



Hand Free Papers

08:30 – 10:00

Hall 3A

76

DO ANATOMIC DISTAL ULNA PLATING SYSTEMS FIT THE DISTAL ULNA?

D.A. Shaerf¹, W. Chae², R. Sharif-Rezavian³, A. Kedgley³, M. Horwitz¹

¹Chelsea & Westminster Hospital NHS Foundation Trust, Department of Hand Surgery, London, United Kingdom, ²Imperial College Medical School, London, United Kingdom, ³Imperial College London, Department of Bioengineering, London, United Kingdom

Background: Distal ulna fracture fixation is difficult due to the narrow safe zone between ulna cartilage and the extensor carpi ulnaris (ECU) - plates commonly irritate this tendon, necessitating removal. This study compared the fit of 3 anatomical plates and whether wrist position affects the safe zone.

Methods: Twelve cadavers were dissected along the FCU/ECU interval. The dorsal branch of the ulna nerve (DBUN) position was documented. The arc and perimeter between ECU and ulna head articular cartilage was measured. Three distal ulna plates (Acumed, Medartis and Skeletal Dynamics) were applied. The implant surface to bone depth was measured in three regions pre and post-contouring. A custom simulator was used to recreate flexion/extension and rotation - impingement of the DBUN or ECU was documented. All measurements were taken by two independent observers.

Results: The DBUN crosses to dorsal 5.4mm (range -5.0 to 24.3mm) distal to the styloid. The safe zone is an arc of 92° (60 - 123°) and a perimeter circumference of 15mm (11 - 20mm). Maximum depth pre-contouring was 4.00mm, 5.08mm and 3.17mm for Acumed, Medartis and Skeletal Dynamics. After contouring this improved to 3.63mm, 3.49mm and 3.17mm, respectively.

The Acumed plate, which is placed volarly, did not impinge on the ECU in any specimen. Significant tendon impingement was found in 14% and 45% of simulated wrist positions for the Skeletal Dynamics and Medartis plates.

Conclusions: Despite the "anatomical" nature of distal ulna plates, it is key to ensure they are properly contoured to the bone to reduce plate bulk. The DBUN course varies usually crossing the surgical field distal to the styloid. The ECU tendon is a mobile structure and intra-operative testing for impingement should be performed in supination. Laterally based plates must be accurately contoured and placed as volar as possible to avoid significant impingement during wrist movement in supination.

Disclosure: Nothing to disclose.

280

THE TALE OF THE NINE YEAR OLD K-WIRE

N. Sargazi, S. Abdalla, I. Khan

Whiston Hospital, Burns and Plastic Surgery, Liverpool, United Kingdom

Introduction: Kirschner wires (K-wires) are a simple and effective method for hand fracture fixation. Pin site and deep bony infections are the main complication. Preventative strategies including early removal of K-wires (within eight weeks) have been recommended.

Methods: We describe the case of a patient with a K-wire protruding through the skin for over nine years, with no infective complications.



Results: A 62 year old right hand dominant, fit and well gentleman who was a manual worker and non-smoker, attended our regional plastic surgery unit following a fingertip injury. Clinical assessment identified an incidental K-wire protruding from the left thumb. The patient described sustaining fractures to his left thumb and index finger abroad following a circular saw injury nine years ago. X-ray showed an intra-articular, comminuted fracture of the 2nd metacarpal fixed using a cerclage wire and a 1st metacarpal fracture, stabilised using a K-wire. The patient returned to the UK following the operation and had not sought any further medical input. The wire began to protrude within a few months of the operation, which he managed with regular antiseptic wash and simple dressings. He denied any infections relating to the metalwork. Examination showed no evidence of active infection with the patient exhibiting relatively good range of movement in the digit. Radiological images showed no features of osteomyelitis. The patient underwent removal of the K-wire and remains under follow up.

Conclusions: We highlight a rare case of a K-wire remaining in situ for over nine years without any infective complications. This raises the question of whether increased patient education and involvement regarding meticulous wound care could be the key to reducing infection rates.

Disclosure: Nothing to disclose.

342

FIXATION OF DISTAL RADIUS FRACTURES USING WIDE AWAKE ANAESTHESIA WITH NO TOURNIQUET TECHNIQUE: A COST EFFECTIVE AND RESOURCE FRIENDLY ALTERNATIVE IN LOWER INCOME AND MIDDLE INCOME NATIONS

M. Tahir¹, G. Mahboob², M. Phillips³, A.R. Jamali¹

¹Jinnah Postgraduate Medical Centre, Orthopaedics, Karachi, Pakistan, ²Sirsyed Medical College for Girls, Orthopaedics, Karachi, Pakistan, ³London Bridge Hospital, Orthopaedics, London, United Kingdom

Background: The purpose of this study was to perform surgical fixations of distal radius fractures using wide awake local anaesthesia with no tourniquet (WALANT) using a cost-effective approach.

Methods: We included 40 patients from March 2017 to December 2018. These patients had a closed distal radius fracture and were presented to us within 10 days of initial injury. We excluded patients that were anxious, non-cooperative or had pre-existing comorbid conditions such as peripheral vascular disease or patients requiring general or spinal anaesthesia for other injuries such as traumatic brain injury. Fracture was classified according to Orthopaedic Trauma Association (OTA) system.

Initially, a hematoma block was given in the emergency, then approximately 10-15 ml of 1% lidocaine with adrenaline was used in 1:100,000 concentration for WALANT. Volar approach was used in all cases for plating of the fracture. Additional 5ml anaesthetic was administered beneath the pronator quadratus (PQ) for drilling and screw fixation. Fluoroscope was used to check the fixation and patient was asked to move the wrist to observe impingement. Postop VAS was recorded. Functional outcome was measured by using the qDASH and Mayo's wrist score, grip strength, flexion and extension at the wrist, at fracture union.

Results: The mean age was 45.23 years, 26 (65%) had injured their dominant hand and most common fracture pattern was A2 13 (32.5%) followed by A3 11 (27.5%) and C1 (15.0%). Time to union was 15.20 weeks (SD 2.43). qDASH score was 13.33 (SD 4.16) and Mayo's wrist score of 81.62 (SD 7.01). Flexion and extension at the wrist were 64.00 (SD 5.08) and 53.12 (SD 5.39) degrees respectively with an average grip strength of 72.88% (SD 8.07%) of the contralateral side.

Conclusions: WALANT is a cost-effective and safe method which can be used in patients unfit for general anaesthesia.

Disclosure: Nothing to disclose.



347

WIRES - TO BURY OR NOT TO BURY IN HAND SURGERY?

B. Kapur, L. Homer, B. Klass, G. Cheung, D. Brown

Royal Liverpool and Broadgreen University Hospital, Trauma & Orthopaedics, Liverpool, United Kingdom

Introduction: There is great controversy in the literature surrounding the management of percutaneous wires, pin site care and whether wires should be buried or left exposed. Pin site infection rates vary from 0% - 100%. At our trust there is a strict pin site management protocol adapted from Russian Ilizarov Scientific Centre for Restorative Traumatology and Orthopaedics. The aim of this study was to identify if our current protocol for pin site care reduces the complication rate versus buried wires.

Methods: Retrospective review of 80 fracture and elective patients managed in the hand surgery department between January 2016 and December 2018. Indication, number of wires, number of clinic visits and complications were recorded.

Results: Eighty-one percent of patients had wires exposed (73 patients, 127 wires). Fracture to elective patient ratio 65:8 (wires 109:18). In 19% (seven patients, 19 wires) were buried. Fracture to elective ratio 2:5 (wires 4:15). There were no returns to theatre in this group. There were no pin site infections in the exposed wire group and one infection in the buried wire group. This patient required a return to theatre and an inpatient stay for antibiotics. The other six patients required a return to theatre for wire removal.

Conclusions: In our institution using our current protocol, results favour the wires to be exposed with appropriate pin site care initiated in theatre. This reduces the infection rate, complications and also the necessity for a second attendance to theatre, which has morbidity, and cost associated with it.

Implications: This study provides evidence that appropriate pin site care reduces patient morbidity and cost with improved patient outcome and experience.

Disclosure: Nothing to disclose.

379

DOES DRESSING CHOICE AFFECT INFECTION RATE FOLLOWING K-WIRE FIXATION OF THE HAND AND WRIST? A SYSTEMATIC REVIEW

J. Clutton, A. Kinghorn, R. Trickett

University Hospital of Wales, Trauma and Orthopaedics, Cardiff, United Kingdom

Aims: K-wire fixation following acute fractures of the hand and wrist is a common procedure. Infection of wires may lead to early removal, further surgery, and compromised patient outcomes. Whilst it is accepted that infection rates are lower if K-wires are buried, there is no consensus on prevention of infection in unburied wires. We conducted a systematic review of the available evidence for different dressing choices and their infection rates.

Materials and methods: A bespoke literature search was performed across several databases. Results were analysed and extracted according to specific inclusion criteria by two independent authors. Included papers were systematic reviews, RCTs, case and cohort studies or large case series in adult patients requiring K-wiring of the hand or wrist for acute closed fractures, where the dressings regime was delineated. Of the 1,201 studies identified after removal of duplicates, nine studies suitable for inclusion were identified.

Results: We were able to identify two RCTs, two case control studies, and five large volume case series where the pin-site dressing choice was described. The studies included were heterogenous, which reflects the wide variation in current practise. In total, 607 patients were included across the ten studies. Dressing choices included sterile sponges, dressing gauze, paraffin gauze, chlorhexidine-impregnated discs. The infection rate



varied significantly, from two percent to 34%. All the studies described poor compliance with pin site care as a major risk factor for infection.

Conclusions: There is no current consensus on dressing choices in unburied K-wires in the hand and wrist. More high-level evidence is required to guide clinicians in their dressing choices to manage exposed k-wires.

Disclosure: Nothing to disclose.

442

POLLICISATION OF INDEX FINGER FOR CONGENITAL THUMB ANOMALIES: A LONG TERM FUNCTIONAL OUTCOME STUDY

A. Palanivel, B. Kumar

Tejasvini Hospital & SSIOT, Orthopaedics, Mangalore, India

Aims: To evaluate the functional outcomes of pollicised index finger in congenital anomalies of the thumb.

Methodology: Index finger pollicisation procedures operated between 1985 and 2009 by a senior surgeon were analysed in a retrospective-prospective study design. Eighty-five patients with 117 hands who met the inclusion criteria were assessed. Objective evaluation was made using the Percival score graded over excellent, good, fair and poor. Subjective evaluation was made using set of 17-item questionnaires which were rated one to five using the Likert scale, and patient, surgeon and independent assessor satisfaction was measured using the VAS score.

Results: Out of 117 hands, the Percival score showed excellent in 12, good in 64, fair in 36 and poor in five. Radial club hand (RCH) associated pollicisation had unsatisfactory outcomes (fair in 36 hands and poor in five hands) whereas none of the other thumb anomalies had unsatisfactory outcomes. Syndromic children with thumb hypoplasia did not have significant unsatisfactory outcomes. All 85 patients had subjective satisfaction of thumb functions. The mean score of subjective evaluation was 72.9 (ranging 57 to 84). Mean VAS score for patient satisfaction was 7.74, for doctor satisfaction was 7.05 and independent assessor was 7.46. Interclass correlation co-efficient was highly significant between VAS score sub-groups. There is highly significant association between outcome and hands with or without RCH following pollicisation with p value of < 0.001. There is highly significant association between subtypes of RCH and outcome thumb anomaly with p value of < 0.001.

Conclusions: In our study, it was clearly brought out that in patients with congenital hypoplasia of thumb, pollicisation of the index finger can produce significant improvement in terms of function, strength and cosmetic appearance. Though RCH-associated thumb anomalies have significantly unsatisfactory outcomes, pollicisation gives high subjective satisfaction in such patients.

Disclosure: Nothing to disclose.

549

PATTERN OF UPPER LIMB AMPUTATION ASSOCIATED WITH LOWER LIMB AMPUTATION FOLLOWING BLAST INJURY: THE UK EXPERIENCE FROM IRAQ AND AFGHANISTAN

L. McMenemy^{1,2}, V. Mondini¹, D. Roberts³, A. Kedgley¹, J. Clasper^{1,2}, S. Stapley^{2,3}

¹Imperial College London, Centre for Blast Injury Studies, London, United Kingdom, ²Royal Centre for Defence Medicine, Academic Department for Military Surgery and Trauma, Birmingham, United Kingdom, ³Queen Alexandra Hospital, Portsmouth, United Kingdom

Developments in prosthetic design have improved quality of life (QoL) outcomes for lower limb (LL) amputees. Although of various design, lower limb prosthetic donning and doffing can be problematic in combination with an upper limb (UL) amputation at any level, including the loss of fingers. The true extent of upper limb



amputation for UK casualties, following the wars in Iraq and Afghanistan, has not been documented. Following polytrauma, patient injury details are recorded on the joint theatre trauma registry (JTTR).

This records the most severe injuries; however, partial hand amputation is often not recorded in the context of multiple injuries. Knowledge of this cohort could aid in prosthetic modification to further improve QoL.

A JTTR search was undertaken for all UK military LL amputees. These records were scrutinised, examining imaging and notes to document any UL amputation. Demographics, level of amputation, and injury profile data were recorded.

One hundred and sixty-four LL amputees were identified with full clinical notes available, of which 68 also had an UL amputation. All cases were male with a median age of 24 (range 18 - 42). Only explosive mechanisms (improvised explosive device (IED) and grenade) resulted in combinations of UL and LL amputations; the majority (73.5%) were bilateral LL amputations. UL amputations were mostly unilateral (85%), and partial hand (72%). Most partial hand amputations excluded the thumb (75.5%), however more bilateral LL amputees sustained partial hand amputations including the thumb (20% vs 11%). No significant difference of side, right or left UL was found ($p > 0.05$). Nine casualties sustained major UL (wrist or above) amputations without a LL amputation, all blast mechanism.

Knowledge of these combinations and documentation of this cohort, enables potential modification of prosthetics to help further improve the quality of life of lower limb amputees.

Disclosure: Nothing to disclose.

600

THE ROLE OF MRI IN THE MANAGEMENT OF SCAPHOID FRACTURES AT A DISTRICT GENERAL HOSPITAL

C. Wilson, S. Andrew, T. Crook, S. Walsh

Dorset County Hospital, Orthopaedics, Dorchester, United Kingdom

Aims: This audit aimed to determine if our clinical practice matches the recommendation by NICE for the use and role of MRI in the management of scaphoid fractures. NICE recommends that MRI should be considered for first-line imaging in patients with suspected scaphoid fractures following a thorough clinical examination.¹ The first cycle of the audit revealed that 6% of patients with clinical tenderness were not referred for MRI.

Methods: A retrospective study reviewed all scaphoid x-rays and wrist x-rays with scaphoid views from the Emergency Department and the Radiology Department between 1st May 2017 and 1st September 2017. A pathway and an education initiative was then introduced. We then re-audited using the same methodology between 1st December 2017 and 1st March 2018. The first cohort of data included 118 patients and the second cohort included 100 patients.

Results: The re-audit data showed that 36% of patients underwent MRI (previously 14%) and eight fractures were diagnosed by MRI (previously four). Only one percent of patients with persistent clinical tenderness were not referred to MRI at first fracture clinic (previously six percent).

Conclusions: Since the introduction of our pathway there has been a significant improvement in the investigation of scaphoid fractures resulting in improved clinical management and outcomes for patients.

References: 1) NICE guideline [NG38] Published date: February 2016. Fractures (non-complex): assessment and management.

Disclosure: Nothing to disclose.



705

A REVIEW OF PATIENT REPORTED OUTCOME MEASURES FOR THOSE UNDERGOING CARPAL TUNNEL DECOMPRESSION SURGERY

M. McMullan, A. Kingman, C. Gibbons

Northumbria Healthcare NHS Foundation Trust, Newcastle upon Tyne, United Kingdom

Background: Carpal tunnel syndrome is a relatively common condition and can lead to irreversible disabling symptoms with impaired function and pain. Despite patients appearing very satisfied after surgery for decompression, NHS England's commissioning guidelines state carpal tunnel surgery is regarded as a procedure of low clinical priority for patients with intermittent or mild to moderate symptoms and therefore not routinely funded.

Our aim was to analyse patient reported outcome measures (PROMs) from those undergoing carpal tunnel decompression (CTD) in our Trust and review the outcomes.

Methods: All patients undergoing CTD within our Trust from July 2015 to May 2018 were asked to complete EQ-5D-3L and Boston carpal tunnel scores pre-operatively, at three months and one year post-operatively.

Scores were analysed to help evidence any trend and suggestions if this was a worthwhile operation. Patients were excluded if no scores were gathered pre and post-op.

Results: Outcomes from 259 patients were included (152 male, 107 female). Over 600 patients results had to be excluded as no follow-up scores were submitted.

Average EQ-5D scores increased from 0.555 pre-operatively, to 0.644 and 0.705 at three and 12 months respectively after surgery. Boston scores improved from three to two at both stages. There were no differences when comparing male to female scores at any stage.

Conclusions: PROMs analysis shows us that carpal tunnel decompression is a worthwhile procedure with continuing improvements in patient scores seen after surgery, for those clinically requiring an operation. Further studies with PROMs could help guide evidence for the threshold for surgery and financial savings from ongoing follow-up and conservative interventions not being required.

Disclosure: Nothing to disclose.

795

COMPLEX DISTAL RADIUS FRACTURES: A SYSTEMATIC REVIEW INTO OPERATIVE INTERVENTIONS AND THEIR FUNCTIONAL AND OBJECTIVE OUTCOMES

A. Kinnair, L. DiMascio

Royal London Hospital, Trauma & Orthopaedics, London, United Kingdom

Background: Complex distal radius fractures, of type AO23C, present an orthopaedic challenge, historically being associated with poorer functional outcomes. Since 2000, there are numerous orthopaedic fixation devices available to help try and improve functional and objective outcome. There is no clear evidence or consensus on which intervention has the more favourable outcome. The aim is to review available literature, surmising the quality of evidence available and comparing the outcomes on different interventions.

Methods: Articles were systematically retrieved from MEDLINE, EMBASE and COCHRANE. Articles were then screened to pre-existing inclusion / exclusion criteria. Outcomes of interest included wrist range of motion, grip strength, functional outcome measurements, and the number and type of complications.



Results: Three thousand three hundred and one articles retrieved, 21 full texts were reviewed, 12 articles included. Of the interventions: fragment specific fixation, internal bridge plating and hemi-arthroplasty all were found to have satisfactory outcomes, with slightly more complications in fragment specific fixation and internal bridge plating. There were no significant differences between the methods chosen, in general the level of evidence supporting each intervention ranged from II - IV with most evidence being level IV.

Conclusions: Based on the level of evidence available this review is not able to define one intervention as being superior. More high quality, randomised control research is required to directly compare the different interventions to answer if any method is superior to another. There also requires some research into cost analysis to support this. This review found a number of different techniques classed as fragment specific fixation and also bridge plating. These results were included for completeness but a general consensus for definition should be sought. There are also multiple PROMS available despite the recent consensus for PRWE and DASH.

Disclosure: Nothing to disclose.