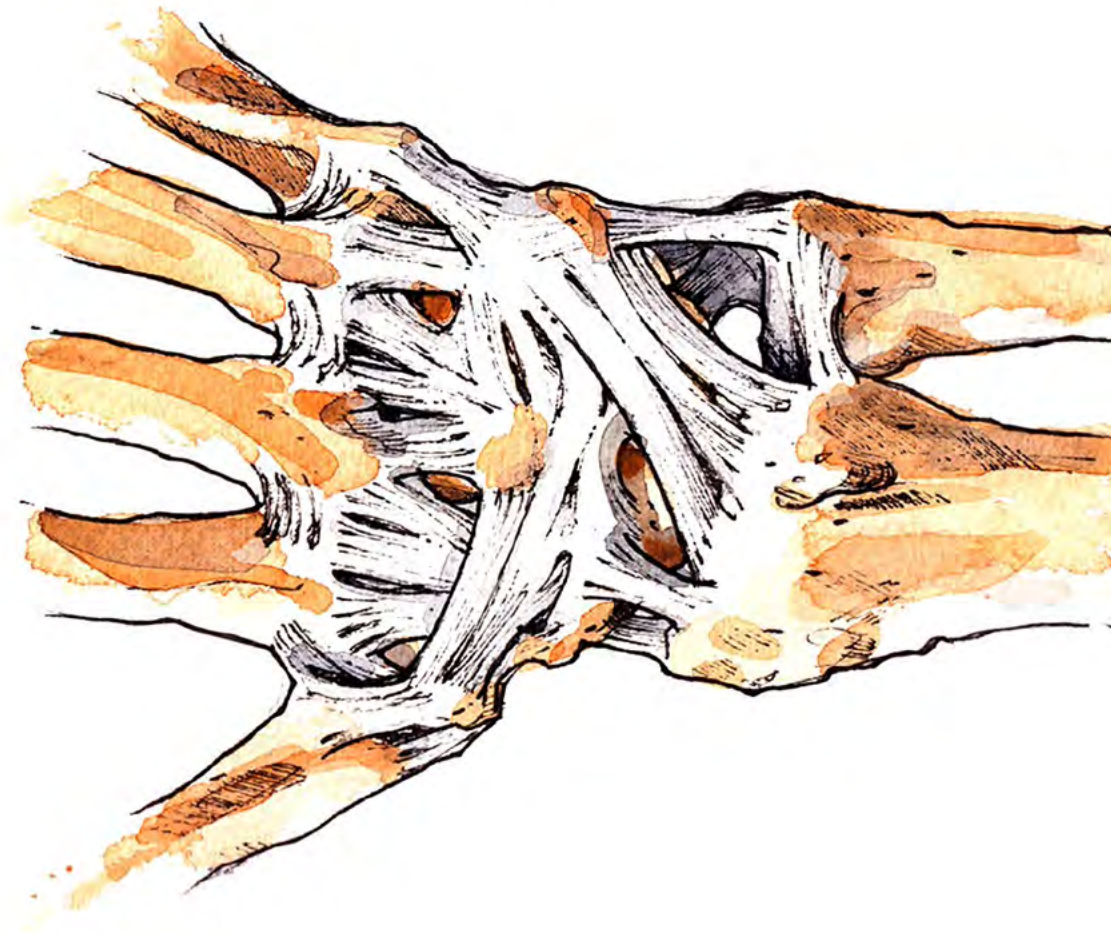
BSSH

The British Society for
Surgery of the Hand



SPRING SCIENTIFIC MEETING

1–2 MAY 2014
HILTON HOTEL NEWCASTLE-GATESHEAD

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PRESIDENT'S FOREWORD

Richard Milner
President

Dear Members and Guests

It is a great honour to welcome the Society back to Newcastle upon Tyne for our Spring Scientific meeting.

The programme covers a wide range of hand surgery looking in depth at such topics as wrist instability, sarcoma surgery, obstetric brachial plexus surgery and a session on the clinical assessment of tetraplegia. We have had a large number of excellent free papers covering the whole field of hand surgery which I am sure will be thought provoking and entertaining.

We have some excellent guest speakers including Marc Garcia-Elias on the late management wrist injuries, and who will take part in our wrist instability session. We have Francisco del Pinal on modern techniques of thumb reconstruction and wrist injuries. Scott Kozin will give us his thoughts on the management of obstetric brachial plexus palsy and a master-class in the clinical assessment of tetraplegic patients. Donald Sammut will give a talk on tendons and pulleys with his usual beautiful illustrations and will give anatomy his own inimitable slant. We of course have other excellent talks from local experts and what I suspect will be a lively debate on the merits of conservative and surgical approaches to wrist instability.

The meeting is being held in the Hilton Hotel on the redeveloped Newcastle/Gateshead Quayside with excellent hotels, restaurants and bars all within walking distance and you can find out why the *Sunday Times* rated Newcastle Quayside as 8th best place for night-life in the world. The meeting is a short walk from the BALTIC Centre for Contemporary Art and the Society dinner on Thursday evening is being held in that spectacular setting.

The meeting will cover all aspects of hand surgery with the presentations focusing on the quality of the work we do and stressing the scientific analysis of results. I am sure the topics will be both thought provoking and entertaining.

This is an exciting programme in a wonderful setting that will allow us to renew acquaintances and to meet new colleagues, which will only enhance our enjoyment of the scientific programme.

I look forward to welcoming you at the meeting.

THURSDAY 1 MAY

09:00 Registration
09:30 Welcome by the President and announcements
09:35 Free papers
10:45 Symposium: Wrist instability
12:30 Lunchtime debate: Should a hand trauma centre be focussed physically in a major trauma centre?
12:30 Lunch and trade exhibitions
13:30 Symposium: The treatment of the delayed wrist injury
14:30 Symposium: Obstetric brachial plexus injury
16:00 Refreshments and trade exhibitions
16:30 Free papers
17:30 Business Meeting (open to Members and Associates of the Society only)
19:15 (for 20:00) Society Dinner at the Baltic Centre for Contemporary Art

FRIDAY 2 MAY

07:30 Registration
08:00 Free papers
09:30 Keynote lecture: Update on thump reconstruction
10:00 Keynote lecture: Treatment of tetraplegia
10:45 Refreshments and trade exhibitions
11:15 Bell session
11:45 Symposium: Sarcoma
13:15 SWIFT Investigators' Meeting
13:15 Lunch and trade exhibitions
14:15 Keynote anatomy: Tunnels, pulleys and points of compression in the upper limb
15:00 Free papers
16:30 Refreshments and close of meeting

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GUEST SPEAKERS

Professor Tim 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.

Speaking in: Wrist Instability – Thursday 10:45hrs

Dr Francisco del Piñal, MD

Head of the Institute for Hand Wrist and Plastic Surgery and Hospital Mutua Montañesa, Santander, Spain

Dr del Piñal obtained his medical degree from the University Complutense in Madrid. He carried out his plastic surgery training at the Hospital Uniersitario in Madrid and undertook a microsurgery fellowship in Melbourne, Australia and a hand surgery fellowship at the Kleinert Group in Louisville, Kentucky, USA. His main interests are wrist arthroscopy, microsurgery and toe transfer for reconstruction of the mutilated hand. Dr del Piñal was President of the European Wrist Arthroscopy Society from 2008-2013 and currently is Secretary General of that Society. He was an editor of the Journal of Hand Surgery (European Volume) and Editor in Chief of 'Arthroscopic Management of Distal Radius Fractures' and 'Arthroscopic Management of Ulnar Pain'. Dr del Piñal has published more than one hundred papers and book chapters and over 400 papers. He has delivered keynote lectures at both hand and plastic surgery meetings in Australia, Argentina, South Africa, Belgium, Italy, Japan, India, Poland, the Netherlands and Hong Kong.

Speaking in: Treatment of the delayed wrist injury – Thursday 13:30hrs,
Keynote Lecture: Update on thumb reconstruction – Friday 09:30hrs

Dr Marc Garcia-Elias, MD PhD

Staff Member of the Institut Kaplan, Hand and Upper Extremity Surgery, Barcelona, Spain

Dr Garcia-Elias studied medicine at Universitat Autònoma de Barcelona from 1972-1978. He carried out his residency in orthopaedic surgery between 1978 and 1983 and became a specialist in orthopaedic surgery and traumatology in 1983. He finished his doctorate 'cum laude' in 1985. In 1989 he obtained a diploma in Biomechanics of the Locomotor Apparatus from the Mayo Medical School in Rochester, Minnesota, USA. Dr Garcia-Elias has been a member of the Spanish Society for Surgery of the Hand since 1983 and was president of the Society from 2005-2007. He was Secretary General of FESSH from 2005-2008 and is currently Secretary General Elect of IFSSH. He is a member of various other international societies. Dr Garcia-Elias has given over 400 lectures between 1984 and 2012. Between 1986 and 2014, he has presented 57 scientific papers at international meetings and 43 at national meetings. He has published two books, 64 book chapters and 138 peer-reviewed papers. Dr Garcia-Elias has been honoured with the Emanuel B Kaplan Award and the Enriquez de Salamanca Award.

He was honorary lecturer at the Guildal Memorial in Denmark in 2003, at Lee Ramsay Straub in New York in 2006; he was the International Guest Lecturer at the 63rd Annual Meeting of the American Society for Surgery of the Hand in Chicago in 2008 and in 2009 he gave the Inaugural Bernard O'Brien Oration at the Australian Hand Surgery Society Meeting in Victoria, Australia, and the E F Shaw Wilgis Lectureship in Hand Surgery in Baltimore, USA. Dr Garcia-Elias' professional biography has been published in "Ein Leben für the Hanchirurgie: 100 Lebensbilder" by Professor Dieter Buck-Gramcko, Steinkopff Verlag, Germany.
Speaking in: Wrist Instability – Thursday 10:45hrs
The Treatment of the Delayed Wrist Injury – Thursday 13:30hrs

Mr Henk Giele, FRCS FRACS(Plast)
Consultant Plastic Surgeon, John Radcliffe Hospital, Oxford
Speaking in: Obstetric Brachial Plexus Injury – Thursday 14:30hrs

Mr Craig Gerrand
Royal Victoria Infirmary, Newcastle upon Tyne
Speaking in: Sarcoma Symposium – Friday 11:45hrs

Mr Carlos Heras-Palou, FRCSEd FRCS(Tr&Orth)
Consultant Hand Surgeon, Pulvertaft Hand Centre, Derby
Mr Carlos Heras-Palou trained in Orthopaedic Surgery in the East Midlands region, and then enjoyed hand surgery fellowships in Derby, Oxford and Leeds. He became a consultant in hand and wrist surgery at the Pulvertaft Hand Centre in Derby in 2001. Mr Heras-Palou runs a dedicated wrist clinic, with particular interest in carpal instability, scaphoid pathology and problems after distal radius fractures. He has been on the council of FESSH and BSSH, and has an interest in education and training, being involved with the British Hand Diploma developed by the BSSH.
Speaking in: Wrist Instability – Thursday 10:45hrs

Dr Geoff Hide
Royal Victoria Infirmary, Newcastle upon Tyne
Speaking in: Sarcoma Symposium – Friday 11:45hrs

Dr Scott H Kozin, MD
Chief of Staff, Shriners Hospital for Children, Philadelphia, USA
Scott Kozin graduated from Duke University in 1982 with a degree in computer science. Medical School was completed at Hahnemann University in Philadelphia, followed by orthopaedic residency at Albert Einstein Medical Center. Fellowship was completed in 1992 at the Mayo Clinic focusing on hand and microvascular surgery. Dr Kozin initially cared for adults and children until the year 2000, when he devoted his practice and research to children at Shriners Hospitals for Children in Philadelphia. Since that time, Dr Kozin has been an advocate for improving the lives of children via research, education, and patient care. He is currently Chief of Staff at Shriners Hospitals for Children in Philadelphia. He has published over 100 peer review papers, mainly on the care of children with various diagnoses including brachial plexus injury, spinal cord injury, and congenital differences. He routinely travels to developing countries to operate on

child in need. Dr Kozin received the Weiland Medal by the American Society for Surgery of the Hand in 2010, which honours a hand surgeon/scientist who has contributed a body of research that advances the field. Dr Kozin is president of the American Society for Surgery of the Hand 2014. Dr Kozin is also a devoted husband and father to his two children, Bryan and Samantha. During his leisure time, he enjoys traveling and mountain bike riding.

Speaking in: Obstetric Brachial Plexus Injury – Thursday 14:30hrs
Keynote Lecture: Treatment of tetraplegia – Friday 10:00hrs
Sarcoma Symposium – Friday 11:45hrs

Mr Donald Sammut, FRCS FRCS(Plast)
Consultant Hand Surgeon, Bath, Reading and London

Donald Sammut is a Consultant Hand Surgeon working in Bath, Reading and London. He trained in London, as well as in Barcelona, Strasbourg and Paris. He teaches Anatomy in London and trains surgeons in Hand Surgery in the UK and Internationally. He is a regular speaker at National and International Hand Surgery conferences. His special interest is in reconstruction of the hand, particularly in reconstruction of the fingertips and in reanimating the paralysed hand. He also travels to Nepal, twice a year, to operate in Leprosy hospitals and to teach local surgeons (www.workinghandscharity.org). He is an artist, a well-established medical illustrator and an illustrator of books. Other biographical details: www.donaldsammut.com

Speaking in: Keynote Anatomy Lecture: Tunnels, pulleys and points of compression in the upper limb – Friday 14:15hrs

Mr Sumedh Talwalkar, MBBS MRCS MS(Orth) MCh(Orth FRCS(Tr&Orth)
Consultant Upper Limb Surgeon Wrightington Hospital, Wigan

Sumedh qualified from the University of Bombay and from the King Edward Memorial Hospital in Mumbai. He completed his orthopaedic training in the Northwest of England, having worked as a senior fellow in upper limb surgery at Wrightington Hospital prior to taking up his consultant post in 2009. In addition to being in charge of the senior fellowship programme at Wrightington Hospital, Sumedh also manages the highly successful FRCS Hand Course, which is held three times a year. He has a strong interest in research and undertook a year out of training at the University of Manchester investigating the role of fibroblasts in the healing of intra-synovial tendon injuries. He has presented at many national and international meetings and has published more than 20 papers and contributed to textbooks. He continues to maintain strong links with the Universities of Manchester and Salford and is an Honorary Senior Lecturer at Edge Hill University. Sumedh's main interest lies in upper limb joint arthroplasty, including replacements of the small joints of the hand, wrist and elbow. In addition to this he is involved in the management of upper limb trauma at Wigan, where in addition to local referrals, he manages a tertiary referral service for complex injuries from other regions.

Speaking in: Wrist Instability – Thursday 10:5hrs

09:00 Registration and Refreshments

09:30 Welcome by the President

Free Papers

Chairs: Mr I Grant and Miss S M Fullilove

09:35 **The correlation between the DASH and the QuickDASH in Dupuytren's disease**

Mr J Rodrigues, Dr W Zhang, Professor B Scammell, Mr I Chakrabarti, Mrs D Davidson, Mr P Russell, Miss S M Fullilove, Professor T R C Davis (Derby, Livingston, Nottingham, Plymouth, Rotherham)

Introduction: The Disability of the Arm, Shoulder and Hand tool (DASH) has been the most popular patient-reported outcome measure used in Dupuytren's research. However, completing its thirty questions takes over six minutes on average. The eleven question QuickDASH may be an alternative that is quicker to complete. It is available on the BSSH Audit website as a research tool. QuickDASH scores correlated with DASH scores (r>0.7) in one published study of a cohort of patients with a range of hand conditions, but none had Dupuytren's. Their relationship has not been studied in Dupuytren's disease.

Methods: Data from a five-centre (Derby, Livingston, Nottingham, Plymouth, Rotherham) service evaluation project of Dupuytren's disease treatment were analysed. Consented pre-operative and post-operative patients completed the DASH. DASH and QuickDASH scores were calculated from this form, as was done in previous published literature.

Results: 769 questionnaires were received. 760 were adequately complete for analysis, describing pre-operative, early post-operative and late post-operative outcomes of 546 procedures, comprising a spread of needle aponeurotomies, fasciectomies and dermofasciectomies. The mean patient age was 68 and 77% were men. The mean DASH was 18.9 and the mean QuickDASH was 17.7. The QuickDASH showed extremely good correlation with the DASH, Pearson's r = 0.984 (95% CIs: 0.981 - 0.986). This was closer correlation than has been reported for other hand conditions. Similar correlations were obtained when subgroups of pre-operative and post-operative assessments were studies separately.

Conclusions: This study supports the use of the QuickDASH as an alternative to the full DASH in Dupuytren's disease.

09:42 Discussion

09:45 **Complication rates following different Dupuytren's disease treatments and associated factors - A multi-centre case-control study**

Mr J Rodrigues, Dr W Zhang, Professor B Scammell, Mrs D Davidson, Miss S M Fullilove, Mr P Russell, Mr I Chakrabarti, Professor T R C Davis (Derby, Livingston, Nottingham, Plymouth, Rotherham)

Introduction: Aponeurotomy exhibits higher recurrence than other treatments. This study investigated other complications.

Methods: Patients one or five years post-operatively at five centres participated in service evaluation. One surgeon assessed all. Logistic regressions controlled for relevant variables, and compared procedures for:

- Re-operation
- Cold intolerance (using Campbell's scale)
- Flexion loss (fingertip-distal palmar crease>10mm)
- Infection (requiring antibiotics)
- CRPS (using modified IASP criteria)
- Altered sensation (absent 2-point discrimination at 6mm in RDN/UDN territory)

Results: Four hundred and thrity-three procedures were studied:

	Aponeurotomy (n=134)	Fasciectomy (n=252)	Dermofasciectomy (n=47)
Re-operation			
1 year	4%	2%	0%
5 years	30%	7%	0%
Cold intolerance			
1 year	10%	31%	63%
5 years	5%	16%	30%
Flexion loss>10mm			
1 year	18%	33%	43%
5 years	15%	24%	18%
Infection	2%	9%	15%
CRPS	0%	2%	0%
Altered sensation	5%	15%	19%

Overall, infection was associated with revision surgery (adjusted odds ratio (adjOR)=2.4, p=0.040), but not smoking or diabetes. It was more common after dermofasciectomy than aponeurotomy (adjOR=7.81 p=0.017). Controlling for revision surgery, multiple digit procedures, diabetes and gender, cold intolerance was more common following dermofasciectomy than fasciectomy (adjOR=3.7, p=0.001) or aponeurotomy (adjOR=14.7, p=0.000); at one year than at five years (adjOR=2.7, p=0.001); and in smokers (adjOR=2.7, p=0.002). CRPS was rare (6/432), but was associated with diabetes (adjOR=7.6, p=0.021).

Conclusions: Although aponeurotomy has a high re-operation rate, it has lower rates of other complications that could permanently interfere with hand function. Comparison of treatments using "recurrence" or "re-operation" as the primary outcome measure may not reflect the patient's experience of treatment outcome.

09:52 **Discussion**

09:55 **Skin Involvement in Dupuytren's disease**
Mr R G Wade, Dr L Igali, Mr A Figus (Norwich)

Introduction: Dermofasciectomy and full thickness skin grafting is associated with the lowest recurrence rate in Dupuytren's disease. It is indicated for recurrent disease or clinically involved skin. Clinical assessment for skin involvement remains difficult and its histological correlation uncertain. We prospectively investigated the rate of dermal fibromatosis in patients undergoing fasciectomy and dermofasciectomy for Dupuytren's disease.

Methods: Over three years, biopsies of skin overlying a cord or nodule from 44 fasciectomies and the skin of 59 dermofasciectomies were sent for histological assessment. Baseline demographics, post-operative complications and function were recorded. Data between groups was compared.

Results: We found dermal fibromatosis in twenty-two fasciectomy (50.0%) and 41 dermofasciectomy (69.5%) cases. Dermal fibromatosis was more common with greater degrees of deformity and therefore, dermofasciectomy conferred greater improvements in range of movement (53.1° versus 92.8°, p<0.001). Predictive factors of skin involvement in Dupuytren's disease included an occupation involving manual labour (OR 2.86 [1.19, 6.86], p=0.017) and palpable palmar nodules (OR 4.63 [1.80, 11.19], p=0.001).

Conclusions: This is the first study comparing the clinical and histopathological features of skin involvement in Dupuytren's disease, showing skin involvement to be sub-clinically present in half of patients with no clinical features. Dermal fibromatosis may be a factor related to a higher risk of recurrence and represents a new and potentially beneficial avenue of research.

10:02 Discussion

10:05 **A randomised controlled trial comparing axillary and wrist nerve blocks for post-operative analgesia following Dupuytren's subtotal fasciectomy**
Mr N Howard, Mr N Hyder (Leighton, Crewe)

Aims: To compare the effectiveness of axillary versus wrist blocks for post-operative pain relief in patients undergoing subtotal fasciectomy for primary Dupuytren's disease. The secondary outcome compared time taken for each block to be performed.

Methods: Patients were recruited prior to undergoing subtotal fasciectomy as day case procedures under general anaesthetic. Patients were randomly allocated to receive an axillary nerve or wrist block post general anaesthetic performed by one consultant anaesthetist. All procedures were carried out by the same consultant hand surgeon and anaesthesiologist at a single centre. Patients were then asked to complete a Visual Analogue Score (VAS 0-10, 0 = no pain, 10 = worst pain ever) for pain at two, six, 12, 24 and 48 hours post-operatively. Analgesic requirements were also noted for 48 hours post-operatively.

Results: Twenty-six patients were randomised to axillary blocks and 27 to wrist blocks. No significant difference was noted in post-operative pain scores between the two groups (p=0.13) and both methods of regional anaesthetic proved effective (wrist block mean VAS score = 1.28, SD 0.71 versus axillary block mean VAS score = 0.55, SD 0.52). There was also no significant difference in post-operative analgesic requirements. No complications following either wrist or axillary nerve block were noted in either group.

Conclusions and Clinical Relevance: Axillary and wrist blocks are both effective methods of post-operative pain relief following subtotal fasciectomy for Dupuytren's disease. The use of wrist block reduces anaesthetic time and delay in discharge encountered with axillary blocks while providing effective post-operative analgesia.

10:12 Discussion

10:15 **Injuries patterns: Acute thumb ulnar collateral ligament injuries**
Dr M Farid, Mr R Bramhall, Miss S Jivan (Wakefield)

Introduction and Aims: Thumb ulnar collateral ligament (UCL) is a strong joint stabiliser. Inadequately treated UCL injuries can lead to significant disability including chronic pain, reduced pinch grip and risk of early arthritis. The aim of this study was to determine acute UCL injury patterns and long-term outcomes.

Methods: Four year retrospective case-note review (May 2007 - December 2011) of patients referred to our department. The decision to operate was based on clinical and plain X-ray assessments. Bone anchoring sutures, K-wires or both were used for UCL repair. Post-operatively, thumbs were immobilised for three to five days, followed by in-line and protected mobilisation for four to six weeks.

Results: One hundred and twenty-three acute thumb UCL injuries were identified. Sixty-four of 123 had an 'end-point' requiring splintage only. Fifty-nine of 123 were explored for equivocal/no 'end-point'. Nine of 59 had a partial injury or isolated volar plate/dorsal capsule rupture. Fifty of 59 had complete UCL injury: 14 isolated stener lesions; five stener lesion and dorsal capsule injury; one stener lesion and proximal rupture; 22 distal avulsions/fracture avulsions without stener lesion; eight proximal UCL injuries. Four patients had complications. None required re-operation. All patients were discharged when thumb pinch grip was pain free.

Conclusions: This series shows good clinical outcomes following surgical UCL repair and supports the use of early active in-line mobilisation. We advocate operative exploration for patients with equivocal or no 'end-points'. Injury patterns vary widely and proximal UCL injures are more common than previously reported. An operative algorithm to restore normal anatomy is considered based on intra-operative findings.

10:22 Discussion

10:25 **Management of distal phalangeal fractures - A seven-year review comparing screw-fixation, K-wire and conservative treatment**
Miss R A S Hay, Dr S Tay (Singapore)

Introduction and Aims: This is a review of distal phalangeal fractures comparing the outcome between three different treatment modalities.

Materials and Methods: The records and radiographs of all patients with distal phalangeal fractures treated between 2007 and 2013 were studied. 95% confidence interval and z-test were used for statistical analysis.

Results: A total of one hundred and seventy-five patients with 179 distal phalangeal fractures were reviewed. 80% fractures were managed conservatively, while 20% fractures had K-wire and/or screw fixation. The average follow-up time was 2.8, 6.4 and 7.7 months for conservative, K-wire and screw-fixation respectively.

Table 1: Pertinent results for the 3 groups

	Conservative	K-wire	Screw
Union Rate/%	56	91	100
Time to Union/Month	1.8 (95% CI, 1.3 – 2.3 months)	3.4 (95% CI, 1.8 – 5.0 months)	2.9 (95% CI, 0.8 – 5.0 months)
Final ROM/°	54.2 (95% CI, 50.4° - 58.0°)	48.9 (95% CI, 37.4° - 60.4°)	55.5 (95% CI, 47.1° - 63.9°)
Removal of Implants	NA	100%	35%

No complications were encountered in this study.

Conclusion: Screw fixation and K-wire had significantly better union rates compared to conservative treatment (z-test). Secondly, the final ROM after screw-fixation was best, followed by conservative and then K-wire. Thirdly, time to union was longer for screw fixation and K-wire compared to conservative. Statistical analysis showed that the latter two differences were not significant. In conclusion, screw fixation is a viable option for management of distal phalangeal fractures.

10:32 Discussion

10:35 **Hook plate: A versatile tool in hand fracture fixation**
Mr P Mikalef, Mr A Mishra, Mr M Gupta, Mr R Jose, Mr S Tan, Mr D Power (Birmingham)

Introduction: Avulsion injuries of the digits of the hand can be a surgical challenge. Internal fixation can provide stability to these injuries allowing early mobilisation. The use of hook plates to manage mallet avulsion fractures has been well documented in the literature. However, this is a versatile tool and can be utilised to manage avulsion fractures elsewhere in the hand. We present our series of treating these difficult injuries using hook plates.

Methods: We have been using the hook plate in the Birmingham Hand Centre since January 2009. The hook plate is fabricated from a Synthes straight plate and is used to buttress the bony avulsion fragment. To date, we have treated sixty patients using this technique. Injuries include bony mallets, central slip extensor avulsions, collateral ligament avulsions, volar plate avulsions, unstable PIPJ fracture dislocations and FDP avulsions. We describe a representative case form each of these injury patterns. Complications are also discussed.

Conclusion: When dealing with avulsion fractures, fixation options are not always straightforward. Hook plates are versatile tools in hand fracture fixation where the fragments are small and are attached to tendons or ligaments, and where inter-fragmentary screw fixation is difficult. However, adequate knowledge of the available instrumentation is required and it is important to understand the basic principles and the potential complications.

10:42 Discussion

Wrist Instability
Chair: Mr P R Stuart

10:45 Overview of the problem
Mr C Heras-Palou (Derby)

10:55 Bio-mechanics of the wrist and causes of wrist instability
Dr M Garcia-Elias (Barcelona)

11:25 My approach to management
Professor T R C Davis (Nottingham)

11:45 My approach to management
Mr S G Talwalker (Wigan)

12:15 Expert Panel Discussion

12:30 Lunchtime debate: Should a hand trauma centre be focussed physically in a major trauma centre?

12:30 Lunch and trade exhibitions

The treatment of the Delayed Wrist Injury
Chair: Mr C A Pailthorpe

13:30 The management of ulnar side wrist pain
Dr F del Pinal (Santander)

14:00 The elective management of wrist injuries
Dr M Garcia-Elias (Barcelona)

Obstetric Brachial Plexus Injury
Chair: Miss B Crowley

14:30 Brachial plexus anatomy and mode of injury
Mr H P Giele (Oxford)

14:50 Examination of a patient with an OBP injury
Dr S Kozin (Philadelphia)

15:10 Primary management
Mr H P Giele (Oxford)

15:30 Later management and reconstruction
Dr S Kozin (Philadelphia)

16:00 Refreshments and trade exhibitions

Free Papers
Chairs: Professor V C Lees and Mr D P Newington

16:30 The litigation cost of delayed scaphoid fracture management
Mr W Harrison, Dr A Newton, Mr G Cheung (Liverpool)

Background: Litigation in surgery is common in the United Kingdom. Compensation for injuries that effect quality of life and employment are often large sums. The prevalence of true scaph-

oid fractures compared to suspected fractures is very low and the false positive rate is equivalent to the true positive rate following X-ray.

Method: Data was obtained from the National Health Service Litigation Authority. All orthopaedic related litigation between 1995-2010 in the UK was reviewed. Litigation for alleged mismanagement of scaphoid fractures was identified and grouped according to the plaintiffs complaint. Unsettled claims were excluded.

Results: One hundred and three (0.01%) of 9,865 legal actions were related to delayed scaphoid management between 1995-2010. Sixteen open cases, which were excluded. Reason for litigation: seven failures to X-ray, 57 missed fractures, four fractures not immobilised, nine discharged too early, five delayed operations and three inappropriate surgeries. Clinical area of alleged negligence: twenty-nine emergency department, two minor injuries unit, 24 outpatient clinic, ten operating theatre, one prison services and 20 due to "unspecified clinical area." The mean compensation fee per case was £20,823 (range £1500-£136,715 for successful claims) and the mean litigation cost was £34,515 (range £0-£171,223). The cumulative cost for scaphoid mismanagement was £2,933,789.

Conclusions: The majority of cases relate to a lack of protocol driven assessment and patient follow-up. A common theme identified was direct discharge from emergency departments by junior doctors without follow-up. It is advised that a local education programme and management protocol exists to safety-net false negative X-rays to ensure follow-up.

16:37 Discussion

16:40 **Soft tissue stabilisation for midcarpal instability using a palmaris longus tendon graft**
Mr T Chaudhry, Mr M Shahid, Mr F Wu, Mr A Mishra, Mr S Deshmukh (Birmingham)

Introduction: Palmar midcarpal instability is an uncommon, relatively poorly understood entity for which a number of treatment options have been reported with varied results. We report the results of a previously undescribed technique of soft tissue stabilisation using a palmaris longus tendon autograft.

Methods: We used a dorsal approach to the wrist and stabilised the hamate and triquetrum using two limbs of tendon graft tensioned carefully and fixed with bone anchors.

Results: Eight wrists in seven patients were available for follow-up at a mean of 17 months (4-30). Six patients were female and the mean age at operation was 33 years (21-42). There was an overall improvement in function (mean pre-operative DASH 47, post-operative DASH 31, $p<0.05$). Mean grip strength increased from 16.3kg to 22.3kg ($p<0.05$). Results were analysed using the Wilcoxon signed rank test. Although the mean results show an improvement, two patients had a poor result with deterioration in DASH score. One had persistent pain and another had clinical evidence of recurrent instability during pregnancy that required midcarpal arthrodesis. There were no significant post-operative complications, however one other patient developed irritation from prominent metalwork and will require a further procedure.

Conclusions: Overall this technique has shown good medium term results in most of our patients. It retains midcarpal mobility, and provides a significant improvement in grip strength and function. The technique requires further evaluation with larger patient numbers and a longer period of follow-up.

16:47 Discussion

16:50 **The effectiveness of wrist denervation for the management of chronic wrist pain**
Mr Z Gamie, Mr C Coapes, Mr S Miranda (Middlesbrough)

Introduction: If conservative management of chronic wrist pain remains unsatisfactory after six months, partial arthrodesis or wrist denervation are available options. Denervation avoids disad-

vantages such as loss of range of movement and post-operative immobilisation. Indications include arthrosis caused by scaphoid fracture nonunion, Kienbock's disease and intra-articular fractures.

Methods: Pain relief, satisfaction and the requirement for further intervention were reviewed in twenty-five patients that underwent selective denervation performed by two surgeons (method A[1] and method B[2]) in our unit (September 2008 – March 2013) using clinical notes and telephone interview.

Results: Seventeen patients had effective pain relief (mean pain score on VAS pre-operative = 7, mean post-operative = 4, p=0.002) and were satisfied at an average of 2.4 years post-operatively. Method A was associated with 48% decrease in average pain score (p=0.01, Student's t-test, n=12). Method B was associated with 37% decrease in average pain score (p=0.08, Student's t-test, n=6). Mean operative time for method A was 77 minutes and for method B was 56 minutes (p=0.09). Fifteen reported better function, one patient had a median nerve neurapraxia and seven required further intervention, at an average of one year post-operatively, with successful results.

Conclusions: Wrist denervation can be a useful intervention to alleviate chronic wrist pain, improve function and delay extensive procedures. The preliminary data suggest one method may be more effective.

References:

1. Buck-Gramko, D. Denervation of the wrist joint. *J Hand Surg* 1977; **2:** 54–61.
2. Berger, RA. Partial denervation of the wrist: a new approach. *Tech Hand Up Extrem Surg 1998*; **2:** 25–35.

16:57 Discussion

Bell Session

17:00 **An audit of the role of MRI in 'suspected' scaphoid fractures**
Mr A K Das, Mr V Ramasamy, Mr N Little, Mr N Ellahee (Epsom)

'Suspected fracture' of scaphoid is defined as those cases which present after trauma with tenderness over scaphoid tubercle but the radiographs of the wrist do not reveal an obvious fracture. A scaphoid pathway was devised which starts with patients attending the hospital with wrist pain following trauma and having tenderness over scaphoid tubercle and anatomical snuff box on clinical examination. If the X-rays revealed a scaphoid fracture they were treated in below elbow plaster cast. If there was no obvious fracture on the X-ray, patients were given futuro splint and reviewed in the upper limb clinic after ten days. If tenderness had subsided, the patients were discharged. However, if the tenderness persisted an urgent MRI scan was done. If MRI did not reveal a fracture, patients were discharged.

The total number of patients was forty-four. Twelve of these patients had a confirmed fracture while 32 had a suspected scaphoid fracture. Out of the thirty-two patients, ten had no tenderness on clinic visit and were discharged. Four patients were lost to follow-up. Out of the eighteen patients with persistent tenderness ten underwent MRI scan. The MRI scan ruled out a scaphoid fracture in seven patients who were discharged. The pathway was followed in 78.57% of patients. In our audit it was helpful in confirming the diagnosis in all patients who underwent MRI. We advocate this pathway as a useful tool for confirming the diagnosis in suspected cases of scaphoid fractures.

17:02 **Fixed angle volar locking plates in corrective distal radius osteotomy for fracture malunion, clinical and radiological outcomes**
Dr S Boutong, Mr S Saha, Ms E Taylor (London)

Introduction: Malunion is a common complication of distal radius fractures with a previously reported rate of 23.5% in distal radius fractures managed conservatively.

Objectives: The purpose of this study was to assess the clinical and radiological outcomes of corrective osteotomy using a fixed angle volar locking plate for management of distal radius malunion.

Method: Retrospective analysis was performed on patients between 2005 and 2012 using the inclusion criterium of diagnosed fracture malunion treated with corrective distal radius osteotomy. Exclusion criteria included surgery carried out less than six weeks post injury. Radiological osteoarthritis was assessed using Knirk and Jupiter osteoarthritis grading.

Result: Thirty-one patients were included, 25 females and six males, all initially managed conservatively. Radiological healing was achieved in twenty-seven (87%) patients, four (13%) patients required further surgery for non-union post osteotomy. Interestingly, synthetic bone graft was used for all patients who went on to non-union. Patients were followed up for a mean of eight months. All patients had a grade 0 or 1 radiological osteoarthritis at the end of the follow-up period. At the end of the follow-up period 56% had been discharged with good functional outcome, 38% remained under review and 6% had been lost to follow-up.

Conclusion: This is the largest series to be recorded in literature at this time. Our findings corroborate previous studies showing that the volar plate achieves good anatomical restoration with correction of radial tilt and height. We suggest the use of autologous bone grafting in distal radius malunion treated with corrective distal radius osteotomy.

17:04 Large ulnar shortening using the DePuy Synthes® Ulna Osteotomy System - A novel operative technique

Mr S Vollans, Mr R Jeffers (Bradford)

Introduction and Aims: Ulnar shortening osteotomy is reported to have good results for ulnar abutment syndrome. With increasing use of the procedure for distal radial malunions, larger ulnar shortenings are often required than are possible with the use of standard techniques. When compared to radial osteotomy, results are comparable if not superior in some clinical and functional outcomes scores. With the advent of low profile locking plates, these are favoured in osteopenic bone.

Materials and Methods: Using the DePuy Synthes® 2.7 mm LCP Ulna Osteotomy System, which normally allows a maximum of 5mm shortening, we report a new technique able to achieve accurate, reliable and reproducible shortenings of 6, 7, 8, 9.5, 10, 10.5, 11.5 and 12.5mm. The two separately described operative techniques require no extra kit than for a normal shortening. For fixation, our technique allows full use of standard drilled jig holes to minimise stress risers, non-locking and locking options throughout, and in addition the use of a lag screw in all cases to generate maximal compression whilst minimising strain at the osteotomy site. We produce a step-by-step technical description including saw-bone operative diagrams, augmented with helpful summary tables for use in clinical practice.

Conclusions: We have carried out a number of larger ulnar shortenings utilising this technique and have 100% union rate with no metalwork complications.

17:06 Determining recovery time for functional range of wrist motion required for holding a car steering wheel: Results of a pilot study

Mrs L Booth, Mr T Okoro, Mr R Kanvinde (Bangor)

Introduction: This study aims to assess recovery of functional range of wrist motion (FRWM) required for holding a car steering wheel after cast immobilisation.

Methods: Patients with wrist fractures (conservatively managed) were recruited. The participants' driving position was measured using a static steering wheel model. Following our previous study of FRWM in a normal population, extension, ulnar deviation, pronation and supination were measured at 2, 5, 7 and 10 o' clock positions on the steering wheel. Assessments initially after cast removal and repeated at six, 12 and 24 weeks. Mean (range) FRWM obtained was compared to the normal values to determine timing of maximal recovery.

NOTES

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Results: Seven participants (mean age 47 ± SD 8.079) were recruited. Primary diagnoses: distal radius fracture (n=6), and scaphoid fracture (n=1). No deficiency was noted in pronation in the injured group. Supination returned to within normal range (16–62°) six weeks post cast removal. Wrist extension at 7 o'clock, 5 o'clock and 2 o'clock returned to within normal range at twelve weeks. Ulnar deviation at 5 and 7 o'clock was within normal range at six weeks. Ulnar deviation at the 2 o'clock position did not reach normal range at twenty-four weeks. (see figure 1 for mean values and range of movement). Grip strength did not return to normal range at twenty-four weeks.

Conclusions: Wrist ulnar deviation and extension are important in this limited sample. Further research is required to assess if targeted therapy is appropriate.

NORMAL POPULATION (Degrees)			INJURED- IMMOBILISED IN CAST FOR MAXIMUM OF 6 WEEKS (degrees)							
			Baseline		6 weeks after cast removal		12 weeks after cast removal		24 weeks after cast removal	
Extension	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range
2 o'clock	34.4	20–53	19	0–45	27.83	10–45	32.50	20–45	29.80	0–45
5 o'clock	47.35	30–78	29.71	0–70	46	10–70	49.67	40–70	52.80	38–70
7 o'clock	48.5	30–72	48	30–66	50	30–72	49.67	30–70	46.50	30–64
10 o'clock	37.5	12–55	25.14	2–54	31	10–54	28.67	10–46	28	10–52
Ulnar Deviation										
2 o'clock	14	4–30	6.86	2–10	8	2–16	7.67	2–14	9.20	0–20
5 o'clock	5.4	2–15	8.29	0–20	6.67	2–20	7.33	2–20	6.80	2–20
7 o'clock	5.4	2–11	8	4–10	9	4–16	8.33	4–14	7	4–10
10 o'clock	14.35	5–36	12.43	4–21	12.50	6–21	13.83	4–21	14.25	4–21
Supination										
5 o'clock	38.7	16–60	36.43	4–59	41.33	22–56	44.67	28–60	44.20	26–62
7 o'clock	38.65	17–62	48.71	35–75	41	24–58	42.5	33–58	43.25	37–58
Pronation										
2 o'clock	57.65	36–84	57.14	38–80	51.67	38–68	56.17	38–69	58	38–78
10 o'clock	52.7	18–77	58.14	33–85	52.50	33–72	54.83	33–69	48.75	33–55

Figure 1: Range of wrist movement on gripping steering wheel. Normal versus injured group.

17:08 A comparison of outcome following distal radius versus iliac crest bone grafting for scaphoid fracture non-union

Mr M Alkoheji, Dr M Elkin, Mr R Tahmassebi (London)

Introduction and Aims: Use of autologous bone graft remains the gold standard treatment for management of scaphoid fracture non-union. Iliac crest graft procurement and its complications have been well documented. We sought to compare the use of iliac crest graft against distal radius graft for the treatment of scaphoid non-union, with emphasis on union rates and patient satisfaction outcomes.

Materials and Methods: A single centre, retrospective review was undertaken of thirteen patients who underwent open reduction and internal fixation with bone grafting of the scaphoid over the course of one year. Eight patients had autologous graft harvest from the distal radius via an extended volar approach, while five patients had graft taken from the iliac crest. A questionnaire was conducted including the verbal numerical pain scale (1-10) at different intervals post-operatively as well as inquiry about symptoms associated with autologous graft harvest.

Results: All patients either achieved successful union at the graft site, both radiologically and clinically, or else were found to be showing radiological evidence of union. There were no sig-

nificant differences in pain levels at the operated wrist between patients who had a distal radius graft and those who had an iliac crest graft at one week (4.3/10 and 4.4/10 respectively) and at one month post-operatively (1.6/10 and 1.8/10 respectively). Patients who had an iliac crest graft had an added pain score of 5.6/10 immediately post-operatively, 5/10 at one week and 2.2/10 at one month at the iliac crest harvest site. No significant difference was found in scar appearance satisfaction, scar tenderness or sensory deficit at the graft sites in both cohorts.

Conclusions: Use of distal radius graft via an extended volar approach for small bone defects such as scaphoid non-union yields similar results in union rates and post-operative pain levels with the elimination of the added pain and complications associated with iliac crest graft harvest.

17:10 Distraction plating for comminuted intra-articular distal radial fractures

Mr R Zhou, Mr N Howard, Mr M Waseem (Macclesfield)

Introduction: The use of a distraction plate combined with bone-grafting when needed was due to the extensive metaphyseal and diaphyseal comminution or failure to achieve stabilisation with conventional surgical methods.

Methods: Eighteen patients who have extensively comminuted distal radius fractures were treated with an extra articular dorsal distraction plate from the radius to the third metacarpal. Cases of complication such as extensor tendon rupture were recorded. Functional outcome was measured by using DASH score, overall patient satisfaction, grip strength and the range of motion. Results were correlated with the length of time the distraction plate was in situ.

Results: All fractures united at the end of follow-up. An average DASH score was 35 at one-year point with a range of 11 to 56. Plates were removed four to six months post-operatively. The duration of immobilisation did not correlate with the range of motion or DASH score at one year. Two cases of EPL rupture were reported before the distraction plate was removed.

Conclusions: The use of a distraction plate can be an effective technique to treat fractures of the distal the radius with extensive comminution or failed conventional surgical treatment. Despite a prolonged period of immobilisation, a functional range of motion can be achieved.

17:12 A simple, reliable technique for the correction of swan neck deformities

Miss A Barnard, Miss S Stevenson, Mr R H Milner (Newcastle upon Tyne)

Introduction and Aim: Spiral oblique retinacular ligament (SORL) reconstruction is a recognised technique for managing passively correctable swan neck deformities. Several methods have been reported. We present a variation whereby one lateral band is passed volar to the proximal interphalangeal joint (PIPJ) and secured to the proximal phalanx with a bone anchor. We aimed to review the outcome following SORL reconstruction with this technique.

Methods: We identified patients who have had a SORL reconstruction performed by the senior author using this technique. All available patients were reviewed and a questionnaire was used to assess patient satisfaction. Range of motion, grip strength and pinch stress were assessed.

Results: Nine procedures were completed in five patients. The indication was swan neck deformity due to volar plate laxity arising either spontaneously or following trauma. All digits were improved and full correction was achieved in eight out of nine fingers. The PIPJ range of movement averaged 87° (range 66 to 100°) with an average extensor lag of 6° (range -4 to 24°). Average follow-up was twenty-three months (range 3 to 96 months). All patients questioned said they would have the same procedure again.

Conclusion: Using a bone anchor to secure the proximal tendon, rather than a tendinous or flexor sheath insertion, gives a robust repair. Follow-up time varied, but the results were maintained in those patients reviewed beyond five years. This technique is reliable in the correction of swan neck deformities resulting from volar PIPJ laxity and patients are satisfied with the outcome.

17:14 **Anatomic PIPJ replacements: A comparison of the Avanta and Ascension implants at six-year follow-up**

Mr J Hobby, Miss C Langley, Mr E Powell-Smith, Mr T Briant-Evans (Basingstoke)

Introduction: Proximal interphalangeal joint replacement has become increasingly popular. There is little published long-term clinical data. We present our mid-term experience with the Avanta SR and Acension© Pyro-carbon PIP joint replacements.

Methods: Between 2002 and 2008 we treated thirty-eight PIP joints in 21 patients (21 Avanta and 17 Ascension). Patients have been prospectively followed including range of movement, radiographs, outcome scores and patient satisfaction. The mean age at surgery was sixty-one years and the average follow-up is 6.1 years (range 3-11 years).

Results: Almost all patients report relief of pain and the majority of the patients are satisfied with the results of surgery. Overall patients have shown a modest improvement in range of joint movement. Four Avanta implants have been revised (two revision joint replacements and two fusions), and there have been three other re-operations for stiffness. Four of the Ascension implants have been revised to new Ascension implants (one early for dislocation and three later revisions for loosening); in addition two dislocations have required closed reduction, and one an extensor tenolysis. We have seen early implant migration in the Ascension implants but most have not progressed. In our hands the Ascension implant appears to perform better than the Avanta.

Conclusions: We have experienced difficulty with dislocation, stiffness and implant migration in some patients. Overall we have found our mid-term results to be acceptable, and believe this gives better functional results than arthrodesis of the PIPJ. We believe that the patients must be kept under review.

17:16 **Patient reported outcome measures following surgical treatment of trapeziometacarpal arthritis**

Mr M A Akhtar, Mr C Coapes (Middlesbrough)

Introduction and Aims: Trapeziometacarpal arthritis is a common problem in the elderly population. Surgical treatment is indicated following failure of conservative management. Our aim was to study the patient reported outcome measures following trapeziometacarpal joint replacement and trapeziectomy.

Material and Methods: All thirty patients undergoing surgical treatment for trapeziometacarpal arthritis from 2010-2013 under the care of a single surgeon were invited to take part in the study via a postal questionnaire. Patient satisfaction, pain relief, improvement in hand function, friends and family test, QuickDASH and patient evaluation measure (PEMS) were recorded.

Results: The response rate was 87%. 50% of patients had joint replacement (Group A) and the remaining 50% had trapeziectomy (Group B). Group A had 89% female and 11% male patients with a mean age of 57. Group satisfaction rate was 7. 67% patients would have the same surgery again and would also recommend it. The pain improved six points from nine to three and hand function improved three points from four to seven on the visual analogue scale (VAS). The quick DASH score was 34 and PEMS 34. Group B had 67% female and 33% male patients with a mean age of 67. Group satisfaction rate was 9.5. 100% patients would have the same surgery again and would also recommend it. The pain improved seven points from nine to two and hand function improved four points from four to eight.The quick DASH score was 45 and PEMS 36.

Conclusions: There was good overall satisfaction with pain relief and functional improvements. Patients with trapeziectomy were ten years older than the trapeziometacarpal joint replacement group. There was no significant difference between the groups, although there was a trend towards better scores after trapeziectomy.

17:18 **Discussion**

THURSDAY 1 MAY

17:30–19:15

17:30 **Business Meeting (open to Members and Associates of the Society only)**

19:15 **(for 20:00) Society Dinner – Baltic Centre for Contemporary Art**

NOTES

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07:30 Registration

Free Papers

Chairs: Miss J S Arrowsmith and Mr D J Brown

08:00 **Unusual congenital digital fibrous tumours: A case series and literature review**
Mr A Fox, Professor M Tonkin (Sydney)

Introduction and Aims: Congenital digital fibrous tumours have been described as a heterogeneous group of conditions. A multitude of isolated case reports show a diversity of histopathological variation and diagnosis within the spectrum of benign infantile digital fibrous tumours. Some of the early nomenclature has been merely descriptive, conveying no clinicopathological relevance. We document eleven cases and review the relevant literature, confirming the heterogeneity of diagnosis, histological pattern and biological behaviour.

Methodology: Retrospective case note review of a single surgeon experience. A variety of digital fibromatous lesions have been identified including: acral fibromyxoma, infantile digital fibromatosis, plexiform fibrohistiocytic tumour, myofibroma, lipofibromatosis and granuloma annulare.

Discussion: We highlight the importance of accurate histological diagnosis to inform prognosis and management as well as the differentiation from malignant lesions. Because of the rarity of the conditions and the importance of accurate diagnosis and subsequent treatment, patients should be managed at specialist centres and within the remits of a multidisciplinary team.

08:07 Discussion

08:10 **An anatomical study of triphalangeal thumbs in radial polydactyly**
Miss L Ng, Miss S Stevenson, Mr M Alrawi, Mr P Kalu, Mr J Littler, Miss J Ahmad, Miss B Crowley (Newcastle upon Tyne)

Introduction: Radial polydactyly encompasses a spectrum of anatomical anomalies, including the presence of triphalangeal thumbs. A number of classifications have been reported based on skeletal anatomy. The aim of this study was to review our triphalangeal radial polydactyly patients including the anatomical findings and surgery performed.

Method: The diagnosis of triphlangeal thumb is made on the basis of pre-operative clinical and radiographic findings together with thorough exploration at the time of surgery. All operation records for patients undergoing primary correction of radial polydactyly are standardised according to the anatomical headings skin, skeleton, joints, extensor mechanism, flexor mechanism, intrinsic muscles and neurovascular.

Results: Triphalangeal thumbs were identified in fourteen cases of radial polydactyly in ten patients. In six cases the duplication arose at the level of the metacarpophalangeal joint, with the remainder arising at the proximal metacarpal level. Pre-operative X-rays did not always truly reflect intra-operative skeletal findings. In nine cases the ulnar duplicate was dominant. First web space tightness was seen in five cases. Significant anatomical variability was observed, especially within the flexor and extensor mechanisms. The triphalangeal duplicate was retained in thirteen cases and additional surgery to correct the triphalangeal element was performed in five cases.

Discussion: This study highlights the anatomical complexity of triphalangeal thumbs in radial polydactyly. Classification based on radiographic findings provides only limited information. We believe the complexity of the anatomical findings are better understood by a thorough exploration at the time of surgery. This helps aid in surgical planning and provides valuable prognostic information.

08:17 Discussion

08:20 **Hand dominance a myth? Grip and pincer strength analysis - A North Wales population-based study**
Mr V Paringe, Mr H Williams, Ms A Coxon, Mr H Mirza (Rhyl)

Introduction: The common practical belief dictates a hand dominance pattern with a 10% rule applicable to the grip strength. The literature is still divided, with Petersen et al demonstrating that the 10% rule is only applicable to the right hand dominant population, and left hand dominant population demonstrating no such predilection, with Incel & Crosby et al confirming the same. Bohannon (2003) conducted a review of ten studies, concluding that, though all ten studies suggested grip strength of the dominant right side to be stronger, the available information was insufficient to make a judgment. The objective was to evaluate the grip and pincer strength differences between dominant and non-dominant hand using objective parameters of dynamometer.

Methods: The study design was prospective, including one hundred and fourteen right and six left hand dominant healthy volunteers (hospital staff). Grip strength was measured using a Jamar calibrated dynamometer. Pincer grip strength measurements were performed by manual pinchmeter.

Results: The mean age of the cohort was 39.7 (20-67). There were sixty-two females and 58 males. There was a statistically significant difference between the grip and pincer strengths for sex with male predominance. The percentage of stronger dominant grip strength was 3.1% and -0.3% for right and left-handed groups respectively (p=0.54). The results for pinch grip showed a stronger non-dominant 4.9% and 6.6% for right and left handed subjects respectively (p=0.90).

Conclusions: Contrary to the literature, we concluded that there is no significant difference between dominant and non-dominant hands in both grip and pincer strength.

08:27 **Discussion**

08:30 **A comparison of the Patient Evaluation Measure, DASH and Quick-DASH questionnaires**
Mr J Hobby, Miss C Langley (Basingstoke)

There is an increasing focus on patient derived outcomes in hand surgery. This paper assesses two of the most popular questionnaires across a range of common conditions, and compares the performance of the eleven question Q-DASH with the longer 30 question DASH.

We administered the PEM and DASH questionnaires in one hundred and six patients before and three-months after surgery; (51 carpal tunnel, 21 Dupuytren's, 15 trapeziectomy, 19 trigger fingers). We correlated pre-operative scores, compared the responsiveness of questionnaires to changes following carpal tunnel release, and correlated post-operative scores to patient satisfaction.

There was very good correlation between the pre-operative PEM, DASH and Q-DASH scores. There was also good correlation between patient satisfaction and the change in scores. The PEM was more responsive to change than the DASH or Q-DASH.

	CTD	Dup	Trigger Finger	Trapeziectomy
PEM	42.9%	37.9%	46.9%	54.6%
Change	-26.1%	-14.3%	-28.5%	-34.2%
Effect Size	-1.28	-0.70	-1.59	-1.48
DASH	34.9%	22.3%	36.6%	41.8%
Change	-19.4%	-10.9%	-19.4%	-25.8%
Effect Size	-0.97	-0.55	-1.10	-1.32
Q-DASH	40.2%	22.0%	31.4%	43.7%
Change	-24.2%	-9.9%	-16.2%	-24.1%
Effect Size	-1.31	-0.47	-1.00	-1.17

The measures showed a very strong correlation with each other, and the changes in score correlated patient satisfaction. The DASH and Quick-DASH performed similarly, confirming that the shorter eleven-item Q-DASH is a satisfactory outcome measure.

08:37 Discussion

08:40 A comparison of the Patient Evaluation Measure and EQ-5D questionnaires
Mr J Hobby, Mrs S Fullilove, Mrs S Ross, Professor T R C Davis (Basingstoke)

Introduction: The UK Government has an increasing interest in patient derived outcomes in surgery. The favoured measure is the EQ-5D, which has not been assessed in hand surgery. This compares the performance of the EQ-5D with the well established Patient Evaluation Measure.

Methods: We used data from the BSSH outcome audit database to compare the PEM and EQ-5D questionnaires in seventy-one patients before and after surgery (15 carpal tunnel, 14 Dupuytren's, and 42 trapeziectomy). We correlated pre-operative scores, and compared the responsiveness of questionnaires to changes following surgery.

Results: There was a poor correlation between the pre-operative PEM and EQ-5D scores ($r2 < 0.25$; $p > 0.05$). The PEM was far more responsive to change than the EQ-5D. A measure with an effect size of one is usually considered to be satisfactory.

Effect size:

Carpal Tunnel:	PEM 1.53; EQ-5D 0.17
Trapeziectomy:	PEM 1.62; EQ-5D 0.68
Dupuytren's:	PEM 0.40; EQ-5D 0.25

Conclusions: General health measures have been shown to be poor outcome measures for hand surgery. This study shows that the EQ-5D has a poor correlation with the PEM, and is not sufficiently sensitive to reliably measure changes in symptoms following surgical treatment. We therefore conclude that the EQ-5D is probably not a suitable outcome measure for hand surgery.

08:47 Discussion

08:50 Bilateral carpal tunnel syndrome - Staged or simultaneous surgery?
Mr T Boddice, Mr D Dickson, Mr A Collier (Harrogate)

Bilateral carpal tunnel syndrome can be managed with either a staged or simultaneous decompression. Simultaneous surgery has reduced overall recovery but there are increased functional difficulties. We aimed to quantify these difficulties and any differences between the two operative approaches. We also aimed to elucidate factors to help select patients for either surgical approach. Sixty-three patients were included, 33 undergoing staged and 30 simultaneous surgery. Patients completed a questionnaire combining Levine functional score, the Quick-DASH score, a visual analogue score (VAS, scale 0-10) for pain assessment, level of satisfaction along with the time before returning to work. Significantly greater functional difficulties in activities requiring dexterity, strength or both hands were reported in the simultaneous group. There was no difference in simple tasks such as ability to hold a book. There was no difference in pain ($p=0.93$) or satisfaction ($p=0.88$). Significantly fewer would undergo simultaneous decompression ($p=0.14$) citing functional difficulty in personal hygiene. A significant decrease in the total time off work in both manual and non-manual workers with on average two to three weeks for simultaneous surgery versus six weeks for staged decompression. Age, sex and pre-operative functional difficulties had no influence on the post-operative functional difficulties. Patients on medication for depression or anxiety were significantly more likely to report functional difficulties or dissatisfaction with simultaneous surgery ($p=0.008$). Whilst most patients are satisfied with simultaneous surgery they must be motivated and aware of the short-term functional difficulties following surgery. We would advice against simultaneous decompression in patients with anxiety or depression.

08:57 Discussion

NOTES
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09:00 **Nerve transfers in the upper limb - The Birmingham Hand Center experience**
Mr A Mishra, Mrs C Miller, Mr S Tan, Mr D Power (Birmingham)

Introduction: A nerve transfer converts a high proximal nerve injury to a more distal nerve injury, which may accelerate muscle reinnervation. The concept and procedures have gained greater acceptance. Standard nerve transfers have been used more frequently, and innovative nerve transfers have been developed to treat a variety of deficits. We present our series and discuss the indications and modifications used.

Patients and Methods: A retrospective case note review was performed from June 2010 to June 2013. Over a three-year period, forty-two nerve transfers in 28 patients were identified. This series includes somsak, modified somsak, Oberlin, nerve transfers for high ulnar nerve and radial nerve injuries and nerve transfers in brachial plexus injuries including intercostal and contralateral C7 with or without functioning muscle transfer.

Results: The timing of nerve transfers was the main factor in the outcome of this surgery. The patients who had Oberlin and somsak transfer and its modification reliably achieved MRC grade 4 muscle power. Tendon transfers are as reliable in high radial nerve injuries and FDP tenodesis combined with AIN to motor branch of ulnar nerve for high ulnar nerve injury provides more reliable results. We did not have problems with neuropathtic pain in our sensory nerve transfers. We present our sequential algorithm for the management of these cases.

Conclusion: Nerve transfer is a useful option in the hand surgeon's armamentarium. Nerve transfers can be combined with tendon transfer for specific indications. When chosen for the appropriate situation, the nerve transfer is a time-tested procedure.

09:07 **Discussion**

09:10 **Nerve transfer in obstetric brachial plexus injury - Our regional unit's experience**
Miss F Choukairi, Miss A S Kruit, Mr W Mamoun, Mr A Mishra, Mr L Sharkey, Miss R Lester, Mrs A Jester (Birmingham)

Introduction: Obstetric brachial plexus (OBP) injuries are uncommon in newborn children and nerve transfers are frequently used to restore shoulder function, the most common transfer being spinal accessory nerve to suprascapular nerve. We present our unit's thirteen-year experience of treating OBP injuries; with particular emphasis on a subset group treated with the aforementioned nerve transfer.

Methods: We conducted a retrospective study of all patients referred to our unit with OBP-palsy over a thirteen-year period (2000-2013). Data was collected for types of surgery performed, birth weight, shoulder dystocia, pre- and post-operative Mallet scores and clinical presentation prior to and post-surgery.

Results: A total of two hundred and fifteen patients were treated at our unit over the study period. Of these, 191 patients (88.9%) were treated conservatively. Twenty-four patients (11.1%) underwent surgery which included 18 primary exploration surgeries of which nine patients underwent accessory to suprascapular nerve transfers, ten were nerve grafts and three were neurolysis only. In the nerve transfer group birth weight was over 4kg in all patients. There were five male and four female patients, and the average age at surgery was 14.6 weeks. Patients were followed for an average period of twenty-one months. All patients had a pre-operative Mallet score of 5. The nine-month post-operative Mallet scores ranged from 8 to 10, with an average score of 9.6.

Conclusion: Most obstetric brachial plexus injuries resolve spontaneously, however, in carefully selected patients surgery can improve upper limb function. We present our results after accessory to suprascapular nerve transfer surgery.

09:17 **Discussion**

09:20 **Management of nerve pain using external neuromodulation an in outpatient setting**
Mr A Siddiqui, Mrs J Poel, Mrs M Want, Mrs A Copsey, Mrs L Hare, Mr M Sood (Chelmsford)

Introduction: Trauma to the hand (including iatrogenic injury) has the potential to result in painful nerves and neuromas. These are a difficult group of conditions to manage. Surgical and non-operative techniques have been described, such as nerve relocations, guanethidine blocks and management with opioids and membrane stabilising agents, all of which can have significant side effects. We have used external neuromodulation as an alternative for management of nerve pain in an outpatient setting and present our series of one hundred and two patients.

Material and Methods: A retrospective study of case notes was carried out and results have been analysed. Outcomes were recorded as (i) pain free, (ii) pain relief lasting days to weeks, (iii) pain relief lasting a few mins to a few hours and (iv) no response.

Results: The use of external neuromodulation has resulted in significant reduction of pain in our patients. 30.3% (n=31) patients were completely pain free. Twenty-two patients (21.5%) had pain relief lasting a few days to weeks and these patients benefitted from regular treatment either in our neuromodulation clinic or by self-administration. 23.5% patients had pain relief lasting for a few minutes to hours and were classed as poor responders. In our study twenty-five patients (24.5%) showed no response to neuromodulation.

Conclusions: External neuromodulation is a useful non-invasive outpatient technique for the management of nerve pain, due to which a significant number of patients with painful neuromas and nerve pain were able to avoid surgery altogether. 51% of our patients in the study were treated successfully with neuromodulation.

09:27 **Discussion**

Keynote Lectures
Chair: Mr R H Milner

09:30 **Update on thumb reconstruction**
Dr F del Pinal (Santander)

10:00 **Treatment of tetraplegia: How to examine a patient with tetraplegia – Clinical demonstration with a patient and my approach to treatment**
Dr S Kozin (Philadelphia)

10:45 **Refreshments and trade exhibitions**

Bell Session
Chair: Professor D Warwick

11:15 **The architecture of Sharpey's fibers is unique in proximal phalanges and metacarpals**
Mr M Khalid, Dr I Inuwa (Muscat)

Background: Sharpey's fibers are predominantly composed of collagen type 3 and play a role in anchoring the periosteum to the underlying bone. It is possible to separate the periosteum of phalanges and metacarpals from the underlying bone even in adults and indeed it is a described surgical technique to raise the periosteum off the bone when plating these bones. This study aims to study the arrangement of Sharpey's fibers in the hand bones and compare them with their arrangement elsewhere.

Materials and Methods: After obtaining ethical committee approval, fresh frozen segments of 0.5cm x 0.5 cm were cut from mid-diaphysis of ten proximal phalanges and ten metacarpals, as well as ten segments from the mid-diaphysis of two humeri. The bone was prepared for specific collagen 3 immunofluorescence stain as previously described by Al-Qtaitat. 10-12 micron thick

cryosections were cut and incubated with anti-collagen type III primary antibody. The secondary antibody was FITC-conjugated anti-mouse IgG. The sections were examined under a epifluorescence microscope, using ultraviolet light and a Confocal Scanning Microscope. Positive regions were identified as apple green colour. Three dimensional reconstructions of the architecture of Sharpey's fibers were created.

Results: The orientation of the Sharpey's fibers was predominantly superficial and horizontal in the phalanges and metacarpals. A greater proportion of deep and transcortical fibers were seen in the humerus samples.

Conclusion: The arrangement of the Sharpey's fibers is unique in proximal phalanges and metacarpals and helps explain the ease with which the periosteum can be separated from the underlying bone.

11:17 **A single-centre cost comparison analysis of Collagenase injection versus surgical fasciectomy for Dupuytren's contracture of the hand**

Mr S Mehta, Mr H Belcher (East Grinstead)

Introduction and Aims: The options for treating patients with Dupuytren's contracture have broadened with the introducion of Collagenase. Although the literature would suggest that Collagenase treatment is effective, has few complications and is popular with patients, it has not been widely commissioned by the National Health Services of the United Kingdom and other European countries due to concerns about cost. The aim of this study was to compare the cost of surgical fasciectomy to Collagenase injections for the treatment of Dupuytren's contracture in a single centre.

Method: Prospective data on forty patients undergoing fasciectomy or Collagenase injection (20 patients in each group) was collected between January and March 2013. Financial data on the costs of the procedures, equipment, theatre time and follow-up appointments were calculated.

Results: The average cost of an open partial fasciectomy pathway was £7,115.34 and a Collagenase pathway £2,110.62. Eight Collagenase patients had physician led follow-up appointments and only three had hand physiotherapy appointments. In contrast, every fasciectomy patient had at least one physician and one physiotherapist follow-up appointment routinely.

Conclusion: The results of this study demonstrate that Collagenase treatment for Dupuytren's contracture of a single-digit in selected patients is just over £5,000 less than treatment for the same condition using surgical fasciectomy. Collagenase treated patients require much less physician and physiotherapist led post-operative follow-up.

11:19 **Evaluation of a single-cord, single-dose Collagenase protocol in sixty-nine patients: A successful, acceptable and cost-effective strategy for palmar Dupuytren's delivered in the NHS**

Mr J Granville-Chapman, Mr O Templeton-Ward, Mrs C Urquhart, Miss D Gray, Mr P Magnussen (Guildford)

Introductions and Aims: Dupuytren's is common and incurable. Open surgery is expensive; needle aponeurotomy recurs early. Efficacy and recurrence are promising for Collagenase (Xiapex). We aimed to determine efficacy and acceptability of a single-dose Collagenase protocol for palmar contracture.

Methods: Prospective service evaluation of objective and validated PROMs data. Single-dose Collagenase (0.58mg) into palmar cord. Digit straightened on day three under local anaesthetic. Splint made on day of straightening.

Results: Sixty-nine patients: one third employed, 59 male. We failed to separate three cords.

	Pre-Inj	Post-Rx	6/52	6/12	1 year
n	69	69	62	40	29
MCPJ	49.1 (15.7)	8.4 (12.5)	4.5 (10.1)	0.6 (1.2)	2.3 (5.5)
PIPJ	13.7 (15.3)	9.8 (13)	5.6 (8.8)	4.6 (8.7)	6.2 (11.3)
qDASH	Mean 18		6.7	5.7	4.4
	Mode 0		0	0	0
	Median 16		2.3	2	1
URAM	Mean 12.2		2.4	2.1	1.9
	Mode 0		0	0	0
	Median 12		1	1	1

Table 1: Passive contracture angle in degrees (°). Mean (SD). qDASH = quick Disabilities in Arm Shoulder and Hand. URAM = Unite Rheumatologique des Affection de la Main

Thirty patients had previous Dupuytren's treatment: all but one strongly preferred Collagenase. Sixty-eight would recommend Collagenase and 67 would have it again. Bruising and swelling were common. Fourteen sustained small skin tears. Symptoms were mild to moderate and inconvenience nil to minimal. Two of three failures had cord separation completed by needle aponeurotomy; one underwent staged fasciectomy. Our cohort total tariff was £83,587: a saving versus fasciectomy of £132,590 (£1,921 per patient).

Discussion: A single-dose protocol is effective, highly acceptable and cheaper than surgery and we commend it in appropriately selected patients.

11:21 The economic impact of re-operation rates on the treatment of Dupuytren's contracture

Miss C Tsang, Mr J Blair (East Grinstead)

Introduction: The treatment of a single palpable Dupuytren's cord causing digital flexion contracture remains a subject of debate. A cost analysis evaluating the impact of re-operations rates on the management of Dupuytren's contracture have not been previously published. We hypothesise that the lesser initial cost of certain procedures may be offset by added surgical cost in addressing recurrences in the longer term.

Methods: An accumulative treatment cost model was constructed to evaluate total treatment cost over a five-year period. Initial treatment modality evaluated included needle aponeurotomy, Collagenase injection and partial fasciectomy. Recurrence and re-operation rates were derived from published data. Re-operations were in the form of partial fasciectomies across all treatment arms. Costing was based on the UK National Tariff for 2012-2013. Re-operation costs were calculated based on the number of re-operations multiplied by cost of partial fasciectomy.

Results:

	Needle Aponeurotomy	Collagenase Injection	Partial Fasciectomy
Recurrence rate at 5 years used in this model	85%	34%*	21%
Re-operation rates (41% of recurrence rates)	35%	14%	9%
Initial Treatment Costs of 100 cases	£99,000	£182,700	£377,350
Re-operation costs	£132,073	£52,829	£33,962
Total treatment costs at 5 years	£231,073	£235,529	£411,312

*3-year follow-up results

Conclusion: Despite reduced costs accrued from repeat procedures within the partial fasciectomy treatment group, due to high procedural costs, it remained the most costly treatment option at five years. This study provides an alternative view in guiding the choice and commissioning of treatments for Dupuytren's contracture. This will be discussed along with study limitations and current cost-effectiveness models.

11:23 Do plates have a role in phalanges?

Mr M Gupta, Mr P Mikalef (Birmingham)

Introduction: Internal fixation with plates provides the best biomechanical stability to a fractured bone, but is shown to have a severe risk of stiffness. As a result, dorsal plating of phalangeal fractures is condemned in the literature. We report our experience of this procedure and show that, in experienced hands, plating is a useful and often better option for treating phalangeal fractures.

Methods: We conducted a retrospective study of fifty-one consecutive procedures of dorsal plating of the proximal phalanx undertaken at the Birmingham Hand Centre. The data was collected from the hospital records. Inclusion criteria were isolated closed fractures of the proximal phalanx with a minimum follow-up of three months after plating. Results were analysed in terms of fracture healing, residual deformity and range of movement. Complications were recorded. Particular note was made of patients requiring tenolysis or metalwork removal.

Results and Conclusion: All fractures healed with no incidence of nonunion. Final range of movement was good to excellent. Deformity was minimal. Stiffness requiring tenolysis was reported in less than 10% cases. Intra-articular fractures, complex fracture patterns and trainee surgeons were more likely to have a poorer outcome. Motivated patients undergoing early and aggressive therapy showed better results. We concluded that, in contrast to the reported literature, plates have a significant role in treating phalangeal fractures. The technique is versatile, allowing stabilisation of complex fracture patterns. Stable fixation allows early mobilisation, thereby reducing the risk of stiffness and deformity. Complications are comparable to other methods of treatment.

11:25 Nerve transfer in obstetric brachial plexus injury - History repeating itself?

Miss F Choukairi, Miss A S Kruit, Mr W Mamoun, Miss R Lester, Mrs A Jester (Birmingham)

Brachial plexus surgery is a fascinating area of reconstructive surgery with a long history of formal development. The first brachial plexus case was described as early as 800 BC. It then took more than 2,500 years to recognise that brachial plexus palsy in newborns has an obstetrical cause.

In 1768, a British obstetrician reported transient arm paralysis in newborns after difficult labour. It then took until the next century for Duchene to recognise traction as a cause of this birth injury and Erb to describe lesion of the C5-C6 spinal nerve roots.

The British surgeon Robert Kennedy presaged modern brachial plexus reconstruction with his reports on neurolysis in 1903 and Fairbank espoused secondary therapy by muscle release to treat internal rotation and shoulder adduction in 1913.

These advances in surgery ground to a halt in 1925, when J.W. Sever presented disappointing outcomes with nerve transfer. Treatment therefore steered towards muscle releases/transfers. From the 1970's on, brachial plexus nerve surgery began blossoming again, with the French plastic surgeon Alain Gilbert adding new neurotisation options to the repertoire and Oberlin describing the ulnar nerve transfer to biceps muscle in 1994.

Entering the new century, Dr Nath, an American plastic surgeon, has described successful outcomes with the modified quad and triangular tilt procedure in infants in 2002, without any nerve

exploration or repair. He is raising the question yet again whether OBP injury should be treated only with a combination of muscle release and -transfer, rather then brachial plexus exploration and neurotisation.

11:27 **Developing a competency-based training programme for a new team of multi-disciplinary hand trauma co-ordinators**

Mr A Hunter, Dr P Chadha, Ms S Mee, Mr R Sharma, Ms J Hocking, Ms L Hadfield-Law, Miss K Owers (London)

Introduction: Hand trauma co-ordinators (HTCs) are essential to the efficient organisation of a day-case hand trauma service. The role involves acting as a point of contact for patients and staff, ensuring theatre lists are coordinated and hand trauma referrals are triaged. The introduction of new multi-disciplinary HTCs to the department required a training and assessment programme.

Methods: Established methods for curriculum development were followed. A programme of training and assessment was established following discussion between hand surgeons, hand therapists, the hand trauma co-ordinator and an education specialist.

Results: A curriculum composed of a range of defined competencies was developed, with a range of knowledge and skills graded according to the level expected. Previously validated work-place based assessments provided feedback and allowed formal assessment of HTCs' competencies against the curriculum. With a focus on the curriculum content, a lecture-based teaching programme, discussion forums and simulation exercises have been introduced. An educational mentor was identified for each HTC to support progression.

Discussion: This is the first competency based training programme of its kind for HTCs. The programme is specific in defining the expected competencies and is flexible in supporting recruitment from a variety of disciplines. The curriculum allows clarity in the teaching and learning of HTCs in the workplace. The assessment of competencies by hand unit staff provides evidence of safe standards and identifies areas for future learning. This training programme can be utilised by other hand trauma units with new and established HTCs in the further development of their service.

11:29 **A systematic review of digital flexor tendon repair: Does the number of core sutures affect functional outcomes?**

Dr J Tan, Mr J Hardwicke, Major M Foster, Mr G Titley (Birmingham)

Background: Although multi-strand digital flexor tendon repairs appear to increase strength of repair in cadaveric models, they may result in worse functional outcomes due to increased gliding resistance. Is there any evidence to support the hypothesis that multi-strand techniques result in a poorer outcome than two-strand techniques?

Methods: A systematic review was undertaken to compare outcomes and rupture rates between two-strand and multi-strand core sutures in zones 2-5. Outcome was measured by the ASSH criteria, original or modified Strickland criteria, or Buck-Gramcko criteria.

Results: A total of 1,878 patients (3,749 tendons) were included from selected studies. Thirty-three studies reported two-strand repairs and 15 reported multi-strand repairs. 3,136 repairs were in zone 2, 221 in zone 3, 52 in zone 4 and 330 in zone 5. Of the total tendon injuries, 59.3% were FDP, 38.4% FDS and 2.3% FPL. Pooled rupture rate was 3.9 per 100 digits. No significant difference was detected between two-strand and multi-strand repairs for outcomes by all measures.

Conclusions: With no significant difference found between tendon repair techniques, we recommend the use of a well-practiced method with regular audit of outcomes. We present the following standards for outcomes in digital flexor tendon repairs; 50% excellent, 80% excellent and good, and a 4% rupture rate.

11:31 **Recurrence rates of trigger finger following injection in diabetics**
Miss K B Ferguson, Mr S Grant, Dr B Conway, Mr H Divecha, Mr S Barnes (Greenock)

Introduction: Trigger finger is a common presentation to orthopaedic hand clinics, with an increased incidence in diabetics. Our current protocol is to inject all trigger digits. If the trigger digit recurs, a second injection is given. Surgery is offered following a second recurrence. Our objective was to determine whether a second injection was of benefit to diabetic patients.

Methods: Prospective data collection occurs for patients who attend the trigger finger clinic. The diabetic patients were identified between September 2005 and September 2012 and the clinical notes reviewed. The results were compared to the non-diabetic population.

Results: As expected, non-diabetic patients were more likely to be successfully treated with one injection, when compared with diabetic patients (78% versus 62%; p=0.02). A second injection was more successful in the non-diabetics (90% versus 52%; p=0.01). However the difference between success rates of two corticosteroid injections did not reach statistical significance (88.4% versus 82%; p=0.20). There was a difference in the surgical release rates between the two groups which did not reach statistical significance (11.6% versus 18%; P = 0.20).

Discussion: The current treatment protocol at our institution is appropriate for the management of diabetic patients and we will continue to offer two corticosteriod injections to all patients before offering open release. Diabetic patients will be counselled that they are marginally more likely to experience a recurrence of their symptoms but ultimately they are no more likely to require surgical release when compared to a non-diabetic patient.

11:33 **Discussion**

Sarcoma Symposium
Chair: Mr S L Knight

11:45 **Overview/Imaging**
Mr G Hide (Newcastle upon Tyne)

12:00 **Benign bone/cartilage tumour**
Dr S Kozin (Philadelphia)

12:30 **Aggressive bone tumours**
Mr C Gerrand (Newcastle upon Tyne)

12:40 **Soft tissue sarcoma of upper limbs**
Mr H P Giele (Oxford)

13:00 **Expert Panel**

13:15 **SWIFT Investigators' Meeting**

13:15 **Lunch and trade exhibitions**

Keynote Anatomy Lecture
Chair: Mr R H Milner

14:15 **Tunnels, pulleys and points of compression in the upper limb**
Mr D Sammut (Reading and Bath)

Free Papers

Chairs: Mr N W Williams and Mr S Miranda

15:00 **Arthrodesis of the distal inter-phalangeal joint using a headless cannulated screw - A prospective review of its results and complications and comparison with fusion using K-wires and interosseous loop wires**
Mr A Siddiqui, Mr M Sood (Chelmsford)

Introduction: We report results of a prospective case series of consecutive patients by a single surgeon to achieve DIPJ arthrodesis using a headless cannulated screw. The results are compared with arthrodesis by K-wires and interosseous wires.

Methods: This study reviews twenty DIPJ arthrodeses using headless cannulated screws. Pre-operatively tip pinch, tripod pinch, key pinch, grip strength, DASH and Michigan Hand Outcome questionnaires were administered. Post-operatively these patients were reviewed at six weeks, three months and six months with the same assessments and X-rays at six weeks and later if required. A matched group of twenty patients with K-wire/wire loop was used for comparison. They had similar post-operative splinting and exercise regimes.

Results: The patients treated with the compression screw had a quicker recovery on objective assessment and on DASH and Michigan Outcome Questionnaires. None of the patients had any major complications, i.e. extrusion, nail deformity, non-union or infection. One patient had re-currence of pre-existing paronychia. None of the patients needed any secondary surgery. Patients undergoing fusion with K-wire and interosseous wires needed secondary surgery for removal of metalwork. Two patients in this group had a non-union and needed revision surgery including bone grafting.

Discussion: Arthrodesis of the DIPJ using headless cannulated screw is a safe and cost effective operation with low complication rates. It is a better choice as it achieves good compression and aids early mobilisation. If done carefully nail dystrophy and non-union do not occur and there is no need for secondary surgery.

15:07 Discussion

15:10 **The English experience of litigation and malpractice in carpal tunnel surgery: An analysis of sixty successful claims over a ten year period (2002-2012)**
Mr S Ajwani, Mr B E Fischer, Mr K Hinduja (Manchester)

Introduction and Aims: Carpal tunnel surgery represents a significant source of litigation in hand surgery. The aim of this work was to evaluate the burden of successful litigation relating to this type of hand surgery in England. Secondary measures looked at identifying the commonest causes of successful legal action.

Material and Methods: A retrospective review was conducted on the National Health Service Litigation Authority (NHSLA) database. All successful carpal tunnel surgery related claims over a ten-year period from 2002-2012 were identified. A total of sixty claims were retrieved and analysed.

Key Results: The total cost of successful claims to the NHS was £3.9 million. This compromised £2.4 million in damages, with £1.5 million in legal costs (22% in NHS legal costs, the remain-der the claimants costs). The mean cost of settling a claim was £65,440 (range £350-£397,134). The commonest cause of claim was nerve damage. The average damages paid in relation to this injury was £55,460. Additional surgery and poor outcome was the next commonest cause of suc-cessful proceedings, with average damages of £28,984.

Conclusion: Legal action in relation to carpal tunnel surgery is a considerable source of cost to hand surgeons and the NHS. The complexity of resolving these cases is reflected in the associat-ed legal costs which represent a significant proportion of payouts. With improved understanding

of factors instigating successful legal proceedings, physicians can recognise areas where practice and training can be improved, and steps can be taken to minimise injury.

15:17 Discussion

15:20 **Hot Clinics - A novel approach to traumatic hand injuries**
Miss M McCarthy, Mr P Mikalef, Miss K McManus, Miss D Thompson, Dr D Chester (Birmingham)

Hand injuries represent 10% of emergency attendances in all hospitals. However, there exists a lack of knowledge and understanding of the functional morbidity of hand injuries. They are often trivialised, as these injuries are rarely life or limb threatening. These patients are triaged as low priority to the end of the queue and are often assessed and managed by junior staff. Inadequate assessment and delays in initiating proper definitive treatment can result in significant morbidity and poor outcomes.

We have instigated a new approach in our unit to ensure that injuries to the hand are assessed and managed by senior and experienced staff. This ensures that appropriate decisions for treatment are made in a timely manner with minimal inconvenience to the patient.

We present our one-year experience of the "Hot Clinics" in the Birmingham Hand Centre. The clinics are held daily for two hours and are staffed by a senior hand fellow and a specialist hand coordinator nurse. We will describe the journey of the patients from their presentation in the hospital until the start of definitive treatment. These clinics have handled nearly one thousand patients so far and we have received excellent feedback. The advantages identified are numerous and include reduced waiting times for patients, reduced patient load in the emergency department, experienced assessment of injuries, timely initiation of definitive treatment, reduced morbidity and extreme patient satisfaction. We propose that this system, or a variation of it, can be established in all hand units for provision of optimum patient care.

15:27 Discussion

15:30 **Pyrocarbon proximal interphalangeal joint arthroplasty: A medium to long-term follow-up of a single surgeon series**
Mr P Storey, Mr M Goddard, Ms C Clegg, Ms M Birks, Mr S Bostock (Sheffield)

Introduction: The Ascension pyrocarbon proximal interphalangeal joint (PIPJ) arthroplasty has been in use since 2000. The specific aim of this study was to assess outcomes and complication rates of a consecutive (since 2001) single surgeon series of patients undergoing this arthroplasty.

Methods: This is a retrospective review of seventy-two implants in 48 patients. Clinical evaluation included range of motion, stability, deformity, and grip strength measurement, visual analogue pain and satisfaction scale assessment and the Patient Evaluation Method (PEM) questionnaire.

Results: The mean patient age was sixty years and the median follow-up was 6.2 years. The most frequent indication for surgery was pain secondary to osteoarthritis (52 cases). Infrequently, surgery was performed on rheumatoid (5) and trauma (10) cases. The median post-operative arc of motion was from 0° to 60° and the mean grip strength 13kg. The median Visual Analogue Scale pain score was 0.6 out of 10, and the mean Patient Evaluation Measure score was 44. Forty-three of the sixty-seven patients had no complications. Fifteen had minor complications, four required early re-operation and five required implant removal. 71% of the patients would definitely have the operation again. The Kaplan-Meier method estimates the pyrocabron joints in this series to have a mean survival time of 10.7 years +/- 0.7 years (95% CI).

Conclusions: From this single surgeon series, we conclude that the majority of patients obtained useful painfree range of PIPJ motion following an Ascension pyrocarbon arthroplasty. Patient satisfaction is high, and the implant has an acceptable longevity.

NOTES

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15:37 Discussion

15:40 **Proximal interphalangeal joint athroplasty of the index finger for severe osteoarthritis**
Mr W El Nahas, Ms L Ingham, Mr D Russell, Mr D Newington (Swansea)

Introduction: Prosthetic arthroplasty for severe osteoarthritis of the proximal interphalangeal joint (PIPJ) is a well established procedure. Many surgeons recommend arthrodesis when the index finger is involved, concerned that lateral forces exerted during thumb and index 'pinch' will lead to early failure and poor functional outcome.

Materials and Methods: Between 2006-2010, sixty-eight Neuflex PIPJ arthroplasties were undertaken at the Swansea Hand Unit. In this five-year cohort, 18 index fingers were operated on, 12 as single procedures, in 14 women and four men. The mean age was sixty-two years.

Results: All patients have been reviewed sequentially, with a minimum follow-up of three years. Improved function and relief of pain were significant. There was a modest improvement in the range of movement, with a suggestion that single procedure outcomes were marginally better. Importantly, only two patients developed mild ulna drift, with one being the result of an early prosthetic failure. Subtle functional gain was particularly apparent in the three patients who underwent conversion of fusion to an arthroplasty.

Conclusion: Neuflex PIPJ arthroplasty of the index finger does not inevitably lead to instability and drift of the joint. Indeed, this finding was very rare in this series. Excellent functional outcomes were achieved and patient satisfaction scores were high. Arthroplasty is a viable, motion preserving, alternative to fusion in selected patients with severe osteoarthritis of the PIP joint.

15:47 Discussion

15:50 **The vascularised bone flaps in complex acute hand trauma - The Birmingham Hand Centre experience**
Mr A Mishra, Mr M Gupta, Mr R Jose, Mr S Tan, Mr G Titley, Mr D Chester, Mr D Evriviadis, Mr D Power (Birmingham)

Introduction: Eighty percent of all wounds in military conflicts are limb wound. As more limb injuries are surviving, composite loss of soft tissue and bone requires reconstruction. This complex defect requires a staged approach. Serial debridements and topical negative pressure are initially utilised, followed by flap cover.

Patients and Methods: A retrospective case note review of all complex bone reconstructions in the Birmingham Hand Centre between 2010-2013 was performed. Eleven cases were identified, of which three were free fibula flaps, three medial femoral condyle flaps and one each of posterior interosseous flap with ulna, radial forearm osseous fasciocutaneous flap, DCIA with groin flap, serratus with rib flap and first metacarpal artery flap with metacarpal neck. The defects included complex defects of upper limbs.

Results: All flaps had healed with no incidence of non-union. Three cases had superficial infection with one needing repeat debridement. Stiffness was noted in three cases, requiring tenolysis.

Conclusion: Vascularised bones can be used during initial reconstruction. They can be harvested from multiple sites and can be used as isolated or as composite flaps. It is a reliable and safe technique to reduce the number of surgical procedures for these complex reconstructions.

15:57 Discussion

FRIDAY 2 MAY

16:00–16:20

16:00 **Hand and wrist injuries in professional county cricket**
Mr N Ahearn, Mr S Griffin, Mr R Bhatia (Bristol)

Introduction: This study examines the incidence of hand and wrist injuries sustained in a professional cricket team. We aimed to investigate the mechanism of injury and subsequent treatment modalities.

Methods: We reviewed all player injuries occurring at Gloucestershire County Cricket Club over six seasons (2008-2013) treated by RB and team physio SG.

Results: There were a total of sixty-four injuries recorded, with 55 (86%) hand, of which the little and ring fingers were the most commonly injured, and nine (14%) wrist injuries. The most commonly occurring injury was eight distal interphalangeal joint dislocations (13%). The majority of injuries, thirty-three (52%), occurred during fielding activities. Bowling accounted for five injuries (8%), wicket-keeping nine injuries (14%), and batting 12 (19%) injuries. There was a mean length injury duration of twenty-seven days (1-264), and a total of 1,516 playing days lost due to injury. The injuries occurred during matches on forty-one occasions (64%), with seven matches (11%) being one day games. There were a total of ten fractures (16%), nine phalangeal (14%), and one radial styloid (2%). Only seven players (11%) had injuries that required operative intervention.

Conclusions: There are a variety of hand and wrist injuries sustained by professional cricketers. The majority of injuries occur in the little and ring fingers whilst fielding during match situations. We recommend buddy strapping of little and ring fingers during fielding to prevent injury.

16:07 **Discussion**

16:10 **Predictors of outcome in flexor sheath infection in an eighty-eight patient case series**
Mr R Baker, Mr M Sood (Chelmsford)

Introduction: We present a case series of eighty-eight patients diagnosed with flexor sheath infection from 2008 to 2013 presenting to Broomfield Hospital.

Methods: Data was collected from the case notes of patients identified from the hand therapy database. Fifty-one patients were male. Mean age was forty-eight years.

Results: Mean time between injury and presentation was five days. There was no association between delay in presentation and presence of pus in the sheath. Pus was significantly more likely if all four of Kanavel's signs were present. The commonest cause of infection was spontaneous (14 patients). The remaining causes included penetrating gardening injuries and bites. Forty-one patients had frank pus in their flexor sheaths at surgery. In thirty-six patients microbiological culture of affected tissues yielded "no growth". Streptococcal infections were more likely to be associated with pus in the sheath than other bacterial species. Average length of admission was six days. Patients presenting with less than four of Kanavel's signs (29 out of the 68 in which this was recorded) achieved a full range of motion earlier than those with all four. Forty-three patients had documented full range of motion allowing discharge by three months.

Conclusion: The commonest cause of flexor sheath infection is idiopathic. Pus in the flexor sheath is more likely in patients with all four of Kanavel's signs and is associated with poorer outcome but was not correlated with delay in presentation. Over half of patients attain full range of motion by three months.

16:17 **Discussion**

16:20 **Refreshments and close of meeting**

NOTES

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BSSH

The British Society for Surgery of the Hand

1 **Day-case wrist surgery with deep vein thrombosis - Case report**
Mr J Kosy, Miss S Fullilove (Plymouth)

The risk of deep vein thrombosis following routine day-case hand or wrist surgery is largely unknown and unreported. The British Society for Surgery of the Hand (BSSH) recommends pre-operative risk stratification and provides guidance on prophylaxis. However, we found no reported cases in the literature and present a confirmed case of deep vein thrombosis following an ulna shortening osteomy.

A medically fit fifty-year old female had day-case surgery performed under general anaesthesia (lasting 70 minutes total). Following mobilising in recovery, the patient was discharged within four hours. The patient's only risk factor for deep vein thrombosis was oral contraceptive pill use. With anaesthesia lasting less than ninety minutes and a single risk factor, this patient's case was deemed low to moderate risk. In accordance with the BSSH guidelines, mechanical calf compression was used but no chemical prophylaxis was administered.

Despite this, the patient presented, two weeks post-operatively, with leg swelling and tenderness. An extensive femoro-popliteal thrombosis was diagnosed on doppler ultrasonography which requiring treatment. A subsequent thrombophilia screen was normal.

This, previously unreported, complication is presented with reference to current guidelines and the sparse evidence relating to the risk of deep vein thrombosis following upper limb surgery. This highlights the importance of risk assessment of patients for deep vein thrombosis and awareness of this potential surgical complication.

2 **Dupuytren's disease infiltrating a full thickness skin graft**
Mr R G Wade, Dr L Igali, Mr A Figus (Norwich)

Introduction: Dupuytren's disease is a common fibroproliferative disorder. In cases of recurrent disease or clinically involved skin, dermofasciectomy and full thickness skin grafting confers the lowest recurrence rate. A healthy skin graft is hypothesised to act as a physical barrier to recurrence or extension and help to rectify the abnormal cellular processes causing Dupuytren's disease. However, the role of fibromatosis within the skin of patients with Dupuytren's disease has received little attention in the literature and is a matter of ongoing debate.

Case: In 2011, a 71-year-old left-handed retired window fitter presented with recurrent cords within the left middle finger, causing a fixed flexion contracture of 50° in the MCPJ and 60° in the PIPJ. He originally underwent primary dermofasciectomy and full thickness skin grafting in 1991 for involved skin overlying a similar pre-tendinous cord. Twenty years later, we performed a revision dermofasciectomy with a new full thickness skin graft. At the time of revision surgery, the old skin graft did not appear to be clinically involved but still it was fully excised and sent for histological analysis. At histopathological assessment, the dermis of the skin graft was shown to be densely infiltrated with fibromatosis throughout its substance. The patient made an uncomplicated recovery and was discharged after thirty-six weeks of follow-up.

Discussion: This is the first-ever report of Dupuytren's fibromatosis infiltrating the dermis of a full thickness skin graft, representing a previously undocumented aspect of this disease and therefore a potential avenue for research.

3 **A retrospective study of a consecutive case series of mallet injuries treated with Ishiguro wiring - Lessons learned**
Mr J Weston-Simons, Miss S Khoyratty, Mr S Lidder, Miss K Rennison, Mr M Katchburian, Mr J Nicholl (Tunbridge Wells)

Introduction: Mallet injuries of the distal interphalangeal joint are common and there are a variety of conservative and operative treatment measures available. This retrospective case series was performed to identify the outcomes of mallet injuries treated with Ishiguru wiring of bony mallet injuries, in order to assess which patterns might benefit from this technique.

Methods: Patients who had this K-wiring technique performed were identified from the hospital trauma database. Clinic letters, operative notes and independent hand therapist reports were reviewed whilst pre- and post-operative radiographs were assessed by blinded authors.

Results: Thirty-three patients were identified. The mean time to surgery from date of injury was seventeen days. Twenty-two patients had greater than 50% articular involvement with eight associated with subluxation of the distal phalanx on initial radiographs. Mean range of movement at last review was 3-55°. There was one radiographic evidence of non-union, with six showing fibrous union and the remaining going onto bony union. There was a trend for those with post-operative radiographic subluxation to have a poorer range of movement. Time to surgery, the presence of subluxation on initial radiographs and greater than 50% articular involvement did not have an effect on functional outcome.

Conclusions: Our review has demonstrated that K-wiring for bony mallet injuries provides good clinical outcomes. Evidence in the literature suggests that monitoring these injuries for the presence of subluxation and subsequently operating does not affect outcome, which we were unable to demonstrate in this study given the time to surgery.

4 The use of a prospective hand fracture database for monitoring patient outcomes from "Max-fix" external fixation of proximal phalanx fractures

Mr D Katechia, Mr A Farrier, Ms A Barnard, Mr S Rannan-Eliya (Newcastle upon Tyne)

Background: The "Max-fix" is a novel, inexpensive external fixation method popularised in our specialist hand unit for fixation of diaphyseal and/or comminuted fractures of the proximal phalanx. We conducted a prospective study using functional outcomes to monitor treatment success.

Methods: Prospective data was collected over an eighteen-month period from the departmental hand fracture database. We treated forty-eight patients with proximal phalanx fractures using the "Max fix" technique, eleven patients did not attend follow-up appointments until discharge and were therefore excluded.

Results: Thirty-seven phalangeal fractures were treated with "Max-fix" fracture fixation. Fixators were removed at a mean of 3.8 weeks (range 2 - 4) and there was one documented complication of pin site infection, successfully treated with antibiotics. Nine patients were discharged at time of external fixator removal (4 weeks) as they were satisfied with function, with a mean average range of movement (ROM) at the PIPJ of 58° and total active movement (TAM) of 184°. The average time to discharge from physiotherapy was nine weeks (range 4-24 weeks). The mean average ROM at discharge was 66° at the PIPJ with a mean TAM of 207°.

Conclusions: Although having few complications, the results from this prospective study compare less favourably than our previous retrospective study (TAM=218°). We have highlighted areas requiring improvement in our post-operative protocol. The use of a prospective multidisciplinary database has allowed us to monitor our outcomes more readily and will allow us to monitor the proposed changes in our post-operative protocol.

5 Optimal CT slice thickness for assessment of scaphoid fracture non-union

Mr D Yeoh, Dr I Pressney, Dr A Daghir, Ms L Tourret (Brighton)

Introduction: Scaphoid fractures are common. Non-union occurs in 5-10% despite optimal treatment. No previous study has determined the optimal CT slice thickness for the assessment of non-union. We outline a method to determine the optimal slice thickness for the identification of trabecular bridging following scaphoid fracture.

Methods: A retrospective study using CT scan dataset of 0.625mm acquisitions, with coronal and sagittal reformats of the wrist obtained at 1, 2, 3 and 4mm thickness. Two independent blinded senior assessors graded trabecular bridging, using linked sagittal and coronal reformats at the different reformatted thicknesses in random order. Grades were assigned from 0 to 5, ranging

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from no trabecluar bridging to 100% trabecular bridging. A 'U' (unsure) score was assigned if indeterminate. This was correlated with clinical union.

Results: Twenty-two CT studies on nineteen patients have been assessed so far. For each scan four scores were given by each reader for four different slice thicknesses. A score was considered discrepant if different from the other three slice thicknesses which were in agreement. Preliminary results show that 2mm slice thickness has the fewest discrepant scores and 1mm slice thickness has the fewest 'U' scores.

Conclusions: The optimal CT slice thickness to assess for non-union in scaphoid fractures has not been studied previously. We propose a method using a grading system to identify the optimal slice thickness which may be correlated with clinical outcome data. Our preliminary data suggest thinner slices (1mm and 2mm) are more useful than thicker slices (3mm and 4mm).

6 Vein sheathing for sensory nerve repair in the upper limb

Mr F Wu, Mr A Mishra, Mr M Shahid, Mr R Jose (Birmingham)

Introduction: Injuries to sensory nerves in the upper limb represent a large proportion of hand traumas and are associated with a significant risk of developing painful neuromas. Those which are not repaired develop end neuromas, which grow into scar tissues, whereas those that are repaired may develop neuromas in continuity. In our hand unit we have successfully treated patients with vein sheathing in both secondary and primary nerve repair. This study presents our experience of this technique and patient outcome.

Methods: This retrospective study identified eleven patients who underwent nerve repair with vein sheathing between 2011-2013. Six patients had vein sheathing following primary nerve repair - three superficial radial nerves, one palmar cutaneous branch of the median nerve and one dorsal branch of the ulnar nerve. Five patients had vein sheathing following secondary nerve repair - four superficial radial nerves, one ring finger digital nerve.

Results: The mean age of the patients was forty-six (primary repair: 44 years, secondary repair: 48 years). Seven patients were male. The mean length of follow-up was five months (range 1-16). In the primary repair group, four patients reported improvements in symptoms and one was symptom free. One patient did not experience change in symptoms. In the secondary repair group, all patients reported improvements in symptoms with three patients completely symptom free. No patients developed painful neuropathy following surgery.

Conclusion: Vein sheathing is a simple and effective technique for use in primary and secondary nerve repairs to prevent formation of neuromas.

7 Anterior shoulder release outcomes using subscapularis muscle release in obstetric brachial plexus palsies (OBPP)

Miss F Choukairi, Miss S Kruit, Mr L Sharkey, Mr W Mamoun, Mr A Misra, Mr A Gaffey, Mrs A Jester (Birmingham)

Introduction: Obstetric brachial plexus injury remains a common injury in newborn children. Children with unresolved OBPP typically develop internal rotation contracture of the shoulder joint due to the unopposed action of the internal rotators and adductors. We present our unit's outcomes following anterior shoulder release using subscapularis in OBPP patients.

Methods: We conducted a retrospective study on patients referred to us with OBPP from 2000-2013. We analysed all patients who had anterior shoulder release. Data collected included birth weight, history of shoulder dystocia, clinical presentation, pre- and post-operative Mallet scores and shoulder range of movement.

Results: A total of twenty-two patients were treated at our unit in the study period. The mean age at operation was six years (range 1-14). Twelve patients had Narakas type 1 lesions, three had Narakas type 2, one had type 3 and two patients had Narakas type 4. All cases were unilateral and

shoulder dystocia was present in 64% of cases. Four patients were excluded from this study due to concomitant surgery. Post-operatively, patients presented with significant gains in shoulder active lateral rotation (49° improvement on average, range -10° to 120°). Gains were also observed in mallet scores and passive range of motion. Complications of this procedure were minimal. 8.7% had secondary surgery including re-release of subscapularis and MOD QUAD.

Conclusion: Anterior shoulder release is a good surgical option for treating internal rotation deformity. Our study shows increased lateral rotation with minimal complications.

8 **In vitro testing of pyrolytic carbon proximal interphalangeal prostheses**

Dr A Naylor, Mr M Bone, Professor A Unsworth, Professor I A Trail, Mr S Talwalkar, Professor T Joyce (Newcastle upon Tyne)

Introduction: Clinical results of the pyrolytic carbon proximal interphalangeal prosthesis have been mixed, with reports describing various complications resulting in secondary operations and revisions. To provide further insight, in vitro testing of pyrolytic carbon proximal interphalangeal (PIP) prostheses was undertaken.

Methods: Two sizes (one size 30, one size 40) of pyrolytic carbon PIP prosthesis were tested in two finger simulators. Flexion-extension (90°-0°) was applied with dynamic forces of 10-15N. At intervals of 3,000 cycles each simulator ceased flexion-extension and applied a static load of approximately 100N for 45 seconds. Dilute bovine serum at 37°C was used as the lubricant. An additional two control prostheses (same size as test prostheses) were subjected to the same environmental conditions to account for any lubricant uptake. The process described was repeated to 500,000 cycles, after which wear measurements were taken gravimetrically and roughness average (Ra) measurements were taken using a non-contact profilometer.

Results: After 500,000 cycles of flexion-extension no gravimetric wear was observed (to a sensitivity of 10µg). The Ra of the distal components increased (from 15 to 19nm) with unidirectional marks visible on the micrograph images. The increase in Ra for the proximal components was smaller (from 31 to 33nm). The gravimetric weight and Ra of the control prostheses remained unchanged.

Conclusion: Initial results show low wear, testing will continue up to five million cycles of flexion-extension.

9 **Social climbing: Peer-to-peer advice for climber's hand injuries**

Mr T Halsey (London)

Introduction: Social networking gives individuals access to a wide range of opinions on a huge array of subjects. UKClimbing.com is the largest internet discussion forum for UK rock climbers and a popular source of advice about all aspects of climbing, including the treatment of hand and finger injuries.

Method: The UKClimbing.com forum was searched for the terms "Finger Injury", "Hand Injury", "Pulley Injury", "Wrist Injury" and "Finger Pain" between 2006 and 2013. Where possible the diagnosis was recorded and a quantitative analysis performed of the advice given.

Results: Seventy-nine threads and 606 posts related to "Finger Injuries". The most common diagnoses were pulley rupture and FDS rupture, followed by collateral ligament injury, trigger finger, ganglion and flexor unit strain. Mallet fracture, PIPJ injury, extensor hood tear, volar plate avulsion and FDP tear were each mentioned once.

The suggestions given varied but were often skeptical of advice from non-climbing doctors. Most frequent was advice to visit Dave MacLeod's website, seek physio review, ice treatment, attend GP, visit ClimbingInjuries.com and modify climbing technique from crimp to open palm grip to reduce pulley strain.

Conclusions: The most frequently recommended source of advice was online climbing coach and elite climber, Dave MacLeod. An increased awareness of the advice climbers give one another may help non-climbing hand therapists and surgeons better understand the spectrum of injuries and sport specific rehabilitation associated with this demanding sport.

10 An innovative, affordable setup for wrist arthroscopy

Mr C Hill, Mr A Mahon (Redditch)

Background: Traditionally wrist arthroscopy setup requires cumbersome and expensive equipment, that is not always available at all hospitals. We describe a cheap, innovative, illustrated method to set up for wrist arthroscopy using readily available equipment in most theatres.

Technique: All that is required is a standard upper limb tourniquet, ankle arthroscopy strap, 3L fluid bag, Chinese finger trap, drip stand and a Mayo cover. The upper limb tourniquet is applied in the usual fashion, with the ankle arthroscopy strap passed over the arm, with the clip hanging down and crucially positioned with one strap proximal and one strap distal to the tourniquet valve connector. This configuration prevents the ankle strap from sliding down, or digging into, the patient's arm. The 3L fluid bag is later hung from the ankle-strap clip to provide downward traction. Chinese finger traps to the index and middle fingers hung over a drip stand covered by a Mayo cover to keep it sterile, provide the required counter traction and complete the set-up.

Discussion: This technique is used effectively in our theatres. It negates the need for a complicated pulley suspension system that can take time to set up and dismantle during a busy theatre list and may not always be compatible with every theatre table. It also provides an optimum position for wrist arthroscopy with good stability and is low cost, which is especially relevant given the current need for greater accountability in healthcare resource spending.

11 Kienbock's disease and scapholunate dissociation – One-stage treatment with a vascularised paedicled 5 ECA bone graft from the distal radius

Mr A Siddiqui, Mr J White, Mr M Sood (Chelmsford)

Introduction: Concomitant Kienbock's with scapholunate dissociation is unusual. Repair of the scapholunate ligament is difficult in the presence of a vascularly compromised lunate. Our solution for revascularisation of the lunate and simultaneous treatment of scapholunate dissociation uses a 5 ECA vascularised bone graft to bridge the scapholunate gap.

Material and Methods: A fifty-seven year old lady fell on her outstretched hand. Initially no bony injury was found. She later presented with Kienbock's disease and also had scapholunate dissociation. A vascularised 5 ECA bone graft stabilised the scapholunate dissociation and vascularised the lunate simultaneously as demonstrated on post-operative CT scans.

Results: The patient is pain free, has almost normal movement and grip and pinch strength are within 20% of the uninjured hand.

Conclusion: We describe and illustrate a one-stage procedure limited to the affected wrist and forearm, using a pedicled vascularised bone graft to stabilise a scapholunate dissociation, and revascularise the lunate at the same time with a good outcome and no donor site morbidity.

12 Distal component loosening of the Universal 2 wrist replacement

Mr D Bowe, Mr A Legg, Mr I Chakrabarti (Rotherham)

Introduction: Current wrist arthroplasties attempt to mimic the normal centre of rotation of the wrist in order to improve the balance across the joint. However, they have variable complication/revision rates and problems with distal loosening.

Method: The notes and radiographs of all patients who underwent primary wrist arthroplasty between 1998 and 2013 were reviewed. All the patients were assessed pre-operatively and at their

final review by the single operating surgeon. Although formal functional outcome scores were not used, the following information was recorded in the notes:

1. Subjective assessment of pain in the operated wrist
2. Range of dorsiflexion and palmar flexion of the wrist
3. Radiographic appearances of the operated wrist
4. Complications
5. Further surgery/re-operation in relation to the wrist replacement

Results: The complication rate from surgery was seven out of 17 and consisted of one superficial wound infection, five extensor tendon ruptures and one acute carpal tunnel/compartment syndrome. Loosening of the distal component was visible on the radiographs of seven out of 17 patients; however only four required revision with a mean time to revision of 30.3 months. Three were revised for aseptic loosening and one for pain. There was no proximal component loosening.

Conclusions: Whilst the reported complication rates are high they appear to be relatively minor. Most importantly, infection is rare and patient satisfaction is high because pain relief is excellent and a functional range of motion is maintained. We conclude that distal component loosening remains a cause for concern with the Universal 2 implant. However, patient satisfaction is high.

13 Patient reported outcomes following volar locking plate fixation of distal radius fractures in the very elderly

Mr C Gee, Mr T Jackson, Mr A Vaughan, Dr K Mohammed, Mr M Oliveira (Chichester)

Introduction and Aims: Volar locking plates for the surgical fixation of distal radius fractures are well established. In our area we have a large number of very elderly, yet very active patients. Patient expectation is high and malunion may still be poorly tolerated. There are very few reports in the literature that have looked at outcomes in the very elderly following volar locking plate. The aim of this study is to assess the patient reported outcomes for patients over the age of seventy-five who have had surgical fixation of a distal radius fracture using a volar locking plate.

Methods: We retrospectively identified all patients who were over the age of seventy-five at the time of surgical fixation between August 2011 and March 2013. Patients' notes were reviewed to identify type of surgical fixation, complications and need for further surgery. Patients completed Disabilities of the Arm Shoulder and Hand (DASH) and Patient-Rated Wrist Evaluation (PRWE) questionnaires at a minimum of six months post procedure.

Results: We identified a consecutive series of forty-eight patients. The average age was eighty-two (76-96). There were no immediate complications and no subsequent infections. There were seven malunions with one patient requiring further surgery. The average DASH score was 11.48 (0-67.5). The Average PRWE score was 19.77. 92.9% of patients reported returning or nearly returning to pre-fracture status.

Conclusions: This retrospective review of a consecutive series of patients demonstrates that volar locking plate fixation remains an effective treatment option even in very elderly patients.

14 Wrist replacement: A systematic review of the evidence from the last five years

Mr D Yeoh, Ms L Tourret (Brighton)

Introduction: Wrist replacement is an alternative to wrist arthrodesis. The main indication is rheumatoid arthritis. NICE produced guidelines in 2008 based on limited evidence, concluding it was suitable for low demand patients. In the last five years, further evidence has been published regarding fourth generation implants, including NJR data.

Methods: Cochrane methodology was used to perform advanced database searches, develop screening methods, inclusion criteria, assessing validity and risks of bias and for assigning levels of evidence and grades of recommendation. Key outcome measures included functional scores, pain relief, range of motion (ROM), radiographic evaluation and prosthesis survival.

Results: A total of two hundred and forty-eight papers were found. Eight papers met the inclusion criteria. The results of four hundred and five prostheses were available, including seven different manufacturers. Mean follow-up was 2.3-7.3 years. Average age was fifty-two - 63. Rheumatoid arthritis was the indication in 42%. Motec demonstrated the best post-operative DASH scores. Only Maestro achieved a defined functional ROM post-operatively. Universal 2 displayed the highest survival rates (100% at 3-5 years), whilst Elos had the lowest (57% at 5 years). Biaxial had the highest complication rates (68.7%) whilst Remotion had the lowest (11%).

Discussion: Wrist arthroplasty is an alternative to wrist fusion. It preserves some motion. Functional scores improve and are maintained mid-to-long-term. Complication rates are higher than wrist fusion, with not-insignificant rates of radiological loosening and osteolysis. Survival rates vary and all papers present small cohorts. The evidence does not support the widespread use of arthroplasty over arthrodesis, and careful patient selection is essential.

MEETING INFORMATION

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 expenses. They must, however, pay £40 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 funding. If all funding for the year has been utilised, full registration fees must be paid.

Registration Fees

BSSH Full Members and Associates who are Consultants	£270 Whole meeting £135 One day
BSSH Associates who are Trainees, Companion Members	£170 Whole meeting £85 One day
BSSH Honorary and Senior Members	£40 per day
Trainee Non-members	£220 Whole meeting £110 One day
Other Non-members	£370 Whole meeting £185 One day
Speakers who are Research Doctors or Scientists	£40 per day

On-site registration does not include a ticket to the Society Dinner.

Registration and Enquiry Desk

The Registration and Enquiry Desk (situated in the Foyer of the Gateshead Suite) will be open at the following times:

Thursday: 09:00-17:30
Friday: 07:30-14:15

The telephone number of the Registration and Enquiry desk during the meeting is: 07930 509 646 (BSSH Mobile).

Honorary and Senior Members

Honorary and Senior Members will not pay a registration fee. A charge of £40 will be made for refreshments and luncheon each day. This is the day delegate rate charged to us by the venue for each delegate.

Venue of the Scientific Meeting

The meeting will be held in the Pipewellgate and Oakwellgate Rooms.

Car Parking
Self-parking is available at the hotel at a cost of £10 per day.

Accommodation
BSSH negotiated a bed & breakfast rate of £110 (double room/single occupancy) with the Hilton Hotel (Group Booking Code: ABSSA). However, all unsold rooms have been released and this rate and availability can no longer be guaranteed.

Alternative hotels within walking distance:
- Malmaison, 104 Quayside, Gateshead, Newcastle upon Tyne NE1 3DX. B&B rates start at £111
- Jurys Inn, South Shore Road, Gateshead, Newcastle upon Tyne NE8 3AE. B&B rates start at £59
- Premier Inn Newcastle Quayside Hotel, The Quayside, Lombard Street, Newcastle upon Tyne NE1 3AE. B&B rates start at £70

Luncheon and Refreshments
Luncheon and refreshments will be served in the Foyer of the Gateshead Suite.

Contributors Information
- There will be projection facilities for PowerPoint presentations only.
- Speakers are asked to keep strictly to the time allocated for their presentations.
- Posters will be located in the Hillgate Room.

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

Thursday:	6.5
Friday:	7.0
Total:	13.5

Society Dinner
Thursday 1st May at 19:15 for 20:00
Performance Space, Baltic Centre for Contemporary Art
Dress code: lounge suits

The Society Dinner is open to Honorary, Senior and Full Members and Associates of BSSH, 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 consisting of book vouchers to the value of £250 will be awarded to the best poster presented at the meeting.

MEETING INFORMATION

Keynote Lectures

Friday 2nd May
09:30 Update on thumb reconstruction – Dr F del Pinal
10:00 Treatment of tetraplegia – Dr S Kozin
14:00 Anatomy: Tunnels, pulleys and points of compression in the upper limb – Mr D Sammut

Symposia

Thursday 1st May
10:45 Wrist instability
13:30 The treatment of the delayed wrist injury

Friday 2nd May
11:30 Sarcoma

Meetings

Business Meeting
The Business Meeting will be held in the Oakwellgate and Pipewellgate Rooms at 17:30 on Thursday 1st May 2014.

BSSH Meetings in 2014

16–17 October: The Royal College of Surgeons, London (combined meeting with the IHSS)

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

Trade Exhibitors

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Contact: Mr C Harrison

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Contact: Ms T Schillaci

SMITH & NEPHEW HEALTHCARE — **STAND NO 5**
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Contact: Ms H Houghton

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Contact: Mr D King

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Telephone: 01733 352 865, Email: carol.curtis@sybron.com
Contact: Ms J Walters

TOUCH BIONICS **STAND NO 8**
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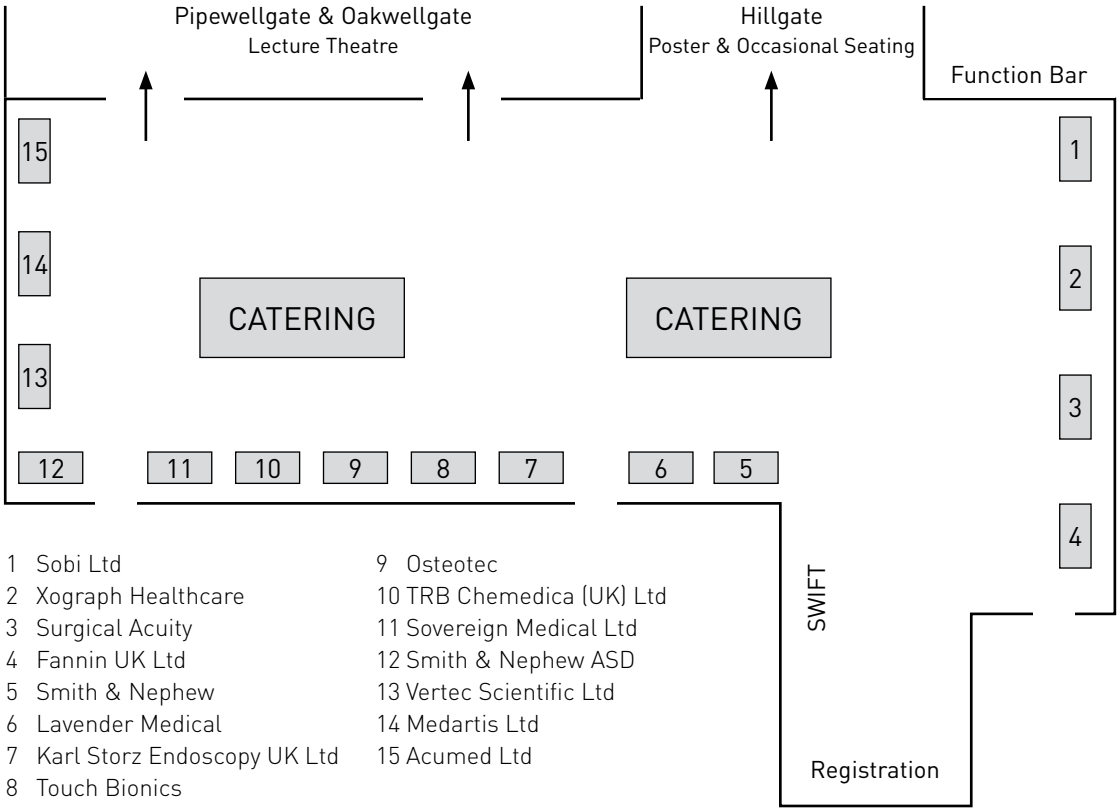

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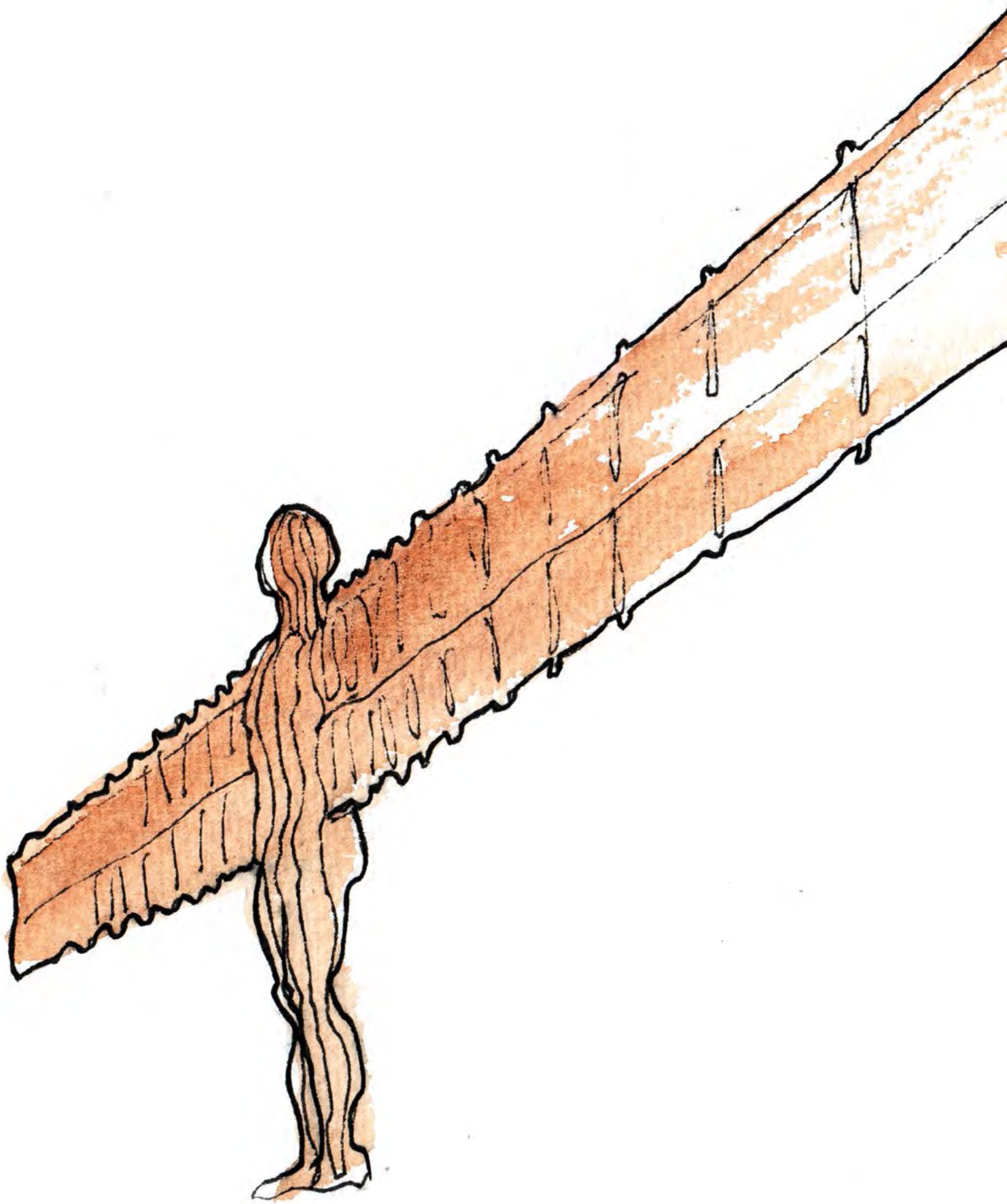

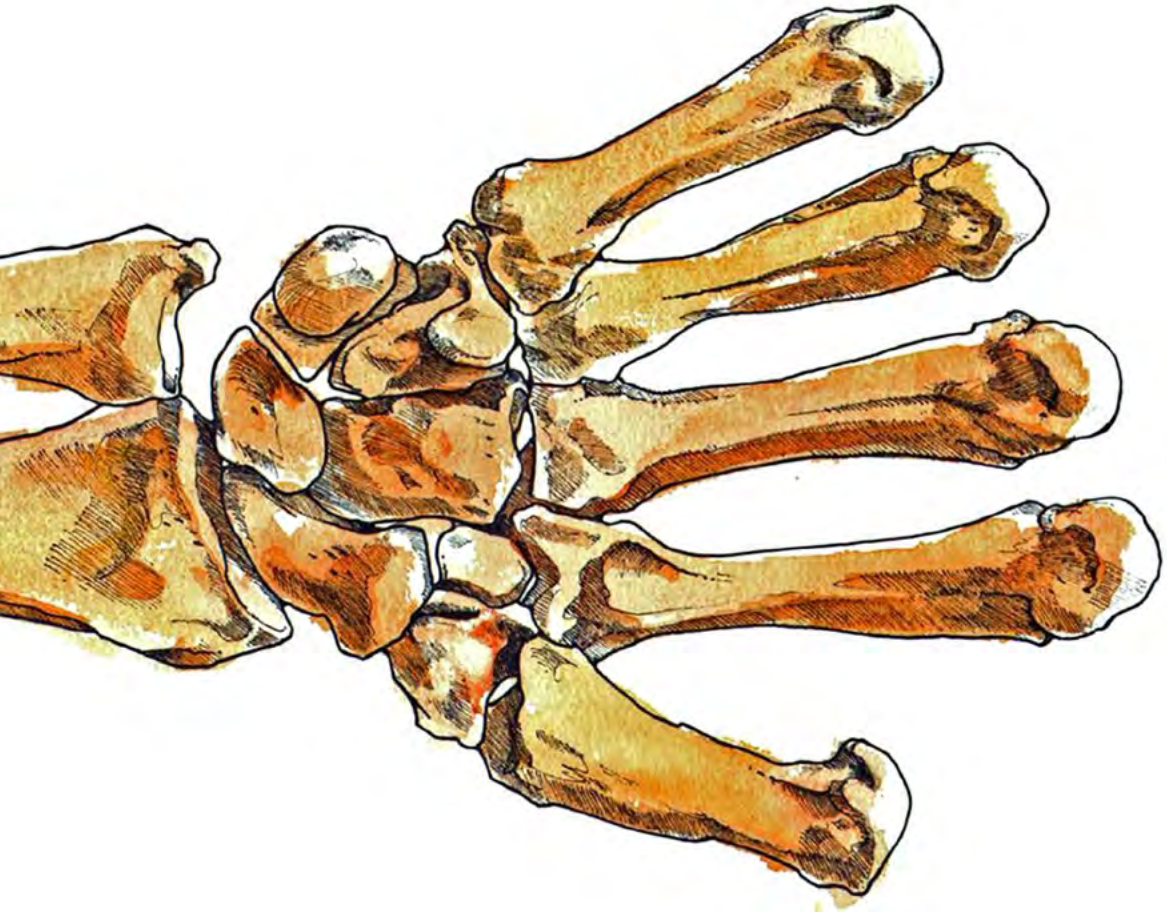

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