BSSH

The British Society for
Surgery of the Hand

SPRING SCIENTIFIC MEETING

25-26 APRIL 2013
HARROGATE INTERNATIONAL CENTRE

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PRESIDENT'S FOREWORD

Dear Members and Guests

Welcome to the BSSH Spring Meeting.

The meeting is being held at the Harrogate International Centre. Harrogate is a spa town situated in North Yorkshire with many local attractions.

The scientific programme includes papers that cover the breadth of hand surgery. In addition to this there are mini symposia on common, difficult hand problems such as osteoarthritis of the distal interphalangeal joint, dysfunction of the distal radio ulnar joint and intra-articular fractures of the base of the middle phalanx. There are keynote lectures on the scientific basis of the benefits of early nerve repair and an anatomical lecture on the biomechanics of intrinsic function. Finally, Professor Simon Kay will deliver the Douglas Lamb Lecture on the subject of missing hands.

This is an exciting programme, which I hope you will enjoy. I look forward to seeing you at the meeting.

Simon L Knight, FRCS
President

THURSDAY 25 APRIL

09:00 Registration and Refreshments
09:55 Welcome by the President
10:00 Symposium: Arthritis of the distal interphalangeal joint
11:10 Free Papers
13:05 Lunch and Trade Exhibitions
14:00 Keynote Lecture: Benefits of early nerve repair – Professor M Wiberg (Sweden)
14:30 Free Papers
15:40 Symposium: Distal radio ulnar joint dysfunction
16:40 Audit Database update – Mr J W M Jones (Peterborough)
17:00 Hand Diploma Presentations
17:05 Refreshments and Trade Exhibitions
17:30 Business Meeting (open to Full Members and Associates only)
19:30 (for 20:00) Society Dinner at Cedar Court Hotel

FRIDAY 26 APRIL

08:30 Registration
09:00 Free Papers
10:00 Symposium: Intra articular fractures of the base of the middle phalanx
11:00 Refreshments and Trade Exhibitions
11:30 Bell Session
12:00 Scaphoid Audit – Professor J J Dias (Leicester)
12:30 Keynote Lecture: The biomechanics of the intrinsics – Mr D Sammut (Windsor)
13:00 Lunch and Trade Exhibitions
14:00 Douglas Lamb Lecture: Missing hands – Professor S P J Kay (Leeds)
14:30 Free papers
15:45 Refreshments and Close of Meeting

GUEST SPEAKERS AND CHAIRMEN

Mr D A Campbell, FRCSEd FRCS(Orth) FFSEM(UK)

Consultant Orthopaedic Surgeon, Leeds General Infirmary

Doug Campbell was appointed a Consultant Orthopaedic Hand and Wrist Surgeon in 1998. He has served on the BSSH Council, Organising Committee for the Instructional Courses, and Education and Training Committee. His clinical interests lie mainly in the area of wrist trauma, arthroscopy and reconstruction and also, increasingly, in the area of sports medicine. His research interests lie in bone mineral density mapping of the distal radius, implant surface manipulation and clinical assessment of injury patterns in sport. He served as Chairman of the AOUK Education Committee (2004–9) coordinating the organisation and delivery of over 35 courses each year. He works with the AO Foundation in the area of new implant development and has been the Chairman of the AO Hand Expert Group since 2005. He is a Member of the Medical Advisory Board of the European PGA Tour and Medical Adviser to several national and club sporting organisations ranging from rugby to gymnastics. He has contributed several chapters to textbooks on many aspects of hand and wrist surgery, published over 30 peer reviewed articles and lectured in over 20 countries.

Speaking in: Distal radio ulnar joint dysfunction – Thursday 25 April

Professor T R C Davis, FRCS

Consultant Hand Surgeon, Queens Medical Campus, Nottingham University Hospitals, Nottingham

Tim Davis has been a consultant practising hand surgery in Nottingham since 1991. He was appointed as a Special Professor in Trauma and Orthopaedic Surgery at Nottingham University in 1999 and was Editor of the Journal of Hand Surgery, (European Volume) during 2000-4. He was President of the BSSH in 2009 and is presently chairman of the Society's Research and Audit committee. His particular research interests are distal radius fractures, scaphoid fractures, Dupuytren's disease and osteoarthritis of the trapeziometacarpal joint.

Chairman: Free Paper Session – Thursday, 25 April

Mr D Dewar,FRCS(Plast)

Consultant Plastic Surgeon, Leeds Teaching Hospitals NHS Trust

Speaking in: Intra articlar fractures of the base of the middle phalanx – Friday 26 April

Professor J J Dias, MD FRCS FRCSEd MBBS

Professor in Hand and Orthopaedic Surery and Head of Section of Orthopaedic Surgery, University of Leicester

Professor Dias is the Professor in Hand and Orthopaedic Surgery and Head of Section of Orthopaedic Surgery at the University of Leicester and works at the University Hospitals of Leicester. His research interests are in epidemiology of hand disorders, Dupuytren's contracture, the outcome of interventions in upper limb and hand trauma and interventions for wrist disorders. He has focused on investigations of effectiveness of interventions for hand and upper limb disorders. He has published over 80 peer-reviewed articles and 25 chapters in books on hand surgery. Professor Dias has received a number of grants

from societies and companies, including a grant from the BSSH for a national study on the outcome of Dupuytren's contracture surgery in 2006 and a £2.2 million grant from NIHR HTA 2013. He was Editor-in-Chief of the Journal of Hand Surgery (European) and a member of the Editorial Board for the Journal of Bone and Joint Surgery. Professor Dias was President of the British Society for Surgery of the Hand (BSSH) in 2008 and is Immediate Past President of the British Orthopaedic Association (BOA). He is a member of several hand and orthopaedic surgery societies internationally, including FESSH, IFSSH and the Indian Society for Surgery of the Hand. He was Head of School of Surgery at the East Midlands Healthcare Workforce Deanery (South).
Speaking in: Scaphoid Update – Friday 26 April

Mr N Downing, MA BMBCh FRCS(Tr&Orth)
Consultant Orthopaedic and Hand Surgeon, Queen's Medical Centre, Nottingham
Nick Downing has been a Consultant Orthopaedic and Hand Surgeon at the Queen's Medical Centre in Nottingham since 2001. His hand surgery fellowship training was in Nottingham, Derby and Sydney, Australia. His practice encompasses all aspects of adult hand, wrist and peripheral nerve surgery.
Speaking in: Arthritis of the distal interphalangeal joint – Thursday 25 April

Mr D Elliot, MA BM BCh FRCS
Consultant Plastic Surgeon, St Andrew's Centre for Plastic Surgery, Broomfield Hospital, Chelmsford
David Elliot has been a consultant hand and plastic surgeon for 23 years in the St. Andrew's Centre for Plastic Surgery in Broomfield Hospital, Chelmsford, Essex. He was an Open Scholar of Oxford University. He is a holder of the Kay-Kilner prize of the British Association of Plastic Surgeons and the Pulvertaft prize of the British Society for Surgery of the Hand and is the author of over 100 publications in the fields of plastic and hand surgery. He is a past President of the BSSH (2005), past Editor of *JHSE* (2005-2007), Past Chairman of the IFSSH Flexor Tendon Committee, past President of the British Association of Hand Therapists (1995-1998), and a past Examiner of the Diploma of the Federation of European Societies for Surgery of the Hand (1996-99). He is an honorary member of APSI and ISSH and a regular guest of both (Venkataswami Orator, 2004, Presidential Speaker 2006, Godrej Orator 2007). He is a reviewer of the Indian Journal of Plastic Surgery. He has been a visiting Professor of Hand Surgery in Australia, Gran Canaria, India, New Zealand, South Africa and Louisville, USA.
Speaking in: Arthritis of the distal interphalangeal joint – Thursday 25 April

GUEST SPEAKERS AND CHAIRMEN

Mr D M Evans, MB BS FRCS

Consultant Plastic and Hand Surgeon, The Hand Clinic, Windsor

David Evans undertook his medical training at the Middlesex Hospital in London and carried out his plastic surgery training in Leicester and Oxford. He worked as consultant plastic surgeon at Wexham Park Hospital, Slough, from 1977–1992. From 1992–2000 he worked as consultant hand surgeon at Guy's and St Thomas' Hospital and the Royal National Orthopaedic Hospital in London. He founded the Hand Clinic in Windsor, where he has been consultant hand surgeon since 1989. David Evans was Honorary Secretary of BSSH from 1986-1988 and President in 1995. He was Editor of the *Journal of Hand Surgery (European Volume)* from 1992-1995 and Honorary Archivist from 2001-2005.

Speaking in: Arthritis of the distal interphalangeal joint – Thursday 25 April

Mr G E B Giddins, FRCS(Orth) FRCSEd

Consultant Hand Surgeon, Royal United Hospital, Bath

Grey Giddins is a Consultant Hand Surgeon at the Royal United Hospital in Bath and an Honorary Senior Lecturer at the Universities of Bath and Bristol. He currently is the Editor-in-Chief for the *Journal of Hand Surgery (European Volume)*.

Speaking in: Intra articular fractures of the base of the middle phalanx – Friday 26 April

Mr J W M Jones, FRCSEd(Tr&Orth)

Consultant Hand and Orthopaedic Surgeon, Stanford Hospitals NHS Foundation Trust

Speaking in: Audit database update – Thursday 25 April

Professor S P J Kay, FRCS

Consultant Plastic Surgeon, Leeds General Infirmary

Speaking in: Douglas Lamb Lecture: Missing hands – Friday 26 April

Professor D McGonagle

Leeds Teaching Hositals NHS Trust

Speaking in: Arthritis of the distal interphalangeal joint – Thursday 25 April

Mr R H Milner, BSc MD DCH FRCS FRCS(Plast)

Plastic Reconstructive and Hand Surgeon, The Royal Victoria Infirmary, Newcastle upon Tyne

Originally from Newcastle upon Tyne he qualified in Manchester in 1977, having undertaken an intercalated BSc in Morbid Anatomy with a research project into the immunological role of the gut lymphocytes. He became a Fellow of the Royal College of Surgeons in 1984 and obtained an M.D. in 1990 for research in peripheral nerve surgery. This study was into the effect of stretch on the peripheral nerves using a rat model. He obtained the FRCS(Plast) in 1991. He undertook SHO surgical rotations in Cardiff and Bristol and a surgical registrar rotation in Sheffield. His plastic surgery training was undertaken in Newcastle upon Tyne (SHO), the Welsh Regional Plastic Surgery Centre (Registrar) and at the University of Adelaide, Australia (Micro-vascular Fellow). He returned to Newcastle upon Tyne as a senior registrar in 1989 and was appointed as Consultant Plastic Surgeon to the Royal Victoria Infirmary in Newcastle upon Tyne and Senior Lecturer to the University of Newcastle upon Tyne in Newcastle upon Tyne in 1992. He has published on many aspects of plastic surgery but chiefly those related to hand surgery and surgery of the upper limb. He is currently undertaking research into the use of collagenase in the treatment of Dupuytren's disease. He has previously been on the editorial board of the *Journal of Hand Surgery*, and has been a Deputy Editor of the *British Journal of Plastic Surgery*, now *JPRAS* and is currently a Trustee of the Healing Foundation. He is a member of the Invited Review Mechanism of the Royal College of Surgeons. He is an examiner for the Inter Collegiate Board of the Royal Colleges of Surgeons for FRCS(Plast). He is a past President of BAPRAS and is currently Vice-President of the BSSH. His main clinical interests are within hand surgery, particularly peripheral nerve, brachial plexus surgery and tendon transfers and in the management of soft tissue sarcomas, particularly nerve sheath tumours.

Chairman: Free Paper Session – Thursday 25 April

Mr D P Newington, FRCS FRCS(Orth)

Consultant Orthopaedic Surgeon, Morriston Hospital, Swansea

Speaking in: Distal Radio ulnar joint dysfunction – Thursday 25 April

Mr D Sammut, FRCS FRCS(Plast)

Consultant Hand Surgeon, Windsor, London and Bath

Donald Sammut trained in London, Strasbourg, Paris and Barcelona, and was appointed Hand Surgeon in Bristol in 1993, where he set up the Hand Unit and the Congenital Hand Services. He now works in private practice. He divides his time between clinical practice and the teaching of anatomy and hand surgery. His main work bases are in Windsor and in Bath. His interests include the reanimation of paralysed hands, congenital hand surgery and reconstruction after trauma, particularly skin cover. He travels to, works and teaches in Nepal, where he has set up programmes of surgery in leprosy villages, and Italy, where he lectures and previously ran a congenital hand service. He has held posts on Council of BSSH and on various Educational Committees. He is also an illustrator and artist, both medical and non-medical, providing most artwork for the BSSH and BAPRAS and also illustrating non-medical publications.

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Keynote Lecture: The biomechanics of the intrinsics – Friday 26 April

GUEST SPEAKERS AND CHAIRMEN

Mr D J Shewring, FRCSEd(Orth)

Consultant Hand Surgeon, University Hosptial of Wales, Cardiff

After training in orthopaedic surgery in Southampton, Cambridge and Cardiff and having completed an Interface Hand Fellowship in Oxford, David Shewring was appointed as a Consultant Hand Surgeon in Cardiff in 1994. After serving on various BSSH committees, including Council and the Organising Committee for the Instructional Courses, he was Honorary Secretary of BSSH between 2010 and 2012. He is currently Chair of the Training Interface Group for Hand Surgery, a member of the T&O SAC and is BSSH representative to IFSSH and FESSH. His clinical interests lie within the sphere of hand trauma and include, in particular, the management of difficult phalangeal fractures.

Speaking in: Intra articular fractures of the base of the middle phalanx – Friday 26 April

Mr I A Trail, MD FRCSEd

Consultant Orthopaedic Surgeon, Wrightington Hospital, Wigan

Speaking in: Distal Radio ulnar joint dysfunction – Thursday 25 April

Mr D Warwick, MD FRCS FRCS(Orth) European Diploma of Hand Surgery

Consultant Hand Surgeon, University Hospital Southampton

David Warwick is Consultant Hand Surgeon at University Hospital Southampton (1998–) and Reader in Orthopaedic Surgery at the University of Southampton. He is also Visiting Consultant Hand Surgeon to the States of Jersey. Mr Warwick looks after upper limb problems for elite sportsmen to include Southampton Football Club, Hampshire County Cricket Club, London Irish Rugby, Hampshire Rugby, British Olympic Sailing and British Diving. David's particular interests are rheumatology, distal radio-ulnar joint problems, Dupuytren's disease, hand trauma and wrist instabilities. David is currently Honorary Secretary of the British Society for Surgery of the Hand (BSSH) and Chairman of the FESSH Training Committee. He is also Chairman of the BSSH Instructional Course Committee and past-Chairman of the BSSH Education and Training Committee. He is Section Editor for the *Annals of The Royal College of Surgeons of England*; he has served on the Editorial Board of the Journal of Hand Surgery and the Journal of Bone and Joint Surgery. He has written several book chapters, dozens of papers and most recently has authored and edited the *Oxford Handbook of Hand Surgery* and *Apley's System of Orthopaedics*.

Chairman: Bell Session – Friday, 26 April

Professor M P J Wiberg, MD PhD

Integrative Medical Biology, Department of Anatomy, Umeå University, Sweden

Keynote Lecture: Benefits of early nerve repair – Thursday 25 April

09:00 Registration and Refreshments

09:55 Welcome by the President

Arthritis of the distal interphalangeal joint

Chairman: Mr M Pickford

10:00 Microanatomy of arthritis in the hand
Professor D McGonagle (Leeds)

10:20 The mucous cyst
Mr D M Evans (Windsor)

10:30 Arthrodesis
Mr N Downing (Nottingham)

10:40 Joint replacement
Mr D Elliot (Chelmsford)

10:55 Discussion

Free Papers

Chairman: Mr R H Milner

11:10 Prevalence of Dupuytren's disease in the Netherlands
Dr R Lanting, Professor E van den Heuvel, B S B Westerink, Professor P Werker (Groningen)

Objective: Dupuytren's disease (DD) is a fibroproliferative disease of palmar fascias of the hand. The prevalence of Dupuytren's disease and the association with potential risk factors have been the subject of several studies, though there is a paucity of such data from the Netherlands.

Study Design and Setting: To study the prevalence of DD, we drew a random sample of 1,360 individuals - stratified by age - from the northern part of the Netherlands. Of this sample, 763 individuals aged 50–89 years participated in this cross-sectional study. We examined both hands for signs of DD and a questionnaire was conducted to identify potential risk factors. The effects of these risk factors were investigated using logistic regression analysis. Additional analyses were performed to develop a logistic prediction model for the prevalence of DD.

Results: The prevalence of DD was 22.1%. Nodules and cords were seen in 17.9% and flexion contractures were present in 4.2% of the study population. Prevalence increased with age, from 4.9% in participants aged 50-55 years to 52.6% among 76-80 year olds. Men were more often affected than women; 26.4% versus 18.6% respectively (P = 0.007). Other significant risk factors were previous hand injury, excessive alcohol consumption, familial occurrence of DD and presence of Ledderhose disease.

Conclusion: The results show a high prevalence of Dupuytren's disease in the Netherlands, particularly the nodular form. Using the developed logistic prediction model, the prevalence of Dupuytren's disease can be estimated, based on the presence of significant risk factors.

11:15 Discussion

11:17 The creation of a user-friendly and data secure database to analyse the use of Xiapex injection in Dupuytren's contracture
Mr D Warwick, Mr D Graham (Southampton)

When Xiapex was introduced in our centre, we wanted to collect comprehensive data on the patients, their disease and their response to the drug. We recognised that this would need a

database which was easy to input and easy to interrogate, as well as meeting the legislated data protection requirements.

We therefore constructed a database on a Microsoft Excel platform. The database is password protected and names are excluded, thus fulfilling legislative requirements. We collected patient data (name, email, telephone, funding status, QuickDASH, Southampton Dupuytren's Score), disease data (previous treatment, digit(s) involved, joint(s) involved), injection data (date, cord treated, ease of manipulation, complications). The database has elegant inbuilt drop-down menus to help input. Using the retained contact details, we are accumulating data on recurrence, symptom improvement and patient satisfaction. The database has inbuilt self-filling reporting charts which continually update themselves. Over one hundred and forty patients have been uploaded so far.

We will demonstrate this user-friendly valuable tool to the meeting.

11:22 Discussion

11:24 **Patient reported outcomes measures (PROMs) following internal fixation of distal radius fractures**
Mr R Jeavons, Dr H Thirkettle, Mr J Auyeung (Durham)

Aims: To assess PROMs following distal radius fracture fixation.

Methods: A retrospective review of distal radius fractures treated using the APTUS Distal Radius Plating System (Medartis AG, Basel, Switzerland) over six years. We collected demographic data and classified, using the Frykman system. The number of distal rows was recorded. Two postal PROMs, Patient Related Wrist Evaluation (PRWE) and Quick DASH were used.

Results: Of ninety-three patients, ten were excluded. The mean age was 54.61 years. Mean length of follow-up 2.35 years (range 0.69-5.08). Mean time to theatre 3.82 days (range 1-28); 7/83 waited more than ten days due to failed conservative management, open fracture treated with initial external fixator or failed K-wire fixation. APTUS plate type used: Styloid = 65, Osteotomy = 13, Adaptive = 5. Number of distal rows utilised in fixation: 0 rows = 2, 1 row = 33, 2 row = 48. 52/83 patients responded to questionnaires (62.7%). Mean Quick DASH 32.69, PRWE score 34.12. Comparing those with or without ulnar styloid fractures; no significant difference in PROMs between the two groups. Comparing single or double distal row construct; no significant difference in PROMs between the two groups. 70% of the two row group had styloid fractures compared to 30 % in the one row group.

Conclusions: The APTUS plating system offers satisfactory PROMs overall, with the styloid plate the most commonly used in a two distal row construct. PROMs are similar in injuries with or without ulnar styloid fracture and one or two distal row construct.

11:29 Discussion

11:31 **Peri-operative factors affecting patient reported functional outcomes post internal fixation of distal radius fractures**
Mr N Bakti, Mr A Graham, Mr R Chennagiri (Aylesbury)

Introduction: The management of distal radial fractures can often be challenging. The advent of low profile locking plates has led to an increasing trend towards internal fixation. We aim to identify the influence of several peri-operative factors on functional outcome after volar locking plate fixation.

Methods: Data on one hundred and ten adults who underwent volar locking plate fixation for distal radius fractures in 2010 was obtained retrospectively. Factors assessed were age, hand dominance, fracture type, time to surgery, experience-level of surgeon, implant choice and post-operative complications. Fractures were classified into AO-Müller types by consensus from

all authors. Functional outcome was assessed with Patient Rated Wrist Evaluation (PRWE) and Patient Evaluation Measure (PEM) questionnaires sent by post. Correlation between factors and functional outcomes were assessed using Spearmann's correlation, independent T-test and analysis of variance.

Results: Average age at presentation was 56.7 years (17 to 88). The majority of patients were females (3.2:1). The most common fracture pattern was AO-Müller type C. Fixation was carried out after a mean of seven days following injury (0 to 76 days). Twenty-six complications were identified including chronic regional pain syndrome (5%), carpal tunnel syndrome (4%), loss of reduction (4%), hardware loosening (1%), tendon rupture (1%), wound infection (1%), teno-synovitis (1%), hardware removal (5%) and revision of fixation (2%).

Conclusion: Of the eight peri-operative factors assessed, the presence of complications post-operatively had a statistically significant poorer PRWE score. Complications did not result in lower PEM scores. All other peri-operative factors had no effect on patient reported functional outcome measures.

11:36 Discussion

11:38 Linking NICE and hand surgery: underused opportunities from NICE's Fellows and Scholars Programme
Mr J Rodrigues (Nottingham)

Introduction: The National Institute for Health and Clinical Excellence (NICE) is central to UK healthcare. Its roles are expanding and, with the introduction of commissioning, are set to become even more important. NICE's Fellows and Scholars (F&S) Programme launched in 2010, aiming to provide educational support for trainees and consultants. In turn, fellows and scholars act as local ambassadors for NICE.

Methods and Results: The opportunities and relevance of the scheme, and the demographics of fellows and scholars were analysed. Ten scholarships per year are available to trainees via open competition, whilst undertaking a project of relevance to NICE involving approximately 7.5 hours/week for the year. Of thirty current and previous scholarships, only one has been held by a plastic surgery registrar, and none by orthopaedic registrars. Ten fellowships per year are available to consultants, with fellowships lasting three years. They involve an ambassadorial role. Of thirty current and previous fellowships, none have been held by either plastic or orthopaedic surgeons.

The presenter's scholarship has facilitated attendance at NICE's annual meeting, NICE Advisory Committee meetings, and NICE Accreditation workshops. It has provided education surrounding outcome measures, cost effectiveness analysis, guideline design and implementation, and patient/public involvement in research and service design.

Conclusions: To date, higher trainees or consultants practising hand surgery have obtained only one of 60 NICE fellowships and scholarships. Securing such positions provides educational opportunities for hand surgeons interested in service design and implementation. Further applications from hand surgeons will benefit our patients, BSSH, the individuals themselves, and NICE.

11:43 Discussion

11:45 Long-term outcomes for trapeziectomy and Weilby interposition arthroplasty
Mr A Bidwai, Mr W Marlow, Mrs C Jackson, Mr Y Khan, Mr M Waseem (Macclesfield)

Introduction and Aims: Trapeziectomy with or without ligament arthroplasty are both accepted treatments for thumb CMC osteoarthritis. Our practice over the last ten years was to perform ligament arthroplasty. We present our long-term results with a minimum of five-year follow-up. This study aims to report functional and satisfaction outcomes following trapeziectomy and Weilby interposition of flexor carpi radialis.

NOTES

Materials and Methods: Forty-three cases were retrospectively reviewed. It was possible to assess 36 cases subjectively and 24 cases objectively. Mean age was 63.7; the majority of patients (33 versus 10) were female. Subjective assessment of function, satisfaction and pain was made using the Disabilities of the Arm, Shoulder and Hand (DASH), Michigan Hand Outcome (MHO) and Patient Evaluation Measure (PEM) scoring systems and Visual Analogue Scales (VAS). Objective assessment of function was by measurement of grip and pinch strength and range of motion.

Results and Statistics: Range of motion of the operated thumb was not significantly different to that that of the contralateral thumb. There was no significant difference in these variables between the operated and non-operated hand either in patients with uni- or bilateral disease. Mean pain rating on a VAS was 1.7. Mean satisfaction rated by VAS was 9.2 and 92% of patients would have the operation again.

Conclusion: Trapeziectomy with Weilby interposition appears to continue to allow similar function to an unaffected hand in unilateral disease at five years. This procedure continues to be beneficial in relieving pain.

11:50 Discussion

11:52 Immediate mobilisation versus immobilisation following excision of the trapezium
Mr F Wu, Mr M Shahid, Mr S Deshmukh (Birmingham)

Introduction: Osteoarthritis of the trapeziometacarpal joint is a common problem that can be treated by excision of the trapezium. Traditionally, the patient is immobilised up to seven weeks post-operatively.

Methods: This retrospective study aims to compare the outcomes of patients mobilised immediately following trapeziectomy with ligamentous reconstruction with those immobilised for six-weeks post-operatively. Twenty-seven patients who underwent this procedure by a single surgeon at a tertiary centre were age and sex matched. Thirteen were immobilised in a plaster-of-Paris cast for six-weeks post-operatively (Group 1, mean follow-up 4.9 years). Fourteen were mobilised immediately post-operatively with only supportive dressing (Group 2, mean follow-up 3.3 years). Pre and post-operative grip strength, key-pinch strength, and DASH score were assessed, and at follow-up using the Patient Evaluation Measure (PEM) score, and visual-analogue score (VAS).

Results: There were no significant differences in outcome between groups. The mean pre-operative and post-operative DASH scores were 55 and 34 for Group 1 ($p=0.25$) and 51 and 39 for Group 2 ($p=0.06$). The mean PEM was 28 in Group 1 and 30 in Group 2 ($p=0.73$). The mean increase in power-grip was 3.5 in Group 1 ($p=0.61$) and 1.8 in Group 2 ($p=0.30$). Key pinch increase was 0.6 in Group 1 ($p=0.86$) and 0.1 in Group 2 ($p=0.28$). The VAS scores were similar for both groups.

Conclusion: This study demonstrates there are no significant differences in outcome and patient satisfaction between immobilisation and immediate mobilisation following trapeziectomy. We recommend a supportive dressing for 3-4 days, following which all immobilisation is discarded.

11:57 Discussion

11:59 X- ray guided steroid injections for interphalangeal joint arthroses of the fingers
Ms C Miller, Mr S Dalgleish, Mr Q Cox (Inverness)

Introduction and Aims: Osteoarthritis of the finger interphalangeal joints is common and severely limits hand function. Surgical options for treatment are often not appealing for patients, with fusion sacrificing range of motion and replacement yielding unreliable results. Intra-articular steroid injections are frequently used by orthopaedic surgeons and rheumatologists, but there is little research assessing this treatment option. This was a prospective audit of patients undergoing intra-articular steroid injections into the finger interphalangeal joints under image intensifier guidance. The aim was to assess the benefits and duration of this procedure.

Method: Fifty joints (in 24 patients) were followed up at six weeks, three months and six months after their injections. Demographic data, visual analogue score (VAS), range of movement (ROM) and hand function related to aspects of daily living (ADL's) were recorded.

Results: There was an improvement in the mean ROM by 19° (47% improvement in total ROM) at six weeks decreasing to 12° (30% improvement in total ROM) at six months. An average improvement in the VAS of 4.8 points at six weeks, decreasing to no improvement by six months. ADL's improved at the six-week and three-month mark, but deteriorated by six months. Analgesia requirements followed a similar pattern and 30% of patients had re-injections by six months.

Conclusion: Patients are satisfied with this procedure as a treatment option for their finger arthritis, with improvements in pain scores, ADL's and ROM of the affected digits.

12:04 Discussion

12:06 Distal interphalangeal fusion using the Headless Compression Screw®
Mr R Knight, Miss C Simpson, Mr M Lawson-Smith, Mr M Gupta, Mr R Pinder, Mr D Power (Birmingham)

Background: Distal interphalangeal joint (DIPJ) fusion results in reliable pain relief for both primary and secondary arthritis and joint instability. Although a variety of fixation methods exist, we report the clinical and radiological outcome of the use of a non-variable pitch, cannulated Headless Compression Screw® (HCS) [DePuy Synthes] in DIPJ fusion.

Methods: A retrospective review of patients was undertaken, identifying patients from the surgical database and theatre log books. Case notes and radiological investigations were examined. Patient demographics, indication for surgery, time to union and complications were noted. Need for a second procedure was investigated.

Results: Twelve patients were identified as having undergone HCS® fixation for DIPJ fusion. Eight females and three males of an average age of 57 years (Range: 25-79 years) made up the study group. Indication for surgery was as follows:

Primary osteoarthritis = 4 patients
Secondary osteoarthritis = 2 patients
Salvage after previous trauma/infection = 5 patients
Acute primary fusion after open fracture = 1 patient

Time to union varied from five to 12 weeks (Average: 7 weeks) with one fibrous union and one infected non-union. Complications included infected non-union after previous flexor sheath infection, resulting in amputation of the finger tip, transverse fracture of the distal phalanx and fingertip sensitivity requiring metalwork removal in one patient.

Conclusions: Reliable distal interphalangeal joint fusion can be obtained using the Headless Compression Screw®. To avoid need for screw removal, the head of the screw must be seated below the level of the tuft of the distal phalanx.

12:11 Discussion

12:13 Elektra trapeziomatacarpal prosthesis: our experience in a specialist hand unit
Mr K Veravalli, Mr A Metcalf, Mr D Russell, Mr D P Newington (Swansea)

Introduction: The Elektra trapeziometacarpal joint (TMCJ) arthroplasty has been reported to have unacceptable complication rates. We have reviewed all the cases carried out at the hand unit in Swansea, which were performed by the senior authors. We present a large prospective review of all these cases.

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Methods: Between 2004–2010, 93 TMC joint replacements (82 patients) were performed using second generation uncemented Elektra prosthesis. All patients had symptomatic and radiological diagnosis of osteoarthritis involving the trapezio-metacarpal joint (E-L grade II-III). All patients had pre and post-operative clinical assessment, radiographs and prospective review in outpatient clinics. Patient demographics were recorded and all complications were noted.

Results: The majority of patients were women (73 and 9) with a mean age of 53.5 (47-60 years) and a follow-up of 58 months (32–94). Eighteen patients had a variety of complications. Sixteen patients had loosening or poor osteointegration of trapezial component. Six out of 16 patients were revised to cemented cup without further problems. Four patients with asymptomatic dislocation were treated expectantly. All other patients had trapeziectomy. The complication rate in this cohort is 20%.

Conclusion: This large review confirms recent data, suggestive of an unacceptable complication rate with the Elektra prosthesis, although many of our patients were very satisfied at five years after the index surgery. We no longer perform this operation but continue to evaluate a pressfit trapezial component in a small selected group.

12:18 Discussion

12:20 K-wire versus compression screw fixation for phalangeal joint arthrodesis
Dr B Chatterton, Dr N S Kalson, Mr A Khandwala (East Grinstead)

Introduction: Phalangeal joint arthrodesis is often performed for traumatic injury and degenerative joint disease. K-wire fixation is a well-established method, but fusion failure and pain around the buried wire has been reported. Compression screw fusion has potential benefits. It is a simple procedure which does not require joint osteotomy causing digit shortening and the implanted screw is not likely to cause pain.

Aims: This study aimed to compare the outcome of K-wire and compression screw arthrodesis.

Patients and Methods: Twenty-three fusions by K-wire and 23 fusions by compression screw in 39 patients were analysed.

Results: Mean age was 57 (SEM±3) years, 24 patients were female. Indication for fusion was trauma (17/39), osteoarthritis (15/39) rheumatoid arthritis (5/39), gout (1/39) and congenital deformity (1/39). Nineteen DIP, 17 PIP, four thumb IPJ and six thumb MCP joints were fused. Successful union was achieved in 21/23 screws (91%), compared to 18/23 wires (78%). One screw failure and one wire failure were due to trauma, two wires failed following splint loss, and one wire failed following wire removal secondary to pain. No reason for failure was identified in the remaining cases (one wire, one screw). Failed fusion occurred in 3/5 smokers (one screw, three wires). Pain requiring removal of the wire was required in 11/23 (48%) wires.

Conclusion: Considering the simplicity of the fusion procedure, its high fusion rate and lack of post-operative complications (such as pain caused by a K-wire) screw fixation can be considered a preferred technique for arthrodesis of phalangeal joints.

12:25 Discussion

12:27 Accuracy of non-image guided injections into the basal thumb joints
Miss C Cheadle, Mr R Jeffers (Bradford)

Purpose: Previous studies describe methods to perform non-guided intra-articular basal thumb joint injections; however, other papers show inaccuracy of needle placement. The mini C-arm has been shown to expose patients to minimal radiation. This study assessed the accuracy of basal thumb joint injections without image guidance and safety of mini C-arm guidance.

Methods: A prospective three-month study of a single surgeon series of all patients undergoing CMCJ/STTJ steroid injection was performed. Following local anaesthetic radial nerve block, the method described by Storey was used for 'blind' needle placement into the CMCJ and a further needle placed into the STTJ with a mini C-arm used to assess accuracy before steroid injection. Eaton-Littler grade, clinically and radiologically worst joint, accuracy of needle placement, number of exposures, screening time and dose area protocol (cGycm-2) were noted.

Results: Twenty-five hands/48 joints were injected (CMCJ 25:STTJ 23). Mean Eaton-Lillter grade = 2.91, there was no correlation between clinically and radiologically worst joint. 'Blind' needle placement accuracy CMCJ = 44% and STTJ = 60.9%. Missed CMCJs primarily were placed on the trapezium surface (57.1%) and STTJs on the scaphoid surface (66.6%). There was no correlation between Eaton-Littler grade, radiologically/clinically worst joint and accuracy. Mean exposures = 11 (range 3-31), mean screening time = 12.32s (range 3-35), mean DAP = 1.02cGycm^{-2} (range 0.2-3.15).

Conclusions: We are unable to accurately inject basal thumb joints without image guidance. We recommend that all injections are image guided and that this is safe as there is minimal radiation exposure.

12:32 Discussion

12:34 Role of autologous fascia lata for hand reconstruction: an alternative reconstruction technique

Mr A Mishra, Mr A Molajo, Mr D Bell, Mr A Iqbal (Liverpool)

Introduction: Tendon reconstruction with tendon graft is a well-established technique where primary tendon repair is not possible and other options are not acceptable. Conventional sources for tendon grafts include palmaris longus and plantaris. It becomes quite challenging when these donor sites do not provide suitable tendonor when multiple reconstructions are required. We present a series of fifteen cases where fascia lata has been used for flexor and extensor tendon and ligament reconstruction and discuss other potential uses of fascia lata.

Patients and Methods: A retrospective case note review of all fascia lata reconstruction for hand surgery was conducted from May 2010 to December 2012. In eleven cases it was used for second stage tendon reconstruction for both flexors and extensor tendon and in four cases it was used for ligament reconstruction for revision arthroplasty of the first CMCJ and swan neck deformity correction. We discuss the technique of harvest and its incorporation in various forms of hand reconstruction, including free tissue transfer.

Results: This reconstruction maintained its integrity and was able to withstand forces of flexion and extension. All patients except one achieved good excursion. Ultrasound examination demonstrated continuity and free excursion of the tendon reconstruction.

Conclusion: Fascia lata represents a viable alternative to traditional reconstruction techniques. It is readily available and easily harvested with minimal donor site morbidity. It is a versatile material and readily fashioned to reconstruct various structures. We encourage surgeons to consider fascia lata for tendon and ligament reconstruction in plantaris or palmaris deficient patients or when multiple tendons require reconstruction.

12:39 Discussion

12:41 SPECT CT: a valuable non-invasive diagnostic tool for the diagnosis of wrist pain

Miss R Shirley, Dr R Dhawan, Dr S Vijaynathan, Mr D M Evans (Windsor)

Many conditions causing pain in the wrist can be diagnosed through a combination of clinical methods and simple radiology, with or without MRI. Arthroscopy is frequently used to confirm such a diagnosis or to investigate pain that has eluded diagnosis, but it is an invasive procedure,

and unless an arthroscopic procedure is possible, it is an invasive operation that carries the patient no further forward.

Method: Twenty patients underwent Tc99m HDP Bone SPECT CT for diagnosis of wrist pain. Indication was wrist pathology with uncertain diagnosis after conventional imaging. A stringent acquisition protocol was applied in all patients, wherein both wrists were scanned. Co-registration imaging was validated and reported by a specialist radiologist with dual expertise in nuclear medicine and CT. Notes were retrospectively collected and correlated with scan findings.

Results: Eight patients had clear dominant foci of increased tracer precisely localised to joint or bone based abnormalities on CT. Four patients had no area of increased uptake. The remaining nine patients had low grade or multiple areas of uptake of tracer. This information was used to plan appropriate treatment and 7/8 patients with one focus of radioactive tracer were given a surgical plan based on scan results.

Conclusions and Clinical Relevance: Bone SPECT CT is a useful, non-invasive diagnostic tool for wrist pathology. 40% of painful wrists showed unifocal functionally and structurally concordant information that allowed definitive management. Negative and multi-focal scans were also useful in determining management.

12:46 Discussion

12:48 Management of the Apert hand in a multidisciplinary setting: the Liverpool protocol
Mr A Mishra, Mr F Ahmad, Dr R Sells, Dr D Pettitt, Mr C Duncan,
Professor P McArthur (Liverpool)

Introduction: Apert syndrome presents with complex malformations of the hands, feet and craniofacial skeleton. The management of these patients is truly multi-disciplinary with a host of clinical priorities, determined principally by functional need and age of the child. We present the Alder Hey Hospital protocol for managing these competing priorities.

Patients and Methods: Seventeen consecutive patients with Apert syndrome referred to our unit for hand and craniofacial surgery were included in this retrospective review.

Results: Patients were classified according to Upton (Upton I - 2 patients, II - 5 patients and III - 10 patients). Craniofacial crisis management (addressing airway, eyes and intracranial pressure) took priority over hand correction. At our institution, syndactyly release rarely requires the use of skin grafts and relies heavily on local flaps. Where possible, the first and fourth web spaces in Upton III hands were released before the age of one year. Release of the second or the third web space was the next priority so as not to compromise flap vascularity. We do not routinely release syndactyly of the toes and if requested by the patient, we may at most release the first web space. The sequence of craniofacial, cleft, hand and feet surgery is presented.

Conclusions: The importance of managing these complex patients with specialist clinical needs in a single unit is highlighted, together with the development of a protocol that provides some structure to the sequence of surgical interventions. We believe this provides a convenient and comprehensive care plan for the patient.

12:53 Discussion

12:55 Full thickness skin grafts do not increase complications when used with the Flatt technique in syndactyly release
Mr T Barabas, Mr S Meetah, Mr M A Pickford (East Grinstead)

The outcome of syndactyly release by a single surgeon (MAP) is reported in this twelve-year retrospective review. Acrosyndactyly and redo cases referred from elsewhere were excluded and first web releases were analysed separately. One hundred and sixty-four 2nd, 3rd or 4th webs were released using primarily the Flatt technique (dorsal flap, interdigitating zig-zag incisions and full

thickness skin grafts). Ninety-eight were simple incomplete, 58 simple complete, 14 complex and three complicated. Complications included seven (4%) graft failures, five (3%) web creeps, four (2%) infections and three (2%) nail deformities. Only two (1%) required re-operation. Initial surgery was performed at an average of thirteen months (range 3 months to 4 years), with a five-year follow-up (range 16 months to 6.5 years) until discharge around age six years old (range 2 years 11 months to 8 years 3 months). Many recent publications support the use of graft-less techniques in syndactyly surgery, but this case series demonstrates that it is possible to achieve good results with few complications when full thickness skin grafts are utilised as part of the Flatt technique.

13:00 Discussion

13:05 Lunch and Trade Exhibitions

Keynote Lecture

Chairman: Professor D A McGrouther

14:00 Benefits of early nerve repair
Professor M Wiberg (Sweden)

Free Papers

Chairman: Professor T R C Davis

14:30 Wrist problems in elite international divers
Miss L Follett, Mr T Powell, Mr D A Campbell (Sheffield)

Basic medical data reveals that over half of the 2012 British Olympic diving team reported wrist symptoms requiring medical attention in the year leading up to the Games. Wrist injuries in elite divers affect training, conditioning and competition. Some athletes experience chronic problems that limit performance and require a significant amount of medical support time in investigating and managing their symptoms. In order to develop an effective, proactive wrist injury management plan for the British diving programme, it was necessary to better understand the incidence and cause of wrist injuries in our elite athlete cohort. The purpose of this study was to undertake a retrospective analysis of the incidence, prevalence and nature of wrist injuries in British elite divers in a one-year period of intensive preparation and competition. A secondary objective was to highlight risk factors associated with wrist injuries.

All twenty-eight elite GB divers (age range 14–31 years) selected for the World Class Podium squad, Senior and Junior Development squads and Talented Athlete Scholarship Scheme (TASS) in the 2012/13 season underwent detailed focused interview to determine the incidence and nature of wrist symptoms over the preceding twelve months. Retrospective training exposure information was collated, together with demographic data. Information regarding protective wrist guard use was also recorded and related to symptom patterns.

This is the first study to examine and document the nature and frequency of wrist problems in this sport. Incidence, prevalence, clinical details and the impact of such problems will be described.

14:35 Discussion

14:37 The prevalence, variety and impact of wrist problems in elite professional golfers
Mr D A Campbell, Dr P O'Connor, Dr R Hawkes (Leeds)

Golf is a popular sport, played around the world by an estimated fifty-seven million people. Previous studies on wrist injuries in elite golfers describe such injuries to be frequent, although no studies report the incidence, variety, severity or impact of wrist injuries in any detail.

This study describes these factors in a cohort of elite professional European Tour golfers competing at the Tour's flagship event, the BMW PGA Championship at Wentworth, in 2009.

Information was collected by personal interview and clinical examination. One hundred and twenty-eight of 153 eligible golfers (84%) were included. A custom questionnaire was designed and used, with further probing detailed questions based on root question responses. Severity of injury was assessed by the number of missed tournaments and the amount of time of missed practice.

Thirty-eight golfers (30%) reported 43 problems. Most injuries (67%) occurred in the leading wrist (the left wrist in a right-handed golfer), and the most common location was the ulnar side of the wrist (35%). Eighty-seven percent of all ulnar-sided problems were in the leading wrist. The most significant injury, in terms of impact on play, was extensor carpi ulnaris (ECU) tendon subluxation, with 50% of cases undergoing reconstructive surgery.

Most structural injuries have a specific treatment and rehabilitation plan that can involve significant periods of time away from the sport, whilst the management of many of the more minor problems is through alteration in technique or practice regimes, aiming to keep a golfer playing during recovery.

14:42 Discussion

14:45 Are thumb injuries becoming more frequent in men's lacrosse?
Mr M Webb, Dr J Price (Newcastle upon Tyne)

Men's lacrosse is a rapidly growing sport. The authors were concerned by the number of thumb injuries sustained while working with an international team at the 2012 European Championships.

We compared data collected during immediate pre-tournament training camp and the European Championships with published reports.

Data was gathered prospectively on all twenty-three players on the England men's lacrosse team. An injury was defined as one that occurred during a team practice or game, and resulting in the player missing one or more further sessions.

Over fifteen days, 23 players participated in 17 athletic exposures each. This included nine games and eight practices. There were three thumb injuries (Rate = 0.007673). One occurred from contact with an opponent, one from direct contact with an opponent's stick and another from a direct blow from the ball. Two fractures of the proximal phalanx and one MCPJ sprain. The data was compared with that published by Bowers et al. They reported 276 thumb injuries in 1,019,222 athletic exposures (Rate = 0.000271). A c2 test with Yates correction for continuity was performed. This yielded a Yates' c2 value of 53.559 which is statistically significant ($p < 0.001$). Mechanism of injury corroborates with published reports.

Lacrosse has become more popular and there has been a trend to develop lighter flexible equipment. Data needs to be collected to determine if thumb injuries can be attributed to equipment design. We would advise manufacturers to explore alternative designs to help protect the thumb more successfully.

14:50 Discussion

14:52 Case series of patient related outcome measures after arthroplasty with the Integra® Universal 2™ Wrist Replacement
Mr D Warwick, Mr S Ali (Southampton)

Introduction: Despite expanding literature, the efficacy and durability of wrist replacements has not been as clearly established as for other implants, partly attributable to the complexity of the

articulation of the wrist, which makes design of prosthetic replacement technically challenging. We have studied subjective and objective outcome measures in patients receiving in the Integra® Universal 2™ Wrist Replacement (UWR-II).

Methods: Retrospective analysis of nineteen patients (20 wrists) who underwent wrist arthroplasty with the UWR-II for osteoarthritis (OA), rheumatoid arthritis (RA), psoriatic arthritis (PA) and Kienbock's disease (KD) between 2004 and 2012 was performed. We measured Quick-DASH, visual analogue pain score (VAS), grip and range of movement pre-operatively and post-operatively. We also examined patients' satisfaction post-operatively.

Results: Median follow-up was 26.1 (range 1.21-52.9) months. Five patients were not contactable (deceased or lost to follow-up). Total sample size was fifteen, of whom 14 responded. Pathology comprised OA (n = 9), RA (n = 1), PA (n = 2) and KD (n = 2). Two patients had complications intra-operatively and 12 post-operatively. Mean pre-operative Quick-DASH was 58, post-operative 43; median pre-operative VAS was 9, post-operative 3, mean difference Quick-DASH after arthroplasty, 14.2, mean difference VAS after arthroplasty, 6. Nine (64%) patients were very satisfied with arthroplasty and ten (71%) would repeat their decision to undergo wrist arthroplasty.

Conclusions: Despite the high post-operative complication rate, wrist arthoplasty with the UWR-II is still an effective surgical option for reducing pain and increasing function in degenerative and inflammatory wrist diseases with high patient satisfaction.

14:57 Discussion

14:59 **Wrist arthroscopy for soft tissue wrist injuries in a paediatric population**
Mr P Storey, Mr A Kocheta (Rotherham)

Introduction and Aims: The indications for wrist arthroscopy continue to broaden, and new techniques and procedures are frequently being developed. However, there remain few reports of its use in paediatric patients.

Material and Methods: We present a case series of eight paediatric patients, all of whom suffered at least three months of wrist pain following a fall onto the outstretched hand. Their pain failed to respond to treatment with a combination of casts and wrist splints. There were no radiographic abnormalities noted in any of the patients. Clinical examination was indicative of carpal instability.

Results and Statistics: The six patients on whom a therapeutic procedure was performed can be divided into two broad groups: radial sided pathology (scapholunate tears, dynamic scapholunate instability) and ulna sided pathology (lunotriquetral tears, triangular fibrocartilage complex tears). Subcutaneous inter-carpal wiring and open TFCC repair was performed as appropriate. The pain settled in all six. A diagnostic but non-therapeutic scope was performed in two of the eight patients.

Conclusions and Clinical Reference: There is a cohort of paediatric patients who have an injury mechanism consistent with carpal ligament injury and who continue to complain of persistent wrist pain despite appropriate non-operative management. Wrist arthroscopy is indicated, is safe and is an effective means of diagnosing and treating these patients. As children compete in contact sports at increasingly younger ages, these injuries are likely to become more frequent.

15:04 Discussion

15:06 **Ulnar shortening osteotomy for malunited distal radius fractures: is it the answer?**
Mr A Mohan, Mr R Shafafy, Mr P Magnussen (London)

Hypothesis: Ulnar shortening osteotomy produces a significant improvement in wrist pain and overall wrist function for patients with radial shortening secondary to malunited distal radius fractures.

Methods: Twenty patients with distal radial fractures were included. Patients presented with wrist pain and radiographically evident positive ulnar variance secondary to malunion of the distal radius with no significant intercalated instability. Patients were treated with a short oblique ulnar shortening osteotomy, using a Stanley jig and small AO compression plate system. Pre and post-operative radiographic measurements of inclination, dorsal/volar angulation and ulnar variance were performed. Patients were scored pre and post-operatively using the Quick Disabilities of the Arm, Shoulder and Hand (QuickDASH) and Patient-Rated Wrist Evaluation (PRWE) scores by an independent observer. Mean follow-up was twenty-four months post surgery. Data were analysed by Wilcoxon signed-rank test and paired t-tests using SPSS v19.

Results: Radiographic analysis revealed no change in the mean radial inclination of 19.1 (range 10-29) and dorsal angulation of 3.8 (range 10 volar - 16 dorsal). Mean pre-operative scores were 61.1 (range 25-95.5) for QuickDASH and 70.4 (range 33-92) for PRWE. At the latest follow-up mean post-operative QuickDASH were 10.6 (range 0-43.2) and 17.2 (range 0-44) for PRWE. Differences in scores after surgery for both QuickDASH and PRWE were statistically significant (p value<0.01).

Conclusions and Relevance to Hand Surgery: Ulnar shortening osteotomy is a relatively simple procedure compared to complex radial osteotomies. In our series, patients showed significant improvement in pain and function by altering the positive ulnar variance.

15:11 Discussion

15:13 Outcomes of surgical management of bilateral rheumatoid wrist disease
Mr K Kailash, Mr A Raza, Dr S Mahalingam, Mr S Talwakar, Mr M Hayton, Professor S Murali, Mr I A Trail (Wigan)

Introduction: Total wrist arthroplasty, when compared to arthrodesis, allows preservation of function but may leave patients with a weaker wrist. Arthroplasty is considered for patients with low demand activities or for the non-dominant side.

Objectives and Aims: The aim of the current study was to identify a system of management for bilateral rheumatoid wrist disease.

Methods: This was a retrospective review of thirty-two patients at a tertiary hospital. There were two groups of patients: Group 1 had bilateral arthroplasty (n=10) and Group 2 had TWA on one side and fusion on the other side (n=22). The follow-up included pain score, patient satisfaction, assessment of range of movements and function.

Results: Mean age for the two groups was 60 years and follow-up 59 months. Post-operatively, pain relief was achieved in 70% within six months and the movements were preserved with mean dorsiflexion and palmarflexion of 190. Mean DASH score for Group 1 was 54.5. Patients in Group 2 who had arthroplasty had a similar DASH of 54. The DASH score was almost identical in arthrodesis patients. The PRWE score was also lower in patients with arthroplasty then arthrodesis. Complications of arthroplasty were joint stiffness 10% (n=3), persistent wrist pain 13%, (n=4) and revision arthroplasty in 6% (n=2).

Conclusion: Arthrodesis has been the gold standard for management of the rheumatoid wrist for pain relief. Arthroplasty still remains an evolving procedure and the short to mid-term results are improving; longevity is yet to be established.

15:18 Discussion

15:20 **Comparison of outcome and complications following three different methods of wrist arthrodesis**
Miss O Ashman, Mr M Khan, Mr K Karuppaiah, Mr J Compson (London)

Introduction: Wrist arthrodesis is a well-established treatment option providing pain relief and stability in patients with a painful wrist. A number of arthrodesis techniques have been described, however there is a distinct lack of comparison studies within the literature. We conducted a retrospective study of patients who underwent wrist arthrodesis between 2006 and 2012 and compared outcomes following three different arthrodesis techniques.

Method: Patients who underwent a wrist arthrodesis between 2006-2012 were identified and the electronic patient records, hand therapy database and PACs system were then utilised to identify patient outcome and complications.

Result: During this six-year period, 38 patients (22 females and 16 males) underwent a wrist arthrodesis. Of these patients, thirteen were arthrodesed with an AO plate, 13 using a double plate technique and eight with a Steinmann pin. Indications for arthrodesis comprised idiopathic osteoarthritis (30%), rheumatoid arthritis (20%), post-traumatic osteoarthritis (18%), Kienbock's disease (15%), perilunate dislocation (3%), charcot arthropathy (3%), juvenile arthritis (3%) and other (8%). The mean length of hospital stay was 3.8 days. One patient suffered from a superficial wound infection, two patients fused with AO plates underwent implant removal (due to extensor tendon adhesions causing pain), and one patient treated with the double plate technique required further surgery with excision of the ulnar styloid.

Conclusion: All three arthrodesis techniques have high fusion rates with low complication rates. However, in our cohort patients fused with the AO plate were more likely to require metalwork removal due to pain caused by extensor tendon irritation.

15:25 Discussion

15:27 **Intra-articular and portal infltration versus wrist block following wrist arthroscopy: a prospective RCT**
Mr Y Agrawal, Dr K Russon, Mr I Chakrabarti, Mr A Kocheta (Sheffield)

Introduction: Wrist block has been used to provide pain relief for many procedures on the hand and wrist but its role in arthroscopy remains unexplored. Chondrotoxicity is a concern with intra-articular infiltration of local anaesthetics. We aimed to evaluate and compare the analgesic effect of portal and wrist joint infiltration to the pain relief provided by a wrist block in patients following wrist arthroscopy.

Materials and Methods: Ethical approval was obtained. A prospective, randomised, double-blind clinical trial was designed and patients undergoing wrist arthroscopy as a day case were recruited for the study. Levo-bupivacaine was used for both techniques. The effects were evaluated using the 10-point Visual Analogue Score (VAS) score. The primary outcomes for statistical analyses were pain scores and average pain scores. Total pain experienced was studied using the area under the curve pain scores and time to first analgesia with Kaplan Meier survival analysis.

Results: We provide demographic data for patients undergoing these procedures in our unit, outcomes of both techniques of analgesia and finally compare the VAS scores and the time to first oral analgesia. Both techniques provided effective pain relief in the first hour and in the first 24 hours from the operation but wrist block was found to be superior with better pain scores at evening of surgery (p=0.0184) and at 24 hours after surgery (p=0.0332).

Conclusion: Wrist block provides superior and more reliable analgesia in patients undergoing wrist arthroscopy without exposing patients to the potential risk of chondrotoxicity.

15:32 Discussion

NOTES

Distal radio ulnar joint dysfunction

Chairman: Miss V C Lees

15:40 **Excision of distal ulna**
Mr I A Trail (Wigan)

15:55 **Suave Kapanjii procedure**
Mr D P Newington (Swansea)

16:10 **Ulnar head replacement**
Mr D A Campbell (Leeds)

16:25 **Discussion**

16.40 **Audit database update**
Mr J W M Jones (Peterborough)

17:00 **Hand Diploma Presentations**

17:05 **Refreshments and Trade Exhibitions**

17:30 **Business Meeting**

19:30 **(for 20:00) Society Dinner at Cedar Court Hotel**

08:30 Registration

Free Papers

Chairman: Mr I A Trail

09:00 **Long-term management outcome of external fixation in post-traumatic flexion contracture of the proximal interphalangeal joint**
Miss S S Jing, Dr G Kazemian, Dr M Tehrani, Mr S Houshian (Chelmsford)

Purpose: Management of chronic post-traumatic flexion contracture of the proximal interphalangeal (PIP) joint remains challenging. We present the long-term outcome of joint distraction using mono-lateral external fixation in the treatment of such injury.

Methods: Between September 2001 and October 2011, ninety-four consecutive patients (98 PIP joints) with a mean age of 43 years (range: 17–69 years) were treated with external fixation following chronic flexion deformity of the PIP joint due to trauma. The average time from injury to surgery was forty-eight months (range: 6-84 months) and duration of joint distraction was ten days (range: 7-22 days). Patients were followed-up for a mean period of fifty-four months (range: 12-72 months).

Results: The mean range of motion gained post-operatively was 67° (range: 30°-90°). There was no loss of gain during follow-up. Patients aged under forty years fared slightly better than those aged over 40 years, but the difference was not statistically significant. Two patients had swelling, pain and redness during treatment, which were resolved by temporarily stopping distraction. We had twelve superficial pin site infections and related discharge was managed successfully by oral antibiotics, but no serious complications. The outcome was not affected in all cases.

Discussion: External fixation is a simple and effective treatment modality for chronic PIP joint contractures with good, predictable long-term results. Careful patient selection and monitoring are important.

09:05 Discussion

09:08 **Why do we seek radiographic evidence for healing of hand fractures?**
Dr B D Chatterton, Dr N Kalson, Mr A Khandwala (East Grinstead)

Introduction: Radiographic callus formation is reportedly not always seen in hand fractures, despite successful progression to clinical union. Some of these fractures unite with fibrous union, especially in the middle and distal phalanges.

Aims: This study aimed to quantify radiographic evidence of callus formation in metacarpal and phalangeal fractures, and establish if there was a difference between K-wired and non K-wired bones.

Methods: Radiographs for two hundred patients with metacarpal and phalangeal fractures (100 K-wire treated and 100 non-operatively treated) were retrospectively reviewed for evidence of callus formation up to ninety days post-fracture. 562 radiographs were analysed in total. All fractures proceeded to clinical union. Comparison was made using Fisher's exact test.

Results: Callus was seen less frequently in K-wire treated fracture radiographs compared with non-operatively treated fracture radiographs (6.6% versus 29% respectively, $p<0.05$). Phalangeal fracture radiographs were less likely to demonstrate callus compared with metacarpal fracture radiographs in both the operative (4.2% versus 17.5% respectively, $p<0.05$) and non-operative groups (20% versus 53% respectively, $p<0.05$). Intra-articular fractures were less likely to demonstrate callus compared with extra-articular fractures in both the operative (0.9% versus 9.8% respectively, $p<0.05$) and non-operative groups (23% versus 31.1% respectively, $p<0.05$).

NOTES

Conclusions: Callus formation is seen in less than 10% of operatively treated phalangeal and metacarpal fractures, and less than 30% of non-operatively managed fractures. It should not form a routine part of post fracture radiographic healing assessment in patients with good clinical outcomes, as the majority of fractures will progress to union independent of radiographic callus presence.

09:13 Discussion

09:16 **The use of Ligamentotaxor™ for the treatment of difficult proximal interphalangeal joint fractures**

Mr K Marenah, Mr M Khalfaoui, Mr R Tahmassebi, Mr A Tavakkolizadeh (London)

Introduction and Aims: Fractures of the hand involving the proximal interphalangeal joint are technically difficult injuries to treat and are often associated with poor outcomes. Several dynamic external fixation devices have been described to treat these injuries with varying reported results. We present our experience of the Ligamentotaxor™ external fixator for the management of periarticular PIPJ fractures after short-term follow-up.

Material and Methods: Eleven patients with PIPJ fractures were surgically treated using Ligamentotaxor™ in our unit between December 2009 and May 2012. They were followed up for a mean of 3.5 months (range 1-6). The primary recorded outcome was recovery of ROM at the PIPJ.

Results and Statistics: The mean time to surgery was ten days (5–20) and the mean duration of external fixation was four weeks (3–5). Two patients contracted pin site infections necessitating early removal of the device in one patient. The mean total ROM at the PIPJ at time of final follow-up was 77° (Range 20–103°).

Conclusions and Clinical Reference: Popular external fixator devices, including the Suzuki and S-Quattro systems, have been in use for many years and have shown reasonable results. The results of Ligamentotaxor™ as published by Koerting et al 2009 showed that its results were comparable, with a reported final ROM of 76.3° in fifteen patients. We have shown in our experience of eleven patients that these results are reproducible with good short-term outcomes, even in those with late presentations leading to delay in surgery.

09:21 Discussion

09:24 **A new technique for closed management of displaced intra-articular fractures of metacarpal and phalangeal head which were delayed on presentation: report of eight cases**

Miss S S Jing, Mr S Houshian (Braintree)

Summary: We present the outcome of delayed management of eight displaced intraarticular fractures of metacarpal and phalangeal head, treated with capsuloligamentotaxis using the Penning mini-external fixator. Closed anatomical reduction with a 2mm over distraction was achieved at the time of operation at an average of twenty days from the time of the initial injury. Excellent outcomes in terms of function and pain were obtained at six months follow-up in all cases. This technique is simple, minimally invasive and effective with minimal complications. We recommend the use of external fixation in the management of delayed presentation of displaced metacarpal or phalangeal head fractures.

09:29 Discussion

09:31 **Corrective osteotomy of malunited metacarpal fractures: long-term results of a novel technique**
Mr K Karuppaiah, Mr J Compson (London)

Introduction: Corrective osteotomies of malunited metacarpal fractures are justified in patients with severe angulation, rotational deformity and shortening. These patients usually present with restriction of movements, decreased efficiency of the flexor tendons and poor cosmetic results. Surgical correction of this three-dimensional deformity is challenging. The authors describe a new technique where these deformities can be corrected completely with good functional outcome.

Material and Methods: Eleven malunited metacarpal fractures (five little finger; two ring finger; three middle finger and one index finger) in nine patients were retrospectively reviewed from January 2006. Of the nine patients, eight were males and the dominant hand was involved in six patients. All the metacarpals were shortened and angulated; however, only eight were rotated. The technique involves using K-wires as a guide for osteotomy and to provide temporary stability during definitive fixation. After corrective osteotomy, the patient was referred to hand therapy and was allowed to mobilise as tolerated.

Results: At the final follow-up of 45.9 months the mean initial fracture angulation of 42.3° (range 30–72°) was completely corrected in all patients. All expect one patient had complete correction of rotational deformity, in the patient with mild persistent deformity, the function was not affected and the patient refused further intervention. There were no complications related to the technique. Two plates were removed due to prominence/irritation over the extensor tendons.

Conclusions: Our technique is simple, safe and effective for the correction of complex metacarpal deformities. Furthermore, this technique gives better intra-operative control of the fragments than other described techniques.

09:36 Discussion

09:39 **Surgical management of post-traumatic proximal interphalangeal joint contracture: a review**
Miss S S Jing, Mr C Chikkamuniyappa, Dr G Kazemian, Dr M Tehrani, Mr S Houshian (Chelmsford)

Chronic flexion contracture of the proximal interphalangeal (PIP) joint presents a common yet challenging problem to hand surgeons. Over the years, multiple treatment modalities have been described, producing limited results. Non-operative treatment using serial casting and splints should be tried before attempting open surgical releases in selective patients. Recent clinical outcome from external fixation has been encouraging and can be a useful alterative. This review provides an update on the current management of PIP joint contractures and suggests a flow chart of treatment to aid decision making.

09:44 Discussion

09:46 **Watching my hand operation live: a patient satisfaction study**
Miss N Kelemen, Dr F Meakin, Mr F Urso-Baiarda, Dr S Bhandari, Mr S Southern (Wakefield)

Introduction and Aims: In our study we aim to assess the efficacy of live video, patient interaction and detailed explanation during hand surgical operations under regional or local anaesthesia.

Materials and Methods: We used a patient satisfaction questionnaire to assess patients' experience related to live video feed, involvement in the operation and anaesthesia. Twenty-five elective (n=9) and trauma (n=16) patients (average age 42 years) undergoing hand surgery have been included. The average operating time was 100 minutes, nine patients had local and 16 had regional anaesthesia.

Results and Statistics: 95% of patients elected to watch their operation live. 48% were nervous before the operation of which 90% became less nervous with the use of the live screen.

Questions	Yes (n and %)	No (n and %)
Did you find what you have seen useful ?	22 (88)	3 (12)
Did it feel like somebody else's hand was operated on?	12 (48)	13 (52)
Did you feel involved in the operation?	21 (84)	4 (16)
Did you ask any questions?	19 (76)	6 (24)
Were the answers you got useful?	19 (76)	6 (24)
Do you think watching your operation on the screen will help you in your post-operative therapy?	23 (92)	2 (8)
Would you watch it again?	24 (96)	1 (4)

Conclusions and Clinical Reference: All patients would recommend the overall surgical experience. Our study highlights the importance of live video feed and anesthesia that allows patient interaction and involvement. This results in high patient satisfaction and effective post-operative recovery.

09:51 Discussion

Intra articular fractures of the base of the middle phalanx

Chairman: Professor J J Dias

10:00 Conservative management and external fixation
Mr G E B Giddins (Bath)

10:15 Internal fixation
Mr D J Shewring (Cardiff)

10:30 Hemi hamate reconstruction
Mr D Dewar (Leeds)

10:45 Discussion

11:00 Refreshments and Trade Exhibitions

Bell Session

Chairman: Mr D Warwick

11:30 Predicting need for follow-up using outcome measures: carpal tunnel decompression
Mr A Marthi, Miss S Bezzaa, Dr A Procter, Mr B Ollivere, Mr P Johnston (Cambridge)

Introduction and Aims: Patient reported outcome measures (PROMs) are questionnaires that allow patients to rate their current 'health-status'. The aim of this study was to assess whether two PROMS (PEM and qDASH) correlate with surgical outcome and if it was possible to define a threshold score to limit unnecessary clinic visits.

Materials and Methods: Carpal tunnel decompression patients were asked to complete both PEM and qDASH questionnaires at their initial appointment and again at clinic, six weeks post-operatively. Seventy-five patients completed both questionnaires at both time points. Surgical outcomes using post-operative clinic letters were defined as: 'Good' (no concerns, discharged); 'Moderate' (some patient concerns, reassured, discharged) and 'Poor' (requiring follow-up/referral). ROC curves were plotted to assess the ability of each questionnaire to distinguish patients requiring follow-up ('Moderate' and 'Poor') from those who would not ('Good') outcome.

Results and Statistics: There were statistically significant differences in post-operative scores for both questionnaires between all three pre-defined surgical outcomes for both questionnaires. Results of ROC analysis of post-operative scores suggest area-under-curve values of: PEM AUC = 0.84 (0.75-0.93) and qDASH AUC = 0.79 (0.68 – 0.89).

Best thresholds using post-operative scores were identified as:

	Threshold	Sensitivity	Specificity
PEM	25	0.77 (0.64 – 0.90)	0.72 (0.58 – 0.86)
qDASH	33	0.64 (0.49 – 0.79)	0.81 (0.67 – 0.92)

Conclusions and Clinical Relevance: Post-operative scores were better than using a difference in scores for distinguishing surgical outcomes in patients. The PEM questionnaire performed better than qDASH, though this difference was not statistically significant. A score of 25 on a post-operative PEM questionnaire is a potentially reliable threshold to limit unnecessary clinic visits.

11:32 Outcomes of carpal tunnel release: does the size of hand or wrist matter?

Mr L H Lee, Mr M Al-Maiyah, Mr J Auyeung, Mrs R Al-Bahrani, Mr A Bhargava, Professor J Stothard (Middlesbrough)

Introduction and Aims: Studies have suggested that a "squarer" wrist is associated with the diagnosis of carpal tunnel syndrome (CTS). We found no reports whether this association affects the outcomes after surgery – possibly clinically relevant. We investigated the correlation between the anthropomorphic measurements and the clinical outcomes after open release.

Material and Methods: Full research and ethics approvals were obtained. Two hundred and two patients (Female:Male = 141:61) with idiopathic CTS (Kamath and Stothard score ≥3) were enrolled. Wrist depth, wrist width and palm length were measured pre-operatively. Standardised open carpal tunnel release was performed under local anaesthetic. Wrist ratio (WR = wrist depth:wrist width) and Wrist-Palm ratio (WPR = wrist depth:palm length) were calculated post-operatively. Outcomes at minimum nine months were obtained by postal questionnaire consisting of Levine Symptom-Severity (LSS) and Levine Functional-Status (LFS) scores.

Results and Statistics: One hundred and thirty-one (65%) responses (F:M = 88:43) were available for analysis. WR and WPR were statistically higher than a matched control population from the same unit. Levine scores were not different than other reports. Our LSS and LFS scores showed strong correlations ($r = 0.86\text{-}0.92$, $p<0.01$) across all groups but not with age. There was no statistical difference in outcomes between WR≥0.70 versus WR<0.70 (Table 1) but outcomes were better in a small group of men with WPR≥0.41.

Conclusions and Clinical Relevance: A number of factors are known to affect outcomes in primary and recurrent CTS release. Individuals with a higher WR ("squarer" wrist) may be predisposed to CTS, but we found no outcome difference, so simple release remains the surgery of choice.

	WR ≥0.70	WR<0.70
N	71	60
Age (range)	59 (34-83)	57 (29-87)
WR (SD)	0.73 (0.02)	0.68 (0.03)
WPR (SD)	0.43 (0.04)	0.40 (0.04)
LSS (SD)	1.36 (0.81)	1.45 (1.04)
LFS(SD)	1.38 (0.82)	1.88 (1.03)

NOTES

11:34 **Revision carpal tunnel decompression using peri-umbilical free fat graft: a retrospective clinical and radiological analysis of eighteen cases**
Mr S Wimsey, Miss L Williams, Dr B Breidahl, Mr P Hales (Bournemouth)

Introduction: Results of revision carpal tunnel surgery are unpredictable. We report on a simple and reproducible technique of peri-umbilical free fat grafting not previously described in the hand surgery literature.

Methods: Between May 2006 and May 2012, eighteen patients underwent revision carpal tunnel surgery with free umbilical fat graft interposition. Patients underwent post-operative MRI of their wrist to evaluate the appearance of the median nerve, position and visibility of the fat graft. All patients had pre- and post-operative QuickDASH scores.

Results: The mean pre-operative QuickDASH score was 31 (range 9 to 45), and the mean post-operative score was 16 (range 0 to 69; $p<0.05$). None of the patients had any donor site morbidity. The intra-operative diagnosis was perineural fibrosis in all cases. On MRI scan, complete fat graft was clearly seen along the entire length of the carpal tunnel in seven scans, some in six and none in one. The median nerve was normal in all except one scan.

Conclusion: Our results show a statistically significant improvement in the mean QuickDASH score which compares favourably with previous studies, where the mean score was 29 (Beck et al, 2012) and 35 (Bilasy, 2012). However, the radiological parameters we measured did not seem to correlate with patient symptoms. Although our study is small and retrospective with only medium term follow-up, we report that our results are encouraging with regards to the surgical technique employed, but that MRI imaging post-operatively does not seem to contribute any prognostic value in outcome assessment of revision carpal tunnel surgery.

11:36 **Carpal tunnel syndrome in two groups of metalworking fitters**
Mr M Jenkinson, Mr P Jenkinson (Londonderry)

Introduction: Occupational risk factors for carpal tunnel syndrome (CTS) remain controversial. Vibrational exposure and forceful grip in various industries have been linked with the development of CTS. The purpose of this study is to demonstrate a link between the amount of vibration and forceful grip employees are exposed to and the development of CTS in two populations of metalworking fitters.

Methods: The prevalence of CTS was determined from the health surveillance data of 1143 metalworking fitters from the same factory. They were divided into two groups determined by assessing their weekly exposure to vibrating machinery and assessed for CTS by means of a questionnaire, clinical examination and electrophysiological testing.

Results: 1143 employees were enrolled in the health surveillance programme. Fifty-nine of 943 (6%, 95% CI 5.3% to 8.3%) of the lower exposure group were diagnosed with CTS with an average age of 49 and 18 years of employment. Twenty of 200 (10%, 95% CI 6.5% to 15.1%) of the higher exposure group were diagnosed with CTS with an average age of 46 and 16 years of employment.

Conclusions: Metalworking fitters exposed to vibrating machinery requiring a forceful grip have more than twice the expected prevalence of CTS. The development of CTS in metalworking fitters is related to the duration of their exposure to these occupational risk factors. The population with a higher exposure to vibrating machinery requiring a forceful grip were significantly more likely to develop CTS than the population with less exposure. They develop CTS younger, after shorter employment.

11:38 **Discussion**

11:43 **Initial results of a new community carpal tunnel release service**
Mr A Akhtar, Mrs D Derham, Mr J Johnson, Mr R Bassi (Macclesfield)

Aim: The aim of this study was to evaluate the clinical and cost benefit of a new community carpal tunnel release service.

Methods: A retrospective review of the first fifty consecutive patients who were referred to a primary care centre with a clinical diagnosis of carpal tunnel syndrome was conducted. Patients were initially reviewed by an extended scope practitioner using a hand-held nerve conduction device (Mediracer® NCS). Patients were either listed for formal carpal tunnel release in the community, discharged back to their General Practitioner or referred for formal electromyography studies (EMG) and to be assessed by the surgeon. All procedures were performed by a single surgeon in the community clinic.

Results: Of the fifty patients included, 39 (78%) proceeded to surgery. Twenty-five patients had completed pre and post-operative Boston questionnaires. Mean pre-operative symptom severity scale (SSS) score was 2.8, whereas post-operative SSS score was 1.7 at six weeks. Mean time from referral to surgery was 65 days. The cost of performing nerve conduction studies using Mediracer® NCS is far lower than formal EMG studies. This could save the Trust significant amounts of money (formal figures to follow). 98% of patients were overall either satisfied or very satisfied with the community carpal tunnel release service.

Conclusion: The community carpal tunnel release service is cost effective and surgery can be performed relatively quickly after initial referral, thus providing a worthwhile service.

11:45 **Carpal tunnel syndrome, nerve conduction studies and steroid injections in the management of carpal tunnel syndrome in a District General Hospital**
Dr R Dolan, Ms L Burns, Mr J Lindsay (Glasgow)

Utilisation of nerve conduction studies in the investigation and management of carpal tunnel syndrome varies according to their perceived usefulness and availability. The use of steroid injections and splinting also varies according to service availability and their perceived effectiveness. We present a three-year follow up of 230 patients, managed in an environment where nerve conduction testing was not readily available. The majority received splinting and a steroid injection in an effort to manage their symptoms conservatively in the first instance.

Our results show that a clear majority of patients who were treated with initial splinting and steroid injections saw a recurrence of their symptoms (71.9% and 79.7% respectively) requiring eventual surgical decompression. These results would seem to suggest that conservative management of carpal tunnel does not produce the desired curative results and that there may be an argument for proceeding directly to surgery.

We also showed that 55% of patients referred for nerve conduction studies seem to progress to surgical decompression. This would seem to suggest that nerve conduction studies could form a robust part of the standard investigation of carpal tunnel in order to identify those who would benefit from surgery.

11:47 **Steroid injections for trigger finger: Delaying the inevitable?**
Mr P Rushton, Mr S Thomas, Mr C Gibbons (Ashington)

Introduction: BSSH guidelines suggest treating triggering digits with steroid injections initially in almost all cases. The success of this is variable with literature suggesting resolution of triggering in 40-85% with a single injection. Studies have typically followed patients up after only a few months. The longer term success of these injections is more uncertain. This study aims to assess the medium-term outcome of patient treated with steroid injections.

Methods: Retrospective cohort study of adult patients presenting to a single surgeon's hand clinic between April 2009 and December 2011 with a triggering digit. Notes were reviewed to identify

demographics, co-morbidities, the success and number of steroid injections and whether patients underwent surgery by November 2012.

Results: One hundred and four consecutive patients (146 digits) with a mean age of 61 years were included. One hundred and six digits received Depo-Medrone injections with 78% of patients reporting early resolution of triggering. Overall, 61% of injected digits went on to surgery. Of those with 'successful' first injections, 49% went on to have surgery due to relapse of symptoms. Mean time from first injection to surgery in these cases was 8.8 months (1-26). 17% of those relapsing cases were diabetic. All digits having two injections went on to have surgery.

Conclusions: In line with the literature steroid injections for trigger finger are often successful initially. Yet around half of those injected will require surgery in the medium term. Repeated injections were not beneficial in this series. Surgeons and patients should be aware of the limitations of this treatment when discussing management strategies.

11:49 **Haemoglobin A1c in patients undergoing surgery for stenosing flexor tenosynovitis**
Miss A Winter, Dr H Bradman, Miss A Hayward, Miss S Gibson (Ayr)

Introduction and Aims: It is well recognised that patients with diabetes mellitus have a predisposition towards stenosing flexor tenosynovitis (FTS). However, recent research has suggested an association between the development of FTS and haemoglobin A1c (HbA1c) level which is used as a marker of glycaemic control. National guidelines on management of diabetes suggest treatment should aim to maintain HbA1c at <6.5%. The aim of our study is to quantify glycaemic control in patients undergoing surgical A1 pulley release.

Methods: We retrospectively reviewed the blood results of seventy-eight patients who underwent FTS surgery. Twenty-seven of these had an HbA1c checked within six months of their surgery and we therefore presumed these patients were diabetic.

Results: For diabetic patients the average HbA1c was 7.9% (range 5.3-11.4) and only seven of the 27 patients had an HbA1c within the recommended range.

Discussion: In this cohort, 33% of patients were presumed diabetic and 74% of these had a documented HbA1c above the national target, suggesting a significant number presenting for surgery have poor glycaemic control. Therefore it may be of benefit to screen for this in patients undergoing FTS surgery.

11:51 **Discussion**

12:00 **Scaphoid Audit**
Professor J J Dias (Leicester)

Keynote Anatomy Lecture

12:30 **Clinical biomechanics of the intrinsics**
Mr D Sammut (Windsor)

13:00 **Lunch and Trade Exhibitions**

Douglas Lamb Lecture

14:00 **Missing hands**
Professor S P J Kay (Leeds)

Free Papers

Chairman: Mr D A Campbell

14:30 **Complications after volar locking plates for distal radius fractures: a two-year review**
Mr N Johnson, Miss L Cutler, Professor J J Dias, Mr A Ullah, Miss C Wildin, Mr B Bhowal (Leicester)

Aim: Volar locking plates are an increasingly popular treatment for distal radius fractures. We aimed to review the complications seen after volar locking plate fixation in a busy teaching hospital.

Methods: We carried out a retrospective review of patients with a distal radius fracture treated, with a volar locking plate between January 2009 and December 2010. Theatre books were reviewed to identify all patients treated with a volar locking plate. The series included 206 procedures in 204 patients (78 males and 128 females). Mean age was 55 years (range 16 - 94) with a mean time to surgery of eight days (range 0 – 36 days).

Results: Twenty-one complications were seen in 19 patients with an overall complication rate of 9.2%. Six (2.9%) patients developed tendon problems including four (1.9%) tendon ruptures. EPL rupture was seen in three patients and one case of FPL rupture. Four (1.9%) patients required re-operation for metalwork problems. Two patients had plates causing limitation of movement. Two patients required removal of intra-articular screws. Fracture reduction problems were seen in three cases. Four patients developed CRPS. Other complications included one wound infection, one carpal tunnel syndrome and two problems with supplementary metalwork. Fifteen further operations were carried out for complications in 14 patients. Seven patients underwent plate removal.

Conclusion: Overall complication rates in this study compare favourably with the published literature. Surgeons and patients must be aware of the potential for tendon and metalwork problems following volar locking plate fixation. We recommend vigilant assessment and early investigation for these complications.

14:35 Discussion

14:37 **Distal radius volar plates: How anatomical are they?**
Mr S Evans, Mr A Ramasamy, Mr S Deshmukh (Birmingham)

Introduction: Volar locking plates are used in the treatment of distal radius fractures. Current volar plate designs incorporate a volar cortical angle (VCA; the angle subtended between the volar lip and the shaft of the distal radius) of 25°. The aim of this study is to determine whether the VCA in uninjured distal radii corresponds accurately with modern volar plates.

Method: Radiological study, utilising computed tomography scans to assess the VCA of one hundred distal radii. Each distal radius was subjected to three measurements of the VCA in the sagittal plane (lateral VCA at the scaphoid fossa; middle at the lunate fossa; medial at the medial distal radial edge). This allows evaluation of potential differences in the VCA within the same distal radius and also provides an idea of the landscape contouring of each distal radius.

Results: One hundred wrists evaluated (67 male, 33 female; mean age 37.4 years). Mean VCA was 32.9° (S.D. ± 5.14°). VCA in male patients was significantly greater than in females (33.6° versus 31.5°; p=0.04). There was a statistically significant difference between the lateral VCA and medial VCA (32.2° versus 34.3°, p=0.02).

Conclusions: Our study demonstrates that the VCA measured in the distal radius is significantly greater (34%) than the volar angulation incorporated within modern plate design. Given that the aim of ORIF is to anatomically reconstruct the distal radius, our study highlights the need for volar plates to be manually bent in order to account for the variability in volar angulation.

14:42 Discussion

14:44 **Are plain radiographs useful in accurately classifying distal radius fractures?**
Dr A Taithongchai, Mr S Evans, Mr M David, Mr B Machani (Birmingham)

Objectives: We aim to show that assessment of plain films alone does not accurately depict the fracture pattern found intra-operatively.

Methods: All closed, adult distal radius fractures over a six-month period presenting to our institution that underwent operative intervention were included. Pre-operative radiographs were reviewed by the senior operating surgeon and classified according to the Frykman and AO methods. The same methods were used to classify the fracture pattern intra-operatively. Pre and intra-operative classifications were then compared.

Results: Twenty-four wrists identified; 16 female and 8 male. Mean patient age 51.0 years. All patients underwent open reduction, internal fixation using a volar approach to the distal radius. There were three patients whose pre and intra-operative classifications matched. There was persistent pre-operative under-estimation of the degree of fracture comminution and intra-articular involvement at both the radio-carpal and distal radio-ulna joints. There was a mean discordance of three grades in the fracture classification pre and intra-operatively when using both the Frykman and AO methods.

Conclusion: Classification systems can help plan the method of fixation and can guide the surgeon in deciding on the exact implant to be used. This study shows that plain wrist radiographs cannot accurately classify distal radius fractures, particularly those with intra-articular components or significant comminution. We would advocate the use of pre-operative CT scanning in any distal radius fracture where plain radiographs do not clearly delineate the fracture pattern. This will enable surgeons to plan operative time appropriately and aid their implant choice.

14:49 **Discussion**

14:51 **A biomechanical study of micro motion observed with locking plate fixation of distal radial fractures**
Mr T Knight, Mr G Cheung, Mr S Rhee, Mr D Ford, Dr J Herman-Kuiper (Oswestry)

Introduction: There is an increasing body of biomechanical evidence to support the use of distal radial locking plates in extra-articular fractures. Comminution of the fracture and significant intra-articular involvement are common features but supporting biomechanical evidence is lacking. Significant differences exist between commonly available locking distal radius plates.

Methods: Plates from five different manufacturers, three titanium designs (Orthofix, Acumed, DePuy DVR) and two stainless steel (Synthes LCP volar column and Smith and Nephew Peri-Loc) were tested. A standardised intra-articular AO 23-C3 deformity was created in second generation sawbones. Biomechanical testing was split into three phases. I: slow loading cycle with photogrammetric recording of inter-fragmentary micro-motion. II: and III: 2000 cycle repetitive loading to 80N and 250N respectively. Results were analysed using ANOVA and repeated measures ANOVA.

Results: Twenty-five plate-bone constructs underwent testing. Differences in micro-motion existed between plate designs [$p<0.05$]. Stainless steel plates did not control micro-motion better than titanium plates in intra-articular fractures [$p<0.05$]. Sagital plane rotation was poorly controlled in the Smith and Nephew plate [$p<0.05$]. Ulnar fragments were best controlled by the Orthofix, the DePuy and the Smith and Nephew plates.

Conclusion: Plate design impacts on fracture stability. Despite similarities significant differences exist between commonly available plates. The dorso-ulnar fragment of the distal radius is particularly vulnerable and can collapse under loading. The choice of plate design will affect mechanical stability. Adequate fixation of the dorso-ulnar fragment is important; failure of this small fragment causes rapid biomechanical failure of an otherwise stable construct.

14:56 Discussion

14:58 **Radiographic outcomes following internal fixation of distal radius fractures using the Aptus plating system**

Mr R Jeavons, Dr H Thirkettle, Mr J Auyeung (Durham)

Aims: To assess radiological outcomes following distal radius fracture fixation.

Methods: Retrospective review of distal radius fractures treated using the APTUS distal radius plating system (Medartis AG, Basel, Switzerland), over six years. We collected demographic and temporal follow-up data. The Frykman classification system was used. Radiographic measures: radial height and inclination, ulnar variance, volar inclination.

Results: Of ninety-three patients, ten were excluded. Mean age 54.61 years. Mean length of follow-up 2.35 years. Mean time to theatre 3.82 days. APTUS plate type used: Styloid = 65, Osteotomy = 13, Adaptive = 5. Number of distal rows utilised: 0 rows = 2, 1 row = 33, 2 rows = 48. Mean time to radiographic union 2.67 months.

Table 1: Overall Radiographic Parameters (n=83). Un-paired t-test used.

Measure	2 weeks post-op	3-6 months post-op	P Value
Radial Height (mm)	10.89+/-2.53	10.04+/-3.67	0.1424
Radial Inclination (deg)	20.5+/-4.22	20.69+/-4.88	0.8908
Volar Inclination (deg)	4.38+/-6.33	0.43+/-8.80	0.0158
Ulnar Variance (mm)	0.83+/-2.64	1.44+/-2.64	0.3086

When comparing injuries with or without ipsilateral ulnar styloid fractures, a significant loss of volar inclination in those with styloid fractures was seen, but not in those without (p= 0.0123). When comparing one or two distal row constructs, a significant loss of volar inclination was seen in two-row construct but not one row (p= 0.0252). 70% of those in the two-row group had styloid fractures.

Conclusions: Reconstruction of volar inclination is difficult to maintain, especially with unstable injuries. Careful technique is required, even when using a two-row construct.

15:03 Discussion

15:05 **Outcomes of scaphoid fracture fixation using the Headless Compression Screw®: the Birmingham Hand Centre experience**

Miss C Simpson, Mr U Ahmed, Mr S Malik, Mr S Tan, Mr D Power (Birmingham)

Introduction: The Headless Compression Screw® (HCS) [DePuy Synthes] is a cannulated non-variable pitch screw that is available in 2.4mm and 3mm diameters. Compression of the fragments is obtained before the screw head is counter-sunk beneath the level of the cartilage layer of the scaphoid. Within this institution the HCS has been in use since 2010 for both acute scaphoid fracture fixation, and scaphoid non-unions. Procedures have been performed both via percutaneous and open approaches.

Objectives: To review the outcomes of using the HCS for scaphoid fixation.

Methods: Patients who underwent scaphoid fixation using the HCS over a two-year period (June 2010 – June 2012) were identified from theatre logbooks. A retrospective review of the case notes and radiographs was performed. Demographic and clinical data together with outcomes and complications were recorded.

Results: Fifty-seven patients underwent scaphoid fracture fixation with the HCS. The average age of the patients was 27 years (Range: 17–52 years), the male to female ratio was 52:5. Scaphoid non-unions accounted for thirty cases. These patients had open fixation with the HCS with bone graft augmentation. Overall, 5/57 patients (9%) developed protrusion of the screw into the scapho-trape-

zial or radio-carpal joint. Two patients, both smokers, who underwent non-vascularised bone grafting for scaphoid non-unions developed persistent non-union and required further intervention.

Conclusion: Our results suggest that the rate of screw protrusion is of some concern. However, the Headless Compression Screw® has demonstrated adequate results when used for fixation of both acute fractures and non-unions of the scaphoid.

15:10 Discussion

15:12 **Management of the complex scaphoid non-union with the medial femoral condyle free vascularised graft**

Miss C Simpson, Mr M Lawson-Smith, Ms L Crawford, Mr S Tan, Mr D Power, Mr M Craigen (Birmingham)

Introduction: Despite satisfactory management of many scaphoid fracture non-unions using simple bone grafting techniques, there remain certain fracture configurations that pose a surgical challenge. The results of simple bone grafting in the presence of avascular necrosis (AVN), bone loss or after previous surgery remain variable. As a result, techniques of vascularised bone grafting have been proposed, although these have resulted in published union rates between 27% and 100%. Using the technique of free vascularised bone harvest from the medial femoral condyle (MFC), Doi described union rates of 100% in cases of proximal pole non-union with AVN. We describe our early results using this technique for patients with proximal pole AVN, long-standing non-unions (>5 years), and patients with previous unsuccessful surgery.

Methods: Fourteen patients have undergone MFC free vascularised graft for scaphoid non-union. Patients were grouped according to the indication for surgery:
Group 1 Proximal pole non-unions with AVN on MRI scan
Group 2 Proximal pole non-unions with either delayed presentation or failed treatment
Group 3 Waist fractures with non-unions > 5 years

Surgery was performed by two microvascular trained hand surgeons working simultaneously at the wrist and knee, reducing operative time to four hours. The vascular anastomosis was performed to either the dorsal carpal arch or the radial artery in the vicinity of the scaphoid. Post-operative immobilisation in a forearm cast was discontinued at twelve weeks, even if a CT scan suggested non-union.

Results: Thirteen of 14 patients have progressed to, or are demonstrating promising radiological union.

	Number of patients	Average time to union (months)
Group 1 Proximal pole with AVN	5	10 Range 2-12 2 progressive union
Group 2 Proximal pole delayed presentation/failed treatment	4	3.75 Range 3-6 All united
Group 3 Waist fractures →5ys old	5	10.7 Range 8-12 1 progressive union 1 non-union

Donor site morbidity is low. One patient underwent washout of an infected haematoma, while three patients complain of mild discomfort at the knee. Three cases required surgical intervention following union due to prominent metalwork.

Discussion: Medial femoral condyle free vascularised grafting represents a viable alternative to local vascularised bone grafts to attain union in difficult scaphoid non-unions. In our hands we demonstrate a high rate of union with a low incidence of donor site morbidity. We propose that if the technique is not offered as primary surgery in difficult scaphoid non-unions, it should at least be performed as a revision procedure.

15:17 Discussion

15:19 **Distal radius fracture fixation: K-wires and plaster versus a volar locking plate: a systematic review**
Mr Y Hamed, Mr K Bitar, Mr P Motkur (Stockton on Tees)

Introduction and Aim: Fractures to the distal radius are common injuries. Some of these injuries are stable and they can be treated conservatively. Conversely, other fractures are unstable and thus require surgical stabilisation. The two most common methods of surgical fixation are K-wires fixation with a plaster cast and a Volar locking plate fixation. There have been several retrospective cohort studies reporting the assessment of functional outcome following each method of fixation. However, there is no clear consensus on which is the better option for fractures with similar characteristics.

Material and Methods: This systematic review has been conducted to compare the two methods of fixation named above for displaced closed fractures in adult patients. Only prospective randomised controlled trials in which participants had had no previous wrist injury were included in the review. The review focused mainly on the assessment of functional outcome, hence patients with cognitive impairment were excluded. A comprehensive literature search was undertaken with four major electronic databases. Only articles published in English language were reviewed due to limited resources.

Results and Conclusions: Three papers were found to meet the inclusion criteria. The findings from the systematic review concluded that, from the functional and radiological outcome perspective, the volar locking plate approach appears to be superior to K-wires fixation for distal radius fractures in adult patients. However, more studies with larger numbers of participants and longer follow-up durations are recommended.

15:24 Discussion

15:26 **A case series of perilunate dislocations: the outcomes and lessons learnt**
Mr M Racy, Miss M Griffin, Mr I Roushdi, Miss S Cerovac, Miss S Umarji (London)

Introduction: Perilunate dislocations usually result from high-energy injuries that can cause significant pain, stiffness and disability for the patient if not treated adequately. Evidence regarding the optimal long-term outcomes in such patients is inconclusive.

Method: We have prospectively followed up a case series of twenty patients with perilunate injuries with an average follow-up of 15 months (range 4-41 months). One patient was lost to follow-up and one patient was treated by carpal tunnel decompression only. Eighteen of the patients had surgery within two days whilst two were treated after one week once life-threatening injuries were stabilised. Definitive surgical management comprised fixation of all fractures (differential pitched screws and K-wires) and anatomical reconstruction of ruptured ligaments where possible. Frequently, a combined dorsal and volar surgical approach was necessary. Post-operatively, all patients were initially splinted (removable splints) followed by early intensive hand therapy.

Results are presented in terms of function (DASH scores), JAMAR grip scores, range of motion and also radiologically. Patients returned to work at a range of 4-10 months. Patients returned to sporting activities at 6-12 months.

Conclusion: Our operative and rehabilitation regime has shown good results in the short and medium term. We would recommend prompt anatomical reconstruction of damaged structures and decompression of nerves (both median and ulnar) in order to achieve best possible results after this devastating injury.

15:31 Discussion

15:45 Refreshments and Close of Meeting

NOTES

1 Is day surgery still working? A ten-year review of hand trauma in Birmingham

Mr A Mohan, Mr R Thomson, Mr D Chester (Birmingham)

Introduction: Day Surgery Units (DSUs) have streamlined the treatment of hand trauma in the UK. We aimed to describe how the establishment of the Birmingham Hand DSU at Queen Elizabeth Hospital has improved the service over a ten-year period.

Methods: Data was collected on patients requiring surgery for acute hand trauma at four time points over a ten-year period (June 2002 – prior to inception of DSU, November 2003 – one month post DSU, November 2004 – one year post DSU, July-September 2011 – eight years post DSU). The number and types of operation performed, day case rates and bed occupancy rates were analysed. Statistical analysis was performed using Fisher's Exact Test.

Results: The volume of hand trauma has increased over time (77 cases/month-2002; 109-2003; 90-2004; average 150-2011). Sharp lacerations and crush injuries remain the most common injuries, while manual labour remained the most high risk occupation. The percentage of patients admitted has fallen (84.4% 2002; 64.2% 2003; 46.7% 2004; 33.6% 2011 p=0.0003) while the day case rate has increased (13.0% 2002; 33.9% 2003; 51.1% 2004; 67.5% 2011 p=0.004). The bed occupancy rate per patient has fallen (2.64 days-2002; 2.08-2003; 1.34-2004; 1.21-2011).

Conclusions: Despite an increased caseload, increased utilisation of the DSU has led to reduced patient waiting times and bed occupancy rates while increasing patient satisfaction and reducing costs.

2 Adult upper limb replantation and revascularisation outcomes: a seven-year Birmingham audit

Mr Y Sheena, Mr A Kaye, Mr D Chester (Birmingham)

Introduction and Aims: Amputations make up a small percentage of upper limb trauma and potentially salvageable parts are rare. This study evaluates frequency, demographics and outcomes of hand and digital replant and revascularisation procedures performed at our centre.

Methods: Retrospective hospital coding analysis identified all 'replantations' between October 2004 and September 2011. Patient demographics, injury, operative and outcome details extracted from electronic patient notes, clinic letters and operative notes were recorded on a proforma-spreadsheet and analysed.

Results: Twenty-eight (25 male) patients with a mean age of 39.4 years had 41 digital and three hand replants or revascularisations during this seven-year period. Power saw was the leading mechanism of injury 15/28 (54%). 9/33 (27%) attempted replants and 9/11 (82%) revascularisation procedures resulted in successful salvage. One hand replant and two revascularisations survived. Single digits had acceptable outcomes with 8/13 replants and 3/3 revascularised digits surviving. Multiple digits did poorly with only 5/25 attempted replants and 2/5 revascularised digits surviving. Beyond twelve hours ischaemia time, no replant/revascularised part survived. 15/28 patients ultimately required terminalisation before discharge and 19/25 total recorded complications occurred within 24 hours of surgery. Of the seven congested digits, all had leeches, but only the three that commenced this therapy within 24 hours ultimately survived. Median outpatient discharge was twenty months if the part survived and 13 months if terminalised after attempted salvage surgery.

Conclusions: Power saw, increased number of amputations and ischaemia times predict poor outcomes. Close monitoring and early leech therapy for congestion may improve survival. Secondary terminalisations did not result in poorer long-term outcomes.

3 Desmoid fibromatosis in a child's hand

Dr E Jenner, Mr V S Devaraj (Exeter)

Introduction: We are unaware of any other cases of post-traumatic desmoid fibromatosis involving the hand. Desmoid fibromatosis is a histologically benign tumour of fibroblastic origin that may be locally aggressive. A higher rate of recurrence is recognised in the hand compared to other areas of the body.

Methods: We present a case of recurrent desmoid fibromatosis after excision of a duplicate left thumb in a 22-month-old child.

Results: Age two years six months the child developed a rubbery, subcutaneous tumour within the scar in the left first webspace that enlarged substantially and impeded flexion. The tumour was excised. Histology was initially reported as keloid. At three years nine months an almost identical tumour re-grew. Again this was excised. ß catenin immunostaining showed immunoreactivity of spindle cells from this specimen and desmoid fibromatosis was diagnosed. Unfortunately, four months later the tumour re-grew. The child was treated with vinblastine/methotrexate chemotherapy according to European Paediatric Soft Tissue Sarcoma Study Group non-rhabdo soft tissue sarcoma protocol. After seven months of treatment tumour size remains static.

Conclusions: The gold standard treatment for desmoid fibromatosis is wide local excision with clear resection margins. In a child's hand the delicate anatomy means that this is often not possible. The effectiveness of chemotherapy is uncertain and the patient risks significant side effects. The optimum treatment of desmoid fibromatosis in the hand clearly remains in doubt.

4 Severe Graves' dermopathy and acropachy: a clinical case and therapeutic challenge

Ms K Miyagi, Mr S Southern (Wakefield)

Introduction: Cutaneous manifestations of Graves' disease are rare. We describe a 43-year-old male with a history of Graves' disease, treated by partial thyroidectomy, who presented with progressive swelling on the dorsum of his left thumb. This arose in the context of a scar sustained from a laceration and subsequent extensor pollicis longus tendon repair three years previously. He was clinically and biochemically euthyroid. A diagnosis of thyroid acropachy and dermopathy was made and treatment options explored.

Material and Methods: Case presentation and literature review.

Results: Thyroid acropachy is characterised by finger clubbing, soft tissue swelling of the digits and periosteal reaction in the long bones on radiography and ultrasonography. It can be extremely disfiguring. Treatments include: normalisation of thyroid function (if perturbed), smoking cessation, avoidance of dependent oedema and trauma, local corticosteroid therapy and compressive therapy. The benefit of systemic immunomodulation remains unproven, with retrospective studies demonstrating no significant difference between treated and untreated patients after twenty-five years of follow-up. Topical steroid application is the only modality shown to improve swelling and hand mobility. Surgical excision is not recommended as trauma is considered an aetiological factor and can exacerbate dermopathy.

Conclusions: Thyroid acropachy and Graves' dermopathy are rare and challenging conditions to treat. In euthyroid patients, only topical corticosteroid therapy is supported by an evidence base. Surgical intervention is discouraged.

References:

1. Fatourechi et al. Thyroid Acropachy: Report of 40 Patients Treated at a Single Institution in a 26-Year Period *J Clin Endocrinol Metab*; 2002. **87:** 5,435–5,441.
2. Schwartz et al. Dermopathy of Graves' Disease (Pretibial Myxedema): Long-term Outcome. *J Clin Endocrinol Metab*; 2002. **87:** 438–446.

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5 **Case report: unpredicted healing of a compound wrist fracture with extensive bone loss, in association with traumatic brain injury**
Dr D Vasdeki, Mr A Arthur, Professor A Hart (Glasgow)

We present the case of a 53-year-old male who sustained poly-trauma as a result of a high-velocity motorbike versus car road traffic accident. On admission his GCS was 6/15 and his injuries involved comminuted fracture of the distal left radius with 8cm diaphyseal loss and loss of distal ulna, fracture of the right tibia and fibula shafts, fracture of the distal shaft of the left femur and diffuse brain injury. Initial treatment of the wrist involved removal of the distal third of the ulna, temporary stabilisation of the distal radius with a bridge plate and K-wiring and soft tissue reconstruction with an ulnar artery propeller flap.

Secondary reconstruction of the radius using bone graft or fibular flap was scheduled for three months after initial treatment.

A CT scan of the forearm three months after injury showed a thick bridging callus between the distal radial diaphysis and metaphysis, which also extended to the distal ulna. At re-exploration extensive bone formation was found and the radius was completely stable after removal of the plate and K-wires. No bone reconstruction was required. The patient returned to activities of daily living.

It as been reported that in head injured patients long bone fractures demonstrate radiographical and histological evidence of rapid bone formation at the fracture site and accelerated fracture union clinically. The underlying mechanism remains uncertain, although relative alkalosis at the fracture site and proinflammatory cytokines, such TNF-α and IL-6, may be associated with this phenomenon.

6 **The "Door Trap": a lurking monster**
Mr O Tillo, Mr A Akhtar, Mr W De Jager (Bradford)

Introduction: Door trapping is one of the most common causes of hand injuries in children. The aim of this study was to analyse its prevalence, severity and outcome.

Methods: A total of forty-eight door-related finger injuries were studied. Data was collected about the mechanism and severity of injuries, treatment, follow-up and outcome. The immediate impact of the injury on the child and parents was measured using decimal scales of distress, and by measuring the time-relapse from injury to presentation. A variety of door safety mechanisms are discussed.

Results: Injuries occurred at home in 57% and at school in 17% of cases. The child was taken to hospital within an average of thirty minutes of injury and in two cases by ambulance. Parents estimated their child's and their distress levels at an average of 8.4. Injuries were associated with nail-bed lacerations in 76%, fractures in 61% and amputations in 34% of cases. Persistent problems were reported in 14% of the cases after a minimum of six months follow-up. Fingers were trapped in the hinge side of the door in 71% and on the lock side in 29% of cases. Although fractures and nail-bed lacerations seemed to be more frequent in the lock side group, this was not statistically significant ($p=0.2$ and $p=0.6$, Fisher's exact test).

Conclusion: Door-related finger injuries in children result in significant distress to the patient and parents and are perceived by the public as serious injuries. Some safety mechanisms fall short of preventing injuries at the hinge side.

7 **Trapeziectomy plus FCR sling suspensionplasty: FCR rupture rate**
Mr M Webb, Mr C Gibbons (Ashington)

First carpo-metacarpal phalangeal osteoarthritis is common with a variety of treatment techniques. Trapeziectomy plus flexor carpi radialis (FCR) sling suspensionplasty provides good

long-term results, but carries a risk of tendon rupture. A review of the literature quotes tendon rupture rates, however these are not specific to trapeziectomy with FCR sling suspensionplasty.

This study aims to establish a rupture rate of the FCR tendon following trapeziectomy with FCR sling suspensionplasty and compare it to that of trapeziectomy alone.

The case notes of patients operated on by a single hand surgeon (senior author) or under his direct supervision were reviewed retrospectively. Chi squared analysis was used to compare rupture rates.

Between March 2004 and February 2012, a single hand surgeon performed 123 trapeziectomies on 104 patients. The male to female ratio was 22:101. During eight of the procedures, suspensionplasty was abandoned as the FCR tendon was insufficient. In the remaining 115 cases, two patients sustained a FCR rupture. Rupture rate of 1.74%. Compared with the 2% published tendon rupture rate (not FCR sling suspensionplasty specific) there is no statistical difference (p=0.391). There is not a statistically significant increased risk of FCR rupture compared to trapeziectomy alone (2.3%, p=0.726).

The rupture rate of the FCR tendon following trapeziectomy and sling supsensionplasty in this study is 1.74%. Tendon rupture is a recognised complication. Sling suspensionplasty does not have an increased risk compared to trapeziectomy alone. Establishing a specific rupture rate facilitates audit of surgical outcomes and helps to better inform patients.

8 Inpatient treatment of hand infection: the experience of a large UK hand surgery centre

Mr B Strong, Miss B Crowley (Newcastle upon Tyne)

Introduction: Treatment of hand infection is a significant part of the work of any hand surgery unit. We set out to investigate the workload produced by inpatient admission for hand infections and the causes of these admissions.

Methods: Patients admitted with hand infections in the six month period between January and June 2012 were identified, using trauma inpatient admission lists. Further data on these patients was compiled using electronic records and clinic follow-up letters. A total of one hundred and thirty patients were identified. Twelve patients were excluded due to lack of data, leaving 118 patient datasets for analysis. Data was analysed using Microsoft Excel.

Results: Seventy-six male (64%) and 42 female (36%) patients were admitted with hand infections during the period, with an average age of 43 years (6.2 months- 89 years). A total of 450 bed days were used, with an average admission length of 3.79 days. The most common reasons for admission were dog bites (17.8%), human bites (12.7%) and cat bites (10.2%). A total of 117 theatre procedures were required. Twenty-three patients were managed with antibiotics alone, 78 required a single surgical procedure and 17 required more than one.

Conclusions: Inpatient management of hand infections is a significant consumer of resources in our department. In a time of increasing pressure on departmental budgets, this highlights the need for more work to identify areas where initial post-injury and early inpatient care can be optimised in an effort to reduce requirement and length of inpatient admissions for hand infections.

9 Proximal inter-phalangeal joint replacement arthroplasty: an option for salvage

Dr J Sullivan, Mr D Thornton (Leeds)

Arthrodesis is a reliable, well-proven salvage procedure in advanced arthritis to relieve pain, following recurrent Dupuytren's disease to prevent further contracture, or following tendon/nerve injury to restore stability. However, in some cases the functional limitation imposed by an arthrodesed joint, regardless of cause, requires another solution.

We describe two cases of silastic joint arthroplasty for the salvage of functionally restrictive PIPJ arthrodeses, one occurring as a result of minor trauma, and one secondary to advanced osteoarthritis.

In both cases the patients experienced significant improvement in hand function, allowing them to return to their previous demanding occupational activities as a consequence of restoration of a useful range of active motion and an increase in grip strength.

Replacement arthroplasty is a valuable procedure and worthy of consideration for the treatment of PIPJ arthrodesis causing functional restriction in high demand patients. Increased active range of movement facilitates full excursion of the other digits, allowing increased grip strength and better functional activity.

10 E-Link hand therapy: patient impact

Mr C Atkinson, Mr R Bramhall, Mr G Radhakrishnan, Miss S Jivan (Wakefield)

Introduction: E-link is a complimentary rehabilitation tool used by the Hand Therapy Clinic at Pinderfields Hospital, Wakefield. It is used in combination with occupational therapy and physiotherapy for a variety of hand and wrist trauma patients. This computer-based rehabilitation therapy engages patients, using simple games to evaluate and improve grip strength.

Method: Treatment is provided over a four-week period, after which the patient is reviewed by the hand therapy team. If improvements in function are seen, a further four-week therapy schedule is arranged. Patient data is recorded, measuring various pinch/grip strengths and range of movements across joints, which can subsequently be used to monitor patient progress.

Advantages: E-link is a flexible rehabilitation method that can be tailored to specific patient needs, thus it is appropriate for a wide spectrum of injuries. Many grip strengths, commonly pinch grip and gross grip, are improved using this programme. Patients appear to engage well with the games offered and are thus encouraged to start using their injured hand earlier. They see improvements in their scores over time, which provides quantifiable positive feedback they can relate to. We find that this has a positive psychological impact which helps motivation with therapy.

Conclusions: We find this programme a useful adjunct to the hand therapy programme. It is simple to use, tailored to specific functions required by individuals and a useful motivation tool. This programme also makes functionally targeted occupational therapy simpler and more efficient as long workshop sessions are usually not required.

11 Morbidity associated with the diagnosis of soft tissue injury in those referred with a 'query scaphoid fracture'

Dr E Reay, Mr P Dobson, Mr P Stuart (Newcastle upon Tyne)

Introduction and Aims: The emergence of the diagnosis 'query scaphoid fracture' has meant a large number of patients are being referred to orthopaedic departments without a definitive diagnosis, and little is known about this group. Previous work identified that the majority of this cohort were discharged simply with a diagnosis of soft tissue injury (STI). The aim of our study was to determine the outcome of this group of patients who had a diagnosis of STI and to assess the longer term morbidity associated with this group.

Materials and Methods: We prospectively identified patients referred to our dedicated scaphoid clinic, diagnosed with STI and discharged from the clinic with that diagnosis. A PEM questionnaire was completed by each patient at the time of diagnosis and a telephone review was made at three months. A repeat PEM questionnaire was undertaken at three months.

Results: Forty patients were diagnosed with STI after assessment in the scaphoid clinic. These forty patients agreed to be contacted at three months. The majority of the cohort had improved

PEM scores but there was a significant minority, particularly those diagnosed with arthritic change on their X-rays, who had continued morbidity.

Conclusions: Of those referred with 'query scaphoid fracture' who were eventually diagnosed with STI there is a general improvement in their symptoms with improvement in overall PEM scores at three months but a significant minority still complained of symptoms associated with the hand and wrist at three months.

12 **Is our hand trauma service hitting the British Society for Surgery of the Hand (BSSH) guidelines?**

Dr T Hossain, Ms V Deans, Miss H Whalley, Mr M Arafa, Ms A Moon, Mr A Mahon (Redditch)

Aims: To complete an audit cycle of audit then re-audit of our patient waiting times for hand trauma surgery in our institution.

Methods: We retrospectively analysed waiting times to surgery for consecutive patients presenting in a three-month period in 2011 (April to June 2011) and re-audited a second three-month period in 2012 (March to May 2012). We measured the waiting times for the ten most common hand trauma cases at our institution, and the results were compared against the standards set out by the BSSH working party in 2007.

Results: In 2011, 185 patients were operated on in the set time period. We were compliant in operating within the BSSH recommended times for only two of the eight hand injury categories that had BSSH guidelines. After presentation and recommendations from this first audit, the 2012 re-audit showed compliance in five of the eight hand injury categories that had BSSH guidelines.

Conclusions: Application of the guidelines of the BSSH working party, in terms of staffing, organisation, and time frames can be effective in helping to reduce patients waiting times to surgery and increasing efficiency.

13 **Triggering siblings: a congenital aetiology?**

Dr R Dolan, Dr D Seoighe, Mr K Cronin (Dublin)

Background: Paediatric trigger thumb (stenosing tenovaginitis) is a rare condition, with an estimated incidence of three per 1,000 live births. Bilaterality in monozygous twins, first-degree familial associations, occurrence at birth and absent history of trauma, supports the congenital hypothesis. We report a case series of dichorionic, monozygotic twins and brothers, presenting with trigger thumbs.

Case Series:
Case 1: Eighteen-month-old dichorionic, monozygotic female twins were referred to a specialist paediatric hand service. Both twins had synchronous acute presentations of flexion deformities of their first interphalangeal (IP) joints one month previously (one unilateral, one bilateral).

Case 2: Two brothers, aged two years and six months and four years, were referred to our hand service with unilateral flexion deformities of the first IP joints of their dominant hands and with asynchronous presentation (18 months and two years, respectively). On examination, all children had fixed flexion deformities at the interphalangeal joint with an inability to induce triggering on passive flexion.

Under general anaesthetic, open release of all five triggering thumbs was performed. A 1cm transverse incision was created at the thumb palmo-digital crease, extending over proximal aspect of the A1 pulley. The A1 pulley was sharply incised under direct visualisation and a nodule of the unroofed FPL identified in all cases. The IP joint was hyperextended to stretch the contracted volar plate and FPL glide in full extension confirmed.

Discussion: This case series provides further credence to the role of heredity in the aetiology of paediatric trigger thumb.

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14 Pathological intra-articular fracture of a solitary enchondroma treated with ligamentotaxis and percutaneous curettage

Mr K Karuppaiah, Mr J Compson (London)

A 35-year-old, right-handed professional flute player presented with pain in the right fourth finger following trivial trauma. Radiographs showed an eccentric lytic lesion in the middle phalanx with a pathological fracture extending into the PIP Joint. The fracture had intra-articular comminution with loss of joint congruity and collapse of the lesion leading to radial deviation of the middle phalanx. As there was intra-articular comminution, the possibility of injecting bone cement or packing the space with bone graft was ruled out. The patient was keen on getting movements earlier in her finger in view of her profession. We treated this fracture with ligamentotaxis, to reduce the fracture indirectly, restore the joint congruity and start early range of movements. To stimulate bone growth into the cavity, a 19 gauge needle was inserted through the fracture site and the wall was curetted. Post-operatively the patient was allowed to mobilise the finger as tolerated. Six weeks later the cavity was filled with new bone and the fixator was removed. The patient had hand therapy, and she returned back to her profession. At the final follow-up of one year the patient had range of movements from full extension to 80° flexion and the radiographs showed complete bone formation with congruent articular surface.

15 Lipoblastomatosis: a case report and literature review

Mr A Mishra, Miss J Goodenough, Dr J Riley, Professor P McArthur (Liverpool)

Introduction: We present a rare benign tumour in an infant and discuss the current literature surrounding lipoblastomatosis.

Case Report: An eighteen-month old male presented in clinic with a short history of a rapidly growing painless mass on the volar aspect of the left forearm. On examination a well defined firm mass was noted in the centre of the distal forearm measuring around 3cm in diameter. Magnetic Resonance Imaging (MRI) suggested the differential diagnosis to be that of a lipoblastoma or liposarcoma. The mass was surgically excised from its site in the pronator quadrates. Histopathological examination concluded a likely diagnosis of lipoblastomatosis with incomplete resection margins.

Conclusion and Literature Review: Lipoblastomas and lipoblastomatosis are rare benign mesenchymal tumours of embryonic fat. The term lipoblastoma refers to a localised encapsulated form of the tumour and lipoblastomatosis is a more diffuse variant which can infiltrate other tissues such as muscle. They almost exclusively affect the paediatric population, are commonly found in the limbs and show a male preponderance. Our case typifies the clinical presentation of a rapidly growing, painless lesion exerting a mass affect to surrounding structures. It also demonstrates the diagnostic ambiguity between lipoblastomas/lipoblastomatosis and liposarcoma.

MRI is useful in determining the extent of infiltration of lipoblastomatosis and therefore useful for treatment planning. Local excision is the treatment of choice but complete excision is often difficult to achieve. Recurrence is rare and is usually related to incomplete resection. When completely removed the prognosis is extremely favourable with no cases of malignant transformation reported to date.

16 Management of Vohwinkle Syndrome: a rare condition featuring progressive palmoplantar eratoderma

Mrs C Defty, Mr A Mishra, Professor P McArthur (Liverpool)

Introduction: Very few cases of Vohwinkle syndrome have been reported since it was first described in 1929. It is characterised by a triad of progressive palmo-plantar keratoderma in a honeycombed pattern, constricting digital bands, and starfish-shaped hyperkeratotic plaques on the dorsal surfaces of the hands, feet, elbows and knees. The condition, thought to have autosomal dominant inheritance with some sporadic cases, manifests in early childhood. Mutations in the epidermal differentiation complex have been identified, including the GJB2 gene coding connexion-26, a gap junction protein, and the loricin gene on the epidermal differentiation complex

on 1q21. The missense mutation of the connexion-26 gene is associated with hearing loss. The condition is otherwise restricted to the limbs and the patient has a normal life expectancy.

Case Presentation: We demonstrate a mother and her daughter's hands before treatment. Both have the syndrome and show different stages of its manifestation. The mother has not received any intervention and shows severe constriction rings with autoamputation very likely in the future as her condition progresses. Further photographs demonstrate the surgical release of the constriction bands on the girl's fingers.

Summary: Due to the rarity of the condition, treatment is based on limited experience. Radiographs should be performed to exclude bony abnormalities. Regular follow-up with a dermatologist is advised. Management is tailored to the individual needs. Topical treatments are not adequate. Systemic retinoids can reverse the keratoderma. This, however, recurs on ceasing the medication. The main surgical intervention required is division of the constriction bands to avoid autoamputation.

17 Fixation of scaphoid non-union with headless cannulated compression screw: Breakage of guide wires and drill bits and their management - A report of four cases

Mr K Marenah, Mr Y Morar, Mr A Arya (London)

Introduction and Aims: The advent of cannulated screw systems has made it quicker and easier to place screws in difficult and confined spaces. Headless cannulated screws were developed to fix articular fractures or fragments and are being increasingly used for fixation of acute displaced fractures and non-union of the scaphoid. They can make the operation simpler and quicker but have their own share of problems. We present a case series of four cases in which we encountered problems with the 3mm AO headless cannulated screw during the fixation of scaphoid non-unions. In our four cases there was intra-operative breakage of the guide wire or drill bit of this screw system, and we had to use a different strategy in each case, to salvage the situation, with no adverse outcomes.

Conclusions and Clinical Reference: As far as we are aware, similar complications of fixation of scaphoid or other small bones by cannulated screws have not been reported before in the English literature, and we would like to share our learning experiences. We believe that the AO headless compression screw is a safe and simple system to use, but like any other implant, thorough knowledge of the system as well as the potential pit falls must be known to ensure safe and effective usage.

18 Metachondromatosis: a familial, deforming case facing surgical challenges

Mr S Hindocha, Mr A Mishra, Professor P McArthur (Liverpool)

Metachondromatosis is a rare, autosomal dominant condition with incomplete penetrance. It is characterised by exostosis and enchondromatosis tumour syndrome. The disease is usually more apparent in the limbs and tends to be symmetrical. Bone changes can be dramatic and clinical presentations ranging from pain to deformity with loss of function are extremely variable.

Surgery in children with this congenital condition is not carried out until after the age of six or seven years. We present a case where significant hand deformity in a child led to much earlier operative intervention in order to balance hand development and function versus surgical risk.

A familial case of metachondromatosis was identified in the Mersey region and referred to the congenital hand clinic. The child in question was a two-year old male with significant deformity of both hands resulting in scissoring of the fingers. Hand developmental delay was apparent and in order to prevent further future abnormal function operative intervention proceeded. We present a series of radiographs, operative photographs and planning techniques in this case.

Although metachondromatosis is familial, various genetic studies have not concluded a definitive gene(s) for this osteogenic syndrome. We plan to extend this study to include other family members and consider further genetic analysis to contribute to the scientific and thus clinical literature for this under investigated deforming condition.

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19 Surgical options for an unusual example of pachydermodactyly

Mr G Radhakrishnan, Mr R Bramhall, Mr C Atkinson, Miss S Jivan (Wakefield)

Introduction: Pachydermodactyly is a rare benign condition where there is painless, fusiform type swelling of the skin surrounding the proximal interphalangeal joints on both the radial and ulnar side. We present an interesting case of a male presenting with such symptoms and our suggestions for management options.

Case Report: We report a case of an eighteen-year-old male student who was referred by his GP, as he felt that his fingers were "chubby". His concerns were purely aesthetic and the dermatologist first saw the patient. Microscopic histological findings on biopsy showed sections of hyperkeratotic epidermis with no signs of dysplasia. Following radiological investigations to assess the anatomy of the swellings he was seen by the surgical team, which decided on a debulking procedure of the left little finger to be conducted under general anesthetic with a mid-lateral incision. The scar has settled well with no signs of recurrence. The patient remains happy with the outcome of his procedure and is keen for surgery on his other digits.

Discussion: Pachydermodactyly is a rare acquired condition, which results from habitual interdigital rubbing of the fingers during childhood. This is the first case the authors are aware of describing surgical management of these cases, which are usually referred to dermatologists. We believe that staged debulking is likely to be the safest and most effective management option. We suggest criteria for surgical intervention and an operative approach to this unusual condition.

20 The perils of Polly: the management of parrot bites to the hand

Dr H Freeman, Mr I King, Mr J Wokes (Middlesbrough)

Introduction: Parrot bites are uncommon causes of hand trauma. Whereas bites from humans, cats and dogs are common and have a well-established management with Co-Amoxiclav, parrot bites have a completely different pathophysiology and require different antibiotic cover. Parrot bites can cause psittacosis, pasturellosis and nontuberculous mycobacteriosis. With review of the literature, we discuss the organisms involved, how they present and offer guidelines for managing this potentially serious injury.

Method: A PubMed search was performed to identify previous case reports and treatment recommendations. Microbiology literature was reviewed and microbiology advice was sought to create guidelines on treatment.

Results: No antibiotic guidelines were found on searching the medical literature. Chlamydophilia psittaci is one of the main organisms in parrot bites and causes psittacosis. This presents as an atypical pneumonia but may progress, causing hepatomegaly, myocarditis, meningioencephalitis and in severe cases, death. Parrot bites also potentially transmit Pasturella multocida, which causes pasturellosis and nontuberculous mycobacteriosis. Tetracyclines are the first line recommended antibiotics in psittascosis and pasturellosis: Co-Amoxiclav in itself is not sufficiently broad-spectrum, though it does have a role for prophylaxis in severe injuries.

Conclusions: Parrot bites are uncommon causes of hand trauma. Conventional treatment of animal bites with Co-Amoxiclav is ineffective against Chlamydophilia psittaci and Pasturella multocida which are transmitted via parrot bites. No treatment algorithm currently exists in the literature for these injuries. We recommend Doxycycline as first line treatment for superficial injuries. More severe injuries require prompt treatment, surgical debridement and washout and dual antibiotic prophylaxis with Co-Amoxiclav and Doxycycline.

21 Does neurophysiology change with the hand in an elevated position: a prospective study in carpal tunnel syndrome

Mr M S Arshad, Dr H Kargwell, Dr Z Rehman, Mr R Swaminathan (Ashton-under-Lyne)

Aims: The hand elevation sign is more sensitive and specific than Tinel's and Phalen's tests in clinical diagnosis of carpal tunnel syndrome (CTS). The aim of our prospective study was to

compare the neurophysiological changes with the hand in a rested versus elevated position. We are not aware of any similar study in the English literature.

Methods: In keeping with our inclusion and exclusion criteria, ten hands with a clinical suspicion of CTS were recruited to participate. Tinnel's, Phalen's and Hand Elevation tests were initially performed in clinic and subsequently patients were referred for nerve conduction studies (NCS). The study was performed by a consultant neurophysiologist at rest and then with the hand elevated at one minute to allow for positive symptoms.

Results: Sensitivity and specificity for Tinnel's, Phalens's and Hand Elevation tests were 86% and 67%, 86% and 100% and 86% and 100% respectively. Positive (and negative) changes for CTS seen during NCS at rest were replicated during hand elevation with peak latency and amplitude worse in 14% and 57% respectively. Furthermore, analysis between positive changes for CTS during NCS in elevation and a positive hand elevation test clinically produces a relative risk of 1.17 (95% CI 0.61-2.23).

Conclusions: This pilot study has demonstrated neurophysiological changes to be worse in 36% when assessed in the elevated position compared to at rest. A larger study is needed to further analyse these changes and their significance.

22 The importance of appearance and function in patient satisfaction after silicone metacarpophalangeal joint arthroplasty in rheumatoid arthritis

Dr T Mehta, Mr P Russell (Nottingham)

Current evidence suggests that loss of hand function is the main motivator for a patient to undergo surgical intervention of the rheumatoid hand, whilst the main determiner of patient satisfaction post-operatively is an improvement in hand appearance. The aim of this study is to help understand the true nature of this source of satisfaction, through elucidating the relationship between two factors causing increased satisfaction after surgery - improved perceived function and improved perceived appearance.

Data from an ongoing prospective cohort study was collected at the Pulvertaft Hand Centre. Fifty-four patients were recruited. Hand appearance was measured using the Michigan Hand Questionnaire. Hand function was measured using the Arthritis Impact Measurement Scales.

The correlation between perceived appearance and perceived function was not significant at twelve months ($rs = 0.02$). Surgical patients experienced a 7.8% improvement in function and a 29% improvement in perceived appearance one-year post-operatively. Effect sizes demonstrated a small decline in function post-surgery, compared to the control (Effect Size -0.20). Appearance was moderately improved after surgery (Effect Size 0.29).

This research supports existing evidence that loss of function is a bigger motivator prior to surgery, whilst appearance is more important to satisfaction post-operatively. We conclude that the satisfaction gained from improved aesthetics of the rheumatoid hand is not associated with a subjective improvement in function. More importance should be placed upon appearance when informing rheumatoid arthritis patients of what to expect from silicone metacarpophalangeal joint arthroplasty.

23 Creating a novel electronic resource to teach the anatomy of the hand

Dr M Portet, Mr K Portet, Professor D Evans (Guildford)

Introduction: We rely on our hands for virtually everything that we do, but despite this many of us will experience a hand condition during our lives. One in five hundred children are born with a congenital abnormality, one in thirty develop a nerve compression problem, and one in five A&E presentations are for a hand related injury. This requires surgical trainees with a sound knowledge of the anatomy of the hand, but evidence suggests that in some cases this is lacking. For example, not all junior doctors are confident in testing muscular function, or diagnosing hand related abnormalities on plain film X-ray.

Materials and Methods: The aim of this study was to address these gaps in knowledge with the creation of an innovative electronic educational resource on the anatomy of the hand. Product development was informed through an appraisal of the pedagogical approaches used for teaching anatomy, a systematic search and appraisal of high quality electronic resources, and a questionnaire completed by sixteen clinical staff and 12 medical students. The resource was then created on Camtasia v.7.1 software, using cadaveric photographs produced in the anatomy laboratory, alongside a range of other media types, and the final package reviewed by eleven respondents of the original questionnaire.

Results: Feedback was overwhelmingly positive, with 91% of those reviewing the software believing that it had contributed to their understanding of the anatomy of the hand.

Conclusion: Clinical staff and others may benefit from the creation of innovative electronic teaching resources in anatomy.

24 Accuracy of ultrasound-guided injection of the thumb carpometacarpal joint: a cadaveric study

Mr D Roberts, Mr A Mishra, Professor P McArthur (Liverpool)

Introduction and Aims: Osteoarthritis of the thumb carpometacarpal joint is a common site of presentation of osteoarthritis within the hand and can cause significant pain and disability. Previous studies have demonstrated the accuracy of fluoroscopically guided injections into the carpometacarpal joint of the thumb. This study aims to demonstrate the efficacy of ultrasound guidance as a minimally invasive method of ensuring the accuracy of thumb carpometacarpal joint injections.

Material and Methods: A volunteer with no previous experience of carrying out joint injections injected the thumb carpometacarpal joints of four cadaveric specimens with a coloured resin using no ultrasound guidance. In a separate session, a volunteer then injected four further specimens with the same substance using ultrasound guidance.

Results: It was found that with no guidance, injection of the carpometacarpal joint was accurate in only 25% of cases. With the addition of ultrasound guidance, all specimens were correctly injected within the joint space.

Conclusions: The results of this study demonstrate that the use of ultrasound in injection of the thumb carpometacarpal joint greatly increases accuracy even in untrained volunteers, when compared to use of anatomical landmarks. It also avoids subjecting the patient to an additional injection of radio-opaque dye. We conclude that ultrasound is an effective and safe method of guiding intra-articular injection of the thumb carpometacarpal joint.

25 External fixation splintage of a pedicled groin flap to the upper limb

Mr Y Sheena, Mr R McCulloch, Mr D Evriviades (Birmingham)

Introduction: We present the case of a patient presenting with a soft-tissue hand defect, sustained from a blast injury in Afghanistan, and definitively managed with a pedicled groin flap. Splintage in this context is challenging and we demonstrate how we achieved good outcomes using external fixation.

Methods: After resurfacing the palm with the pedicled groin flap we used Schanz screws inserted into distal radius and pelvic ASIS to stabilise the flap and will demonstrate this technique with clinical photographs.

Results: The patient was discharged on the same day post-operatively and attended clinic on day 14 were the external fixator was removed and the flap divided and definitively secured as a day case with an excellent outcome.

Discussion: The use of external fixation splintage of flaps has been described, but there is only one case series of its use in the upper limb published by Yang et al in Mandarin.[1] The advantages of this technique, compared to alternatives such as topical negative pressure dressings or plaster of Paris, are ease of flap observation, improved wound care, decreased shear on the flap and a reduced risk of vessel spasm. The main disadvantage is the risk of pin-site infection.

Conclusion: We advocate the consideration of external fixation to splint pedicled groin flaps, as we have found it practical, safe and effective.

References:

1. Yang RG, Zhang WJ et al. The application of external fixator for complex tissue defect in the forearm. *Zhonghua Wai Ke Za Zhi*; 2009. **47:** 1,014–1,016.

26 Extensor pollicis brevis tendon tear secondary to kettlebell training

Mr K Karuppaiah, Mr T Kochhar (London)

Kettlebell exercises are more efficient for an athlete to increase his or her muscle strength. However, it carries the risk of injury, especially in the beginners. A 39-year-old gentleman came to our clinic with radial-sided wrist pain following kettlebell exercises. Clinically, the patient had swelling and tenderness over the tendons in the first dorsal wrist compartment and Finklesten test was positive. The patient had a decreased excursion of the thumb when compared to the opposite side. Ultrasound/MRI scan revealed asymmetric thickening of the first compartment extensors, extending from the base of the thumb to the wrist joint. Besides injury to the extensor pollicis brevis (EPB) tendon by repetitive impact from kettlebell, leading to its split, was identified. Detailed history showed that the injury might be due to off-centre handle holding during triceps strengthening exercises. Our report stresses the fact that kettlebell users should be taught about problems of off-center handle holding to avoid wrist injuries. Also, in kettlebell users with De Quervains disease clinical and radiological evaluation should be done before steroid injection as this might lead to complete tendon rupture.

27 Acute calcific tendonitis of flexor tendons in carpal tunnel: a case report and literature review

Dr L Wilkinson, Dr M Patel, Mr R Swaminathan (Manchester)

Acute calcific tendonitis (ACT) is a well-known condition affecting the shoulder, with the majority of cases affecting the supraspinatus tendon. When atypically affecting the hand and wrist, it is seen in the flexor carpi ulnaris and extensor tendons. We would therefore like to present an uncommon case of acute calcific tendonitis of flexor tendons in the carpal tunnel with normal median nerve function.

A 68 year old lady presented with an acute onset of pain and swelling to the wrist, mainly on the volar side, with no associated features suggestive of carpal tunnel syndrome. Clinical examination revealed global pain in the wrist causing restriction of wrist and finger movements. The patient was apyrexial and otherwise well. X-rays showed multiple well- and ill-defined calcific deposits in the carpal tunnel. Treatment included elevation of the arm, a short course of antibiotics and NSAIDS based on a presumptive diagnosis of infection. Symptoms improved in three days. On follow-up, the patient was asymptomatic with normal function of the wrist and repeat X-rays confirmed complete disappearance of the calcific deposits.

This poster includes a case report, a review of literature describing clinical and radiological diagnosis, as well as current thinking on aetiopathogenesis. Due to limited literature illustrating similar presentations without median nerve involvement, we would like to exhibit this uncommon case with supportive X-ray images to increase the awareness of this self-limiting condition which can be easily mistaken for septic or inflammatory arthritis.

NOTES

28 Targeting device for scapholunate K-wiring

Mr P Storey, Mr A Kocheta (Rotherham)

Introduction and Aims: Scapholunate instability often requires treatment with stabilisation of the scapholunate joint. Our standard technique requires passing three 1.2mm K-wires across the scapholunate joint, employing a mini-open incision. We have encountered several challenges from this technique, including the need to avoid the SSRN and radial artery, the difficulty attaining initial K-wire purchase on the scaphoid, and the problem achieving tripod orientation of the K-wires.

Material and Methods: AO 2.7mm drill guides are readily available and have a serrated tip with space for three 1.2mm K-wires within the barrel.

Results and Statistics: We have found that during K-wire insertion across the scapholunate joint, an AO 2.7mm drill guide provides tissue protection, prevents the K-wires shearing off the scaphoid, and performs as a targeting device to facilitate a tripod K-wire orientation.

Conclusions and Clinical Reference: This simple adjunct facilitates scapholunate wiring.

VENUE

The meeting will be held in the Queens Suite, Harrogate International Centre, Kings Road, Harrogate HG1 5LA

Car parking

The Harrogate International Centre has its own 210-space dedicated car park. A further 1,200 spaces are available at the nearby Jubilee and Victoria car parks.

Luncheon

Luncheon will be served in the Queens Suite.

REGISTRATION

Important notice: Doctors or scientists engaged in research AND presenting a paper will not be charged a registration fee for the day they are presenting, if they can confirm in writing that they have no access to study leave expeses. They must, however, pay £55 per day. This is the day delegate rate charged to the Society by the venue for each individual attending.

Exemption from payment of registration fees is not available to those who have access to study leave. If all study leave for the year has been utilised, full registration fees must be paid.

Registration fees

Full / Overseas / Associate Members who are Consultants	£305 Whole meeting £165 One day
Associates who are Trainees / Companion Members / Non-member UK Trainees	£180 Whole meeting £90 One day
Other Non-members	£380 Whole meeting £190 One day
Honorary / Senior Members	£55 per day
Speakers who are Research Doctors or Scientists	£55 per day

On-site registrations do not include a ticket to the Society Dinner.

Honorary and Senior Members will not pay a registration fee. A charge of £55 will be made for refreshments and luncheon each day. This is the day delegate rate charged to us by the venue for each delegate.

Registration and enquiry desk

The Registation and Enquiry Desk (situated outside the Queen's Suite) will be open at the following times:

Thursday	09:00 – 17:30
Friday	08:30 – 14:00

The telephone number of the Registration and Enquiry Desk during the meeting is: 07930 509 646

MEETING INFORMATION

CONTRIBUTORS INFORMATION

Projection facilities

There will be facilities for PowerPoint presentations only.

Speakers are asked to keep strictly to the time allocated for their presentation.

CONTINUING MEDICAL EDUCATION

The following number of points have been awarded for each day:

Thursday:	6.0
Friday:	5.5
Total:	11.5

SOCIETY DINNER

Thursday, 25 April at 19:30 for 20:00
Cedar Court Hotel, Park Parade, Harrogate HG1 5AG

Dress code: business attire

The Society Dinner is open to Honorary, Senior and Full Members and Associates, all of whom may invite guests. One ticket was included in the registration fee for those who pre-registered for the whole meeting.

PRIZES

Poster Prize

A prize conisting of book vouchers to the value of £250 will be awarded to the best poster presented at the meeting.

KEYNOTE LECTURES

Thursday

14:00 Benefits of early nerve repair by Professor M Wiberg (Sweden)

Friday

12:30 The biomechanics of the intrinsics by Mr D Sammut (Windsor)
14:00 Douglas Lamb Lecture: Missing hands by Professor S P J Kay (Leeds)

SYMPOSIA

Thursday

10:00 Arthritis of the distal interphalangeal joint
15:40 Distal radio ulnar joint dysfunction

Friday
10:00 – Intra articular fractures of the base of the middle phalanx

MEETINGS

Business meeting
The Business Meeting will be held on Thursday, 25 April at 17:30 in the Queens Suite (open to Members and Associates only).

Future meetings
17-18 October
The Royal College of Surgeons, London (combined meeting with BAHT)

MEDICAL AND TECHNICAL EXHIBITION

Firms supplying instruments, appliances, materials and books will be exhibiting throughout the two days in the Queens Suite, where refreshments and luncheon will be served. It is hoped that everyone will support this exhibition.

EXHIBITORS

ACUMED LTD — **STAND 1**
Huebner House, The Fairground, Weyhill, Andover SP11 0QN
Telephone: 01264 774 450, Fax: 01264 774 459, Email: debbie@acumed.uk.com
Contact: Mr B Cradduck

ADVANTECH SURGICAL LTD — **STAND 2**
7 The white House, 42-44 The Terrace, Torquay TQ1 1DE
Telephone: 0845 130 5866, Fax: 0845 130 5866, Email: ben@advantechsurgical.com
Contact: Mr B Sharples

ARTHREX LTD — **STAND 3**
Unit 9, 3 Smithy Wood Drive, Smithy Wood Business Park, Sheffield S35 1QN
Telephone: 0114 232 9180, Fax: 0114 257 8929, Email: lauren.reece@arthrex.co.uk
Contact: Ms L Reece

B BRAUN MEDICAL — **STAND 4**
Thorncliffe Park, Sheffield S35 2PW
Telephone: 0114 225 9000, Email: chris.banks@bbraun.com
Contact: Mr C Banks

KLS MARTIN — **STAND 5**
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Telephone: 0118 900 0570, Fax: 0118 900 0571, Email: info.uk@klsmartin.com
Contact: Ms D Webber

MEDARTIS LIMITED — **STAND 6**
Suite 63, Annexe 4, Batley Business Park, Technology Drive, Batley, West Yorkshire WF17 6ER
Telephone: 01924 476 699, Fax: 01924 472 000, Email: anna.walsh@medartis.com
Contact: Ms A Walsh

MEDICAL DEFENCE UNION — **STAND 7**
230 Blackfriars Road, Lodnon, SE1 8PJ
Telephone: 0800 716 376, Email: membership@themdu.com

MERCIAN SURGICAL — **STAND 8**
10 Topaz Business Park, Topaz Way, Bromsgrove B60 0GD
Telephone: 0844 879 1133, Fax: 0844 879 1155, Email: john.duffy@merciansurgical.com
Contact: Mr J Duffy

NORTHSTAR ORTHOPAEDICS LTD — **STAND 9**
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Telephone: 01635 275 380, Fax: 01635 275 381, Email: sacha@northstar-ortho.co.uk
Contact: Ms S Bartlett

OSTEOTEC LTD — **STAND 10**
9 Silver Business Park, Airfield Way, Christchurch BH23 3TA
Telephone: 01202 487 885, Fax: 01202 487 886, Email: susann@osteotec.co.uk
Contact: Ms S Idres

PHOENIX SURGICAL INSTRUMENTS LIMITED — **STAND 11**
14b Pindar Road, Hoddesdon, Hertfordshire EN11 0BZ
Telephone: 01992 479 444, Fax: 01992 478 878, Email: info@phoenixsurgical.co.uk
Contact: Mr L Simmons

SAGE PUBLICATIONS LTD — **STAND 12**
1 Oliver's Yard, 55 City Road, London EC1Y 1SP
Telephone: 020 7324 8608, Fax: 020 7324 8700, Email: Catherine.marshall@sagepub.co.uk
Contact: Ms C Marshall

SOVEREIGN MEDICAL LTD **STAND 13**
Unit 16, MII Business Link, Stansted CM24 8GF
Telephone: 01279 816 167, Fax: 01279 816 299, Email: david@sovereignmedical.co.uk
Contact: Mr D King

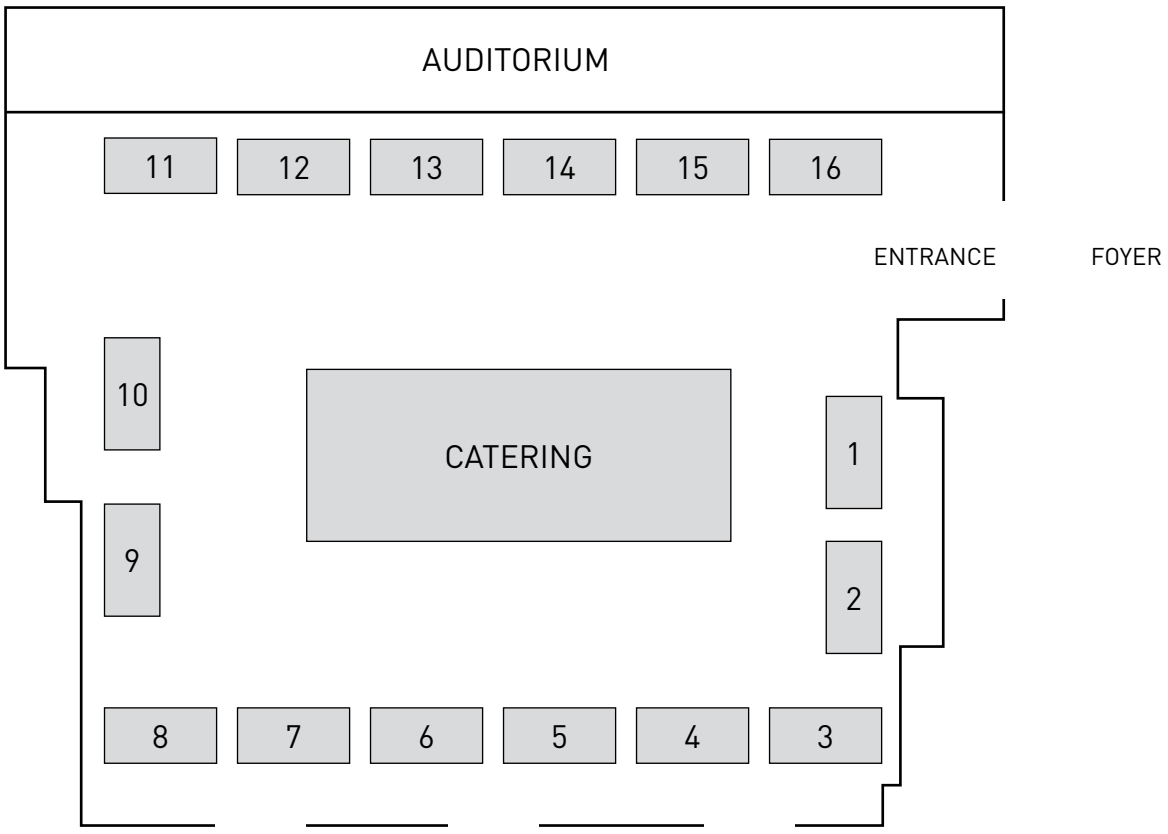
STRYKER UK **STAND 14**
Hambridge Road, Newbury, Berkshire RG14 5AW
Telephone: 01635 262 455, Email: Amanda.quinn@stryker.com
Contact: Ms A Quinn

TOUCH BIONICS **STAND 16**
Unit 3, Ashwood Court, Oakbank Way, Livingston EH53 0TH
Telephone: 01506 439 698, EMail: colin.egan@touchbionics.com
Contact: Mr C Egan

VERTEC SCIENTIFIC **STAND 15**
Unit 44, Easter Park, Benyon Road, Silchester, Reading RG7 2PQ
Telephone: 01189 702 104, Fax: 01189 701 861, Email: nviccars@vertec.co.uk
Contact: Mr K Lakin

TRADE EXHIBITON FLOOR PLAN

Queens Suite (not to scale)



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