presented as cellulitis treated by his General practitioner with oral antibiotics for 24 hrs. She became hypotensive in Accident and emergency department requiring prompt resuscitation

The third patient (youngest) presented with a cellulitis of hand which over few hours rapidly progressed to skin necrosis up to arm level.

All three patients were managed on hospital guidelines of severe infection. Initial blood investigations included full blood counts, serum electrolytes, C reactive proteins and blood cultures. Prompt resuscitation with early multidisciplinary team assessment involving senior anaesthetic, orthopaedics and general surgeons.

Broad spectrum antibiotics were started after consulting microbiologists. Two patients had radical surgical debridement with in few hours of presentation and one required forequarter shoulder level amputation as the muscles were necrotic preoperatively.

Post operatively, intensive care support was available to prevent multi-organ failure.

Despite extensive measures only one patient survived, recovered fully and discharged after skin grafting. Two patients died.

Discussion:

Necrotising fasciitis is rare but carries a high mortality of 25%-35% despite broad spectrum antibiotics. Cellulitis is the main differential diagnosis although with rapid deterioration.

High index of suspicion, early multidisciplinary involvement for surgical decision and post-operative care are essential. Extensive wide excision and even amputation may be lifesaving. Intensive care, blood transfusion, multiple surgeries and soft tissue cover improve mortality.

0210

An audit of admissions to a UK Major Trauma Centre following deliberate self-harm and attempted suicide: prevalence, demographics, mechanism of injury and outcome.

Karen Hardwick¹, Maggie Bellew¹

¹Leeds Teaching Hospitals NHS Trust, Leeds, United Kingdom

Background:

All patients admitted to the Leeds Major Trauma Centre (MTC) have significant injuries. The majority are caused by accident. There are however a small proportion of patients admitted with severe injuries caused by deliberate self-harm (DSH) or suicide attempt.

Methods:

Data on admissions to the Leeds MTC following DSH and suicide attempts from the TARN database, were analysed retrospectively. Descriptive and statistical analyses were used to explore frequency of admissions, demographics, mechanism of injury, severity of injury, outcome and length of hospital stay. Comparisons were made with data from another UK MTC.

Results:

Over a four-year period 192 admissions were recorded as being due to DSH or suicide attempt. The average age of patients was 38.5 (SD 16.1, range 11-93). Over two thirds of the patients were male (72%). The most frequent mechanism of injury was 'fall /jump' with 41% (n=78) of patients using this method. A significant difference was found between gender and mechanism of injury ($p=0.025$) with males using a wider range of methods than females and females choosing 'fall/jump' most frequently. Of the 192 patients, 114 (59%) had an ISS (Impact Severity Score) of >15 . The demographics of this sub-group were consistent with the whole sample. As expected there was a significant link between ISS and mortality. Suicide attempt was fatal for 34 (18%) patients with no difference between males and females. A significant difference between mechanism of injury and mortality was found, with hanging most frequently resulting in mortality and stabbing being associated with lower ISS ($p=0.001$). The average length of hospital stay was 15.2 days (SD 26.8, range 1-284), with an average 2.9 days (SD 5.4, range 0-29) in Critical Care. Comparing data to another UK MTC indicated consistency regarding mechanism of injury and mortality rates.

Conclusions:

This audit increases our understanding of DSH/suicide e.g. highlighting gender differences. It also indicates the high cost of DSH and suicide attempts with the majority of this sample having high ISS, and most patients surviving. Further research into follow-up and preventative support for this group of patients would be beneficial.

0075

Improving the Adequacy of Consent in Patients for Surgery with Fractured Neck of Femur

Gaj Thiru¹, Andrew McKean¹, Mohammed Imam¹, Abdel Hassan

¹*Ashford and St Peter's Hospitals NHS Trust, Chertsey, United Kingdom*

Aim:

Neck of Femur (NOF) fractures represents a challenge in current healthcare milieu. Operative fixation is associated with high morbidity and mortality. Proficient documentation and record keeping are important pillars of good clinical practice. Consenting in a trauma setting is generally recognised as being suboptimal. These can be attributed to different factors. These include the experience of the consenter, the timing of the consent forms and the Surrounding circumstances. Litigation rates in surgery are increasing in the UK and recent court rulings (Montgomery case) have changed the perspective of consenting in surgery.

We assessed the adequacy of the consent process in light of the guidelines set by the BOA, to identify possible areas of improvement, implement any necessary changes and assess the impact of these changes.

Method:

A retrospective review of electronic notes was conducted over a 6-month period in a single trauma unit. Consecutive patients who underwent any operative fixation of NOF fractures were included in our audit. Those who were unable to consent or whose notes were not electronically recorded were excluded. The BOA endorsed website, 'orthoconsent.com' was used as our audit standard and documented potential risks/complications were compared to this.

Results:

Consenting in intracapsular NOF fractures patients (n=35) showed that the documentation of 4/13 potential risks/complications was recorded in <50% of cases. Consenting in extracapsular neck of femur patients (n=35) showed that documentation of 7/12 potential risks/complications was recorded in <50% of cases. Re-audit following our interventions showed 100% documentation of potential risks/complications in both intracapsular and extracapsular NOF fractures patients. After introducing a standardized printed proforma, an overall significant improvement in the studied parameters was noticed ($P < 0.0023$).

Conclusions:

These results demonstrated that unstructured handwritten consenting is significantly associated with less precision. This audit has shown that use of a proforma reduces the amount of data left out of record. Consenting in fractured NOF patients in our unit was suboptimal when compared to BOA endorsed consent guidance. The introduction of a NOF fracture specific consent form within our unit will lead to ongoing adequate consenting.

0199

Is there a need for Virtual Fracture Clinics for Children?

Investigating the Parents' perspective.

Jennifer Barwell, Anish Sanghrajka

Introduction:

Virtual fracture clinics are being introduced throughout many hospitals in the country, but little research has been performed into this area. Many clinicians are concerned that parents would always want to be seen in person, and so would be dissatisfied with virtual clinic appointments for their child.

Aim:

The aim of this study was to investigate parental opinions about their initial visit to a conventional fracture clinic, and determine whether this population would accept telephone consultations as an alternative.

Methods:

This study was performed in the Trauma & Orthopaedic department of a University Teaching Hospital. A paper questionnaire was designed for completion by parents, investigating their views about various aspects of their visit to the fracture clinic (eg satisfaction, convenience). The survey also asked opinion about telephone consultations. All parents of children attending the hospital's fracture clinic were invited to participate in this study, with recruitment performed over an 8-week period.

Results:

140 completed responses were collected over the study period. 75 (54%) children were seen within 48 hours of their Emergency Department attendance.

110 (79%) children required time off school to attend the appointment. 54 (42%) parents felt the appointment was inconvenient for them. Only 33 (24%) felt the appointment was worthwhile. 58 (41%) thought that a telephone consult was a suitable alternative to a face-to-face appointment, with 44 (31%) preferring this option rather than attending fracture clinic.

Conclusion:

With large numbers of families reporting that fracture clinic appointments were inconvenient, and only a quarter reporting that the appointment was worthwhile, the fracture clinic model for children needs improvement. A significant proportion of families are happy to have telephone consultations, making a virtual clinic in selected cases a viable option. The data from this study would provide a useful baseline for others wanting to assess their fracture clinic service.

0144

Virtual Fracture Clinics are Acceptable to Patients

Isobel Rothera, Charlotte Richardson, Pranai Buddhdev, Diana Back, Zameer Shah

Introduction:

Virtual fracture clinics are becoming increasingly common. They have been reported as cost-saving, predominantly through reducing the number of face-to-face appointments required, with comparable clinical outcomes when compared to traditional fracture clinics. However, there is a lack of literature looking at patient opinion on this shift in fracture management. Our aim was to evaluate the acceptability of virtual fracture clinics amongst our patients.

Methods:

Questionnaires were randomised to all patients attending the fracture clinic at St Thomas' Hospital, London, November - December 2016. Responses were measured using a 4-point Likert scale.

Results:

A total of 105 questionnaires were completed. Responders ranged from less than 18, to over 75 years old. 41% of individuals were attending fracture clinic for the first time.

80.9% of responders felt that the concept of virtual fracture clinics was acceptable. This is in the context of 94.6% of patients being satisfied with the conventional fracture care they received. Only 6.7% of patients felt their appointment had been unnecessary, and free text responses indicated that patients value appointments for reassurance and to alleviate concern. 25.2% of responders would not feel confident with a virtual fracture clinic appointment, despite this being led by a senior Orthopaedic surgeon.

Discussion:

This diverse patient population are satisfied with the fracture care they are receiving at a central London teaching hospital. The innovative concept of virtual fracture clinics is accepted by the majority of patients, but patients do greatly value face to face appointments for reassurance and injury explanation. In establishing a virtual fracture clinic model this information must be provided in an alternative manner to ensure that an acceptable balance between efficiency, cost effectiveness and patient satisfaction is struck. Maintaining patient trust, and effective communication through understanding the specific needs of the local population, is key to achieving this.

0137

Virtually Satisfied: A Service Evaluation of the Multiprofessional Fracture Clinic

Abbas See¹, Zaamin Hussain¹, Fiona Huang², Arham Qureshi³, Karam Al-Tawil⁴, Niel Kang⁵

¹University of Cambridge, Cambridge, United Kingdom ²Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom ³University Hospitals Coventry and Warwickshire, Coventry, United Kingdom ⁴East of England Deanery, Cambridge, United Kingdom ⁵Addenbrooke's Hospital, Cambridge, United Kingdom

Background:

The Multiprofessional Fracture Clinic (MPFC) was introduced in Addenbrooke's Hospital in February 2015 to efficiently triage patients leaving the Emergency Department (ED) with musculoskeletal injuries. Decisions to discharge patients via telephone with nurse-led consultations or alternatively offer face-to-face fracture clinic appointments are guided by consultant orthopaedic surgeon evaluation after the patient has left the ED. Introduction of the MPFC reduced the number of fracture clinic appointments by 1/3rd and facilitated patients to be seen in the appropriate clinics at the appropriate times. Following this restructuring, this study aimed to evaluate patient satisfaction and highlight weaknesses and areas for improvement. We hypothesized a high level of patient satisfaction and increased efficiency.

Methods:

A retrospective review of a four-week period (8/2/2016 to 4/3/2016), identified 389 patients that were seen in the MPFC. A questionnaire was designed from two validated NHS questionnaires: the adult inpatient survey 2015 and the outpatient questionnaire. This was delivered to patients by email, telephone or paper. The questions were modified to match the context of the MPFC and validated by the Patient Experience Department. Data from the Patient Advice and Liaison Service (PALS) was obtained and reviewed for any complaints or comments relating to the MPFC.

Results:

Of 112 respondents, 41.9% were immediately discharged without follow-up. On a scale from 1 (very poor) to 10 (very good), the mean overall experience value was 8.2, and median 8. Most respondents preferred telephone calls (85.8%) rather than alternatives and felt confident in the management of their injury (87.9%). Comments from the open text fields suggested that the most valuable features of the MPFC are its speed, efficiency and the personal service provided by the nurse-delivered, consultant management plans. Suggestions for improvement included improving communication, for example by providing an information leaflet in ED to demystify the MPFC pathway.

Conclusion:

Patient satisfaction with the MPFC is high, with no major complaints reported to PALS. A large proportion of patients can be discharged directly, thus reducing the strain on the face-to-face services. This study suggests the implementation of a safe and efficient service, however further refinement is needed to optimize efficiency.

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0170

Plating for Displaced Mid-shaft Clavicular Fractures in Children

Riazuddin Mohammed¹, William Goude¹, Munawar Shah¹

¹*Walsall Healthcare NHS Trust, Walsall, United Kingdom*

Introduction:

Dispalced clavicle fractures have reported non-union rates of upto 15 % and can be treated with open reduction and internal fixation. The predictors of nonunion in diaphysial fractures include increasing age, female gender, fracture displacement, and the presence of comminution. We report our series of isolated closed displaced clavicular fractures in children treated with open reduction and plate fixation.

Methods:

13 children under 16 years of age (10 Boys, 3 Girls) with isolated Edinburgh Type 2B1 (simple or wedge comminuted displaced mid-shaft) clavicular fracture with intact neurovascular status were treated with open reduction and plate fixation in a period from April 2012 to September 2016. Average age was 14.4 years (range 12-16 years) and non-dominant limb was involved in 2 patients. Average time from injury to procedure was 6.6 days (1-21 days). Complications and fracture healing were assessed and the patients discharged from follow-up care when clinically safe.

Results:

At a mean follow up of 8.2 months, all the fractures healed in the study group. Six patients had plate prominence and have had the metalwork removed. Two patients had scar sensitivity and some paraesthesia. One patient had broken plate, but the fracture had healed and as the patient was not symptomatic, this was left alone.

Conclusions:

In children with displaced clavicular fractures, a detailed discussion is mandatory with the patient and their family when proposing operative treatment with plate fixation. Though fracture healing is obtained in all, a high proportion of patients end up with removal of the metalwork.

0069

How long is your clavicle? A prospective cadaveric study comparing the validity of ultrasound and manual measurement of clavicle length

Elmunzar Bagouri¹, Paul McCormack¹, Sheba BAsheer¹, Manjit Bhamra

¹The Mid-yorkshire hospitals NHS Trust, Wakefield, United Kingdom

Introduction:

The rising trend of operative fixation of clavicles has raised questions about the clinical effects of shortening and the best methods to measure it. Most surgeons rely on X-rays or clinical examination however Furey et al have reported poor correlation between x-rays and CT findings.

Aim:

The aim of this study is to test the validity of ultrasound as a quick and non-invasive measurement method in comparison to traditional manual measurements of clavicle length.

Methods:

Nineteen cadavers (38 clavicles) were identified for potential inclusion in this study. Data was collected prospectively by two investigators using a standardised technique, the sterno-clavicular and acromio-clavicular joints were identified manually, marked and the lengths of the clavicles were measured using a metal ruler. Next, the markings were erased and the measurements were repeated following the same protocol after identification of the joints using ultrasonography (US). Finally, following dissection, the clavicles were re-measured under direct vision.

Results:

We obtained Manual, US aided and direct measurements were taken from 35 clavicles (18cadavers) using the described technique. Only paired results, either manual or US-aided with a corresponding direct clavicle measurement, were used for comparative analysis. Median clavicle length in all groups was 140mm (ranges: Manual 130-165, US-aided 110-165, Direct 130-150).

Statistical analysis was conducted using parametric tests (GraphPad Software, Inc. CA). We defined statistical significance as a p-value of 0.05 or less. Using a paired t-test, manual measurement (with palpation of adjacent joints) when compared to measurement under direct vision yielded a two tailed p-value of 0.0011, suggesting a very significant difference in the paired measurements. However, US-aided measurement when compared to direct measurement demonstrated no significant difference between the paired measurements (two-tailed p-value = 0.2001).

Conclusion:

This study demonstrates that US-aided measurement of clavicle length may be more accurate than traditional manual measurement using palpation of clavicle length. Ultrasound has the benefit of being safe, non-invasive and involves no exposure of the patient to ionizing radiation. This study was conducted in cadavers with the associated limitations. Further study is required to validate these findings in vivo.

0081

Proximal Humerus Fractures: Reliability of Neer versus AO Classifications on Plain Radiographs and Computed Tomography

Khalid Al-Hourani¹, Oliver Pearce, James Smith, Phil McCann, Barnaby Sheridan

¹*Musgrove Park Hospital, Taunton, United Kingdom*

Introduction:

Several classifications for proximal humerus fractures exist, with excellent reliability being desirable. Despite widespread research into these classifications, ambiguity remains when deciding which classification is most reliable or reproducible. Furthermore, to the authors' best knowledge, the abbreviated Neer classification remains under-investigated. We aimed to, a) Compare the reliability and clinical utility of Neer (original 16, abbreviated 6-type) and AO classifications, and b) assess plain radiograph (XR) reliability of classifications based on computed tomography (CT).

Methods:

Single-centre retrospective study identifying trauma proximal humerus fractures between Feb 2016-Feb 2017. Neer 16-type, Neer 6-type and AO classifications were used. Intra- and inter-observer reliabilities were obtained using Kappa co-efficient, and comparison of classifications using CHI squared ($p < 0.05$ significant).

Results:

Twenty-two patients were included. Mean age was 62 years (SD 14.5). Management changed in 9/22 patients based on CT. Computed tomography changed Neer-16 type in 16% observations, Neer-6 in 10% and AO in 23%. This was significant when comparing Neer-6 and AO classifications ($p = 0.04$). Neer-6 had best inter-observer reliability (0.737) with management of one patient changing after CT. On XR and CT, Intra-observer agreement was substantial, >0.7 , using Neer-16 and Neer-6 ($p < 0.005$). Inter-observer agreement for Neer-16 and Neer-6 was substantial, >0.7 ($p < 0.005$). In comparison, intra and inter-observer agreements for AO were lower on XR and CT, 0.4-0.6, ($p < 0.005$).

Conclusion:

Our study showed significantly higher reliabilities using Neer classifications compared to AO. The abbreviated Neer-6 classification is significantly more clinically accurate and reliable than AO. The authors recommend using the abbreviated Neer-6 classification for reliability and reproducibility in proximal humerus fractures.

0044

Reverse Total Shoulder Replacement for Shoulder Trauma

Madhavan C Papanna¹, Hassan Sheikh¹, Sally Spence¹, David Thyagarajan¹

¹*Northern General Hospital, Sheffield, United Kingdom*

Background:

Proximal humeral fractures make up almost half of all shoulder girdle injuries. Recent trials looking at treatment of proximal humeral fractures have concluded that conservative treatment is as effective as surgery, especially in the elderly. Under this diverse sub group of elderly patients, we often see patients with high functional demands, who benefit from surgery.

Treatment of certain complex, displaced fractures patterns, fracture dislocations head split fractures is fraught with complications when internally fixed. Shoulder hemi arthroplasty or, more recently, reverse shoulder replacement, are widely accepted surgical options.

Methods:

Between 2014 – 2016, 19 patients were treated with reverse total shoulder replacement following complex fracture patterns mentioned above.

16 were acute fractures and three were fracture sequelae. The procedures were carried out using a standard deltopectoral approach in all cases. New generation dual platform shoulder replacement system was used in all cases. All patients were followed up at six weeks, six months and yearly thereafter. Shoulder range of movements, Oxford Shoulder Score and complications were recorded during follow up. Radiological assessment was performed to look for notching, tuberosity healing and implant loosening.

Results: There were 18 females and 1 male with a mean age of 74.5 (range 64 -86). All patients regained good shoulder function following surgery. The average active elevation was 110 (70 – 170). There were no postoperative infections or dislocations. One patient developed CRPS which responded to gabapentin and physiotherapy.

Conclusions:

Amidst the controversy surrounding operative management of proximal humeral fractures in elderly, surgical management using reverse shoulder replacement appears to be beneficial in a selected sub group of patients. Early results with this new generation system demonstrate good functional outcomes and low complication rates.

0014

Distal Biceps Tendon Ruptures: a Comparison of Outcomes Following Surgical and Non-surgical Management

David George¹, Andrew Eyre¹, Kinjal Juthani¹, Victoria Schutzer-Weissmann¹, Islam Abdelrahman¹, Michael Thomas¹, Adam Pandit¹

¹Wexham Park Hospital, Frimley Health NHS Trust, Slough, United Kingdom

Introduction:

This large single centre cohort series reports the outcomes of patients undergoing distal biceps tendon repair at our Institute over a 9-year period, compared to patients treated non-operatively.

Methods:

All consecutive patients that presented to our Institute with a distal biceps tendon rupture from July 2007 to July 2016, with a minimum 3 months follow-up, were included in this retrospective study. Three distinct groups were analysed including those undergoing a single-incision repair with the Toggle-LocTM system or Endobutton, and those treated non-operatively. Outcomes were defined subjectively (ability to undertake activities of daily living without significant pain or disability), and objectively (DASH and Oxford Elbow Score).

Results:

52 distal biceps ruptures in 51 patients were included, with a mean age of 44.4 years (SD 10.9), and included 49 male patients (96.1%). 36 injuries were treated surgically; Toggle-Loc (n=19, 52.8%) and Endobutton (17, 47.2%), and 16 non-operatively. Five patients were lost to follow-up (9.6%). Functionally, patients treated non-operatively had a statistically significant higher DASH score to surgical patients ($p=0.03$), otherwise no other differences were seen amongst the groups. The overall complication rate was 9.8% (n=5); 12.5% of non-operative, 10.5% Toggle-Loc and 5.9% Endobutton, with no significant difference between the groups ($p=0.638$).

Conclusion:

We have demonstrated that a single-incision repair of a distal biceps tendon is safe, with good clinical outcomes following either an Endobutton or ToggleLoc technique. Similar outcomes are also seen when treated non-operatively with early return to function.

0164

Clinical Results for Distal Biceps Tendon Reconstruction using Endobutton and Screw Technique

Nikhil Gokhale¹, Sherri Curtis, James Blacknall, Marlies Schreuder, Jomy Kurian, Amit Bidwai, Nicola Lidstone

¹*Kings Mill Hospital, Sherwood Forests NHS Foundation Trust, Mansfield, United Kingdom*

Background:

Rupture of the distal tendon of the biceps occurs in men in the age group of 40-60 years. The mechanism of injury is usually a sudden extension force applied to a flexed and supinated elbow. If left untreated, rupture of the distal biceps tendon leads to a 40% loss of strength in supination and a 30% loss of flexion strength of the elbow. We report our experience with distal biceps tendon reconstruction using an endobutton and screw technique.

Methods:

We present a retrospective case series of 34 distal biceps tendon ruptures treated over a period from 2013-2016. All patients underwent reconstruction using the Arthrex endobutton and screw technique. Patients were identified from implant re-order forms. Each patient underwent retrospective casenote review. Patients were invited for assessment and evaluation by Quick DASH (Disabilities of the Arm, Shoulder and Hand) score and Oxford elbow score minimum of 6 months post index-procedure.

Results:

All patients were men with an average age of 43.82 yrs (range 22-70yrs). The average follow-up period was 18.8 months (range 6-48 months). In 3 cases an endobutton technique was used only due to radial tuberosity wall blow-out. In 1 patient the procedure was abandoned due to poor tissue quality and in another patient the tendon was found to be intact. There were no reported failures, 12 patient reported transient neurological injury and 2 had persistent sensory defeciy. The mean Oxford elbow score at follow up was 43.6 (range 34-48). Mean Quick DASH was 6.5 (range 0-22.7). The final average flexion extension arc was -1.33° to 153°, while the average pronation and supination angles were 79° (range 60°-90°) and 81.67° (range 60°-90°), respectively at the last follow-up.

Conclusion:

The endobutton and screw technique for distal biceps tendon reconstruction allows for a robust repair, which allows the majority of patients to return back to full function including physical work in the majority of cases. Pitfall of the technique includes radial tuberosity damage and a transient nerve injury, which patients should be counselled for pre-operatively.

0049

A comparison of computerized tomography arthrography and magnetic resonance arthrography in the assessment of traumatic anterior shoulder dislocations

Robert Jordan, Imran Ahmed, Chetan Modi, Gev Bhabra, Tom Lawrence, Steve Drew

Purpose:

The aim of this study is to compare the sensitivity and specificity of CTA to MRA in the assessment of traumatic anterior shoulder dislocations.

Methods:

A retrospective analysis of consecutive traumatic anterior shoulder dislocations undergoing either CTA or MRA followed by surgical assessment between February 2012 and 2017 was performed. Surgical findings were obtained from electronic surgical notes and these findings were used as a reference for imaging results. The sensitivity, specificity, and predictive values were calculated for the different injuries.

Results:

20 patients underwent CTA and 102 patients underwent an MRA before shoulder arthroscopy during the study period. 83% were male and the mean age was 33 years (range 15 to 49). 18% of patients had undergone previous arthroscopic stabilisation, 29% were first-time dislocations and the remainder were recurrent dislocations. The overall sensitivity and specificity of CTA to all associated injuries was 88% and 78% respectively which was lower than that of MRA 90% and 85%. Although the sensitivity of CTA (89%) for soft tissue Bankart lesions was comparable to MRA (93%), the specificity was lower using CTA (38%) than MRA (95%).

Conclusion:

MRA has a higher sensitivity and specificity for identifying associated injuries and therefore CTA cannot be recommended over MRA.

0047

Managing Traumatic Anterior Shoulder Dislocations – an Overview of Practice at a Major Trauma Centre

Robert Jordan, Imran Ahmed, Chetan Modi, Gev Bhabra, Tom Lawrence, Steve Drew

Purpose:

This study reviews how traumatic anterior shoulder dislocations are managed at a major trauma centre.

Methods:

Patients presenting to our emergency department with a radiologically proven anterior dislocation between 1st February 2015 and 1st February 2016 were identified retrospectively. Patients with recurrent dislocations or associated fractures were excluded. Electronic notes were reviewed for physiotherapy involvement, recurrent dislocations, further radiological investigations, involvement of a shoulder specialist or surgery performed.

Results:

During the study period 78 patients were seen with a traumatic first time shoulder dislocation. The mean age was 32 (range 17 to 97 years) and 85% were males. 93% were seen in fracture clinic, 79% had formal physiotherapy but only 31% were referred to a shoulder specialist. During the 12 month follow up only 5% had a radiologically proven recurrence. 32% underwent further imaging with USS (17%) commonest modality in elderly patients and MRI (12%) or CT (5%) in younger patients. 9% of patients underwent surgery within 12 months; 4% stabilisation, 2.5% rotator cuff repair and 2.5% reverse arthroplasty.

Conclusion:

This study demonstrated the current wide variation in management and investigation of traumatic anterior shoulder dislocations in all age groups.

0173

Paediatric Supracondylar Fractures of the Humerus: a Review of Management across Four Centres and 136 Patients

Matt Gray¹, William Fishley, Mark McMullan, Benjamin Drake, Ali Raza, Mark Webb, Nick Green, Will Eardley

¹*James Cook University Hospital, Middlesbrough, United Kingdom*

Objectives:

To review the management of paediatric humeral supracondylar fractures across four trauma and orthopaedic departments, identifying potential areas for improvement.

Methods:

136 patients with paediatric humeral supracondylar fractures were identified in six clinical audits undertaken across four hospitals (2 major trauma centres, 2 trauma units) between 2015-2017. Each patient was assessed against the criteria set out in BOAST 11 (*'supracondylar fractures of the humerus in children'*) through retrospective review of clinical documentation, operative notes and PACS imaging.

Results:

Good compliance with operative and follow-up BOAST 11 criteria was demonstrated. Documentation of pre-operative neurovascular assessment was identified as an area for improvement with overall compliance rates as follows: radial pulse 53.8%, digital capillary refill time 41.9%, radial nerve 50.2%, ulnar nerve 49.6%, median nerve 50.4%, anterior interosseous nerve 28.7%.

Conclusions:

Generally compliance with BOAST 11 guidance is good. However, documentation of pre-operative neurovascular status is unacceptable in this study group. This may be due to several factors including a lack of confidence in clinical assessment of individual neurovascular structures or a deficiency in documenting a full examination. Further work targeting upper limb neurovascular assessment and documentation is underway to improve future compliance levels.

0140

TSF for Tibial Fractures in Children and Adolescents – Major Trauma Centre Experience

Rajkumar Thangaraj, David Haughton, Mounir Hakimi, Emmanouil Morakis, Ibrar Majid, farhan ali

Unstable tibial fractures in children and adolescent patients provide a challenge in treating unstable tibial fracture. TSF is a viable option when other modalities of management are limited. Retrospective case series to assess the outcome of management of unstable tibial fractures in paediatric patients with TSF was performed. 38 TSF had been applied for 37 patients (M:F=22:13, mean age 11.8 years, range 6 - 15 years) for unstable tibial fractures between 2012 and 2016. 17 were closed tibial fractures and 21 were open tibial fractures. Statistically significant difference existed between the open and closed tibia fractures in the union time, number of procedures, pin site infection rate. Combined average period of healing was 20.4 weeks +/- 3.1 at 95%CI [median value 18.1, range 9.0 - 56.4, SD 9.7] with closed tibial fractures healing at a mean of 16.1 weeks +/- 2.3 at 95%CI [median value 15.6, range 9.0 - 26.7, SD 4.8] and open tibia fractures healing at mean of 23.6 weeks +/- 4.6 at 95%CI [median value 21.4, range 10.4 - 56.4, SD 10.8]. 12 patients (31.5%) [3 closed and 7 open tibial fractures] had pin site infection requiring intravenous antibiotics, pin change or debridement. 5 patients had mild LLD, 2 had mild residual deformity, 1 had re-fracture treated in cast while 1 patient required re-application of TSF for non-union. We feel that TSF can be considered as a viable option for primary management of unstable tibial fractures in children and adolescents.

0183

Characterising the Incidence and Management of Paediatric Forearm Fractures in a UK Trauma Centre over a one-year Period

Sandeep Deshmukh¹, Ben Marson¹, Kathryn Price¹

¹*Nottingham University Hospitals NHS Trust, Nottingham, United Kingdom*

Background:

Forearm fractures are common in the paediatric population. In some cases paediatric forearm fractures are treated with a removable splint with no follow-up. In others, multiple fracture clinic attendance with casting, or even surgery, might be required – a more substantial ‘burden of care’. An understanding of the mechanism of injury, demographics of the affected population and management could potentially lead to optimisation of healthcare provision. Our objective was to characterise these aspects of paediatric forearm fractures in the higher ‘burden of care’ group.

Methods:

In this retrospective study, paediatric (aged ≤16 years) fracture clinic attendees at Queens Medical Centre who sustained forearm fractures and were treated with casting or surgery over a one year period between March 2015/16 were included. Screening based on theatre records and the plaster logbooks in paediatric fracture clinic.

Data collection performed from electronic records – ED notes, fracture clinic letters and radiographs on PACS. This included demographic information, mechanism of injury, management decisions and outcomes, as well as radiographic appearances of fractures. The latter were classified according to the AO Pediatric Comprehensive Classification of Long-Bone Fractures.

Results:

In total, 441 forearm fracture cases were included in this study. The commonest mechanism of injury was a simple fall in the 0-5 and 5-10 year age groups, but was football-related in the 10-16 year age group.

Of the 268 fractures managed with simple casting initially, 3.3% (9 cases) required further intervention due to loss of fracture alignment. 79 (18%) of all fractures were managed by manipulation under sedation in ED on initial presentation, with 6 (7.6%) of these cases requiring further intervention due to loss of fracture alignment.

Isolated metaphyseal fractures of the distal radius and/or ulna comprised 47.6% of the fractures in the study group.

Conclusion:

This study has confirmed that mechanism of injury and fracture patterns do vary between age groups, as might be anticipated. There is some variation in terms of the level of fracture angulation which is deemed ‘acceptable’. Only a low percentage of cases required escalation of intervention after initial management in a cast or after manipulation in ED.

0119

A Systematic Review Investigating the Effectiveness of Surgical versus Conservative Management of ankle fractures in Adults

Lugman Elgayar^{1,2}, Frances Arnall¹, JL Barrie¹

¹University of Salford, Greater Manchester, United Kingdom ²Central Manchester University Hospitals, Manchester, United Kingdom

Introduction:

Nine percent of all fractures affect the ankle, with an incidence of 122/100,000/year. While unstable fractures are usually treated surgically, there has been no recent systematic review of the evidence supporting this decision. We aimed to update the systematic review of Michelson (2007).

Methods:

Six databases were searched from inception to February 2017: Cochrane Library, PubMed, Medline-Ovid, CINHAL, ScienceDirect, and Web of Science. Randomised controlled trials (RCTs) which examine surgical versus conservative managements in adults with closed ankle fractures, with follow-up for at least 6 months, were included.

Results:

754 articles were retained of which 5 RCTs (951 participants) were included. The risk of selection bias in all trials were relatively low. However, most of trials had high risk of performance and detection bias. Functional outcomes: Three trials used the validated Olerud Molander Ankle Score. The first trial (n=43), reported a statistically better score for the surgical group at 27-months whereas the second (n=81) and third (n=620) trials found no significant difference at 12-months and 6-months respectively. No significant differences between surgical and conservative treatment were reported by the oldest two trials (n=111) and (n=96) in non-validated functional outcome measures. Other outcomes were as follows; Malunion (9/334 versus 48/301, $p<0.00001$) and nonunion (3/408 versus 28/383, $p<0.0001$) were considerably higher in the conservatively treated group. Early treatment failure was significantly lower with surgery (7/435 versus 70/419, $p<0.00001$). **Conclusion:** The risk of malunion, nonunion, and loss of reduction is greater in non-operative care. However, both treatment approaches provide equivalent functional outcomes.

0174

Reducing pre-operative starvation on the plastic surgery trauma list

Tim Fowler¹, Andrew Davies¹, Ffion Dewi², Thomas Wright²

¹*Department of Trauma and Orthopaedics, North Bristol NHS Trust, Bristol, United Kingdom*

²*Department of Plastic Surgery, North Bristol NHS Trust, Bristol, United Kingdom*

Introduction and Aims:

Pre-operative fasting is necessary to reduce the risk of regurgitation of gastric contents and pulmonary aspiration in patients undergoing general anaesthetic and procedural sedation. Excessive fasting is associated with metabolic, cardiovascular and gastrointestinal complications, in addition to patient discomfort. We aimed to reduce the fasting time for patients on the plastic surgery trauma list.

Methods:

Adult inpatients awaiting surgery were asked to complete a pre-operative assessment questionnaire. Questions included the length of pre-operative fasting, clarity of instructions and wellness scores. Patients who declined to participate, or were unable to consent were excluded. The first cycle revealed the need for significant improvement. Interventions included staff education, patient information sheets, pre-operative carbohydrate drinks, greater availability of ward snacks and improved communication between the ward staff and surgical team through our electronic trauma database.

Results:

The initial audit of 15 patients revealed a mean fasting time of 16.3 hours for fluid (range 10-22) and a mean of 19.3 hours for solid food (range 10-24). The mean wellness score was 6/10 (10 being very well) and 67% of patients felt they were given clear information. The final cycle demonstrated clear improvement in all domains. The mean fasting time declined to 5.1 hours (range 3 - 10 hours) for fluid and 13 hours (range 7.5 - 17 hours) for solid food. The mean wellness score (10 = very well) increased from 6 to 8, the mean thirst score declined from 6.1 to 5.1 and 100% patients felt they had been given clear information

Conclusion:

Removal of the traditional "NBM from midnight", patient education, a clear fasting routine with pre-operative carbohydrate drinks and improved communication between the full multidisciplinary team, has led to a significant reduction in fasting times on our trauma list.

0090

Proximal femoral fractures: Is the anterior-posterior pelvis view all that is required? Do Surgeons and Radiographers agree on interpretation of these images?

Laurence Collins¹, Abdul Aziz Madni¹, Asan Rafee¹

¹*Salford Royal Hospital, Salford, United Kingdom*

Introduction:

We investigated whether the horizontal beam lateral (HBL) view provides additional information to anterior-posterior (AP) pelvis views in the assessment and treatment planning for patients with proximal femoral fractures. Additionally, we compared Surgeons' and Radiographers' interpretation of fracture displacement on AP views.

Patients and Methods:

The AP radiographs of 153 patients with intracapsular proximal femoral fractures were assessed independently by sixteen observers; 4 Orthopaedic Consultants, 4 Orthopaedic Registrars, and 8 Radiographers. Each observer classified the fractures as "displaced" or "undisplaced".

The 8 Orthopaedic observers provided a provisional treatment plan, based on the AP view alone. They were subsequently shown the HBL view and asked again for their treatment plan.

Level of agreement on fracture classification within the Surgeon group, within the Radiographer group, and between the two respective groups was compared. Comparison of treatment plan by the Surgeons based on AP view alone and then with additional HBL views was also made.

Results:

When classifying fractures as displaced or undisplaced there was a substantial level of agreement within the Surgeon group ($K = 0.7$) and moderate agreement within the Radiographer group ($K = 0.56$). Interobserver consensus between the two groups revealed a modal agreement of 88.9% ($K = 0.72$).

When Surgeons classified fractures as displaced on AP view the treatment plan changed in only 2.73% of cases after the additional HBL view. If they categorised the fracture as undisplaced on AP view this figure was 16.9%.

Conclusions:

One radiograph provides sufficient information to allow treatment planning for the majority of intracapsular proximal femoral fractures. These patients can be identified by Radiographers and avoid unnecessary imaging. This will reduce radiation exposure and discomfort. Additionally, savings in time and money can be made as a result.

0171

Violence and Smoking - Cape Town's Orthopaedic Trauma

Jonathan P Simpson, Louw, F

Introduction:

The trauma profile of South Africa differs from that of Britain. South Africa experiences high levels of mortality and morbidity due to violence and injury; this is supported by alcohol misuse and a lack of money, employment, education, justice and investment in social infrastructure. Compound injuries, HIV, diabetes and smoking are common comorbidities and patient factors in South Africa that can influence and complicate fracture management, union and wound healing.

Methods:

The aim of this study was to analyse the demographics and disease burden of Orthopaedic trauma patients admitted into New Somerset Hospital in Cape Town. Data was collected prospectively for 5 weeks to build an inpatient profile. Demographics included age, sex, fracture site and mechanism of injury. An original disease burden analysis looked at rates of the patient factors listed above.

Results:

Patient demographics matched data from a similar study conducted 5 years ago, with comparable age, sex and fracture site profiles. The rate of trauma due to violent mechanisms has notably risen 5 years on, almost exclusively within the younger population; whereas, the rate of fractures due to road traffic incidents has remained constant. 17% of patients had a compound fracture, 38% were smokers, 13% had HIV and 4% had diabetes.

Discussion:

The high rates of compound injuries, smoking and HIV affect the prognoses of the trauma patients, and add to the total disease burden on the ward. As previously reported in the literature, injury from interpersonal violence was particularly prevalent amongst the young males. The violent mechanisms of injury comprise a substantial proportion of Cape Town's trauma, in contrast to in the UK. Along with the trauma variety and volume, South Africa provides a unique and interesting learning experience in the developing world for an aspiring Trauma and Orthopaedic surgeon.

0179

Hind-foot nail as a salvage treatment option for patients with of ankle fractures

Geraint Morris¹, Saravana Vail Karuppiiah², Anand Pillai

¹University of Manchester, Manchester, United Kingdom ²University Hospital South Manchester, Manchester, United Kingdom

Introduction:

The treatment of ankle fractures in the elderly can be challenging. Due to significant osteoporosis and poor soft tissue cover, conventional treatments such as immobilisation as well as open reduction and internal fixation are associated with high complication rates. The hind-foot nail (tibiototalocalcaneal) has been described as a treatment option for these unstable fractures reducing post-operative complications and hospital stay.

Materials and Methods:

All prospective patients undergoing hind-foot nail for unstable ankle fracture fractures were included in the study. There were no exclusion criteria. Patients notes were assessed for the type of fracture, open or closed, demographic data, pre-operative and post-operative functionality, radiological outcomes and any post-operative complications. All patients were followed up till time of unions and further telephone follow up at 1 year.

Results:

Over 4 years, 18 patients received the hind-foot nails as intervention for ankle fractures, with a mean age of 73 years (± 16.6) and a mean ASA of 3 (± 0.7). 89% of the unstable fractures were from low energy injuries. 67% of patients regained their pre-operative functionality, the mean Olerud and Molander score at follow up was 29 (± 9.3). The Manchester-Oxford Foot Questionnaire gave a score of 48.2 (± 36.4) for walking and standing, 35.8 (± 30.6) for pain and 43.8 (± 22.4) for social interaction. 1 superficial infection was reported (6%) with no deep infections seen. 1 patient was diagnosed with non-union (6%) that required prosthesis removal, with no cases of mal-union seen. No peri-prosthetic fractures or peri-operative complications were reported including deep vein thrombosis. Six-month mortality post-operatively was 6%.

Discussion:

This study showed a lower complication rate compared to that of previous reports for open reduction and internal fixation of ankle fractures. However functional questionnaire scores were lower than previously reported studies, which may be due to limitations in study design.

Conclusion:

This study shows that the use of a hind-foot nail is a viable surgical option in this cohort groups of patients with low functional demand and co-morbidities.

0197

Silverback - A demographic study of spinal column injuries in elderly major trauma patients at a major trauma centre

Angus Fong¹, Mike Petrie¹, Michael Athanassacopoulos¹, Lee Breakwell¹, Neil Chiverton¹, Ashley Cole¹, Antony Louis Rex Michael¹, James Tomlison¹

¹Sheffield Teaching Hospitals NHS Foundation trust, Sheffield, United Kingdom

Introduction:

Silver trauma is still a fairly new concept. As we move to recognise them as a different entity, we recognise that there is a need for more information with regards to spinal trauma within this group in order to shed light on patterns of injuries and risk factors in order to predict management needs.

Method:

Retrospective study of all elderly (>65) spinal trauma in one year at a major trauma centre. Demographics and injuries details collected from TARN database and then cross reference with local radiological imaging from PACS and operation details through electronic operation records.

Results:

109 (44%) elderly patients with spinal column injuries are identified from a total of 247 spinal trauma patients. Average age 80.1 with 56% female (vs 35%). 55% of these injuries had a low energy mechanism vs 17% in non-elderly. Average ISS of 14.7 with 34% having chest injuries. These are both lower than the overall population. Only 12.8% proceed to have spinal surgery. The spread of injured zones in the spine is similar to the overall population. As expected, all the central cord syndromes were recorded in this group.

Discussion:

The most significant difference of this group is that a much higher proportion of spinal fractures were associated with low energy trauma. Not surprisingly, there are also a higher representation in female patient presumably because of osteoporosis. Perhaps due to the low energy trauma, the need for surgery is less and that they are also less susceptible to spinal cord injuries.

0169

Acute Elderly Acetabular Fractures treated like a Revision THR Pelvic Discontinuity - A Radiostereometric Analysis Study

Daud Chou¹, John Abraham, Stuart Callary, Bogdan Solomon, Donald Howie

¹*Royal Adelaide Hospital, Adelaide, Australia*

Introduction:

Severely comminuted, displaced acetabular fractures with articular impaction in the elderly population pose a significant treatment challenge. To allow early post-operative rehabilitation and limit the sequelae of immobility, treatment with acute total hip replacement (THR) has been advocated in selected patients. A fix and replace construct with stabilisation of both columns plus simultaneous THR has shown promising early to mid-term results. Alternative constructs to treat such fractures have used the principles of expansion or distraction commonly used to treat pelvic discontinuity during complex revision THR surgery. This study assesses patient outcome scores and migration of the acetabular components used in this expansion construct.

Methods:

Between 2011 and 2016, seventeen elderly acetabular fractures underwent acute THR with an expansion technique and a cup cage construct. Patient, fracture and surgical demographics were collected. They were followed up for a mean of 24 months (range 12 – 42 months). Clinical and patient reported outcome measures were collected at regular post-operative intervals. Radiostereometric analysis was used to measure superior migration and sagittal rotation of the acetabular component.

Results:

Thirteen fractures were classified as central hip dislocations, two anterior column posterior hemitransverse, one anterior hip dislocation and one transverse acetabular fracture. All but one fracture had articular impaction, most commonly of the acetabular roof. There were no cases of non-union, intra-operative complications or need for revision surgery. Mean Harris Hip Scores at 12 months was 69 (range 28-98). The mean proximal migration of the acetabular components at 12 months was 0.91mm (range 0.09 - 5.12). The mean sagittal rotation was 0.52mm (range 0.03 – 7.35).

Conclusion:

Elderly acetabular fractures are difficult to manage. Patients can often be too frail to undergo intra-pelvic, prolonged or two stage procedures. The technique described requires a single approach and provides immediate cup stability allowing full weight bearing day one post-op. Our promising early clinical and radiological outcomes suggest this technique may be an alternative to a fix and replace construct.

0186

Outcomes of Total Hip Replacement in Neck of Femur Fractures Across 5 Years

Benjamin Kapur¹, Samir Abdalla¹, Janardhan Rao¹

¹*Countess of Chester Hospital, Chester, United Kingdom*

Background:

Neck of femur fractures are the most common cause for admission onto an orthopaedic unit, with annual costs of approximately £2b in social and health care required. Total hip replacements are offered to patients that mobilise unaided. These patients can be managed on an elective or acute unit depending on the local policy and bed availability.

Aim:

Assess and compare complications, day of mobilisation, and infection rate in neck of femur fractures that underwent total hip replacement (THR) that were managed on an elective vs acute unit.

Methods:

Retrospective data collection of patients undergoing THR for neck of femur fractures between 2012 and 2017. All neck of femur fractures undergoing THR were included in the study.

Results:

Sample size N=101 patients were included in the study (Male N=23, Female N=78). Age range 62-87 years (mean age = 74 years). Mean length of admission N=10 days. 91% of the procedures were completed by surgeons of consultant grade.

12% were managed on an elective unit, with the remaining 88% managed on an acute unit. Mean time to mobilisation was 1 day on both the acute unit and elective unit. Of the patients managed on the elective unit, there was a 1% incidence of post-operative superficial infection and 1% incidence of cerebrovascular accident.

Overall, there was a 3% incidence of deep vein thrombosis and 2% incidence of pulmonary embolism. Dislocation incidence was 2%, 1% single-stage revision rate due to prosthesis dislocation, and 1% incidence of periprosthetic fracture due to further trauma.

There was a 3% incidence of hospital acquired pneumonia, 1% incidence of myocardial infarction, 1% incidence of cerebrovascular accident, 1% incidence of superficial infection, 6% incidence of urinary tract infections, 4% incidence of other medical complications. There was a mean drop in haemoglobin of 22 g/L and a transfusion rate of 9%.

Conclusion:

We conclude that there were no significant differences in the outcomes of patients managed on the elective vs acute unit.

0011

Results of Internal Fixation of intra Capsular Neck of Femur Fractures a 5-year Data – a Completed Audit Look

Sudhir Kannan, Alwyn Abraham, Jason Wilson

Background:

Hemiarthroplasty for patients with neck of femur fractures in patients < 65 years is associated with poor outcome (Swart et al 2017). THA and ORIF have been associated with better outcome. Our aim was to evaluate the results of internal fixation for neck of femur fractures in patients less than 65 years of age.

Methods:

We collected a retrospective data initially from 2008 to 2013 and implemented changes following which we collected retrospective data from November 2014 to July 2016. Our outcome variables were number of patients having surgery < 24 hours, rate of AVN, rate of internal fixation versus hemiarthroplasty.

Results: Our sample size was 115 patients, follow up was up to 18 months (Median 8 months). 63 fractures were displaced and 52 were undisplaced.

Our study showed that 71-76 % of patients aged < 65 years had internal fixation, 78-81 % of these patients were operated < 24 hours. There were no AVNs, Non union rate was 10%, failure of fixation was 14%, media time to failure was 3 months, rate of secondary procedure was 10% .

Conclusion(s):

Operative fixation of neck of femur fractures performed < 24 hours have a better outcome, the rate of secondary surgery is also less.

Implications:

Internal fixation might be considered as a viable option with reasonable success rates and better outcomes in patients aged less than 65 years with neck of femur fractures.

0022

Vancouver B1 Peri-prosthetic hip fractures-Is Internal Fixation Adequate?

Sitaram Giri, Mahesh Thibaiah, Serajdin Ajnin

Introduction:

Difficulty involved in the management of Vancouver B1 femoral fractures is evidenced by the array of treatment options described in the literature. Options available are internal fixation with or without allogenic strut graft or revision arthroplasty. We aim to identify those subgroups in the B1 femoral fractures that would benefit from primary long stem revision or strut grafts.

Material and methods:

20 patients with Vancouver type B1 fracture treated with osteosynthesis using cable plate were reviewed. There were 12 females and 8 males with average age of 81 years. 11 fractures were in cemented and 9 in uncemented stems. Clinical notes and x-rays were assessed until the fracture united or the patient had a reoperation. All the patients were allowed toe-touch weight-bearing for 6 weeks followed by partial weight-bearing for 6 weeks before proceeding to full weight-bearing.

Results:

3 patients died within 4 months of the injury. Fracture union occurred in 12 out of the remaining 17 patients (71%). The fracture patterns in this group were long oblique or spiral. Non-union was recorded in 4 out of 17 patients (29%). The fracture patterns noted in this group were short oblique or transverse fractures around the stem tip. All failed osteosynthesis were revised successfully using long stem prosthesis that allowed them immediate full weight bearing. Deep infection occurred in 1 patient who died 4 months post-operatively.

Conclusion:

Our experience shows that we should consider subcategorising Vancouver B1 periprosthetic fractures into fractures around the body of the stem and those around the lower third or the tip of the stem. Long oblique or spiral around the body of the stem can be treated with internal fixation but the short oblique or the transverse fractures around the lower end of the prosthesis should be treated either with primary revision to a long stem prosthesis or combination of internal fixation with strut grafts as the non-union rate is higher in these subgroups of fractures treated with internal fixation only. In instances when either internal fixation or long stem revision treatment option is feasible then revision arthroplasty should be the preferred option.

0156

Outcome and complication of Locked plating for supracondylar peri prosthetic femur fractures

Serajdin Ajnin¹, Khaldon Wahab¹, Omar Zupair

¹*Heart of England NHS Foundation Trust, Birmingham, United Kingdom*

Introduction:

The incidence of periprosthetic fractures after total knee arthroplasty is approximately 2.5%, they are often associated with poor bone stock and fracture comminution. The purpose of this study was to report the outcome of consecutive series of periprosthetic supracondylar femoral fractures treated with locked periarticular plate fixation.

Methods:

We conduct a retrospective review of 32 patients who were treated with a Locked plate fixation for periprosthetic supracondylar femoral fracture following TKA. One patient died within 3 months and another patient lost to follow up. Patients had a mean age of 78.5 years (61-93 years), 23 were females and 7 males. All plates inserted by direct visualisation and anatomical reduction. The mean duration of follow up was 23 months. Outcome was addressed radiographically and clinically according to range of motion and pain.

Results:

25 of 30 fractures (83%) healed with a mean time of 14 weeks (12-23). 5 fractures develop non-union (17%) 3 leading to hard ware failure and one had deep infection. 19 (63%) of the healed 25 patients develop malalignment mean 9 degree (5-18). At the last follow up the mean knee flexion was 90 degree (range 80-110), 17% of patients had a persistent loss of extension of 10 degree. 80% of patients reported no or only mild pain during last clinic visit.

Conclusion:

Despite advances in implant design and surgical technique, surgical treatment of periprosathetic femur suracondylar fracture remains a challenge. High malalignment and significant failure rates still occur with Locked plating may be due to poor bone stock and immediate weight bearing needed for this group of patients.

0033

Adult Distal Femoral Shaft Fractures in a Central London Major Trauma Centre: Five Years of Experience

Akib Khan¹, Quen Tang¹, Dominic Spicer

¹Imperial College Healthcare NHS Trust, London, United Kingdom

Background:

Distal femoral fractures account for 3-6% of adult femoral fractures and 0.4% of all fractures. They are associated with significant morbidity and mortality. There is a bimodal age distribution described in the literature. As countries move to develop inter-hospital trauma networks and adapt healthcare policy to an aging population crisis there is growing importance for research within this field. The aim of this study is to report the experience of a central London major trauma centre in managing adult distal femoral fractures over a five-year period.

Study Design:

Hospital coding records, departmental notes and the local Trauma Audit and Research Network registry records were used to identify patients with distal femoral shaft fractures between December 2010 and January 2016. Imaging for 219 cases captured were reviewed. Seventy-three inappropriately coded, 10 paediatric and 12 periprosthetic cases were excluded. Patient demographics, mechanism of injury, associated injuries, AO/OTA classification and fracture management were collected and analysed using Mann Whitney U and Chi Squared Tests.

Results:

Total of 124 patients with 125 fractures over a five year and two month period included in analysis.

Patient Demographics: Younger patients were male (median age 65.6) compared to female (median age 71). More associated injuries occurred in men compared to women (16.7% vs 8.9%).

Mechanism: Men were more likely to be involved in high-energy mechanisms (70.5%) whilst women were more likely to sustain injuries from low-energy causes 82.7%) ($p < 0.00001$). The majority of patients sustained their injury from falling (48.8%) followed by motor vehicle accidents (26.6%). Other mechanisms were far less common.

Injury Pattern: Majority of fractures were type 33-A (52.0%) followed by type 33-B (30.4%) and type 33-C (17.6%).

Fixation Technique: Total of 92 (73.6%) cases underwent operative management. The commonest operation was use of locking plates (64.1%) followed by IM nailing (19.6%).

Conclusions:

This study describes the epidemiology of a rare fracture pattern with variable degrees of complexity. Given the relative scarcity and severity of 33-C fracture patterns, management should be guided by Major Trauma Centres with higher caseloads and experience. This study will help trauma service planning for urban centres similar to London.

0036

Is IMN superior to SHS in fixing Intertrochanteric fractures?

Maimen Shyam, Manish Divekar

Background:

Short proximal nails (IMN) and sliding hip screws (SHS) have been used at our institution for surgical management of intertrochanteric fractures (Types 31A1 and 31A2). IMN can offer better rigidity of fixation, reduced surgical time and early mobilization leading to reduced length of stay. NICE recommends use of sliding hip screws for these intertrochanteric fractures.

Methods:

The aim of the audit was to compare the outcome following use of SHS and IMN for management of intertrochanteric fractures.

A retrospective study was undertaken from August 2015 to August 2016 to assess the outcome of surgical management of intertrochanteric fractures. Demographic data, surgical management, type of implant, length of stay and complications were gathered from hospital records. We correlated our findings to data available from National Hip fracture database (NHFD).

Result:

181 patients (133 SHS, 48 IMN) underwent surgical fixation for intertrochanteric fractures. Infection and wound problems were identified in 3 cases of IMN (one surgical debridement). 3 patients underwent re-surgery due to surgical errors (2 SHS, 1 IMN). 30 Day mortality was 37 (27 SHS, 10 IMN). We noticed an overall reduction in pressure ulcers from 2.6% to 2.3%. The overall acute hospital length of stay increased from 12 to 15 days.

Conclusion:

We did not notice any reduction in the length of stay, secondary surgeries, complications or mortality. Newer intramedullary devices are more expensive and associated learning curve is not cost effective in the current limited resources of the modern NHS.

Implication:

Implant should be chosen in individual cases based on its merits.

0068

Identification of the medial femoral safe zone for drilling during dynamic hip screw side plate fixation: A CT Angiogram tracing of the profunda femoris artery

Samer SS Mahmoud, Bessam Ahmed, Khalid Hamid, Paul Baker, Simon Milburn

Introduction:

Sliding hip screw and side plate construct is the most commonly used fixation method for extracapsular neck of femur fractures. Vascular injury to the Profunda Femoris Artery (PFA) associated with drilling at time of fixation is increasingly reported. The aim of our study is to map the safe zones for drilling to avoid this serious complication.

Methods:

Local radiology archiving software was used to identify normal lower limb Computerized Tomography Angiogram (CTA) studies. The length of the PFA was taken as the distance between a reference point (mid-point of the base of the lesser trochanter) and the termination of the PFA on the coronal sections. Using axial sections at 1 cm intervals, the position of the PFA in relation to the medial femoral cortex was identified. On each section 2 lines were drawn, Line A representing the femoral midcoronal plane (determined by the epicondylar axis). Line B, passing through the artery and meeting line A at the lateral femoral cortex. Angle between both lines was measured in degrees and labeled as positive for the anterior and negative for posterior. Distance between the medial femoral cortex and the lateral wall of the PFA was measured in centimeters along the Line B.

Results:

In 28 males and 16 females with mean age of 65.6 years (Range 19 – 96), the mean length of the PFA was 11.35 cm (Range 8.12 – 16.2, SD 2.1).

The part of the PFA between 5 – 9 cm distal to the reference point was close to the medial femoral cortex (10 – 16.5 mm) and lying near the coronal axis of the body (Arc of -17.2 to + 6.6 degrees).

The course of the artery started anteromedial, becoming gradually closer to the medial cortex as it descended distally before terminating in a posteromedial position.

Conclusion:

The danger zone of the PFA is located between 5 – 9 cm distal to the reference point. Direct lateral to medial drilling of the femur in this region can result in perforation of the PFA. Hence, excessive attention should be paid on application of screws in this region.

0102

Magnetic Resonance Imaging (MRI) for occult hip fractures: **What do we find?**

Matthew Hampton, Richard Gibson

Introduction:

Most hip fractures can be diagnosed on a plain radiograph. Patients who present with a clinical picture suggestive of a hip fracture but a normal radiograph require an MRI to confirm or exclude the diagnosis of a fracture. We explore the findings of MRI scans performed to look for occult hip fractures.

Materials and methods:

All MRI scans performed to look for an occult hip fracture between 2014 and 2017 were reviewed. Any scans performed in patients when a pathological process was suspected were excluded. 172 MRI scans were reviewed; the findings and subsequent management were recorded.

Results:

52 (30%) of the 172 patients imaged had a hip fracture. Of these 19 were intracapsular, 15 extracapsular and 18 were fractures of the greater trochanter, 9 of which extended across the neck.

40 (23%) patients sustained a different fracture to account for their symptoms. These included 30 pubic ramus fractures of which 25 also involved the sacrum. 8 acetabulum fractures, 1 pubic symphysis and 1 case of avascular necrosis of the femoral head.

59 patients (34%) sustained a soft tissue injury as the only finding. 16 patients sustained an injury to the gluteal muscles, 14 patients injured the iliopsoas complex (5 avulsion and 9 tears) and 11 patients had trochanteric bursitis. Other soft tissue diagnosis included subcutaneous haematomas, adductors, proximal quadriceps, external rotators and hamstring injuries and a single psoas collection.

Discussion:

MRI is the most sensitive and specific test for the early detection of an occult hip fracture. Within our case series we identified that 30% of patients imaged had a hip fracture. It highlighted the importance of further imaging when the greater trochanter is fractured to exclude extension across the neck as this occurred in 50% of cases and all these cases had fixation in our series. This series also highlights that 83% of patients who sustained pubic ramus fractures also had associated fractures of the sacrum (insufficiency fractures). The most common diagnosis in patients imaged was a soft tissue injury of which injury to the gluteal, iliopsoas and trochanteric bursa were predominant.

0092

Major Trauma: Does weekend Attendance Increase 30 – day Mortality?

Jordan Bethel, Zoe Little, Alex Trompeter

Background:

Differing mortality rates according to day of hospital admission is an ongoing area of debate, where a supposed increased rate of mortality with weekend admissions has been termed “the weekend effect”. We sought to identify the 30-day mortality rates in major trauma patients attending our Major Trauma Centre (MTC) and the underlying reasons for the patterns seen.

Methods:

A retrospective review of data retrieved from the Trauma Audit and Research Network (TARN) database was undertaken for all patients attending our MTC between January 2013 and July 2015 with an Injury Severity Score of 9 or higher. 30-day mortality rates were calculated according to day of attendance.

Results:

1424 patients met the inclusion criteria. 30-day mortality was highest in patients attending on Fridays (10.8%) and lowest in those attending on Sundays (5.5%). There was no significant difference in 30-day mortality between weekend attendances (7.8%) compared to those on a weekday (7.7%). A significantly higher 30-day mortality rate was seen in patients attending on a Friday or Saturday (10.4%) compared to those attending Sunday to Thursday (6.6%) (RR 1.548). Patients with a head injury as their most serious injury on a Friday or Saturday were more likely to have GCS < 9 (34.7% vs 24.4%) and more likely to die (22.7% vs 12%) than those attending Sunday to Thursday.

Conclusion(s):

There is no significant difference in 30-day mortality when directly comparing weekday to weekend attendances. There is, however, a significantly higher mortality on Friday and Saturday compared to remainder of the week which appears to be explained by a greater severity of head trauma.

Implications:

This study provides no evidence of a “weekend effect” in this MTC but the increased severity of and mortality from head injury identified on Friday and Saturday is a public health concern which warrants further investigation.

0141

The prevalence of chronic pain between 6-12 months post tibial diaphyseal fracture.

Francois Prinsloo, Mathew Prime, Alex Wickham, Shehan Hettiaratchy

Introduction: Chronic pain (CP) affects up to 78% of patients at 1 year after tibial diaphyseal fracture (TF).¹ CP can significantly affect an individuals quality of life and also impacts society through inability to work and increased healthcare use. Many nerves run in close proximity to the tibia and are thus prone to injury during TF. Nerve injury can cause acute neuropathic pain (ANP), which responds poorly to commonly prescribed analgesics. Under treated ANP predisposes patients to CP through central sensitisation and wind-up mechanisms. We aimed to identify levels of pain and risk factors for CP at 6-12 months following TF.

Methods: All patients admitted to the major trauma centre at Imperial College Healthcare NHS Trust between 01/01/2016 – 31/12/2016 were evaluated. Patients who had sustained isolated TF were identified using clinical coordination system eTrauma. Injuries were categorized using the AO classification. Pain and quality of life (QoL) were assessed using the EuroQol (EQ-5D-5L) questionnaire and the DN4 neuropathic pain questionnaire. All data was analysed using SPSS.

Results: Forty isolated TF were identified during the study period and 20 were followed up between 6-12 months after TF. Mean pain scores of 2.6/5 were identified using the EQ-5D. Pain was reported by 18 (90%) of patients and 10 (50%) reported moderate to severe pain. Pain scores were significantly greater following high-energy injuries however no significant links were seen with other patient, injury or management related factors and levels of pain at follow up. Using the DN4 criteria, 7 (35%) patients had neuropathic pain, however only 57% of these received appropriate anti-neuropathic pain medication.

Conclusion: CP is a common occurrence after TF and is largely under-reported. Neuropathic pain affects approximately one third of patients, half of whom do not receive appropriate treatment. Further prospective multi centre investigation is warranted to better identify those with ANP, and other risk factors for chronic pain development. This can then guide effective management and improve patient outcomes.

References:

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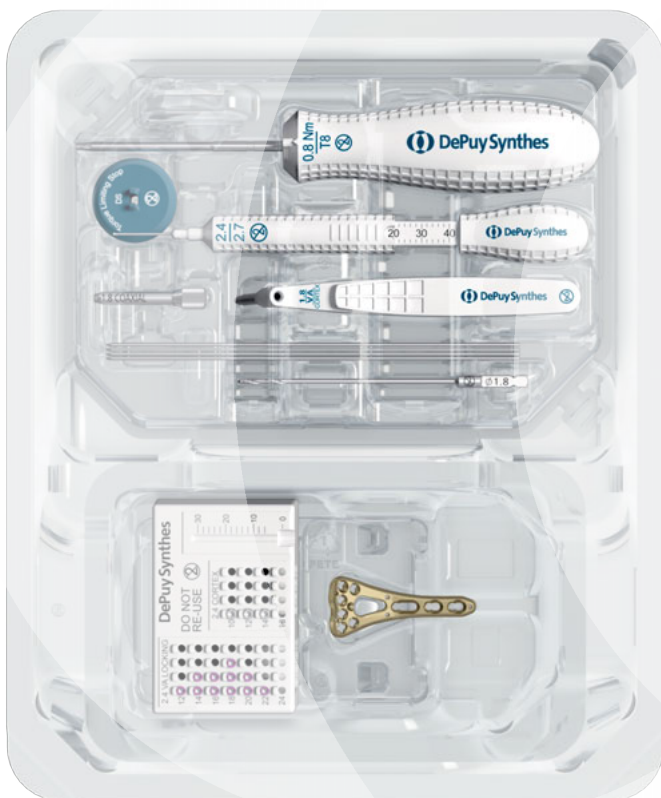


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0158

The results of using the Corail uncemented hemiarthroplasty in treating patients with intracapsular neck of femur fractures

Padmanabhan Subramanian¹, Sunil Shah¹, Stella Legge¹, Ali Fazal¹

¹*Barnet Hospital, Royal Free London NHS Foundation Trust, London, United Kingdom*

Background:

The National Institute for Health and Clinical Excellence (NICE) guidelines from 2011 advocate the use of cemented hemiarthroplasties in treating patients with displaced neck of femur fractures. This is based on evidence, which predominately used data from conventional cemented and uncemented hemiarthroplasty designs. There is very little data comparing the use of modern hemiarthroplasties. The aim of this study is to provide outcome evidence for the use of a modern fully hydroxyapatite-coated stem in treating patients with this injury.

Methods:

A retrospective analysis was performed of 266 consecutive displaced intracapsular neck of femur fracture patients attending our institution between April 2014 and December 2015. All patients included were treated using the collared Corail (DePuy, Warsaw, Indiana) femoral stem with a unipolar cobalt chrome head. The patients were followed up for 1 year.

Results:

The mean age was 85.2 years (SD 7.3; 62 to 101) of which 72.6% were female. 63.2% of patients were ASA grade 3 or 4. The mortality rate at 30, 120, and 365 days were 8.3%, 15.0%, and 18.4% respectively. At 30 days, 38.0% of patients returned to their own home and 58.4% of patients continued to ambulate. 87.6% of patients were operated within 36 hours of attendance to hospital. 2.6% had complications, which required reoperation within 30 days (1.5% for dislocation and 1.1% for a wound washout).

Conclusions:

We have demonstrated that the use of a contemporary uncemented modular hemiarthroplasty provides comparable results to the available evidence for cemented hemiarthroplasties.

Implications:

This study supports the use of uncemented hemiarthroplasties in the management of displaced neck of femur fractures.

0138

Comparison of surgical outcomes after internal fixation of thoracolumbar fracture in groups wearing spine braces for different durations

Francois Okoroafor, Basel Alromhain, Mariel Purcell, Calan Mathieson

Objectives:

We present results from the second year of a trial comparing post operative outcomes in patients wearing spinal braces, following surgery for thoracolumbar fracture. We are studying the surgical outcomes related to shorter-and-shorter brace duration on an annual basis. We intend to ultimately determine whether there is added benefit from using a spinal brace post surgical fixation compared to surgical fixation alone.

Method:

Queen Elizabeth National Spinal Injuries Unit, Glasgow is responsible for the acute care of adult patients with traumatic spinal cord injuries (SCI) in Scotland. From April 2015 to April 2017 period all patients admitted with single level thoracolumbar fractures managed with internal fixation were included in study. Patients admitted from April 2015 to April 2016 were instructed to wear a spine brace after surgery for 12 weeks (Group 1). The brace duration for patients admitted April 2016 to April 2017 was 8 weeks (Group 2). Patients transferred to other centres were excluded. Primary outcomes: neurological status, and analgesia requirement. Statistical testing: *Mann-Whitney U test* and *Fisher's exact test*.

Results:

52 patients sustained single level thoracolumbar injuries; 10 patients excluded. Group 1 - 26 patients; 46% female; median age 27 (14 – 72); 50% caused by fall, 38% RTA; 31% lumbar spine fractures, 73% compression fractures, 8% distraction, 19% translation; 31% complete SCI at admission, 46% neurologically intact at admission. Group 2 - 16 patients; 38% female; median age 34 (16 – 55); 63% injuries due to fall, 31% RTA; 75% lumbar spine fractures; 56% compression fractures, 31% distraction, 13% translation; 13% complete SCI on admission, 56% neurologically intact on admission.

Significant difference between group analgesic requirements at admission ($p = .0009$). No significant difference between group analgesic requirements at 12 weeks ($p = 0.6015$). Both groups demonstrate reduction in use of strong opioids over time.

No deterioration in neurological status observed. 19% of patients in group 1 showed improved ASIA impairment score, 31% in group 2. No significant difference between groups ($p = 0.483$).

Conclusion:

General improvement in analgesia requirement; group differences indeterminate. Generally, some patients improved neurologically. No significant difference between group neurological improvements.

0147

Neck of femur fractures in the frail elderly: Should supportive care be prioritised?

Andrew Davies¹, Thomas Tilston¹, Katherine Walsh¹, Mike Kelly¹

¹*Department of Trauma and Orthopaedics, North Bristol NHS Trust, Bristol, United Kingdom*

Introduction:

Elderly patients with a neck of femur (NOF) fracture have a high mortality rate. National outcomes have improved significantly as the management of this patient group is prioritised. However in 2016, 4,622 patients died within 30 days of admission (7.1%). Several pre-operative risk stratification tools exist including the Nottingham Hip Fracture Score (NHFS). We aimed to investigate whether alternative post-operative pathways of care should be established for high-risk patients.

Methods:

All cases of inpatient mortality following NOF fracture at our Major Trauma Centre over a 22 month period were reviewed. A comprehensive assessment of care was performed from emergency department admission until mortality. All investigations, interventions and management decisions were recorded. Each case was discussed at a multi-disciplinary morbidity and mortality (M&M) meeting including surgical, orthogeriatric, nursing and anaesthetic teams and a consensus reached on whether mortality was expected.

Results:

949 patients were admitted following a NOF fracture during the study period. There were 71 inpatient deaths, 85% were considered predictable at our M&M. The mean length of stay was 18 days (range 0 - 85). In 44% of cases, mortality was considered predictable on admission, 41% were considered predictable following acute deterioration. Where mortality was predictable on admission the mean NHFS was 14.8% and patients received on average 29 blood tests (range 6-114) and 6.9 X-rays and CTs (range 2-20). 69% of patients received end of life care; mean duration 2.5 days (range 0-17).

Discussion:

Mortality remains high in selected patients. Our study demonstrates that full investigation and medical management frequently continues until death, including in patients with predictably poor outcomes. Early palliative care input has been integrated successfully into patient management in other specialities and supportive care has been proposed to “bridge the gap” between full medical care and palliation, to provide appropriate care for the most frail patients. Should this be prioritised in selected orthopaedic patients?

0151

The detection rates for neck of femur fracture in the emergency department using X-ray imaging: an audit of 1425 patients

Richard Unsworth¹, Bernardo Brandao², Martyn Lovell¹

¹University Hospitals of South Manchester, Manchester, United Kingdom ²University of Manchester, Manchester, United Kingdom

Introduction:

A neck of femur (NOF) fracture is the commonest serious injury for the elderly and poses a high burden on A&E departments nationally. X-rays are a relatively inexpensive, accurate and safe way of detecting most NOF fractures. Plain pelvic and hip radiographs with high quality projection have been found to exhibit a sensitivity of 90%-98%. Despite this, A&E pick-up rates for NOF fractures using XR with antero-posterior and lateral views remains unreported.

Aims:

To quantify the rate of detection for NOF fractures using plain radiographs in the accident and emergency department of University Hospital of South Manchester (UHSM) in a twelve month period.

Method:

The automated X-ray system at UHSM, termed Picture Archiving and Communication System (PACS) enabled examination of all X-rays requested by A&E staff querying NOF fracture or stating history of fall for adults to quantify the pick-up rate of these fractures in the twelve month period stated below.

Results:

In the period from the beginning of January 2016 to the end of December 2016, a total of 1425 patients were X-rayed for a suspected NOF fracture upon their admission to A&E. 325 fractures were identified out of this cohort, therefore giving a detection rate of 23%.

Discussion:

An audit or study has not yet been performed on the pick-up rates of NOF fractures in A&E departments nationally. It is difficult to know how useful this is as we do not want fractures to be missed.

One area where this has been looked at more fully is Ottawa rules for ankle fractures. If applied well there is still only a pick up rate of 32%. This may be something we are left with but something which needs quantifying

0152

Early Surgery for Hip Fracture Patients Taking Direct Oral Anticoagulants: Matched Case-Control Study

Mohammed As-Sultany¹, Jennifer Bowden¹, Rosemary Finley¹, Nigel Donnachie¹

¹Wirral University Teaching Hospital NHS Foundation Trust, Arrowe Park Hospital, Upton, Wirral, United Kingdom

Introduction:

An increasing number of admitted hip fracture patients are taking direct oral anticoagulants (DOACs), which makes it a challenge deciding when to safely operate on them. The general current consensus is to delay surgery by at least 48hr from admission. We aim to investigate whether it's safe to perform early surgery on these patients.

Methods:

A retrospective search of all admitted hip fractures to our unit during 2016 identified 11 patients who were taking DOACs and had early surgery within 36hr of admission. Each case was matched for age (+/- 2 years), gender, ASA grade and operation type with at least one control. Controls were excluded if they had surgery later than 36hr and/or were taking antiplatelet or anticoagulants such as warfarin. A total of 33 controls were identified. Statistical analysis was carried out using the paired t-test to look for differences in the change in haemoglobin (Hb) level as well as the length of stay. The McNemar's test was used to look for the need for post-operative RBC transfusion, differences in the occurrence of wound ooze and superficial/deep surgical site infections (SSI), and mortality at 30-days and one year.

Results:

Both patient groups had an average age of 88 years with the case group comprising of four male and seven (64%) female patients. The case group had an admission to surgery mean time of 23hr 41min compared with 19hr 24min in the control group. No differences were found in the pre-operative Hb ($p=0.77$), or amount of post-operative Hb drop ($p=0.55$) between the two groups. There was also no increased risk of needing a post-operative RBC transfusion in the case group. There was no increased risk of having a persistently oozy wound or developing an SSI post-operatively. The case group had a significantly shorter length of stay ($p=0.03$). There was no difference in the 30-day mortality ($p=0.37$) and one year mortality ($p=0.05$) between the two groups.

Conclusions:

The results demonstrate that hip fracture patients taking DOACs could safely have surgery within the recommended 36hr from admission. However, larger prospective studies are required to confirm these findings.

0165

Un-cemented Hemiarthroplasty for Neck of Femur Fractures **– A contrast to NICE Guidance?**

Andrew Hart-Pinto¹, Moin Durrani¹, Karthikeyan Iyengar¹, Riad Adam¹

¹Southport & Ormskirk Hospital NHS Trust, Southport, United Kingdom

Objectives:

NICE guidance [CG 128-2011] advocates cemented hemiarthroplasty or total hip replacement, with an approved Orthopaedic Data Evaluation Panel (ODEP) stem rating, for management of traumatic hip fracture. The corial stem is a cement-less, ODEP-10 rated, implant. Amongst patients with multiple comorbidities, the use of cemented prosthesis carries increased risk for; fat embolism and bone cement implantation syndrome (BCIS). Current literature reports elevated rates of peri-prosthetic fracture, 7.8% Kendrick-et-al 2013, with un-cemented implants. Authors aimed to evaluate whether complication rate, including peri-prosthetic fracture, was comparable to high rates reported in literature.

Method:

Patients admitted to Southport and Ormskirk NHS Trust, receiving bipolar un-cemented hemiarthroplasty for neck of femur fractures, over a 24 month period, between 1st January 2015 and 31st December 2016 were included in this retrospective study. Data was collated from patient's electronic notes, radiological images, and national hip fracture database. Compiled data was subject to descriptive analysis.

Results:

46 patients received corial bipolar un-cemented hemiarthroplasty. Mean age at time of surgery was 81.43 years [\pm 7.38 (1SD)]. Surgery was performed more commonly in females than males, [n=29 (63.0%)] and [n=17 (37.0%)] respectively. Majority of subjects received anaesthetic risk classification of ASA grade 3 or greater, [n=37 (80.4%)]. 1 patient was identified to have intraoperative peri-prosthetic fracture resulting from un-cemented stem insertion, [n=1 (2.17%)]. In this cohort, no patients developed wound dehiscence or surgical site infection. [n=1 (2.17%)] developed pulmonary embolus. [n=3 (6.52%)] died in the postoperative period, none of which as a direct complication from surgery.

Conclusion:

Corial un-cemented implant, in combination with a safe surgical technique, has successfully been used to provide definitive management for high risk patients with hip fracture. This departmental study demonstrated lower rates of postoperative complications on comparison with reported literature. A considerably lower rate of intra-operative peri-prosthetic fracture was observed at 2.17%. Thus, Authors advocate choice for corial bipolar hemiarthroplasty amongst patients, with reasonable pre-injury mobility, at increased risk of BCIS, whom may not be appropriate for total hip replacement.

0175

The most commonly cited articles in orthopaedic trauma over the past 48 years: A bibliometric analysis

Matt Gray¹

¹*James Cook University Hospital, Middlesbrough, United Kingdom*

Objectives:

To identify the most cited publications in orthopaedic trauma surgery since 1970 and compare trends in research areas and citation over this time.

Methods:

The 'Web Of Science' (WOS) platform was used to interrogate the Science Citation Index (Institute for Scientific Information) to identify the 100 most commonly cited articles in orthopaedic trauma surgery published between 1970 and 2017.

For each article the following data on country of origin, journal, publication year, type and category of article, level of evidence and absolute citations was collected. Research themes between the first and second halves of the 48-year study period were also compared.

Results:

41,597 articles were captured in the WOS search, of which 701 papers were cited over 100 times.

Of the top 100 papers: each was cited 199 times or more, 71% were clinical studies and over half were of American origin (52%). Fewer clinically-based and more basic science papers were observed in the second half of the study period (1994-2017).

Overall, the most cited article was Gustilo and Anderson's classic paper on open fractures of long bones, with 1,797 citations since publication in 1976.

Conclusions:

This bibliographic study has identified the most cited and arguably most influential articles in orthopaedic trauma surgery over the past 48 years. An appreciation of past and current trends in the orthopaedic trauma literature sets the context for further research in this important field.

0176

Junior doctor knowledge of hand and forearm nerve supply: Assessment and a Quality Improvement Project

Matt Gray¹, Will Eardley

¹*James Cook University Hospital, Middlesbrough, United Kingdom*

Objectives:

To assess the knowledge of hand and forearm nerve supply in doctors working in an orthopaedic rotation at a major trauma centre.

Methods:

Doctors at FY2 and CT1 level in a single orthopaedic department at a major trauma centre were recruited to complete a simple online test. The test comprised 11 questions surrounding the sensory and motor function of the hand and forearm (including radial, ulnar, median, anterior interosseous nerves). Each question was assigned 1 mark.

Results:

10 doctors participated in the study comprising 4 FY2s and 6 CT1s (or equivalent). Scores ranged from 5 (45%) through to 11 (100%). The average score was 9.9 out of 11 and 6 participants achieved full marks.

Discussion and conclusion:

Clinically and medico-legally, competence in upper limb neurovascular *assessment* and *documentation* are essential skills for a doctor, especially when caring for patients with upper limb fractures.

Knowledge of assessment tested here was generally good, however some deficiencies were identified in 4 participants (40%). *Documentation* of assessment has been tested previously in multiple clinical audits, where a recurring theme of poor compliance has been observed.

As a quality improvement project in response to the above, we have designed a novel aide-memoire to be circulated to all doctors rotating through our department at induction. This double-sided, credit card style aide-memoire combines the 'Rock-Paper-Scissors-OK' assessment paradigm alongside a simple method for documentation. Assessment of the impact of this intervention is planned with further testing and audit after an initial four-month rollout period.

0161

A Retrospective 1 year Review of all Shoulder Dislocations in a District General Teaching Hospital against BESS/BOA Patient Care Guidelines

Raymond McKenna¹, Jonathan Crean, Andrew Walls, Ronan McKeown

¹*Raymond McKenna, Belfast, United Kingdom*

Trauma & Orthopaedic Department, Craigavon Area Hospital, Northern Ireland

Introduction:

Traumatic glenohumeral joint dislocation is the most common joint dislocation; incidence 23.9 per 100,00 per year; almost 50% between ages 15-29. Probability of recurrent instability within 2 years can exceed 80%. It is vital that appropriate referral pathways exist with multidisciplinary team approach for investigation/management. This is not only cost effective but aims to reduce associated sequelae of injury and streamline services.

Background and objective:

Craigavon Area Hospital is a level 3 trauma centre, which serves an estimated population of 260,000 people. This 1-year retrospective review aimed to assess the management of shoulder dislocations against BESS/BOA guidelines.

Methods:

A database of shoulder dislocations within the hospital compiled from April 2015 to April 2016 using records from the A&E admission, electronic care system, radiology and theatre. All patient charts reviewed for diagnosis/treatment with a minimum 12-month follow up.

Results:

118 patients identified; total of 171 shoulder dislocations. 84 first time dislocations; 24% < 25 years, 30% aged 25-40 and 46% >40 years. Significant neurological injury present in 3 patients, greater tuberosity fracture in 7 and additional lesions in a further 7. 86% of dislocations reduced in A&E, 3 spontaneously and 8 within theatre; 2 required open reduction. Average age of recurrent dislocation was 25. In patients aged <25 with first time dislocation, rotator cuff function was documented 100%; subsequent referral to specialist 35% in contrast to 75% of patients aged <25 with recurrent dislocations. Further imaging (Ultrasound) in 28% patients, with average delay of 104 days. High-risk group, (age >40 years) further imaging in 47%. 1/20, aged <25 with first dislocation had timely surgical stabilisation.

Discussion:

Within our unit, updated agreed MDT care pathway for shoulder dislocations is required. Audit highlights benefits of early specialist review, need for more imaging in high-risk patients and early specialist referral in <25 year olds with first dislocation to consider surgery. We hypothesise other units may lack appropriate protocols and wish to highlight current best care guidelines and appropriate pathway as a poster.

0162

Audit of fracture clinic services against national standard; service improvement to meet increasing demands. (Fracture clinic services provision at a District General Hospital, a future vision for service improvement)

Thomas Murphy¹, Zaid Al-Wattar¹, Kalon Hewage¹, Leslie Brown¹, Guy Selmon¹

¹Conquest Hospital, St Leonards - On - Sea, United Kingdom

Introduction:

The BOA outlines 12 standard for the management of patient with acute orthopaedic injury in fracture clinic in the BOAST – 7 guideline. In particular it stipulates that all patients should be seen within 72 hours from the time of referral.

This audit aimed to assess the adherence of the Fracture Clinic service of the Conquest hospital in East Sussex to this guidance.

Method:

We conducted a prospective audit of patients newly referred to Fracture Clinic in March and April 2015. Interventions were then made to improve the service, and the cycle was repeated in November and December 2016.

Results:

The primary audit cycle demonstrated that improvements were needed in 6 of the 12 standards listed in the BOAST-7 guideline. The results were presented departmentally and interventions were instigated. The secondary audit cycle demonstrated improvements in a further 4 of the standards relating to consultant led clinics (100%), osteoporosis and CRPS management, and patient leaflets and information. With regard to the 72-hour review time we were unable affect significant change. Despite increasing departmental awareness compliance actually decreased from 28% in 2015 to 22%.

Discussion:

The primary audit demonstrated room for improvement in Fracture Clinic services. The department made changes including introducing an osteoporosis liaison nurse along with osteoporosis and common injury leaflets for patients. A CRPS pathway provided to all doctors in the induction handbook was introduced. Whilst awareness was raised of substandard adherence to the 72 hour waiting time, we were unable to make significant improvement regarding this standard. It would appear that demand for fracture clinic services is increasing at East Sussex and the current fracture clinic structure is inadequate to meet this demand. The trust is in infancy of a new 'Virtual Fracture Clinic' process, which aims to address this short fall. By using a consultant led triage system we hope to increase the efficiency of the service by ensuring all fracture clinic visits are necessary, and patients are reviewed by the correct specialty at the correct time.

0182

Dual plating in tibial plateau fracture, when is it an option or necessity?

Seraidin Ajnin, Jamie Arbuthnot

Introduction:

The best fixation method for bicondylar and comminuted medial tibial plateau fracture were debated. The aim of this study is to compare the outcome of single locking plate with that of dual plates in the treatment of Schatzker type IV and V tibial plateau fractures.

Methods:

A retrospective cohort study including 29 patients with Schatzker type IV and V was conducted. All fractures were reclassified in pre-operative CT scans according to three-column concept. Relevant demographic and clinical variables were studied. Postoperative films were evaluated meanwhile the patient reported outcome was assessed using Oxford knee score.

Results:

Both lateral plating and dual plating for simple bicondylar fracture (without posterior column fracture) displayed satisfactory clinical and radiographic results apart from wound problems when dual plating through single incision. Sagittal malalignment in missed posterior column fracture were associated with poor outcome. Patients with posteromedial fracture treated by posteromedial buttress plate in addition to Medial locking plate through same approach showed significantly better outcome scores than those who were not.

Conclusion:

When medial tibial condyle is relatively intact, single locking plate can provide stability similar to that of dual plate while decreasing operative duration and soft tissue complications. However, if there is posterior column fracture, we recommend starting first with medial locking plate through posteromedial approach then using lateral x-ray in knee flexion to assess the stability of posterior column and the need for buttressing posteromedial fragment through same approach.

0188

The Use of Woodcast as Primary Splintage for Distal Radius Fractures

Samir Abdalla¹, William Harrison¹, John Taylor¹, Kiran Saldanha¹

¹*St Helens & Knowsley NHS Foundation Trust, Liverpool, United Kingdom*

Background:

Woodcast is a novel biodegradable splint used in fracture immobilisation for upper and lower limb injuries. It is both washable and re-usable, hence making it an environmentally friendly product that can be cost-effective. Additionally, it has superior radiolucent qualities and equal biomechanical strength when compared to plaster of Paris (POP) and fibreglass.

Aim:

Assess the use of Woodcast as the primary mode of splintage for distal radius fractures.

Methods:

Plaster technicians, emergency nurse practitioners and emergency department (ED) staff were trained prior to the initiation of the trial in the application and usage of Woodcast for distal radius fractures by the supplier (Woodcast). Two groups were recruited, a control group that had POP, and an intervention group that had Woodcast as their primary treatment. Data was collected retrospectively on the control group, prior to the introduction of Woodcast, and prospectively in the Woodcast group. All closed distal radius fractures in consecutive patients above 18 years of age were included in the trial. Exclusion criteria was under the age of 18, and open fractures. The trial spanned across 3 months.

Results:

Sample size for the control group was N=30, and for the intervention group N=36. Mean age was 63, and 62 years in control and Woodcast group respectively. Within the control group 60% of patients had intra-articular or comminuted fractures, whilst 25% had intra-articular or comminuted fractures in the Woodcast group. 8% of the patients in the Woodcast group required surgery. Mean subjective assessment of x-ray quality was found to be 4 (scale 0 - 4, with 0 being poor, and 4 being excellent). There was a 17% major plaster complication rate in the Woodcast group, whilst only 3% in the control group.

Conclusion:

Woodcast can be used as primary splintage for distal radius fractures due to its excellent radiolucency properties, biodegradable components, and ability to achieve adequate quality moulding. However, we found that the material is unforgiving when applied by non-specialist clinicians and has a high risk of plaster complication.

0192

Discharge following hip hemiarthroplasty for acute hip fractures: the forgotten cohort?

Jamila Karim, Jennifer Reynolds, Omer Salar, Edward Davis, Sohail Quraishi, Mushtaq Ahmed

Introduction:

Hemiarthroplasty is a common treatment for intracapsular hip fractures. Little is known about factors affecting the rate of unplanned clinic attendance, readmission and mortality in this patient group within the first post-operative year. We aimed to determine if there is a role for routine follow-up for certain strata of our hip fracture population treated by hemiarthroplasty based on unplanned attendance to clinics and attempted to stratify risk of re-admission, re-operation and mortality within the first 12-months post-operatively.

Method:

A prospectively collected single centre database of patients over 65 years undergoing hip hemiarthroplasty for traumatic non-pathological hip fractures was retrospectively analysed between August 2007 and February 2011. Pre-operative data regarding patient demographics, mobility, residence and co-morbidities were collected. Post-operative (1, 4, 12 months) place of residence, mobility status, unplanned attendance to an orthopaedic clinic with symptoms relating to the respective limb, re-admission and mortality was collated. Regression analysis was performed (SPSS, IBM Corporation, version 24). $P < 0.05$ was considered significant.

Results:

553 consecutive patients were identified. Unplanned clinic attendance was correlated to age, ($p = 0.000$, $B = -0.0159$, 95% CI: -0.200 to -0.65), with patients between the age of 65-69 years most implicated. ASA grade ($p = 0.019$, $B = 0.124$, 95% CI: 0.014 to 0.163) and frequency of unplanned outpatient attendance ($p = 0.000$, $B = 0.568$, 95% CI: 0.120 to 0.284) were significantly associated with increased readmission. Mortality following hemiarthroplasty was not significantly associated with any variable.

Conclusion:

There is no current vogue to follow-up this group of patients in the post-operative period. We have identified variables that should be sought prior to community discharge within this population.

Implications:

Stratification would facilitate formal follow-up/ rehabilitation programs to be arranged for those at risk of hospital re-admission. Post-operative orthogeriatric and/or general practitioner follow-up may reduce 12-month re-admission and/or unplanned clinic attendance. Validated scoring and risk stratification systems are required to fully justify this.

0193

A systematic review investigating the effectiveness of open reduction and internal fixation versus conservative management of complex proximal humeral fractures in adults

Mohamed Yousef S Turkman, Lugman Elgayar, walid ben-nafa, muthu jeyam

Introduction:

Proximal fractures of humerus make up approximately 5% of all bone fractures in adults and the incidence of such fractures increases rapidly among people over 65 years old, these fractures are usually non-displaced or minimally displaced and are typically treated using non-invasive methods. A minor but significant number of humeral fractures in adults, particularly the elderly, are complex and displaced, and might require surgery. The best choice of treatment is debated. We are aimed to update the systematic review of Rangan (2015).

Methods:

Seven Databases were searched from inception to May 2017: PubMed, MEDLINE, Cochrane Database and Cochrane Central Register of Controlled Trials, Web of Science, CINAHL, Scopus and EMBASE were searched from inception to 2017. Randomised controlled trials (RCTs) assessing patients that underwent non-surgical or surgical (open reduction and internal fixation) treatments of complex proximal humeral fracture were included.

Results:

1489 articles were retained of which 4 RCTs (399 participants) were included. Empirical data of relatively high quality but with moderate risk of bias was collected. Functional outcomes: four trials used Constant shoulder score protocol and found no significant difference in the functional outcomes between two treatment groups at 12-months. Other outcomes were as follows: post-treatment pain assessment (32/64 versus 31/67, $p=0.26$) and the mortality rate (13/180 versus 7/180, $p=0.19$) and the incidence of the re-operation was considerably higher with surgery (24/180 versus 13/180, $p=0.06$).

Conclusion:

The results suggest that the effectiveness of surgical treatment is not superior to non-operative approaches. Surgery should be considered very carefully in older patients, for which the non-operative treatment might be preferable.

0194

Early weight bearing after plate fixation of tibia plateau fractures does not lead to loss of reduction or articular collapse

Aanchal Jain, Efthymios Iliopoulos, Wessam Ebied, Alex Trompeter

Plate fixation for tibial plateau fractures is a commonly used method of fracture stabilisation. Many orthopaedic surgeons traditionally do not allow their patients to weight bear for the first 6 weeks after surgery fearing loss of fracture reduction and articular collapse. The aim of this study is to investigate whether the post operative weight bearing status influences these outcomes.

Data was collected retrospectively for all patients with tibial plateau fractures who were treated surgically between January 2015 and June 2017. Inclusion criteria was fixation with a plate construct. Fractures treated non-operatively, with screws alone or external fixation were excluded. The immediate post operative weight bearing status of these patients was noted. Weight bearing status was divided into two groups – Group 1 (Non and touch weight bear – the non weight bearing group) and Group 2 (Weight bear as tolerated / Full weight bear – the weight bearing group). Radiological data about displacement or loss of fixation was collected at the six weeks and three months follow up after the operation, using a standardised measurement for displacement performed independently by two authors (EI, WE).

Of 120 fractures in 118 patients, a total of 90 fractures were included to the study. The mean age of the cohort was 45.1 ± 16.5 years with the majority of the patients being male (66%). 51% of the patients had a Schatzker II fracture. Fifty-five patients were treated with one lateral proximal tibial periarticular plate (61%) and eighteen patients needed a supplementary medial or postero-medial plate. The weight bearing status did not correlate with the fracture type ($p=0.82$). None of the follow up radiographs revealed loss of fixation and only one patient from the weight bearing group had $>1\text{mm}$ displacement at the two follow-ups. Fisher's exact test revealed no statistically significant difference between the two study groups in both follow-up time points ($p=0.36$ and 0.37 respectively). The quality of reduction and articular reconstruction of tibia plateau fractures treated with plate fixation is not affected by the immediate post-operative weight bearing status Early weight bearing of these patients should be encouraged, as no adverse effects are noted.

0195

Outcomes of periprosthetic fractures of the femur at a DGH: **A 5 year review**

Oluwatosin Taiwo, Andrew Stone, Ashwin Unnithan, Arshad Khaleel

We present our experience of peri-prosthetic fractures of the femur treated at our hospital between 2012 and 2017.

Aims:

To determine the outcome of peri-prosthetic femoral fracture surgery in our unit

Method:

Data was collated retrospectively from consecutive patients treated between 2012 and 2017 using clinical and radiographic records. Vancouver classification system was used: Only Vancouver B and C fractures were examined. Rate of subsequent revision and other complications measured. The Chertsey outcome score for Trauma (COST) was used to assess patient reported outcomes.

Results:

Between 2012 and 2017 we had a total of 73 patients; 54 females and 19 males. The mean age at presentation was- 82.3 years. Vancouver B fractures accounted for majority of the cases seen.

32 Patients had open reduction and internal fixation (ORIF) and 41 had revision arthroplasty surgery. Total number of deaths was 18 over the 5 year period. 45 (61%) of the fractures were around uncemented stems and 28 (38%) around cemented stems. The average length of stay in hospital after surgery was-18.8 days

Complications included- Dislocation – 2 cases; Wound infection -3 cases; 1 patient required a further revision; Pulmonary embolus-2 cases.

Conclusion

We treated 73 patients in total; Male to female ratio was 1:3. Methods used were safe and produced acceptable results

The Chertsey outcome score for trauma (COST) was a useful tool for determining patient outcomes after surgery.

0198

The incidence of bucket handle tears in patients with tibial plateau fractures

Aanchal Jain, Efthymios Iliopoulos, Alex Trompeter

It is recognised that a spectrum of soft tissue knee injuries can be associated with tibial plateau fractures, including meniscal tears, ligamentous injuries and chondral lesions. Whilst certain fracture characteristics such as joint depression have been seen to be predictive of meniscal injury in general, there is a paucity of evidence surrounding the predictive factors specifically for bucket handle meniscal tears. These have a significantly worse outcome than other meniscal injury so identifying this population subgroup is an important aspect of management of patients with tibial plateau fractures. The aim of this study was therefore to investigate the incidence of bucket handle tears associated with tibia plateau fractures and any predictor factors for these injuries. Data from 100 consecutive tibial plateau fractures treated in our institution between January 2015 and March 2017, were collected. All the patients who underwent surgical treatment which involved opening the joint and direct visualisation were included. Fractures managed non operatively or percutaneously were excluded. Pre-operative computerised tomography was evaluated in a standardised manner by two independent / blind examiners (EI / AJ) - the amount of depression and widening of the joint surface was measured. Demographic, fracture and soft tissue injury data were collected by reviewing the patients' clinical records. A total of 72 fractures were included. Mean age was 45.8 ± 17.1 years, and most patients were male (61.1%). The most common fracture grade was Schatzker II (52.8%), followed by Schatzker IV (24%). The total incidence of bucket handle tears reached 9.7%.

Monovariant analysis specifically for bucket handle meniscal tears revealed that Schatzker II fractures trended towards correlation but did not reach significance ($p=0.06$). Widening of the joint surface did not have significant correlation ($p=0.13$), however significant depression ($>10\text{mm}$) did correlate and was predictive for bucket handle meniscal tears ($p=0.026$). The incidence of bucket handle meniscal tears associated with tibia plateau fractures is relatively high and reaches approximately 10%. Despite that none of the examined predictor factors have unique correlation with these meniscal tears. Schatzker type II injuries and severe fracture depression can be useful predictors, which an orthopaedic surgeon should be aware of.

0200

Fixing intracapsular fractures in a district general hospital, does the hip survive?

Andrew Stone, Alexander Overton, Arshad Khaleel

Aim:

Determine outcome after cannulated screw hip fracture fixation in a district general hospital and examine any correlation between method of fixation and subsequent re-operation.

Method:

Retrospective data collection from January 2010 to June 2017. Clinical notes and radiographs examined of all patients having undergone cannulated screw fixation for intracapsular proximal femur fractures at our district general hospital.

Results:

95 eligible patients were identified. Mean follow up was 44 months (range 5 to 90 months). 44 patients (46%) had at least 1 fully threaded screw as part of their fixation, with the remainder had partially threaded screws only. 35 (37%) had some comminution visible on plain radiographs. 21(22%) went on to have further surgery: 7 for metalwork removal (7%) and 15 for conversion to arthroplasty (16%). Of those who went on to have conversion we recorded 4 incidences of AVN and 3 incidences of non-union. The remainder underwent conversion due to persistent pain on mobilisation. There was no correlation between the type of screws used (fully threaded/partially threaded) or number of screws and the rate of conversion.

Conclusion:

This initial study implies our local outcomes meet or exceed the accepted rates for re-operation. Use of a fully threaded screw does not appear to affect conversion rate, even in cases with comminution. A further prospective study into the effect of fixation method on patient reported outcomes during the 7.5 year follow up period is warranted – ethical approval is currently being sought.

0203

Significant Paediatric Fractures Requiring Surgical Intervention

Rashid Riaz¹, MOHAMMED ZAFRAN, MAHESH PIMPLE¹

¹WHIPPS CROSS UNIVERSITY HOSPITAL BARTS HEALTH NHS, LONDON, United Kingdom

Objective:

Paediatric elbow fractures come in an array of types with many requiring surgical intervention. The purpose of this study is to focus on rare elbow fractures in children. Elbow fractures necessitating surgery in children younger than 16 were considered.

Method:

From our radiology database (PACS), we identified children who needed surgery in our institution over the past 8 years for fractures around elbow. We noted the age at presentation, type/severity of fracture, method of fixation and radiological results. We noted non-union and deformity (carrying angle) at final follow up.

Results:

Total fractures studied were 72. 24 Radial Neck, 10 Medial Epicondyle, 9 Olecranon, 8 lateral condylar, 7 Elbow fracture-dislocations, 8 rare elbow fractures, 3 Inter-condylar and 3 Radial Head.

Discussions:

Radial neck fractures transpire after ossification center of the proximal radial epiphysis. They were present in 4 to 14 years. 14 fractures were fixed with flexible nails and 10 had MUA.

Medial epicondyle fractures primarily resulting with a medial epicondyle avulsion presented in 11 to 15 years. 6 were fixed with K-wires and 4 with screws.

Olecranon account for 4% to 7% of paediatric elbow fractures. These were present in 7 to 10 years. 6 were fixed with K-wires and 3 with MUA.

Rare elbow injuries including medial condyle, dislocation with lateral condyle fracture, Monteggia variants, capitellum fractures were 8 in total.

8 lateral condylar fractures in 4-7 years old became non-union and 3 had cubitus valgus requiring surgery for correction.

There were 7 Elbow dislocations being most common in adolescence.

Inter-condylar fractures occur due to falling on the elbow or indirectly landing on the wrist. 3 presented in ages 11 to 13 and fixated with K-wires.

Radial head fractures are frequent in adults whereas radial neck fractures are abundant in children. Present in ages of 10-14 and they were mended with headless screws.

Conclusion

We would like to draw attention to comparatively uncommon fractures in paediatric elbow because poorly treated fractures result in significant functional disabilities. Some may not be even evident in early postoperative period so highlighting these uncommon fractures, which are more prone for complication i.e. non-union and deformity.

0207

Re-audit of Neck of Femur fracture prophylactic antibiotics

Chukwudi Uzoho¹, Dominic Davenport¹, Alina Corobana¹, Max Edwards¹

¹Princess Royal University Hospital, Kings College NHS Trust, London, United Kingdom

Aim:

All fractured neck of femur (NOF) patients should receive a single dose of both Teicoplanin & Gentamicin immediately prior to surgery as per Trust guidelines. The doses are weight-adjusted and not dependent on renal function.

Standards

Trust guideline doses;

Actual Weight	Dose (Teic/Gent) (mg)
<70kg	400/160
71-100kg	600/240
>100kg	800/240

Methods:

We retrospectively assessed 45 surgically managed NOF patients from July to August 2016. We collected data including type of antibiotic, dose of antibiotic and which chart was used to prescribe the antibiotic. Our intervention involved a presentation to the Orthopaedic and Anaesthetic departments. Post-intervention, we re-audited 46 NOF patients from November to December 2016.

Results:

Pre-intervention: 45 patients, 98% had documented evidence of antibiotics given, 9% received Teicoplanin only, only 48% had the correct dose prescribed for their weight.

Post intervention: 46 patients, 98% had documented evidence of antibiotics given, 100% received both Teicoplanin and Gentamicin, 87% had the correct dose prescribed for their weight. 2 patients given their antibiotics the night before theatre

Conclusion:

Following the intervention all patients who were administered Abx received both Teicoplanin and Gentamicin. More patients received the correct weight-adjusted dose of antibiotics 87% vs 48%. Two patients received antibiotics the night before surgery.

Recommendations;

1. Weigh all NOFs at point of entry - scales/ trolley in A+E
2. Anaesthetist to document on AC that Abx has been prescribed and given
3. Orthopaedic SHO to clearly document 'FOR THEATRE INDUCTION' in the 'time to be given' box on the yellow drug chart

0104

Evaluating the demand of major trauma on different surgical specialties in a UK Major Trauma Centre

Patrick Quinn¹, David Lockey^{2,3}

¹University of Bristol, Bristol, United Kingdom ²Severn Major Trauma Network, Bristol, United Kingdom ³North Bristol Trust, Bristol, United Kingdom

Background:

Ideally, Major Trauma Centres (MTCs) would have all surgical specialties on site and senior surgeons available to operate whenever required. However, some specialties are not at the MTC due to the development of specialist services in a region having many influences other than trauma care.

Methodology:

Anonymised datasets were extracted from the Trauma Audit and Research Network spanning from 01/09/14 to 31/08/2016. Retrospective analysis of the registry provided a group of 1285 major trauma patients (ISS>15).

Results:

The proportion of ISS>15 patients requiring surgery was lower than expected (55.49%). Neurosurgeons and orthopaedic surgeons were involved most frequently (59.89% and 55.12% respectively). General surgeons were required infrequently but urgently (45.13% of their interventions were performed <4 hours of arrival to the MTC). Cardiothoracics are not on site but 31.4% of cardiothoracic-injured patients required a thoracotomy. In this instance trained trauma team leaders can perform emergency thoracotomies, negating the effect of not having cardiothoracics on site.

Discussion:

This is the first effort to conduct an evaluation of the major trauma demand on the surgical specialties. General surgeons were required infrequently but urgently, raising questions regarding the exposure that they experience in this region. No significant issues have been identified with having Cardiothoracics off-site but demands differ by region.

Conclusion:

Having identified the urgency and frequency of the surgical requirement, some issues with training and exposure can be seen. By better understanding the surgical requirements of different regions for major trauma, the organisation and delivery of major trauma care can be improved.

0105

Using Google Trends To Assess For Seasonal Variation In Knee Symptom Reporting In The United Kingdom

Varun Dewan¹, Hartej Sur²

¹Wye Valley NHS Trust, Hereford, United Kingdom ²Sandwell & West Birmingham Hospitals, West Bromwich, United Kingdom

Introduction:

The Google Trends search engine provides an insight into the search habits of individuals using the Google search engine. Usage of such data can provide us with information about the incidence of medical condition that are otherwise hard to track as patients do not always seek medical attention. An example of this is injuries to the knee. This study aimed to assess the seasonality of patients with knee symptoms that may be suggestive of a knee injury using data from Google Trends.

Method:

Data was downloaded for 'knee pain' and 'knee swelling' from the Google Trends search engine from 4th January 2004 to 2nd January 2016. Statistical analysis was conducted to assess for trends and seasonality for these search terms.

Results:

The data demonstrated that there has been an overall increase in the volume of searches for both 'knee pain' and 'knee swelling' over time. The month of April demonstrated the highest number of searches. Statistical analysis demonstrated a statistically significant increase in searches in warmer months compared to colder months.

Conclusion:

The Google Trends search engine represents a method of data collection and analysis that may complement more traditional methods. Our study shows that internet searches for symptoms related to knee injuries demonstrated a seasonal trend that has also been shown to be present for knee injuries in professional athletes.

0106

Closing the loop: Trauma Management Re-audit in Chelsea and Westminster Foundation Trust. How did the audit significantly guide our service to the right way?

Ihab Abdalaziz¹, Monica Popescu¹, Miriam Kadry¹

¹Chelsea and Westminster Foundation Trust, London, United Kingdom

Methods:

The data were captured in form of 2 questionnaires over an 8 week period with 73 sessions&110 patient captured. The 1st form addressed patient demographics, anaesthetic data&timing of the different stages of the patient journey to theatre&was completed by the anaesthetist. The other looked at each theatre sessions start and finish times, communication&reasons for delays&was completed by the ODP. All data were compared to 2015 audit.

Results:

63% of patients received GA&37% received spinal anaesthesia(76% &24% in 2015). 28% received an additional nerve block in theatre to supplement post op analgesia(23% in 2015). No adjuncts were used in the form of invasive monitoring during the audit period. 82% of sessions were covered by a consultant anaesthetists&47% by a consultant orthopaedic surgeon(52%&33% in 2015). A team brief took place in 82% of the sessions&in 15% of these the team brief took place >08:30am(57%&47% in 2015). There was a delay in sending for 1st patient in 41%(53% in 2015)&with a delay in arrival to theatre in 52%(73% in 2015). In Fracture NOF, there was no delay of surgery in <36 hr in 74% (65% in 2015) with a nerve block was offered in 100%&given in 81%(20% in 2015), by anaesthetist in 85%&A&E in 15%(0% in 2015). 94% of lists were reviewed on the night before by the anaesthetist on call.

Discussion:

The re-audit monitored the outcome of the applied recommendations &action plans of the audit run by the department in 2015 to identify areas of improvement in trauma theatre efficiency&utilisation. A "significant" improvement in the theatre communication steps(Briefing & its timing)&in compliance to offer&give block to Fracture NOF were noted compared to 2015 results(1,2). Better results were also noted regarding delay in sending&arrival of 1st patient. Teaching sessions for FICB by the anaesthetic department to A&E doctors were done&they started to practice it successfully. There was an improvement of the percentage of consultant-delivered sessions in the theatre on anaesthetic&orthopaedic sides with trauma list was reviewed by the anaesthetist on-call to help optimisation at the earliest opportunity. The audit flagged the successful effects of applying the audit process in improving our level of care.

References:

1. AAGBI SAFETY GUIDELINE. Management of Proximal Femoral Fractures 2011
2. National Hip Fracture Database Anaesthesia Sprint Audit of Practice 2014

0213

Improving Management of Paediatric Buckle fracture in Orthopaedic outpatients: A completed audit loop

Nouman Baig, Ali Tariq, Ciara Egan

Introduction:

Paediatric fractures contribute a large number to orthopaedic outpatients, especially fracture clinics (1). Nice guideline (NG38) which was published in 2016 gives a guideline about assessment and management of non-complex fractures including buckle or torus fracture in paediatric age group (2).

Objective:

We retrospectively collected data for audit from outpatient records of children younger than ten years presenting with buckle (Torus) fracture for the months of May and June 2017. We compared our practice against the NICE guideline standards. We made certain changes in our practice and then repeated the exercise prospectively for two months from 15th of July to 15th of September. We wanted to follow the practice which is taking place in many large paediatric orthopaedic hospitals with good results (3,4).

Material and Methods:

In the retrospective data we identified 21 patients which fit our inclusion criteria. After the changes the number of children included in the prospective data collection were 23 patients.

Results:

Of the 31 children which we treated according to our old protocol, there were 59 outpatient's visits, with an average of 1.90 visits for every child. After the changes made in our management, for 33 patients there were 39 visits with an average of 1.2 visits per child.

Conclusion:

With the introduction of changes in light of NICE guidelines, there has been considerable improvement, but it needs to be followed and we need to involve A/E into this practice as well.

Months	N = Total	Fracture opd Visits	Average
April -May	31	59	1.90
July – August	33	39	1.2

References:

- 1 - Baig M (August 28, 2017) A Review of Epidemiological Distribution of Different Types of Fractures in Paediatric Age. Cureus 9(8): e1624. doi:10.7759/cureus.1624.
- 2- <https://www.nice.org.uk/guidance/ng38>
- 3- Primavesi R. Sticks and stones and broken bones: Distal radius fractures in children. *Canadian Family Physician*. 2011;57(1):45-46.
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0212

IYAD WYAD YAG WYAG - An Orthopaedic Fracture Clinic service audit: A complete Loop

Nouman Baig, Ali Tariq, Ciara Egan

Introduction:

The British Orthopaedic Association gave BOAST guideline 7, published in August 2013(1). They guide us about the standard of care patients should expect when they come to orthopaedic fracture clinic.

Objectives:

We wanted to compare our fracture clinic practice against the standards set by BOAST, to make changes after comparing, and to re-audit our practice to evaluate it further.

Material and Methods:

We prospectively collected data from 105 patients presenting to fracture clinic of different orthopaedic consultants working in our hospital, using RCSI (Royal college of Surgeons in Ireland) recommended SWOPS(Satisfaction with Outpatients Services) questionnaire (2).

We made some changes and recommended some changes to hospital management as well, and again conducted a re-audit.

Results:

As far as the improvements were concerned we were only able to make them on behalf of the doctors and auxiliary staff. We were able to decrease the waiting time from initial presentation in A/E to the fracture clinic appointment, also few other changes were made in light of patient recommendations. That did make difference in the patient satisfaction levels.

Conclusion:

IYAD WYAD YAG WYAG- means If you always do what you always did, you always get what you always got. In light of our complete audit loop we do find improvements, but still few areas of concern which need to be addressed.

0108

A review of epidemiological distribution of different types of fractures in paediatric age group in a county hospital

Nouman Baig, Robert Din

Introduction:

Paediatric fracture makes a big part of any orthopaedic trauma service. And the majority of these fractures take place during sports and recreational activities. In this study, we examined the incidence of different kind of fracture types, their incidence in the paediatric age group, their relation to particular activities, sex and age.

Methods:

We collected retrospective data of all the paediatric group patients who were referred to the orthopaedic service in OPD or A/E with the majority of patients seen in OPD. We collected the data using a questionnaire which had questions regarding age, sex, time of year, mechanism of injury/activity and type of fracture. We collected data for 1022 patients during one calendar year.

Result:

The total number of paediatric fracture presentations in one calendar year was 1022, with 48.63 % male and 51.36 % female. The highest incidence of fracture was at the age of 16 years in boys and 11 years in girls. Upper limb fractures much common than lower limb fractures in most of the subgroups.

0110

How steep is the trauma learning curve? An objective measurement of trainees on a UK programme

Robert Jordan, Imran Ahmed, Gurdip Chahal, Peter Wall, Nicholas Smith

Introduction:

Trauma procedures are historically where trainees gain their early surgical experience. In the UK trainees rotate through six years of higher surgical training and are required to perform trauma surgery throughout. This study aimed to objectively measure whether the surgical skills improved during their training.

Methods:

A retrospective review of common trauma procedures completed by ten trainees on UK orthopaedic programmes was performed. Trainees were asked to identify cases from their E-logbook of procedures performed during their first and last years of training for comparison. Dynamic hip screws, ankle and wrist fixations performed during these periods were identified. Intra-operative radiographs were reviewed by two authors for an objective measure of surgical reduction using tip-apex distance, radial length, radial angulation and talo-crural angle. Electronic theatre records were analysed for the surgical time taken for each procedure.

Results:

During the training periods a total of 634 procedures were identified by the orthopaedic trainees. The tip-apex distance was lower in senior trainees (13mm vs 16mm) and the proportion deemed to be acceptable was higher (100% vs 92%). Radial length (9mm vs 7.5mm) and the proportion with an acceptable angulation (95% vs 88%) were both improved during wrist fixations in the last year of training. Objective measurements of ankle fixations were comparable. The time taken for all three procedures was significantly shorter during the final year of training.

Conclusion:

Objective improvements were seen in hip and wrist fixation and the time taken for all procedures was reduced during the final year of training.

0113

An audit of the management of surgical chest drains in the trauma and orthopaedics department

Daniel Ward¹, Cezary Kocialkowski¹, Barnaby Sheridan¹

¹*Taunton and Somerset NHS Foundation Trust, Taunton, United Kingdom*

Background:

Anecdotally, the management of surgical chest drains varies within our trust. Uncertainty regarding the chest imaging required has potentially led to unnecessary ionising radiation (IR) exposure.

Aims:

To investigate whether local surgical chest drain management follows local and national guidelines. To refresh chest drain management knowledge, improve care and minimise patient IR exposure.

Standards:

All patients (100%) with a traumatic pneumothorax should have a chest radiograph (CXR) pre- and post-chest drain insertion, unless a tension pneumothorax is suspected clinically. All patients (100%) with a chest drain inserted for pneumothorax management should have CXR demonstration of lung re-inflation prior to drain removal.

Method:

A search of the electronic patient record system was completed looking for discharge summaries containing the terms 'chest' and 'drain'. This identified twenty-two patient episodes between April 2015 and December 2016, and three patients were excluded. Discharge summaries, imaging requests and PACS imaging were reviewed and data collected on patient demographics, chest drain indication, chest imaging, pneumothorax size and follow-up.

Results:

Seventeen patients (89%) had a CXR pre-chest drain insertion. The remaining two patients instead had cross-sectional chest imaging pre-chest drain insertion. Nineteen (100%) patients had a CXR post-chest drain insertion. Seventeen patients (89%) had CXR demonstration of re-inflation pre-chest drain removal. Fifteen had a separate pre-chest drain removal CXR taken with two having demonstration of re-inflation on their post-chest drain insertion CXR. Seventeen patients (89%) had a CXR post-chest drain removal, despite there being no absolute indication for this. One patient had eleven CXRs and a chest HRCT. Six patients (32%) had follow-up CXRs although five of these (83%) had pneumothorax resolution on chest imaging prior to discharge.

Conclusion:

Though there is good local adherence to guidelines, too many patients had chest drains removed without demonstration of lung re-inflation. Patients are having unnecessary post-chest drain removal and follow-up CXRs. There is considerable variation in the management of patients with surgical chest drains. We plan to organise local training sessions to improve knowledge and confidence managing patients with surgical chest drains. We plan to re-audit following the implementation of changes.

0115

Management of Acute Kidney Injury in Fractured Neck of Femur Patients:

a closed-loop audit of NICE guidance

Joe Barrett-Lee¹, Jennifer Reynolds¹, Charlotte Somerville¹, Fouad Chaudhry¹, Rajeev Bansal¹

¹*The Dudley Group NHS Foundation Trust, Dudley, United Kingdom*

Introduction:

Postoperative acute kidney injury (AKI) is common in hip fracture patients, with reported incidence ranging from 16-24%. AKI in this group is associated with longer hospitalisation and higher rates of mortality. In 2013 the National Institute for Health and Care Excellent published guidance on the management of AKI. The aim of this study was to audit management of AKI against this guidance in hip fracture patients at a UK District General Hospital.

Methods:

All patients receiving operative treatment for acute hip fractures in July 2016 were retrospectively screened for AKI in the first seven days postoperatively and included. Pathological and conservatively managed fractures were excluded. Case records were reviewed to obtain incidence and severity of AKI, risk factors, and management. Changes implemented included; urinary catheterisation on admission and 24 hours postoperatively, strict fluid balance monitoring with 4-hourly urine output for first 48-hours postoperatively, maintenance intravenous fluids during the nil by mouth preoperative period and 24-48 hours postoperatively, and education of junior and nursing staff. Re-audit was undertaken in April 2017.

Results:

50 patients were surgically managed for hip fractures in July 2016, 20 (40%) developed an AKI. 75%, 20%, and 5% of AKIs were stage 1, 2, and 3, respectively. 55% of AKIs developed on day 1 postoperatively and a further 25% on day 2, with the remainder occurring up to day 6. Half of patients saw a 25 – 50% reduction in systolic blood pressure between admission and the first 24 hours postoperatively. Following implementation of changes, there was a 23% reduction in AKI incidence in April 2017, with 41 patients surgically managed for hip fractures and 7 postoperative AKIs. Other areas of improvement included having systems in place to recognise oliguria, fluid balance monitoring, and fluid prescription. Hypotension remained problematic on re-audit with 4/7 AKI patients having a reduction in systolic blood pressure greater than 25%.

Conclusions:

This review demonstrates that the incidence of post-operative AKI following hip fracture was high, however in the main this was low severity and resolved quickly. Simple interventions to improve fluid management resulted in a considerable reduction in AKI incidence.

0116

The impact of age on major orthopaedic trauma in the United Kingdom

A themed analysis of the Trauma Audit Research Network Database

Jonathan Herron, Richard Hutchinson, Fiona Lecky, Antoinette Edwards, Omar Bouamra, Will Eardley

Aims:

To contrast the early management and mortality of older patients with orthopaedic trauma to that of a younger population.

Methods:

The Trauma Audit and Research Network database was interrogated to identify cases admitted between April 2012 and June 2015. Injury distribution and severity, interventions, comorbidity, critical care episodes and mortality were recorded.

Results:

Of 142,765 adults with major trauma, 72,942 (51.09 %) had long bone or pelvic fractures and 45.81% of these were >64 years old. Road traffic collision was commonest mechanism in the young (40.4%) and in older people, fall from standing height (80.4%). Mortality in older patients with fractures is greater (6.8 vs 2.5%), although critical care episodes are more common in the young (18.2 vs 9.7%). Orthopaedics is the commonest admitting and operating speciality and in older people, fracture surgery accounted for 82.1% of procedures.

Conclusion:

Orthopaedic trauma in older people is associated with a mortality that is significantly greater than for similar fractures in the young. Older people are less likely to have care beyond ward level and are often managed in isolation by orthopaedic surgeons. This highlights the need for a review of admission pathways and shared orthogeriatric care in this growing population.

0117

Ipsilateral Peroneal Compartment Syndrome- It can easily be missed leading to long term morbidity

Sitaram Giri, Yaganti Saidaiah, Mahesh Thibbaiah

Background:

Compartment syndrome in the lower limb is commonly seen in the anterior compartment or multiple compartments following an acute traumatic event or chronic repetitive trauma.

Case Report:

39 year female presented to the casualty in the evening with a history of progressive leg pain following a 15 miles charity walk in the same afternoon. She appeared to be in significant pain. She had moderate swelling of the leg with diffuse tenderness and a negative passive stretch. A definitive diagnosis could not be made but in view of pain she was admitted for close observation. On re-examination in the morning her leg was slightly more swollen and passive stretch was positive. Decision was made to decompress and she was taken to theatre within the next 4 hours. Per-operatively there was partial devitalization of the peroneal compartment but the rest of the compartment was normal. Devitalised muscles were debrided and the wound left open. She was taken back to theatre in 48 hours for closure of the wound. At 4 months follow up she had grade 4 power in ankle eversion and persistent sensory loss in the superficial peroneal nerve distribution.

Discussion:

Absence of definite trauma and lack of gross swelling can lead to delay in diagnosis of isolated peroneal compartment syndrome. A high index of suspicion is essential. Although previous reports mention good outcome even when decompression was performed up to 24 hours but we had an unfavourable outcome even after a delay of 14 hours from the onset.

0118

Divergent Elbow Dislocation with Ipsilateral Radial Shaft Fracture- Uncommon Complex Injury but Good Clinical Outcome.

Sitaram Giri, Mahesh Thibaiah, Serajdin Ajnin

Background:

Elbow is anatomically one of the most inherently unstable joint. Elbow dislocations are usually convergent type where the radius and ulna move as a single unit. Divergent dislocations are uncommon injuries. Fractures associated with elbow dislocations usually occur around the elbow and involve the coronoid, radial head or the olecranon. Ipsilateral forearm fractures with divergent elbow dislocations are extremely uncommon and are mostly reported in children.

Case Report:

We present a case of 31 year male who presented to casualty with a deformed elbow following a fall from push bike. Initial radiographs revealed a divergent elbow dislocation with ipsilateral displaced mid-shaft radius fracture. There was no distal neurovascular deficit. The dislocation was promptly reduced in the casualty under sedation. He went to the operation theatre the next morning. Following an internal fixation of the radial shaft fracture, EUA did not reveal any elbow instability. He was immobilised in plaster cast for 4 weeks followed by ROM exercises. At the last follow up at 4 months he did not have any residual elbow symptoms, had returned back to full time work. He had a ROM from 20-120 degrees and good supination and pronation. X-rays showed some calcification in anterior capsule.

Previous reports of divergent dislocation with ipsilateral forearm fractures suggest stabilization of proximal radio-ulnar joint. Prompt reduction of the dislocation followed by later fixation of the forearm fractures results in good radiological and functional outcome. Although capsular calcification does seem to occur, but has no effect on the functional outcome.

0084

Home, No Follow-up: Are we ignoring the significance of unplanned clinic attendances, re-admission and mortality in the first 12 months post-operatively in over 65 year old hip fracture patients treated with DHS fixation?

Jamila Karim, Jennifer Reynolds, Omer Salar, Edward Davis, Sohail Quraishi, Mushtaq Ahmed

Introduction:

80,000 hip fractures are admitted to UK hospitals annually. Little is known about 12-month post-operative re-admission, unplanned clinic attendance and mortality. We aimed to determine if there is a role for routine follow-up for certain strata of our hip fracture population treated by Dynamic Hip Screw (DHS) Fixation based on unplanned attendance to clinics and whether it is possible to stratify risk of re-admission, re-operation and mortality within the first 12 months post-operatively.

Methods:

A prospectively collated single centre database of patients over 65 years old undergoing DHS fixation for traumatic hip fractures between August 2007 and February 2011 was retrospectively analysed. Pre-operative data regarding patient demographics, mobility, residence and co-morbidities was collected. Post-operative (1, 4, 12 months) place of residence, mobility status, unplanned attendance to an orthopaedic clinic with symptoms relating to the respective limb, re-admission to hospital and mortality was collated. Regression analysis was performed (SPSS, IBM Corporation, version 24). $P < 0.05$ was considered significant.

Results:

648 consecutive patients were identified. Increasing age ($p = 0.006$) and presence of pressure sores during initial admission ($p = 0.0019$) increased the frequency of unplanned clinic attendance. No significant predictors of re-admission to hospital were found. Overall mortality was related to increasing age ($p = 0.042$), male gender ($p = 0.004$) and ASA grade ($p = 0.009$).

Conclusion:

There is no current vogue to follow-up such patients in this post-operative period. We have identified variables that should be sought prior to discharge in this population.

Implications:

Formal follow-up/ rehabilitation programs could be offered for those at risk of unplanned clinic attendance. Post-operative orthogeriatric and/or general practitioner follow-up may reduce 12-month mortality in those at risk but validated scoring and risk stratification systems are required to fully justify this.

0087

Evaluation of the Initial management of potential C-Spine injuries.

Chiraag Pandya¹, Richard Gadd¹, Antony Louis Rex Michael¹

¹Sheffield Teaching Hospitals NHS Foundation trust, Sheffield, United Kingdom

Introduction:

NICE guidance for the management of potential C-Spine injuries was updated in February 2016. New guidance states that all potential C-Spine injuries should be assessed using the Canadian C Spine rules and those that warrant imaging should receive a CT scan. This is a change from previous guidance where low risk patients were managed with X-ray, new guidance recommends CT C spine be the imaging of choice.

Aims:

To undertake a clinical audit to evaluate the current practice at the 'Northern General Hospital Emergency Department, Sheffield' and whether current practice complies with new guidance

Methods:

Retrospective analysis of patients who were seen in the Emergency department in July 2016 who were coded for neck pain was undertaken. Online notes and ICE records were reviewed, with those who did not attend due to a traumatic neck injury being removed. The history taken by the Emergency department clinician was reviewed to assess whether the Canadian C spine rules were applied and whether the appropriate management was undertaken.

Trauma calls were not included in this as they are coded differently and assessed via ATLS protocol.

Results:

98 patients were identified, 12 patients fulfilled the criteria for imaging.

50% received the correct imaging.

1 patient fulfilled criteria for imaging but didn't receive any.

3 patients didn't fulfil the criteria for imaging but received imaging.

Conclusions:

The Canadian C Spine rules were most likely used but their use wasn't documented.

50% of those who fulfilled the criteria for imaging didn't receive the correct initial imaging.

Recommendations:

Implementation of an algorithm to ensure correct use of the Canadian C-Spine rules and to aid assessment at triage.

Increased awareness from radiology and Emergency department senior clinicians.

0089

Visual Screening in Hip Fracture Patients: Blindingly Obvious?

Mandeep Bedi, Omer Salar, Fizza Mushtaq, Sairam Kumar, Garikapati Rao, Carl Meyer, David Ford

Introduction:

Visual Impairment (VI) is a significant factor in falls and fracture aetiology. The national institute of clinical excellence (NICE) recommends visual screening in all hip fracture patients. We aimed to describe the prevalence of ocular pathology in our cohort and thus answer; is visual screening in hip fracture patients worthwhile?

Methods:

Prospective ophthalmic screening was performed on consecutive patients admitted between November 2014 and June 2015 who met inclusion criteria. Visual assessment included acuity, fundal examination, ocular pressures and optical coherence tomography (OCT). Index of Multiple Deprivation (IMD) and Health and Disability Indices were collated and statistical comparison made to regional data using unpaired t-tests (SPSS version 24 (IBM Corp)). A p value <0.05 was considered significant.

Results:

48 patients underwent visual screening and according to NICE criteria, 90 (95%) eyes had no, 3 eyes (3%) moderate and 1 eye (1%) severe VI. Lens examination revealed 43 eyes (45%) either normal or pseudophakic, 6 (6%) previously undiagnosed significant cataracts and 41 (43%) previously undiagnosed early cataracts requiring monitoring. 5 (5%) patients on OCT scanning had previously unidentified significant pathology. Our study population showed a significantly higher IMD (less deprived) and Health and Disability (HD) indices compared to the controls. ($p < 0.0001$, $p = 0.0002$, respectively).

Conclusion:

11% required treatment and a further 43% required active monitoring of previously undiagnosed conditions despite 42 (88%) having pre-existing regular outpatient care and high IMD/HD indices. In populations with lower uptake of outpatient services, undiagnosed prevalence may be higher; thus we support current NICE screening recommendation

0079

Should Wires for Fixation of Lateral Humeral Condyle Fractures in Children be Buried or Left Exposed?

Alistair Jones, Roshan Raghavan, Amitabh Dwyer

Background:

Lateral condyle fractures in children are usually treated with open reduction and internal fixation if there is an element of displacement. When they are treated with wires they are either left buried or left exposed. By burying them it's believed that they can be left longer for better union but by leaving them unburied it needs to be removed earlier. There is no consensus as to whether wire burial is preferable or not.

Purpose:

To systematically review and critically appraise the literature that investigates, studies that compare Humeral lateral condyle fixation in children with buried wires versus exposed wires.

Study Design:

Systematic review

Methods:

A systematic review of literature was done using online database EMBASE, Pubmed, Medline, CINAHL and Cochrane database. Studies were only included if they were comparing Lateral condyle fracture fixation in children with wires left buried versus exposed.

Results:

Four studies were identified that compared results of lateral condyle fixation in children with wires left buried to those left exposed and three of them found leaving the pins exposed was a safe option and burying the wires did not have any statistically significant advantage over exposed wires.

Conclusion: Exposed wires are a safe and an economical option while fixing Lateral humeral condyle fixation in children.

0091

Using the Leap Motion hand gesture sensor for wrist fracture rehabilitation: A feasibility study

Tamsyn Clark¹, Diar Karim², Afia Masood³, Rebecca Kearney⁴, Andrew Metcalfe⁴, Mark Elliott³

¹*Oxford University Hospitals NHS Trust, Oxford, United Kingdom* ²*School of Psychology, University of Birmingham, Birmingham, United Kingdom* ³*Institute of Digital Healthcare, University of Warwick, Coventry, United Kingdom* ⁴*Clinical Trials Unit, University of Warwick, Coventry, United Kingdom*

Introduction:

Following immobilisation of distal wrist fractures, physiotherapy aims to regain range of motion, strength and functional activity. The success of this is dependent on patient compliance. At present there is no way of monitoring this.

The Leap Motion Controller (LM) (Leap Motion, Inc., CA, USA) is an infrared depth sensor developed as a means of hand gesture recognition. The device may provide a means of monitoring range of motion exercises employed following wrist fracture. However, no study has evaluated LM in this context.

Aim:

This feasibility study aims to investigate whether the LM device could provide an accurate measure of peak angle (range of motion) and repetition count of the standard exercises used in rehabilitation following a wrist fracture.

Methods:

Participants performed pairs of wrist movements (flexion and extension, pronation and supination, radial and ulnar deviation), which were synchronously measured using LM and Polhemus Liberty (Polhemus, Inc., VM, USA) devices. The latter is a high accuracy, magnetic motion capture system used as our ground truth for comparison. Frequency and peak angle were measured with a custom built algorithm. Results from the devices were analysed using paired t-tests.

Results:

Eleven healthy individuals performed 50 repetitions of each movement. Frequency and mean peak angle measures recorded by LM closely matched all those recorded by the Polhemus Liberty ($p > 0.05$), except for pronation where there was a significant difference between the two systems with LM underestimating peak angle.

Conclusions:

Feasibility data indicate that the low-cost LM sensor adequately measures frequency and peak angle of most flexion-extension and radial-ulnar deviation movements used in wrist fracture rehabilitation. Therefore the device has the potential for use as a home-based strategy to provide the patient and clinician with feedback on exercise performance and improve adherence to physiotherapy.

0096

Compliance with NICE Guidelines in CT cervical spine in trauma

Joseph Boktor¹, Ian Pallister²

¹Morrison Hospital, Swansea, United Kingdom ²Morrison Hospital, Swansea, United Kingdom

Background Context:

According to NICE Guidelines, Trauma patients must have CT cervical spine scan within 1 hour in the following conditions: intubation, GCS <13, Age >65, Dangerous Mechanism of injury: Fall from height >1 m, 5 stairs or High-speed motor accident and Poly-trauma.

Purpose:

Check our current practice compliance with NICE Guidelines.

Study Design:

Retrospective observational study.

Patients & Methods:

All trauma call patients from January 2013 till December 2015 (24 Months). looking for patients who had CT Head with and without CT spine. we excluded patients who had full body CT and patient who didnot have CT. we also looked for intubated and self ventilated patients.

Outcome Measures:

Comparing practice with guidelines . in that condition, expecting 100% compliance

Results:

34 patients had CT Head. 27 of them had CT cervical spine (80%). 4 of them were intubated (which is an absolute indication for CT cervical spine) and 3 patients had Fall from height > 1meter or High-speed motor accident.

Conclusions:

our compliance with NICE guidelines is 80%. All patients should have CT.

Recommendations:

Presenting audit findings at the next local meeting for Radiographers, General A&E meeting. Poster of the NICE Guidelines for Cervical Spine Imaging displayed in Radiology room, A&E , T&O department. Re-audit in 1 year.

0097

A retrospective study of the mortality of hip fracture patients at Airedale Hospital in 2016

Neelam Patel, Alex Witek, Peter Leggetter

Airedale hospital orthopaedic department sits as an outlier in the National Hip Fracture Database with an average time to theatre better than the national average, but an average 30 day mortality which is much higher. This study was undertaken to look into this and ascertain why this is the case and whether assumptions that the hospital deals with an older, more frail population than the national average are true.

This study looked at all the hip fractures admitted to Airedale in 2016. It found 37 patients who died within 30 days of their operation, most commonly between 11 and 15 days post operatively, and the most frequent cause of death being pneumonia. These patient deaths were then investigated individually looking at premorbid mobility status, nutritional status, ASA grade, and more specifically an age adjusted Charleson score was then calculated for each patient. Taking into account age and comorbidities, this found 35 patients with a score greater than 5, equating to a predicted 10 year survival of, at most, 21%. Comparisons were then made to national data, demonstrating that Airedale deals with exactly the same proportion of 80+ year old's with hip fractures, and in fact less ASA grade 4 patients than the national average. Further analysis of the national data demonstrated no correlation between admission to an orthopaedic ward within 4 hours, adherence to the best practice tariff and acute length of stay when comparing each to 30 day mortality.

This study has revealed locally that assumptions about our population are unfounded, there was no 'weekend effect' apparent and that one third of deaths are due to pneumonia post operatively, something that may hopefully be improved upon now the department are aware of it. It also showed no correlations between certain factors and the in hospital management of patients and how they fared, maybe forming an argument that factors such as time from hospital admission to admission to an orthopaedic ward are important, but attention should be brought back to the basics of medical care peri-operatively in optimising patients for theatre and then treating them after.

0099

The Adapted Clavien-Dindo in Trauma (ACDiT) score to aid with morbidity appraisal as part of a robust clinical governance mechanism

Alastair Beaven¹, David Naumann¹, Emma Toman¹, Iain Smith, Keith Porter, Mark Midwinter

¹National Institute for Health Research, Surgical Reconstruction and Microbiology Research Centre, Queen Elizabeth Hospital, Birmingham, UK, birmingham, United Kingdom

Background:

Health care governance demands robust mechanisms of identifying and discussing patient complications. This is often performed by use of mortality and morbidity (M&M) meetings. Mortality is easy to quantify, whereas morbidity is not. We have devised a morbidity score for trauma based on the Clavien-Dindo complication scale originally intended for elective surgery. The adapted Clavien-Dindo in trauma (ACDiT) score can be used to provide meaningful non-mortality data for trauma complications.

Methods:

The ACDiT score was adapted from the Clavien-Dindo system after consensus review between an international collaboration of trauma specialists in Birmingham (England, UK), Glasgow (Scotland, UK) and Houston (Texas, USA). A combined international multi-centre observational study was undertaken to apply the ACDiT scale to 484 trauma patients at three university teaching hospitals. These included both intensive care (ICU) and non-ICU managed patients, and included patients managed operatively or non-operatively. Complications were defined as any unexpected deviation from initial proposed treatment course. They were identified from manual and electronic patient notes, handover sheets, as well as multi-disciplinary team and M&M meetings. Complication grades were compared to hospital-free and ICU-free days as other outcome measures of patient morbidity.

As a separate exercise, a patient and public involvement (PPI) group of trauma survivors and their relatives was consulted to determine whether the score's developers shared the same ideas concerning complication severity as the group.

Results:

217/484 (44.8%) patients experienced complications, of whom 61/217 (28.1%) died (Grade V). The remainder consisted of grades I (n=20), II (n=60), III (n=24) and IV (n=52). There was a significant association between higher ACDiT grade category and lower number of hospital-free and ICU-free days ($p<0.01$). Eighty-eight patients with complications did not require surgery, validating the score's utility for non-operative management. The PPI group's opinions on complication severity strongly matched the authors' ($r = -0.975$; $p<0.0001$)

Conclusions:

The ACDiT scale can be used to grade the severity of post-trauma complications in patients managed both operatively and non-operatively, amongst different clinical levels of care, and with parity between doctors' and lay-persons' expectation of complication severity. It provides clinically meaningful data for M&M meetings and other quality improvement exercises.

0125

Fractures in Congenital Insensitivity to Pain with Anhidrosis - **Case analysis**

Hyeonwook Ahn¹, Sung-Taek Jung¹, Tae-Min Lee¹, Chan-Jin Park¹

¹*Chonnam National University Hospital, Kwang-ju, The Republic Of Korea*

Objectives:

Congenital insensitivity to pain with anhidrosis (CIPA) is rare autosomal recessive disease that is caused by mutations in the neurotrophic tyrosine receptor kinase 1 gene. This disorder is characterised by loss of pain sensation, anhidrosis, mental retardation and other many orthopedic problems including fractures and charcot arthropathies. The objectives of this study are to review the 10 patients with CIPA and evaluate treatment outcome.

Materials and Methods:

From March 1998 to December 2016, ten patients with CIPA were followed for an average 12.1 years (range, 2.2-16.9 years). Mean age at the diagnosis was 6.3 years (range, 0.4-22.1 years). Confirmed diagnosis was made by typical clinical manifestations and sural nerve biopsy. In addition, we assessed physical characteristics, birth history, electrophysiological studies, developmental abnormalities. In terms of orthopedic problems, we analyzed initial manifestation, count of fractures and charcot arthropathies, location of occurrence, treatment methods, and complications.

Results:

In 10 CIPA patients, 35 fractures were developed during follow-up period. Twenty six fractures were treated by conservative methods, eight cases received operation through various fixation methods. Long bone diaphyseal fractures were well healed, but physeal injuries or intraarticular fractures were progressed to Charcot arthropathies. Charcot arthropathies were shown in 29 joints of 10 patients, orthosis is applied for lower extremity in 5 patients. Limb length discrepancy, osteomyelitis, acetabular dysplasia and hip dislocationas were observed as other orthopedic complications.

Conclusion:

Fractures and Charcot arthropathies are main orthopedic problems in CIPA patients. Conservative treatment or operative treatment should be decided through comprehensive treatment plan.

0127

Rates of operative intervention for proximal humeral fractures at a major trauma centre. Has the PROFHER trial changed our practice?

Mark Gaden¹, John Geoghegan¹

¹Nottingham University Hospitals NHS Trust, Nottingham, United Kingdom

Background:

Fractures of the proximal humerus are common, accounting for 6% of fractures in adults and have significant associated morbidity. Decision making when it comes to treating these injuries can be complex and is evolving. The PROFHER study published in March 2015 found no significant advantage to surgical intervention for displaced proximal humeral fractures involving the surgical neck.

Aim:

We aimed to investigate whether these findings and evolving attitudes toward surgical intervention have changed practice in a major trauma centre.

Method:

We retrospectively reviewed all acute, displaced proximal humeral fractures involving the surgical neck treated operatively in our unit over the six year period between 2009 and 2016. Fractures not involving the neck, open fractures and fracture dislocations were excluded as were segmental injuries. Radiographs were reviewed for each patient in order to classify the fracture pattern and confirm the treatment modality.

Results:

293 fractures met the inclusion criteria and were reviewed. Radiographic assessment using the Neer classification identified 15 one-part fractures, 150 two-part fractures and 128 three- or four-part fractures. We observed a peak in 20011 with 55 fractures being treated operatively. The results of the PROFHER trial were presented at the BESS annual congress in June 2014 following which we have noted a decline in operative intervention to 34 patients being treated operatively in each of 2014 and 2015. 26 fractures were treated operatively in the six months prior to the dissemination of the PROFHER findings compared with 16 in the six months after the study was published.

Treatment modalities have followed a similar trend with the notable exception of reverse shoulder arthroplasty which has been used with increasing frequency.

Conclusion:

We have noted a decline in operative intervention for displaced proximal humeral fractures involving the surgical neck following the PROFHER trial as well as an evolution of treatment strategies.

0128

A retrospective review of acute scaphoid fracture fixation

Richard Stevens¹, Kate Bennett-Brown², Meg Birks¹, Stephen Bostock¹

¹Northen General Hospital, Sheffield, United Kingdom ²University of Sheffield, Sheffield, United Kingdom

Introduction:

Scaphoid fractures are the most common carpal bone fracture. While the majority will unite in a cast, there is an increased risk of developing AVN & secondary arthritis. Selecting which fractures are going to go on to non-union remains difficult, but acute fixation is commonly performed in those felt to be at risk. We performed a retrospective review of our experience with acute fixation.

Methods:

148 patients over a 9 year period were identified as having had scaphoid fractures surgically treated within 6 weeks of injury. Demographics, radiological parameters, intra-operative details & post-operative factors were recorded. Rate of union & time to union were calculated. Statistical analysis was performed to see if any factors significantly affected these or the complication rate.

Results:

Overall union rate was 86% with a mean time to union of 84 days. Occupation ($p=0.04$) & Age ($p=0.04$) had a statistically significant effect on union rate, with more non-unions in manual workers & younger patients. Post-op immobilisation ($p=0.0005$), occupation ($p=0.01$) & approach ($p=0.037$) all significantly affected time to union. No post-operative immobilisation sped up the time to union, as did being in full-time education or using a percutaneous volar approach. Overall complication rate was 46%, with residual stiffness being the most common (27% of patients).

Discussion:

Our experience matches previously published data with a similar union rate & time, not significantly different to treatment in cast. Fixation offers quicker union times if it can be performed through a percutaneous volar approach & no cast is used post-operatively, but is not without risk of complications.

0130

The epidemiology and morphology of tibial diaphyseal fractures presenting to a major trauma centre in the UK.

Francois Prinsloo, Mathew Prime, Shehan Hettiaratchy

Introduction:

Tibial diaphyseal fractures (TF) are the commonest long bone fracture in the UK and account for 40% of all open fractures. This injury most commonly affects men as a result of high-energy trauma. There is however a second peak of incidence in older women following low-energy mechanisms. The establishment of major trauma centres (MTC) in 2012 has impacted upon the presentation and management of these injuries: particularly open injuries, which often require an Ortho-Plastic input for their management. Management following TF is often complex and patients are disabled by psychological illness and pain.

Methods:

All patient admissions to Imperial College Healthcare NHS Trust between 01/01/2016 – 31/12/2016 were evaluated. TF were identified using clinical coordination system eTrauma. Injuries were categorized using the AO classification; data was analysed using SPSS.

Results:

A total of 130 patients were identified, 73% were male and there was a mean age of 43 years. There was a peak of incidence between 30-35 years for males, and between 55-60 years for females reflecting the sub-groups of this injury. High-energy trauma was responsible for 60% of injuries. AO class A fractures were most common and 43% of all injuries were open fractures. Open fractures carried a mean age of 41 in men compared to 57 in females. Surgery was performed in 95% of cases, 61% received Intramedullary nailing and 31% received Taylor spatial frames.

Discussion:

This study demonstrated similar patient demographics and injury morphology to previous data. TF in males was due to high-energy trauma whereas in females low-energy mechanisms were more common. The majority of TF were following high-energy trauma such as road traffic accidents and injuries sustained at the workplace, for example at construction sites. Thus men are more at risk due to higher participation in high-risk activities. The higher frequency of low-energy TF in females and also the higher average age of open fractures is likely due to musculoskeletal conditions, such as osteoporosis, where severe injuries occur following comparatively trivial events and so healthcare leaders should be prepared for the potential for increased volumes of TF in the ageing population.

0131

Closed loop audit: Use of Consent Form 4 for in-patients requiring Operative Treatment for a Fractured Neck of Femur

Alex Witek, Neelam Patel, Steve Ross-Thriepland, Richard Pilling

Those attending hospital with a fractured neck of femur following trauma are generally elderly, infirm and sometimes have co-morbidities such as dementia affecting their capacity for sound decision making. When assessed as lacking capacity, guided by GMC and MCA 2005 guidelines, decisions have to be made in the best interests of the patient, in these cases to proceed to theatre to fix the fracture, and so a consent form 4 is completed demonstrating this and that steps have been taken to discuss everything with the next of kin (NOK). This audit was undertaken to ascertain if patients are being discussed with their NOK, with the standard being to have 100% of cases discussed or at least attempted to be discussed with those close to the patient.

Retrospective audit, taking all fractured neck of femur patients between January and May 2016, with an Abbreviated Mental Test Score of less than or equal to 8, requiring a consent form 4 for their operation. Patient notes were retrieved and individually reviewed, finding 28 patients with 25 of those having a correctly completed form 4 (90%). Measures were taken to, educate staff, include teaching in departmental induction, and for permanent staff to take the lead. This was re-audited using the same parameters from October 2016 to February 2017 finding 27 patients with 24 having a correctly completed form 4 (88.9%).

Results showed that despite certain measures and recommendations, the results got worse. The main factors contributing to this were regularly rotating staff members, poor documentation and time pressures. With further education, the first two factors can hopefully be improved. A further intervention proposed is to alter the consent form 4, providing tick boxes to ensure doctors proceed through the appropriate steps and make every effort to keep the patients family involved.

This is an important yet difficult aspect of providing care to vulnerable adults when admitted due to trauma where decisions need to be, at times, made and acted upon quickly. However, we should all be making every effort to make patients families aware of events and our plan for their treatment in hospital.

0135

THR vs Hemiarthroplasty in the management of intracapsular NOF fracture

Duaa Guma, Yathin Das

Background:

Neck of femur fractures are common injuries sustained by older patients who are both more likely to have unsteadiness of gait and reduced bone mineral density, predisposing to fracture.

Aim:

To assess if patients admitted with intracapsular NOF fracture to North Devon District hospital were receiving care compliant with NICE guidelines, and to compare the outcome of THR and Hemiarthroplasty in patients with intracapsular NOF fracture.

Methodology:

A retrospective audit of data from 2012 – 2015. Data was collected from patient's notes and discharge summary.

Results:

54 patients were matching with NICE guidelines criteria for THR which are: independent walking, medical fitness and no cognitive impairment. 72% of them underwent THR. The length of stay in hospital was less after THR, with average of 8 days, while the average was 12 days after Hemiarthroplasty. 93.4% of patients after THR were discharged home, and none of them required admission to rehabilitation unit. While 12.8% of patients after Hemiarthroplasty needed rehabilitation unit after discharge. With follow up at 1 month and 4 months post operatively, it was found that patients who had THR had better mobility, 20% of them were freely mobile after 4 months, but only 10% of patients after hemiarthroplasty were freely mobile. The mortality rate in the first 3 months was higher after Hemiarthroplasty, as it was 5% compared to 0% after THR.

Conclusion:

Strict compliance with NICE guidelines was not achieved. THR is better than Hemiarthroplasty in terms of length of stay, post-operative mobility and mortality rate.

0018

Improving trauma surgery outcomes - just a 'TAD'

Michael Grant¹, Anil Dhadwal¹, Matt Philpott¹, Cefin Barton¹, David Machin¹, Nick Boyce Cam¹

¹*Leighton Hospital, Crewe, United Kingdom*

Background:

Internal fixation of hip fractures using a compression/dynamic hip screw (CHS/DHS) is a common orthopaedic procedure. The importance of accuracy of reduction and the proximity of the tip of the screw to the apex of the femoral head relating to success of this treatment option is well documented. Revision of failed internal fixation of proximal femoral fractures is known to be associated with increased risks.

Objective:

To assess whether the introduction of a daily post-operative review meeting would lead to an improvement in the accuracy of the Tip-apex-distance (TAD) during CHS/DHS fixation at our institution.

Design & Methods:

Data was collected prospectively on all patients with a fractured neck of femur who had internal fixation with a CHS/DHS from August 2015. After 12 months a daily post-operative review meeting was introduced and further data collected. Intra-operative TAD was measured and verified by 3 reviewers. Secondary outcome data included implant failure, duration of surgery, radiation exposure intra-operatively and post-operative reduction in Haemoglobin. Data was analysed using SPSS.

Results:

A total of 115 patients to date underwent CHS/DHS fixation at our institution, 80 prior to the introduction of the intervention (group 1). Mean TAD for group 1 was 18.07 (sd 5.67) and mean TAD for group 2 was 13.68 (sd 4.74), $p < 0.01$. The mean drop in Hb for group 1 vs group 2 was 21.28 (sd 15.65) vs 19.78 (sd 14.24) $p = 0.62$. There was no statistically significant distance in mortality rates (group 1 = 20% vs group 2 = 12.5%), $p = 0.423$.

Conclusions:

Our results indicate that the introduction of a daily, consultant led post-op radiograph review meeting has resulted in an improvement of the TAD, without adverse effects on the patients. We believe that introducing a regular systematic peer review system within orthopaedic institutions can have a positive impact on standards of trauma surgery and patient outcomes.

0019

Penetrating Gluteal Injury in Hemodynamically Unstable Patient; how to manage?

Yaser Selim

Penetrating gluteal injuries are life-threatening; yet few publications on this topic have been reported in the Anglo-American literature in the past 15 years. Data from a prospective study demonstrate that major life threatening Visceral and vascular injuries occur in 29 % of patients who sustained GSW. The rate of this kind of injuries requiring surgical intervention has been reported to be 27% to 49%.¹ We report a patient who presented with gunshot wound injury to the right buttock with massive bleeding and late presentation which added to the severity of hypovolemia .gunshot involves the upper part of the gluteal region continuous bleeding in spite of using manual compression and gauze packing .after a trial of local exploration by an orthopedic surgeon , general surgeon had been called for opinion. Immediate laparotomy was done with ligation of the internal iliac artery. Patient's vital status improved and patient survived

In conclusion: internal iliac artery ligation can be a life-saving procedure in extensive gunshot injuries to the buttock, with severe bleeding and hemodynamic instability in absence of angiographic facility,

Key words: penetrating injury, buttock, gunshot

0050

How effective is consent training for new orthopaedic trainees?

Robert Jordan, Imran Ahmed, Nicholas Smith, Jayne Ward

Introduction:

The consent process forms a crucial part of surgical care and the ability to gain valid consent ensures the patient is suitably informed of the risks and benefits of the procedure. The recent Montgomery ruling has further highlighted the need to gain adequate consent. In addition, new surgical trainees may feel uncomfortable and underprepared for the task of consenting. The aim of this study was to assess the competency and self-rated ability of new orthopaedic trainees to consent for common trauma operations.

Methods:

Initially both an audit analysing the quality of consent against British Orthopaedic Association and General Medical Council guidelines was performed. Secondly, new orthopaedic trainees were asked to complete a questionnaire assessing their knowledge of the consent process and guidelines, training they had previously received and how comfortable they being asked to consent patients. Subsequently specific consent training targeted at these junior surgeons was carried out before the questionnaires and audit were repeated.

Results:

Significant improvements were seen in quality of the written consent forms after training. The questionnaire revealed that 92% found the training beneficial and the proportion who felt uncomfortable consenting reduced from 45% to 12%. The understanding of GMC guidance and Montgomery ruling increased from 36% and 9% to 84% and 76% respectively.

Conclusion:

The consent process is poorly understood and executed by new surgical trainees. Targeted training has been shown to improve their knowledge, performance and confidence in performing this task.

0051

Is the Mirels' scoring system for impending pathological fractures reproducible?

Robert Jordan, Imran Ahmed, Gurdip Chahal, Peter Wall

Introduction:

Mirels' scoring system is widely used for predicting the risk of pathological fracture of metastatic long bone lesions and hence the need for prophylactic fixation. This study aimed to assess this scoring system and analyse whether it is reproducible in a separate population.

Methods:

A retrospective review was performed of all patients undergoing a bone scan to assess metastatic disease between February 2011 to February 2016 at one centre. Patients were included if the scan identified a long bone metastases and simultaneous plain radiographs and clinical letters were available for review. Each lesion was scored using Mirels' scoring system independently by two authors. Patients were followed up for one year to assess if a pathological fracture had occurred. The proportion of pathological fractures for each score was then calculated.

Results:

During the study period 50 patients were identified; 62% male and the mean age was 70 years (range 45 to 91). The commonest primary tumours were prostate (50%) and breast (32%). The most frequent location for deposits were proximal femur (62%), femur (18%) and proximal humerus (14%). Overall 18% of patients suffered a pathological fracture with a mean Mirels' score of 9 compared to a score of 6.9 where no fracture occurred. An increasing Mirels' score is associated with an increasing risk of pathological fracture; score of 7 had 14.3% risk and a score of 11 had 100% risk of fracture.

Conclusion:

The Mirels' scoring system has been shown to be reproducible in our population.

0052

A retrospective comparison of total hip replacement and cemented hemiarthroplasty in the management of elderly patients with intracapsular hip fractures

Robert Jordan, Imran Ahmed, Peter Wall, Gurdip Chahal

Introduction:

Hip fractures are common, with 65,000 cases each year in the UK. NICE guidelines state that displaced intracapsular fractures should be managed with either a hemiarthroplasty or total hip replacement (THR). THRs should be offered if the patient is independently mobile outdoors, has normal cognition and is medically fit. This study aimed to compare the length of stay, complications, mobility and discharge destination between the two treatments.

Methods:

All patients undergoing an arthroplasty for a neck of femur fracture between April 2011 and December 2016 were identified from the National Hip Fracture Database. The database and hospital electronic system were used to identify patient demographics, length of stay, mobility, discharge destination and any reoperations.

Results:

During the study period 1224 patients underwent an arthroplasty; 1023 cemented hemiarthroplasties and 201 THRs. The THR group were younger (mean age 72 vs 85 years) and had a higher cognition (AMT 9.8 vs 6.7). The mean length of stay was 6 days shorter following THRs and a higher proportion of patients were discharged to their premorbid accommodation (88.6% vs 72.1%). However, the complication rate was higher following THR (5% vs 3.1%).

Conclusion:

In our series THR was associated with a shorter hospital stay, improved post-operative mobility and return to pre-morbid accommodation. However, there was a higher requirement for reoperation.

0054

Addressing DNACPR (do not attempt cardio-pulmonary resuscitation) in patients with a fractured neck of femur who lack capacity. Challenges to delivering best practice within a legal framework

Daniel Hill¹, Laura Nazar, Matthew Freudmann

¹*East Lancashire Hospitals NHS Trust, Blackburn, United Kingdom*

Nationally half of all deaths occur in hospital, with 94% having a DNACPR order in place at the time of death. Recent court rulings have raised the profile of practices surrounding DNACPR orders where patients lack capacity. Failure to consult with those close to the patient in relation to DNACPR decisions is a breach of respect for private and family life under Article 8 of the Human Rights Act. A recent report found that those close to the patient were not consulted before one out of every five DNACPR orders are placed. We advocate addressing the issue of resuscitation in patients with a fractured neck of femur who are approaching the end of their lives. Where the patient lacks capacity there is a legal duty to consult with those close to the patient where it is practical and appropriate to do so. There must be a convincing and well-evidenced reason to proceed without consultation and the orthopaedic surgeon should exercise extreme caution before doing so.

0055

Skin closure following fractured neck of femur surgery: A survey of orthopaedic surgeon's practices

Daniel Hill¹, Matthew Freudmann, Tim Board

¹East Lancashire Hospitals NHS Trust, Blackburn, United Kingdom

Introduction:

Surgical intervention for patients presenting with a fractured neck of femur is common, however the best method of skin closure remains unclear. The use of metallic skin clips in the closure of hip wounds has been suggested to increase the rate of surgical site infections, however there are few high quality studies evaluating this.

Methods:

We designed a survey to assess surgeons currently preferred skin closure method and their reasons for choosing it. This was sent to 545 consultant orthopaedic surgeons.

Results:

The positive response rate to our survey was 71% (n=370). The survey showed that 44% of surgeons used metallic skin clips, and this was the most common method of closure reported. Hip surgeons were less likely to use metallic skin clips when compared to surgeons with other principal subspecialty practices. Surgeons using clips were most likely to state the rationale for use as convenience, whereas those using non-clip skin closure methods were more likely to cite reduced rates of wound inflammation, discharge, and infection as the rationale for use. Only a small proportion of surgeons indicate that their decisions were evidence based.

Conclusion:

Skin closure following surgery for fractured neck of femur is not consistent amongst surgeons and is not driven by evidence. Greater levels of evidence in this field are required to improve outcomes in this patient group.

0056

Is the management of patients with vertebral column trauma in units lacking onsite spinal services meeting national standards of care?

Daniel Hill¹, Hans Marynissen¹

¹East Lancashire Hospitals NHS Trust, Blackburn, United Kingdom

Aims:

The aim of this study was to describe the provision a spinal service using an electronic referral platform to direct management from an external spinal service, and quantify the time taken to obtain a definitive management plan in the context of time spent under prescribed spinal immobilization.

Materials and Methods:

A retrospective review was performed of all patients during a 12-month period with vertebral column trauma admitted to the acute orthopaedic ward following instruction from a regional spinal service. Data was collected using an electronic referral platform and other electronic hospital systems. We determined; total admission time, delays in obtaining imaging, and delays in obtaining follow up advice. The proposed initial diagnosis, final diagnosis, and final management plan were also determined. We used the BOAST 2 standard stating that *"spinal immobilisation is not recommended for more than 48 hours"* as the standard of care to measure our service against.

Results:

100 patients were admitted following advice from the spinal service. A total of 975 inpatient hospital bed days (mean = 9.8 bed days per patient) were occupied. 117 radiological investigations were requested after the point of referral (47 CT-scans, 37 MRI-scans, and 33 weight bearing radiographs). The mean interval between investigations being requested and then performed was 42 hours 23 minutes (range 8 minutes – 13 days). The mean response time from the spinal service with a definitive management plan following completion of the investigation was 18 hours 54 minutes (range 6 minutes – 7 days). 34% (n=34/100) of patients had a definitive management plan including the definitive mobilisation instructions in place within 48 hours and met the standard of care outlined by BOAST 2 that immobilisation is not recommended for more than 48 hours.

Conclusion:

Current arrangements are placing patients under prescribed immobilisation for longer than is recommended, and delays in obtaining radiological imaging are an important factor, together with the time taken to receive further management plans. Hospitals must ensure that radiological investigations for this subset of patients are carried out on an urgent basis to minimise time spent immobilised.

0058

The use of fast-setting cement in hip hemiarthroplasty significantly reduces operating time without an increase in the rate of complications

Michael Smith¹, Philip Brown¹, Mark Webb¹

¹*Countess of Chester Hospital NHS, Chester, United Kingdom*

Aim:

To determine if it is safe to use fast-setting bone cement in hip hemiarthroplasty.

Method:

Retrospective study of patients having cemented hip hemiarthroplasty for displaced intracapsular neck of femur fractures over a 15 month period.

Results:

Seventy five cases were identified. Fast-setting cement (CMW2, Depuy) was used in 27 cases, and standard-setting cement (Refobacin R, Biomet) was used in 48 cases. Patient demographics were similar across both groups, allowing comparison. Procedures were performed with a standard technique using the same prosthesis (Exeter Trauma Stem, Stryker). The proportion of procedures performed by Consultants (25%) and trainees (75%) was comparable.

Operation duration (Incision to wound closure) was significantly shorter in the fast-setting group with median operation duration 67 minutes compared to 90 minutes for standard setting cement (Normally-distributed data, Unpaired T-Test, 95% CI, $p=0.0001$). Median length of stay was the same in both groups (20 days) as was the incidence of peri-operative cardiac arrest (8%). 30 day mortality was 4% in the fast setting group and 13% in the standard setting group. There was one return to theatre in a standard-set patient with deep infection.

Conclusion:

It is safe to use fast-setting cement in hip hemiarthroplasty. We have observed a significant reduction in operation duration when fast-setting cement is used. This is the first study on this subject in the published literature.

0066

Can We Predict A Second, Contralateral Hip Fracture - A Large Retrospective Cohort Study

Hassaan Sheikh, Adeel Aqil, Fahad Hossain, Babawande Akinbamijo, Harish Kapoor

Background:

A hip fracture carries significant morbidity and mortality - a re-fracture of the contralateral hip carries even higher complications. Most second hip fractures occur within 48 months of the initial fracture. There is relative paucity of literature investigating risk factors associated with a contralateral hip fracture. The aim of this study was to comprehensively analyse all measurable variables that may increase the risk of a contralateral hip fracture.

Methods:

We retrospectively analysed prospectively entered data in the National Hip Fracture Database (NHFD) over a three year period pertaining to a major trauma centre. This identified 1361 consecutive patients with hip fractures. Following exclusions (duplicates, incomplete records and previous instrumentation of the contralateral hip) a total of 1242 patients were recruited. All patient related, surgery related and inpatient variables were collected. The NHFD was searched again to identify patients who had a subsequent contralateral hip fracture in the following two years.

Results:

A total of 66 patients (5.3%) had a contralateral hip fracture in the two years following initial hip fracture. Mean age at first presentation was 81 years and mean time to second fracture was 305 days. Following stepwise univariate and subsequent multivariate logistic regression, the following parameters were significant for predicting re-fracture risk: dementia (risk ratio (RR) 2.163, confidence interval (CI) 1.087-4.304), chest infection (RR 1.907, CI 1.038-3.503), recurrent urinary tract infections (RR 1.858, CI 1.065-3.242) and Charlson co-morbidity score (RR 1.229, CI 1.001-1.510). There was also a non-significant association with worsening walking ability (RR 1.219, CI 0.989-1.504). Discharge destination after initial fracture was not associated with risk of second hip fracture.

Conclusions and implications:

We have identified a number of discrete risk factors that are associated with a short to medium-term risk of contralateral hip fracture that may be useful in screening for patients at risk and appropriate triage for social placement and community support.

0070

Retrospective Analysis of the Outcomes of Open Ankle Fractures

Syed Naqib Ahmed¹, S S Ahmed²

¹University of Brighton, Brighton, United Kingdom ²Health Education Kent Surrey and Sussex, Eastbourne, United Kingdom

Open ankle fractures are complex injuries that present a significant clinical challenge. The incidence in the elderly population is higher, wherein low-energy injury mechanisms commonly lead to their occurrence. Clinical management is well defined for the young, but the complexity of these cases is greater in geriatric patients due to the presence of poor soft tissue quality, osteoporotic bone, and comorbidities that increase morbidity and mortality. Current management of open fractures of the lower limb is guided by the BOAST 4 guidelines.

Aim:

The aim of this project was to recognise any areas for improvement in care of patients with open ankle fractures and develop guidelines specifically tailored to the management of elderly patients.

Methods:

A retrospective, quantitative study of patients with open ankle fractures was conducted. All patients with open ankle fractures from May 2010 - June 2015 were evaluated; these patients were identified using the institutes theatre management system - Bluespир. Data collected included patient demographics, comorbidities, injury characteristics, intraoperative management and outcomes.

Results:

A total of 45 patients met the inclusion criteria for the study. Analysis of wound complication showed that **31.1%** (14/45) patients experienced one or more complications. Out of the 45 patients, **55.6%** (25) were >65 years, classed as elderly subgroup. Of the 14 complications to present in the entire cohort, **71.4%** (10) occurred in the elderly. Additionally, **40%** (10/25) of the patients had plastic surgeons involved in their management with **64%** (16/25) of fractures being Gustilo III. Elderly patients managed with a locking fibular plate developed fewer postoperative complications ($p = 0.029$).

Conclusions:

Although not statistically significant, the current study showed that the majority of patients (55.6%) presenting with open ankle fractures are elderly people. The use of a locking fibular plate in fracture management was advocated for fracture stabilisation when soft tissue cover could be achieved. Overall, complication rates were higher with increasing age, diabetes and severity of fracture. The need of a multi-disciplinary approach to management of patients was recognised. This included the importance of a combined management plan from orthopaedic and plastic surgeons in Level 1 trauma centres.

0073

Distal radius fractures - Time to surgery

KP Schoeman¹, Natasha Morrissey¹

¹*Ashford and St Peter's Hospitals NHS Trust, Chertsey, United Kingdom*

Distal radius fractures are the most common upper limb fracture and represents about 15-20% of fractures in A&E. Injuries are associated with potential short term limb threatening complications and chronic longer term consequences that warrant early assessment and treatment. NICE provides guidance for the management of non-complex fractures (NG38). We audited the time to surgery for distal radius fractures at Ashford and St Peter's Hospitals over the year to September 2016. Results show that only 28% and 38% of patients with intra-articular and extra-articular distal radius fractures respectively, were treated within the NICE recommended period. Recommendations for change included education on the NICE recommendations of management of non-complex fractures, improved communication between A&E and the Trauma teams with prompt referral of intra-articular fractures. The introduction of 'Consultant of the week' facilitated prompt access fracture clinic where management decisions are made. The management of distal radius fractures was re-audited for the three months from December 2006 to February 2017 and results show an increase in the number of patients receiving timely surgery. Almost 75% of patients with intra-articular distal radius fractures received surgery within the guidance period, compared to only 28% previously.

0074

Skyline view of shoulder to visualize intraoperative joint penetration of humeral head screws

Jayadeep J S, Amit Sinha

Introduction:

Internal fixation of any fracture involving the joint or periarticular regions is reduced and plate and screws applied. The screws if not applied with image intensification will penetrate the joint and lead to postoperative morbidity. Our technique of intra operative image intensifier view 'skyline' of the shoulder helps avoid this dreaded complication.

Proximal humerus fractures are internally fixed with plate and screws. Intra operatively radiographs are performed to ascertain the screw penetration of the gleno humeral joint. Commonly these fixations utilize the deltopectoral/Mc Kenzie approaches. Beach chair position is preferred. Radiographs intraoperatively would involve orthogonal views. These views however fail to pick up joint penetration of the head screws.

The image intensifier beam is directed at about 30 degrees to the long axis of the arm. In the sagittal plane tilting of the C arm in varying degrees to make the image parallel to the glenoid and screening in various sagittal planes will show the tip of the screws. Any implants that breach the sub chondral bone of the cartilage of the humeral head is removed and replaced with smaller screws.

Results:

No screw penetration in the surgeons series after employing this technique. The senior surgeon has been employing this technique for the 36 months and has identified all the instances the screws had penetrated the articular cartilage during the surgery and changed the screws.

These were intra articular screws which were not visible on routine intra operative images.

0009

Epidemiological profile and tibia shaft fractures treatment in a Brazilian orthopedic reference center

Alex Lima Santos, Conrado Nitta, Guilherme Boni, Gustavo Tadeu Sanchez, Eric Fernandes de Souza, Fernando Baldy dos Reis

Introduction:

Tibia shaft fractures are the most common long bone fractures and the most common fracture among open fractures. It occurs more frequently in men, in productive age, secondary to traffic accidents.

Objectives:

This study was designed to provide the epidemiological profile and the treatment of the tibia shaft.

Patients and methods:

This was an observational, analytic and prospective study, which took note of all tibia shaft fractures classified as AO-42 admitted in the hospital between January and December of 2016. All eligible cases were evaluated for: Age, mechanism of trauma, gender, type of treatment, associated fractures and period of hospitalization.

Results:

In the time period of the study 60 tibia shaft fractures were admitted in the hospital, 53 of which were eligible for this study. From the eligible cases treated in the hospital, we found more men than women with age between 20 and 39 years old.

Regarding the mechanism of trauma 82% were involved in traffic accidents, in which 56% were from motorcycle accidents and 32% were from being hit by a vehicle or motorcycle.

The stabilization with the external fixation was the most used initial treatment for open fractures, and the conversion for another method of fixation were found in 53% of these cases. On the other hand, the locked intramedullary nail fixation and the non-operative treatment were the preference for the definitive closed fractures in most part of these cases.

Conclusion:

Tibia shaft fracture is a lesion that occurs predominantly in young men victims of motorcycle accidents. About half of all patients presented open fractures and almost 2/3 of them were classified as 42A.

Implications:

The patients are in general young men and involved with motorcycle accidents. The results of this study, in association with the results of other studies, suggest that public policies to make motorcycle drivers aware of the risks of accidents are necessary. On the other hand, it is verified that the lack of intramedullary nailing blocked in the public network makes the doctors resort to other forms of treatment.

0013

A late presentation of massive pelvic insufficiency following external beam radiotherapy (EBRT) for cervical cancer

Thomas Lloyd¹, Nnamdi Obi², Ben Davis²

¹Buckinghamshire Healthcare NHS Trust, Aylesbury, United Kingdom ²Norfolk and Norwich University Hospital, Norwich, United Kingdom

We present a case of massive and progressive, late pelvic insufficiency fractures following EBRT for gynecological malignancy. A 66 year-old lady sustained a pathological fracture through the left iliac wing in a low energy fall. She had previously been treated for cervical carcinoma with microinvasion by Total Abdominal Hysterectomy, followed by EBRT at a later date for a large pelvic soft tissue mass with presumed adjacent bony invasion. Radiographs demonstrated a minimally displaced fracture through a sclerotic left iliac crest, with no involvement of the weight-bearing zone of the joint. The fracture was managed non-operatively for several years due to its isolated nature and concerns regarding potential complications of surgery given the bone and soft tissue quality. The fracture proceeded to an established painful non-union with progressive migration of the iliac wing segment. Follow-up imaging revealed multiple further insufficiency fractures bilaterally at the sacral ala and at the left superior and inferior pubic rami, in the absence of any further trauma. The patient's symptoms deteriorated significantly, leading to immobility and high levels of opioid use. In view of this, posterior pelvic stabilization with bilateral sacroiliac screws and excision of the isolated osteonecrotic left iliac wing segment was performed. Her pain has subsequently resolved, with complete cessation of opioid analgesia, and her mobility has been fully restored.

This case presents an unusual and severe consequence of pelvic radiotherapy for a gynecological malignancy. To our knowledge, no other cases have been documented within the literature with similar progression and management. In particular, excision of the left iliac crest segment at the time of posterior stabilization is a technique not previously described for established nonunion of iliac crest insufficiency fractures. There is little consensus on whether prophylactic operative stabilization of insufficiency fractures is beneficial to patients. In cases where there is concern regarding the nature of the underlying bone and soft tissue architecture, this case illustrates that prophylactic stabilization may prevent further deterioration to gross pelvic instability and patient disability.

0026

Management of Acute Pretibial Haematoma in Elderly Population

Fouad Chaudhry¹, Arshad Khan¹, Simon Wharton¹, Sohail Butt¹

¹*Russells Hall Hospital, Dudley, United Kingdom*

Introduction:

Pretibial haematoma in the elderly population is a growing problem. These patients have complex medical histories. Most of them have various co-morbidities. On top of it, the majority of them are on anticoagulant medications. Due to these factors, minimal trauma results in dire consequences. The management of these patients requires a multidisciplinary approach, including input from Orthopaedics Surgeons, Plastic Surgeons, Geriatricians, haematologists, Tissue viability team and the physiotherapists. We reviewed the current practice in our hospital for the management of these patients.

Methods:

All the patients who were referred to T&O with pretibial haematoma between March 2014 and April 2017 were identified from the Orthopaedic department admission database. Their case notes were studied. The data collected including demographic details, treatment given and outcome of the treatment.

Results:

During this time 40 patients were referred with the pretibial haematoma. Females were predominant 33 as compared to just 7 males. The average age was 83 years (56-96). The majority of them were on anticoagulant medications such as Warfarin and Rivaroxaban with significant other co-morbidities. 22/40 patients were managed non-operatively, with regular dressings. 5/22 had their haematoma evacuated in the ward followed by regular dressings. 8/18 patients had an evacuation of haematoma with Split Skin Graft (SSG). 8/18 patient's haematoma evacuation in theatre followed by regular dressings. 2/18 patients had an application of VAC. Among those who had SSG (8) one patient had no uptake of graft and in another patient, the graft was lost due to infection. Rest of them (6/8) had good uptake of graft and good healing at the donor site.

Discussion:

This review shows that pretibial haematoma is a growing problem in the elderly population and the numbers are likely to rise in the future with the ageing population. Most of them can be managed non-operatively, but those who require surgery pose a significant challenge as these group of patients are high risk. Evacuation of haematoma + SSG allows one operation, early mobility and early discharge from the hospital. This should be considered in consultation with plastic surgeons.

0028

Mortality and Morbidity of Cervical Spine Fractures in Elderly Patients

Katie Jones, Alexandra Khoury, Aranghan Lingham, Christopher Buckle, Kasetti Ravikumar

In the elderly population, the rate of cervical spine fractures from low energy falls is increasing and these injuries are complicated by co-morbidities, low bone density and degenerative changes. These patients have high rates of mortality, and complications during and after admission. Currently there is a lack of best practice in treating cervical spine fractures as serious injuries, when compared to other injuries such as neck of femur fractures. These patients struggle with mobility and pain during admission and are often managed non-operatively with a prolonged period of immobilisation in a cervical collar. We looked at the results of these injuries in our unit retrospectively.

We performed a retrospective analysis of patients aged over 65 with diagnosed cervical spine fractures from November 2013 to January 2015. In addition to demographic information, we collected data on the mechanism of injury, their co-morbidities (as defined by the Nottingham hip fracture score), osteoporosis and recurrent falls. Their outcomes were recorded as thirty day mortality, one year mortality, length of stay and readmission rate to hospital.

We identified 20 patients that fit our criteria, and found they had high rates of osteoporosis and previous falls. The average number of co-morbidities was 3.7. They had high rates of inpatient complications with lower respiratory tract infections (47%) being the most common. The average Nottingham hip fracture score was 5.7 ranging from 4-8. Thirty-day mortality was 20%, one year mortality was 40%, and the mean length of stay was 24 days. There was one readmission within 30 days.

We have identified that elderly patients with cervical spine fractures from low impact mechanism have a high morbidity and mortality rate, similar to hip fracture patients in a comparable age group. Though the majority of these patients were managed non-operatively, they have multiple comorbidities which require careful evaluation. This group of patients would benefit from a multidisciplinary approach, including ortho-geriatrician input, and co-ordinated care to manage their comorbidities, complex needs and complications during their admission. Further research is needed to define the impact of these common fractures in the elderly population and to standardise care to improve their outcome.

0041

Subtrochanteric Hip Fractures Treated with Cerclage Cables and Long Cephalomedullary Nails: A Review of 59 Consecutive Cases Over 9 Years

Lawrence Wengle¹, Olan Carmody¹, James Harty¹

¹*University College Cork, Cork, Ireland*

Introduction:

Subtrochanteric hip fractures can be difficult to reduce due to both anatomical and biological factors. Kennedy et al. published a paper from our institution in 2011 which has become one of the most cited papers for this method of reduction in the literature. This study aims to assess the long-term results of this method of fixation to determine if subtrochanteric hip fractures reduced using cerclage cables and long cephalomedullary nails is an effective method of treatment.

Methods:

We retrospectively reviewed 59 patients over a 9-year period at our institution. All subtrochanteric hip fractures included would not reduce satisfactorily using closed methods. These fractures were then reduced via a mini-open lateral approach with the addition of cerclage cables to stabilize the fracture in an anatomical position before inserting a cephalomedullary nail. We further categorized the fractures using the AO classification system (Table 1) and reviewed their radiographic clinical outcome.

Results:

The average age at the time of surgery was 75.2 (range 23–98 years). The mean follow up time was 9.6 months (range 1–42). The average number of cerclage cables used was 1.4 (range 1–4). The most common type of fracture treated using this method was a type 32-A1.1 (n=29). We reported 7 cases in which complications occurred postoperatively. Long-term radiographic and functional results were satisfactory.

Discussion and Conclusion:

This study is the largest series of its type in the literature and further demonstrates that the use of cerclage cables for subtrochanteric fracture reduction is an effective form of treatment both radiographically and functionally.

0042

The use of Chemical VTE Prophylaxis in Ankle Fractures treated with open reduction and internal fixation in a trauma unit

Fouad Chaudhry¹, Howard Stringer², Qutab Qadri¹

¹Russells Hall Hospital, Dudley, United Kingdom ²University of Birmingham, Birmingham, United Kingdom

Introduction:

Ankle fractures that require open reduction and internal fixation and below knee cast is a common injury seen by trauma surgeons in UK. Treatment results in limited mobility, thus increasing the risk of venous thromboembolism (VTE).

VTE incidence can be as high as 1 in 3 in modern orthopaedic practice. The British Orthopaedic Association do not provide guidelines but instead encourage surgeons to evaluate available evidence and consider the patient individually to formulate a VTE strategy. NICE recommend that mechanical VTE prophylaxis is started on admission and pharmacological VTE prophylaxis starting 6-12 hours after surgery until the patient no longer has significantly reduced mobility.

It is estimated that 25,000 people die each year in England from VTE. While the cost of managing VTE surpasses £600 million.

Methods:

A retrospective audit was conducted to review the current practice in a busy trauma unit. Patients aged more than 16 years who underwent ORIF between January 2016 to April 2017 were included. The duration and type of VTE prophylaxis at the discharge and incidence of proven DVT or PE was noted.

Results:

66 patients underwent ORIF. All patients were advised non-weight bearing or partial weight bearing and put in a below knee back slab or cast up to six weeks. The mean age was 52 years. The mean operation time was 65 minutes. 42 patients received no chemical prophylaxis at discharge. In this group, one patient developed DVT confirmed on USG. 24 patients received chemical prophylaxis (Enoxaparin) which ranged between 2 weeks to 6 weeks. Among this group, 2 patients developed DVT. Another patient suffered symptoms of DVT without prophylaxis, but the USG scan was negative for DVT.

Conclusion:

We conclude that incidence of DVT with and without chemical prophylaxis is low. There is no consensus on the use of VTE prophylaxis following ankle fracture surgery according to NICE and BOA, leading to variable practice and adding to unnecessary cost and inconvenience to patients. We, therefore, recommend collectively formulated clear strategy, risk assessment and guidelines to ensure uniformity of care. This will then contribute to reducing the cost for NHS.

0043

Tranexamic Acid and its effect on peri-operative blood loss in proximal femoral fractures

Andrew Walls¹, Lynsey Henderson, Adam Tucker, Clare Rowan, Graham Bailie

¹*Ulster Hospital Dundonald, Northern Ireland, Belfast, United Kingdom*

The role and use of Tranexamic acid (TXA) in arthroplasty is more commonplace in the UK. Its use in Trauma hip surgery is less routine and concerns exist over potential thromboembolic complications in this frailer population.

A retrospective audit loop on the use of TXA was performed. A total of 130 hip fractures were included. Primary outcome was haemoglobin drop, with secondary outcome of blood product transfusion. Appropriate statistical analyses with a p value of <0.05 considered significant.

In the initial cycle 1 of 58 patients (1.7%) had TXA. After the WHO checklist was modified and the unit endorsed TXA administration, 32/72 patients (44.4%) received TXA.

Haemoglobin drop between DHS/Cannulated screws Vs Hemiarthroplasty/THR was not significant regardless of TXA use ([mean \pm SD for each group;p=0.165).

Post-operative haemoglobin drop was analysed by surgical intervention comparing those who received Vs those who did not receive TXA. Subgroup analysis by intervention before and after TXA endorsement demonstrated none of the surgical interventions were significantly different (DHS/Screw p=0.980, Nails p=0.179, THR/Hemi p =0.205). Chi square testing showed that TXA administration is not associated with reduced transfusion risk in the current study population (χ^2 = [value]; p=0.561). There were 15 post-operative transfusions. ROC curve analysis demonstrated a critical value of 112.5g/dL was associated with an increased transfusion risk post operatively. (AUC=0.777, p=0.001 [95%CI 0.689-0.865]). There were 4 incidences of VTE, with only 1 patient receiving TXA, with no significant association (Fisher exact p=0.783). Binary logistic regression demonstrated a non-significant risk increase of 2.1% in VTE with TXA in this population (OR 1.021;p=0.986).

In conclusion, TXA does not influence Haemoglobin drops , transfusion risk , nor VTE risk in the current study. However this study was limited by a small group size. This closed loop audit demonstrated an effective intervention with increased TXA administration with minimal complications.

0045

Rare Hoffa fracture of the lateral femoral condyle with sagittal split: case report with literature review

Akash Patel, Lily Li, Aallya Qureshi, Krisztian Deierl

Introduction:

Hoffa fractures are rare, intra-articular fractures of the femoral condyle in the coronal plane, involving the weight-bearing surface of the distal femur. Surgical fixation is warranted to achieve stability, early mobilisation and satisfactory knee function. We describe a unique type of Hoffa fracture in the coronal plane with sagittal split and intra-articular comminution, with review of current evidence with regards to surgical approaches, techniques and implants.

Case:

A 40 year old motorcyclist was involved in a high speed collision. XR confirmed displaced fracture of the lateral femoral condyle. CT showed sagittal split of the Hoffa fragment and intra-articular comminution. The patient underwent surgical treatment using cannulated screws, headless compression screws and anti-glide plate. Weightbearing was commenced at 8 weeks. Arthroscopy and adhesiolysis was performed at 12 weeks to improve range of motion. The patient was discharged at one year with a pain-free, functional knee.

Discussion:

Most papers recommend surgical fixation of Hoffa fractures, however there is no widely accepted surgical method or rehabilitation regime. Varying approaches, screw direction, implants, and post-operative care have been described. Surgical approach depends on the fracture configuration. The medial/lateral parapatellar approach is commonly used as it does not compromise future arthroplasty, but does not allow easy fixation of posterior comminution. Arthroscopic-assistance may give good outcomes and less tissue dissection. AP screws are widely used due to easier access to the fracture site. PA screws may provide better stability, but access is more difficult. Fixation often involves passing screws through the articular surface, therefore the smallest possible screw should be used. Headless compression screws leave a smaller footprint in the articular cartilage. Locking plate augmentation generally gives good outcomes.

Conclusion:

Hoffa fractures are rare and difficult to treat. Surgical treatment is the best choice for optimum post-operative knee function. There is no consensus on choice of surgical approaches, techniques and implants. In this particular case we emphasise the importance of using an anti-glide plate to address the sagittal component. Despite the need for a secondary procedure, the treatment has had positive outcomes, and may be used as a guide for treatment of similar fractures.

0211

The Ortho-Plastic Management of Paediatric Open Lower Limb Fractures: Experience of a UK Level I Major Trauma Centre

Thomas Handley, A Khajuria, L Geoghegan, S Hettiaratchy, M Ives

Aims:

The aim of this study was to evaluate the ortho-plastic management of paediatric open lower limb fractures at a UK major trauma centre, reporting the risk of infection and rate of union.

Methods:

A retrospective review was performed on children presenting at our institution with an open tibial fracture from 2011 - 2016. Patient demographics, mechanism of injury, method of fracture fixation and soft tissue coverage, union time and outcomes were recorded.

Results:

23 patients (16 male; 7 female) presented with an open tibial fracture. Road traffic accidents (RTAs) accounted for majority of the injuries (17/23, 73.9%). Methods of fracture fixation comprised: 11 (47.8%) external fixations, 6 (26.1%) plaster of paris, 4 (17.4%) intramedullary nails and 2 (8.7%) open reduction internal fixations (ORIF). Wound management comprised: 15 (65.2%) primary closures, 1 (4.4%) delayed primary closure, 2 (8.7%) split skin grafts (SSG), 2 (8.7%) local flaps and 2 (8.7%) free flaps. The mean union time was 15.2 weeks (SD = 11.4 weeks). There was 1 (4.4%) pin-track infection, in a complex fracture through the distal third of the diaphysis of the right tibia and fibula; 1 (4.4%) superficial wound infection and no flap failure.

Conclusion:

The study shows that unlike in adult open tibial fractures where flap coverage is considered gold standard, primary closure may suffice in selected paediatric patients. This would circumvent donor site morbidity and other flap-associated complications. Further work is required to evaluate long-term functional outcomes of this cohort.



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