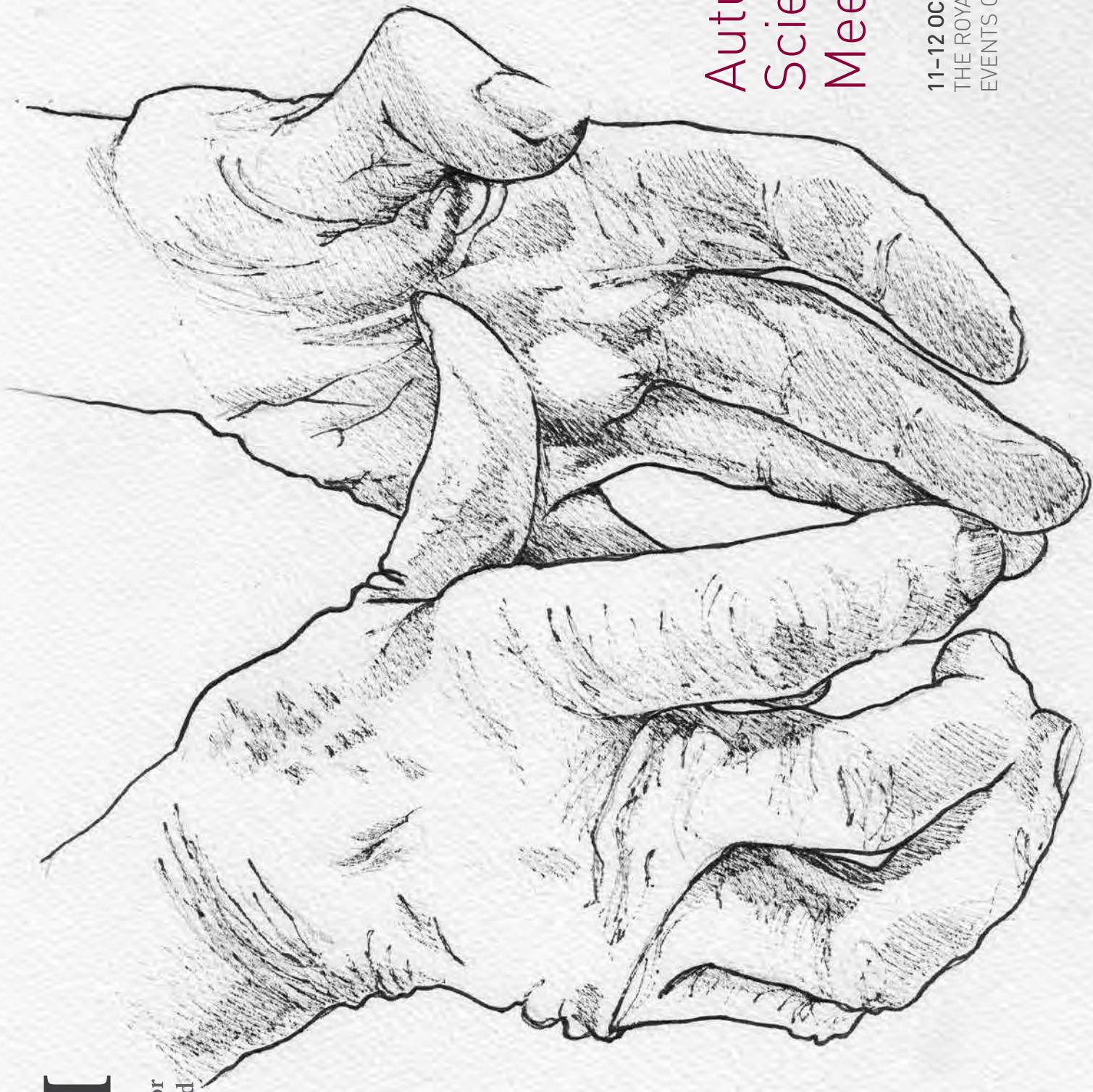


# BSSH

The British Society for  
Surgery of the Hand



## Autumn Scientific Meeting

11-12 OCTOBER 2012  
THE ROYAL YORK HOTEL  
EVENTS CENTRE

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## PRESIDENT'S FOREWORD



Dear members and guests

Welcome to the BSSH Autumn Meeting.

For the last two years the meeting has been held in Manchester but, by way of a change, it was felt that a move to York on the other side of the Pennines would be appropriate. As you know, York is an old and beautiful city with many attractions. We are fortunate to be able to use the Royal York Hotel Conference Centre and host our dinner at the National Railway Museum, which is across the road.

Added to that, Smith & Nephew are sponsoring a wrist arthroscopy symposium on Wednesday and Mr Martin Burton is undertaking a workshop on Cochrane reviews.

The main meeting will concentrate on arthroplasty of the hand and wrist, although there will be something for everybody with the following guest speakers:

- Dr Brian Adams (USA)
- Mr Michael Boeckstyns (Denmark)
- Professor Philippe Kopylov (Sweden)
- Professor Luc de Smet (Belgium)
- Dr T B Hansen (Denmark)
- Dr Clayton Peimer (USA)
- Dr David Slutsky (USA)

I look forward to meeting you and I trust you will enjoy the conference.

**Ian A Trail MD FRCS**

President

# OUTLINE PROGRAMME

## PRE-MEETINGS: WEDNESDAY 10 OCTOBER

- 08:45 (to 16:30) Wrist Arthroscopy Workshop, Smith & Nephew Laboratory  
Principal guest instructor: Dr David Slutsky, Harbor UCLA, USA, supported by Wrightington Faculty
- 09:30 (to 16:30) An Introduction to Systematic Reviews, Royal York Hotel  
Led by: Mr Martin Burton, Consultant ENT Surgeon and Director of the UK Cochrane Collaboration

## THURSDAY 11 OCTOBER

- 08:00 Registration and Refreshments
- 08:25 Welcome by the President
- 08:30 Arthroplasty: Wrist
- 09:30 Free Papers
- 10:00 Arthroplasty: Finger
- 11:00 Free Papers
- 11:15 Refreshments and Trade Exhibitions
- 11:45 Update on Collagenase
- 12:45 Free Papers
- 13:15 Lunch and Trade Exhibitions
- 14:00 Cochrane Collaboration
- 14:30 Free Papers
- 15:20 Refreshments and Trade Exhibitions
- 15:40 Cases I Wish I had Never Started
- 16:30 Douglas Lamb Lecture
- 17:00 Annual General Meeting (open to Full Members and Associates only)
- 19:30 (for 20:15) Society Dinner at the National Railway Museum

## FRIDAY 12 OCTOBER

- 08:30 Registration
- 09:00 Flap Cover in the Hand
- 09:45 What's New in Internal Fixation
- 10:30 Free Papers
- 11:05 Refreshments and Trade Exhibitions
- 11:30 Base of Thumb Deficiency
- 13:00 Lunch and Trade Exhibitions
- 14:00 Presidential Handover
- 14:05 Where are we with Nerve Conduits
- 14:35 Free Papers
- 14:50 What's the Latest in Wrist Arthroscopy
- 15:35 Close of Meeting

## GUEST SPEAKERS



### **Dr Brian Adams MD**

Professor, Department of Orthopaedic Surgery, University of Iowa, Iowa City, USA  
Brian Adams received his medical degree from the University of Nebraska in 1982. Following the completion of his orthopaedic surgery residency at the University of Iowa College of Medicine, he undertook a fellowship in hand and microsurgery at Loma Linda University in California. He has been a Professor in the Department of Orthopaedic Surgery at the University of Iowa College of Medicine since 1996. He is a member of a number of professional organisations including the American Association for Hand Surgery, the American Society for Surgery of the Hand and the American Orthopaedic Association. He is the Editorial Board Consultant for the Journal of Hand Surgery (A) and sits on the editorial boards of several other journals. He has published nearly 40 peer-reviewed articles, as well as a large number of non-peer-reviewed articles and multimedia productions. His areas of clinical research include total wrist arthroplasty, distal radio-ulnar joint injuries and reconstruction, motion analyses of the normal and reconstructed joints and shoulder joint arthroplasty.

Speaking in:

Wrist arthroplasty, Thursday 11 October

Douglas Lamb Lecture, Thursday 11 October

Base of thumb arthroplasty, Friday 12 October



### **Mr Michel Henri Boeckstyns MD**

Consultant Hand Surgeon, Gentofte Hospital, Denmark

Michel Boeckstyns received his medical degree from the University of Copenhagen in 1974 and completed his specialty training in orthopaedic surgery in 1987. Between 1990 and 1992 Mr Boeckstyns underwent training in hand surgery at the Rigshospitalet and at Odense University Hospital in Denmark. He has been a consultant hand surgeon at Gentofte Hospital since December 1992. He was president of the Danish Society for Surgery of the Hand from 1996–1999 and the Danish delegate on FESSH from 2000–2003. He has been a member of the Examination Committee for the European Examination in Surgery of the Hand since 2005.

Speaking in:

Wrist arthroplasty, Thursday 11 October

Update on Collagenase, Thursday 11 October



### **Mr Martin Burton MA DM FRCS**

Director, UK Cochrane Centre, Oxford

Martin Burton is Director of the United Kingdom Cochrane Centre, the unit responsible for supporting the activities of Cochrane contributors in the UK, Ireland and the Middle East. He is a consultant otolaryngologist at Oxford University Hospitals NHS Trust, based at John Radcliffe Hospital in Oxford, and also Senior Clinical Lecturer at the University of Oxford and Lecturer in

## GUEST SPEAKERS

Clinical Medicine at Balliol College. He was the founding co-ordinating editor of the Cochrane Ear, Nose and Throat Disorders Group ([www.cochrane-ent.org](http://www.cochrane-ent.org)) and Clinical Lead of the ENT and Audiology Library of the UK's National Library for Health.

He trained as a medical student at Cambridge and Oxford Universities and did his early clinical training in Oxford and Bristol. He was a Fulbright Scholar and undertook research training at the Kresge Hearing Research Institute at the University of Michigan. Following a period as Lecturer in Otolaryngology at the University of Melbourne, he completed his doctoral thesis on the safety of cochlear implantation in small children. His higher surgical training was completed in London and as fellow in otology, neurotology and skull base surgery at Johns Hopkins University in Baltimore, USA.

His clinical practice is otological – particularly middle ear surgery, tinnitus and balance disorders. He is interested in the application of evidence- (and wisdom-) based medicine in otolaryngology.

Speaking in:

Cochrane collaboration, Thursday 11 October

**Mr Michael Craigen FRCS(Orth) FRCSEd EurDiplHandSurg**

Consultant Orthopaedic Surgeon, The Royal Orthopaedic Hospital, Birmingham

Speaking in:

What's new in internal fixation, Friday 12 October

**Mr Christopher Duff FRCS FRCSEd(Plast)**

Consultant Plastic Surgeon, Wythenshawe Hospital, Manchester

Speaking in:

Flap cover in the hand, Friday 12 October

**Professor Luc de Smet MD PhD**

Surgeon in Chief, Hand and Upper Limb Surgery, Department of Orthopaedic Surgery, University Hospitals, Leuven, Belgium

Professor de Smet received his medical diploma from the Ghent Medical School in 1979 and completed his orthopaedic surgery training at the University of Ghent. He published a book on hand surgery and contributed approximately 20 chapters to other books. His main research projects are outcomes and EBM, congenital hand anomalies and wrist pathology. He is a past president of the Belgian Hand Group and a member of BSSH, the Dutch Society for Surgery of the Hand, the Belgian Surgery Society Orthopaedic and Traumatology, ERASS, the Congenital Hand Anomaly Study Group (CHASG) and the Belgian Association of Paediatric Orthopaedics.

Speaking in:

Base of thumb arthroplasty, Friday 12 October

## GUEST SPEAKERS



### **Dr Torben B Hansen MD PhD**

Associate Professor, University of Aarhus, Head of Orthopaedic Research Unit, Reginal Hospital Hostebro, Denmark

Dr Hansen graduated from the University of Aarhus in 1985. He undertook his orthopaedic and hand surgery training from 1985–1998. In 1994 he wrote his PhD dissertation on trauma management. Dr Hansen is a member of the executive board of the Lundbeck Foundation Research Centre in Copenhagen for fast track hip and knee surgery. So far he has published more than 90 scientific papers in peer reviewed journals and is a reviewer for various national and international scientific journals. His current main research areas are hand surgery with special focus on TMC total joint implants and implementation of fast track hip and knee replacement surgery.

Speaking in:

Base of thumb arthroplasty, Friday 12 October



### **Mr Michael Hayton, FRCS(Tr&Orth) FFSEM**

Consultant Orthopaedic Hand Surgeon, Wrightington Hospital, Wigan

Mr Mike Hayton is a Consultant Orthopaedic Hand Surgeon. He works at Wrightington Hospital in the North West of England. Mike's clinical practice is exclusively hand, wrist and elbow surgery and he has a particular interest in sports injuries. He lectures widely in Europe and North America and has published many peer-reviewed articles and written several book chapters.

Speaking in:

Update on Collagenase, Thursday 11 October



### **Professor Philippe Kopylov MD PhD**

Senior Surgeon, Hand and Upper Extremity Unit, Department of Orthopaedics, Lund University Hospital; Senior Hand Surgeon and Co-director of Orthocenter Skåne, Sweden

Education: French Baccalaureat série D 1970; French authorised doctors' degree 1978; French medical thesis: Les fractures du fémur chez l'enfant 1980; Swedish authorised doctors' degree 1984; Swedish specialty in orthopedics 1988; Swedish specialty in hand surgery 1988; French specialty in orthopedics 1993; PhD in Injectable Calcium Phosphate Bone Substitute in Distal Radial Fractures 2001.

Affiliations: Member of: Swedish Hand Surgery Society since 1986, French Hand Surgery Society (GEM) since 1990; European Rheumatoid Arthritis Surgery Society (ERASS) since 1996; International Federation of Societies for Surgery of the Hand (IFSSH) since 1992; American Society for Surgery of the Hand (ASSH) since 1999; European Wrist Arthroscopy Society (EWAS) since 2005; scientific committee of the European Federation of National Associations of Orthopaedics and Traumatology (EFFORT) since 2008; Adviser in Hand Surgery for Swedish Health Department 2008–2011.

## GUEST SPEAKERS

Special qualifications and professional interests: Rheumatoid surgery; fracture surgery, especially wrist surgery; joint implants development, especially in DRU joint and small joints in the hand.

Speaking in:

Finger arthroplasty, Thursday 11 October



### **Mr Richard Milner FRCS FRCS(Plast)**

Consultant Plastic Surgeon, The Royal Victoria Infirmary, Newcastle upon Tyne

Speaking in:

Update on Collagenase, Thursday 11 October



### **Mr Greg Packer FRCSEd(Orth)**

Consultant Orthopaedic and Hand Surgeon, Southend University Hospital NHS Foundation Trust. Business Unit Director Musculoskeletal Services Southend University Hospitals

Speaking in:

Wrist arthroplasty, Thursday 11 October



### **Dr Clayton Peimer MD**

Clinical Professor of Surgery (Orthopaedics), College of Human Medicine, Michigan State University, Marquette, MI, USA

Dr Peimer is an internationally cited orthopaedic hand surgeon with over 30 years of clinical, academic and administrative experience. He is cited annually in 'Best Doctors in America' in 'Best Physicians' and 'Who's Who' in the US. He is a clinical and academic expert in traumatic and reconstructive surgery of the hand and arm, upper limb sports injuries, congenital deformities of the hand and wrist, and in tumors of the upper limb. Dr Peimer was one of the original clinical investigators to evaluate endoscopic carpal tunnel surgery. He was one of the National Institutes of Health reviewers who recommended clinical testing of collagenase for treatment of Dupuytren's contracture and he served as one of 16 US primary investigators in the clinical trials of collagenase injection that lead to approval by the Food and Drug Administration for use in the US. He has authored nearly 200 publications and chapters in peer-reviewed journals and books; and he created and edited the two-volume text, 'Surgery of the Hand and Upper Extremity'. He has held leadership roles in major professional societies for hand and musculoskeletal surgery, is a past-president of the American Foundation for Surgery of the Hand and been guest lecturer at conferences and universities in America and worldwide.

Speaking in:

Update on Collagenase, Thursday 11 October

## GUEST SPEAKERS



### **Dr David Slutsky**

Assistant Professor of Orthopaedics, Harbor UCLA, USA

Dr Slutsky is an Assistant Professor of Orthopaedics at Harbor UCLA and Chief of Reconstructive Surgery. He is the Founding Editor-in-Chief of the Journal of Wrist Surgery. He is the past president of the Southern California Society for Surgery of the Hand and co-director of the International Wrist Investigators Workshop. He is a member of the American Society for Surgery of the Hand and current chair of the Publications Committee. He is the upcoming president of the European Wrist Arthroscopy Society. He has authored 34 peer-reviewed publications, 70 book chapters, chaired 25 courses, 6 webinars, presented over 100 papers and produced over 100 surgical videos. He has served as the editor of three hand clinic journals as well as for ten books on hand surgery, including nerve injuries, wrist arthroscopy, wrist disorders, distal radius and scaphoid fractures, microvascular surgery and upper extremity surgery. He has been in practice in Torrance, California, since 1991.

Speaking in:

What's the latest in wrist arthroplasty, Friday 12 October

### **Professor Giorgio Terenghi PhD FRCPPath**

Professor of Tissue Engineering, Head of Nerve Regeneration Research, Blond McIndoe Laboratories, University of Manchester

Speaking in:

Where are we with nerve conduits, Friday 12 October



### **Mr Adam Watts MBBS BSc FRCS(Tr&Orth)**

Consultant Hand, Plastic & Reconstructive Surgeon, The Royal Devon and Exeter Hospital, Exeter

Adam Watts is a Fellowship-trained Hand and Upper Limb Surgeon. He completed his post-graduate training in Orthopaedics in Edinburgh before undertaking Upper Limb Fellowship training in Glasgow, Wrightington, and an Australian Orthopaedic Association accredited Fellowship with Associate Professor Greg Bain in Adelaide, Australia. Adam specialises in hand, wrist and elbow problems and has a keen interest in teaching and research. He is a member of the Research and Audit Committee of the BSSH. He has been an invited speaker at a number of national and international conferences and has been awarded the 2012 ASSH International Travelling Fellowship. Adam has published widely on conditions affecting the hand and upper limb and holds a number of research grants. He is clinical supervisor for a number of PhD projects at Manchester University and is Honorary Senior Lecturer at Salford University.

Speaking in:

Finger arthroplasty, Thursday 11 October

08:00 Registration and refreshments

08:25 Welcome by the President

### **Arthroplasty: Wrist**

Chairmen: Mr I A Trail/Professor J K Stanley

08:30 Universal prosthesis

Dr B Adams (Iowa City, USA)

08:40 Discussion

08:45 Re-motion prosthesis

Mr M Boeckstyns (Gentofte, Denmark)

08:55 Discussion

09:00 Maestro prosthesis

Mr G Packer (Southend-on-Sea)

09:10 Discussion

### **Free Papers**

09:30 Outcome and survival of ulnar head arthroplasty

Dr M Sabo, Mr S Talwalkar, Mr A Watts, Mr M Hayton, Mr I A Trail, Professor J K Stanley (Wigan)

**Aim:** To determine the clinical outcome and survivorship of ulnar head arthroplasties.

**Methods:** Medical records were searched to identify all patients undergoing primary ulnar head replacement at our institution. Seventy-four patients with 78 implants were identified and found to meet these criteria. Survivorship and outcomes were determined through retrospective review of records, and current clinical and subjective patient scores.

**Results:** At surgery, mean patient age was 49.2 years (24–76), with 65% being female. Approximately one third had undergone a Darrach or Sauvé-Kapandji procedure, and primary diagnoses included inflammatory arthritis, osteoarthritis, post-traumatic arthritis, and neoplastic disorders. Follow-up averaged 88 months (24–180), with two and five year survivals of 92% and 91%. Mean PEM score was  $40 \pm 17$ , mean Wrightington wrist score was 69 (pain 12, function 57), mean PRWE score was 76 (25 pain, 51 function), and EQ5D 8±2. Patient satisfaction was 28 of 40, and 35 of 41 would have the procedure again. Mean pronation was  $79 \pm 14^\circ$  and mean supination was  $53 \pm 30^\circ$ . Grip strength on the operative side averaged 14.6 kg (range 3–38), which represented 66% of the contralateral grip strength. Weak correlations exist between number of surgeries prior to arthroplasty ( $r=0.12\text{--}0.36$ ) and younger patient age ( $r=0.23\text{--}0.29$ ) and worsening outcome scores.

**Conclusions:** Ulnar head arthroplasty has a good survivorship. Forearm rotation remains in a functional range of motion with pronation being more predictable than supination. Function remained limited for many of these patients despite a high rate of satisfaction. Arthroplasty represents a partial solution at best in this complex patient group.

09:35 Discussion

- 09:37 Medium-term outcome of Universal-2 total wrist arthroplasty for rheumatoid arthritis**  
 Mr K Kailash, Mr A Raza, Mr S Mahalingam, Professor S Murali, Mr S Talwalkar, Mr M Hayton, Mr I Trail (Wigan)

**Introduction:** Total wrist arthroplasty (TWA) for rheumatoid arthritis of wrist allows pain relief and preservation of the movements.

**Aims:** The aims of the study were to evaluate clinical and radiological outcomes of Universal-2<sup>\*</sup> TWA at a tertiary centre.

**Methods:** This was a retrospective review of case notes of ninety-three Universal-2<sup>\*</sup> wrist replacements performed from 2003 to 2009. The patients which were excluded are: six who were lost to follow-up, five had arthroplasty for osteoarthritis and two patients died due to unrelated causes.

**Results:** The seventy patients (80 wrists) had a mean age of 59 years (26 to 86 years) and mean follow-up of 53 months (13 to 94 months). The pain relief was achieved in 62.5% within six months and patient satisfaction was 87%. Movements were preserved with mean dorsiflexion of 24° and palmarflexion of 23°. An interim study of thirty-four patients showed VAS pain score improved from 5.4 to 1.7 and DASH score improvement of 14 points. Major complications were revision of wrist arthroplasty in 3.7% ( $n=3$ ) and 3.7% salvage arthrodesis ( $n=3$ ). Kaplan-Meir probability of survival was 91% at 7.8 years (95% CI=7%) for six revision procedures performed to date.

**Conclusion:** Our study is the largest case series with Universal-2<sup>\*</sup> TWA. Pain relief and patient satisfaction following wrist arthroplasty were consistently high in this series. When compared to the literature, the incidence of major complications was lower in our study (8.5%), whereas it was 12% for Universal-2<sup>\*</sup> TWA and, 26% and 50% in earlier studies with Universal<sup>®</sup> implant.

#### 09:42 Discussion

- 09:44 The biomechanical and functional relationships of the proximal radioulnar joint, distal radioulnar joint and interosseous ligament**  
 Dr P Malone, Professor G Terenghi, Mr J Cooley, Miss V C Lees (Manchester)

**Aim:** This study assessed the integrated function of the proximal radioulnar joint (PRUJ), interosseous ligament (IOL) and the distal radioulnar joint (DRUJ) in a cadaver model.

**Methods:** Tekscan™ pressure sensors were inserted into the DRUJ and PRUJ of fifteen fresh-frozen dissected cadaver specimens. Microstrain<sup>®</sup> sensors were mounted onto the IOL of nine of these specimens. Using a customised biomechanical jig, axial loads were applied to the forearm and measurements taken throughout pronosupination with sequential applied loads. A generalised estimating equations regression model determined statistical significance.

**Results:** Force transmission peaked at S30-S60 ( $P<0.005$ ) for the DRUJ and neutral-S30 ( $P<0.001$ ) for the PRUJ. Applied load typically increases transmitted forces across the joints ( $P<0.05$ ). The unloaded PRUJ has a greater contact area and resting force than the DRUJ ( $P<0.05$ ). Axial loading consistently increases IOL strain ( $P<0.001$ ). In pronation, the IOL is lax, strain gradually increasing as the arm moves to neutral ( $P<0.01$ ). Tension in mid-IOL is maximal in midrange of forearm rotation decreasing in full supination ( $P<0.05$ ). Tension in distal-IOL is maximal in supination ( $P<0.001$ ).

**Conclusions:** The PRUJ is a load-bearing joint, with transmitted pressure profiles of similar conformation to those in the DRUJ. Different components of the IOL support loading at different stages of pronosupination.

**Clinical Relevance:** The PRUJ, IOL and DRUJ represent an integrated osseoligamentous system distributing applied load in the forearm. Disease or surgical modification of any one of these structures may potentially impact function.

09:49 Discussion

### Arthroplasty: Finger

Chairmen: Mr M Bransby-Zachary/Mr R Eckersley

10:00 Pyrolytic carbon MCP arthroplasty

Professor P Kopylov (Lund, Sweden)

10:10 Discussion

10:15 Pyrolytic carbon PIP arthroplasty

Mr A Watts (Exeter)

10:25 Discussion

10:30 Finsbury PIP

Mr I A Trail (Wrightington)

10:40 Discussion

### Free Papers

11:00 Four-year outcomes of Neuflex® PIP joint arthroplasty

Mr O Harley, Mr S Dalal, Mrs R Delaney, Mr M Hayton, Mr I A Trail (Wrightington)

The long term outcomes of Neuflex® PIP joint replacements: 29 joints (19 patients) with mixed primary pathologies are reported. All arthroplasties performed at the Wrightington upper limb unit with at least four years of follow-up were reviewed by physical assessment, DASH score and X-rays. Mean follow-up was 62 months (range: 46–82). Mean AROM was 49° (10–97°).

**Results:** 72% of joints achieved an AROM at least 30°. All joints were pain-free at rest and 86% were pain-free with movement. Original implants remained in situ for 23 (79%) of the joints although eight of these remaining joints (35%) were found to be broken radiologically. No difference in AROM was found between sub-groups of intact and broken implants ( $p>0.05$ ).

**Conclusions:** Neuflex® PIP joint arthroplasty provided excellent long-term pain relief in at least 86% of replaced joints. There is a high rate of implant breakage but this is not associated with poor function.

11:05 Discussion

11:07 Long-term outcomes of Finsbury PIP joint arthroplasty for osteoarthritis

Mr O Harley, Mr S Dalal, Miss L Banks, Mrs A Birch, Mr M Hayton, Mr I A Trail (Wrightington)

**Introduction:** The Finsbury implant is a semi-constrained, uncemented anatomical resurfacing implant for the PIP joint. It has an UHMWPE on cobalt chrome bearing.

**Methods:** Outcomes of Finsbury PIP joint replacements in 25 joints (13 patients) with osteoarthritis are reported. All arthroplasties were performed at the Wrightington upper limb unit with 57 months of follow-up interval (27–77). These were reviewed by physical assessment, Michigan Hand Outcomes Questionnaire (MHQ) and X-rays.

**Results:** 96% of joints were pain-free at rest and 68% were pain-free with movement; remaining patients reporting only mild and intermittent pain. MHQ score improved from 37 to 66 ( $p<0.01$ ). There is a trend for improved AROM from 34° (0–75°) pre-operatively to 42° (5–94°) post-operatively although this did not reach significance ( $p=0.12$ ). Subsequent joint releases were performed in six patients. Implant revision has only been performed in one patient and there was one late

dislocation. No radiological signs of loosening were seen although some minimal migration was seen in three digits.

**Conclusions:** Good pain relief and functional improvements are seen with the use of this implant. Post-operative range of motion is typically related to pre-operative range. Implant position is satisfactorily retained in the long-term.

**11:12 Discussion**

**11:15 Refreshments and Trade Exhibitions**

### **Update on Collagenase**

Chairmen: Mr M Hayton/Mr D Warwick

**11:45 Collagenase from a USA prospective**  
Dr C Peimer (Marquette, USA)

**11:55 Discussion**

**12:00 Results of studies to date**  
Mr M Bockstyns (Gentofte, Denmark)

**12:20 Discussion**

**12:25 Practical tips and tricks when using Collagenase**  
Mr M Hayton (Wrightington)

**12:35 How I got Collagenase past my PCT**  
Mr R H Milner (Newcastle upon Tyne)

### **Free Papers**

**12:45 Therapy-resisting Dupuytren's disease: A new era in adjuvant treatment approach?**  
Professor I Degreef, Professor L De Smet (Leuven, Belgium)

Tamoxifen, a synthetic non-steroidal anti-estrogen known to modulate the production of TGF- $\beta$ , has shown its efficiency on fibroblast activity in vitro and in vivo. A potential positive effect of tamoxifen on the outcome of surgery in Dupuytren's contractures in patients with a strong fibrosis diathesis was studied. A prospective randomised double-blind study with a protocol according to the CONSORT standards was set up to investigate the influence of neo-adjuvant highly-dosed tamoxifen on the healing process and the recurrence and/or extension of Dupuytren's disease after subtotal fasciectomy in thirty patients with a severe fibrosis diathesis. The short term surgical outcome after three months improved significantly in the group with tamoxifen compared to the placebo group, in both the goniometrical correction of the contractures and patient satisfaction. However, this positive effect was slowly lost over a period of two years. The study demonstrates that neo-adjuvant use of tamoxifen may improve short-term surgical outcome in Dupuytren's disease in patients with a high fibrosis diathesis. However, an important rebound effect after the medication is discontinued causes a loss of the benefit but a longer use of the medication may carry severe risks of thrombosis and liver dysfunction. Therefore, although a positive effect on surgical outcome was established, the risk of extending the duration of high doses of tamoxifen may outweigh the possible benefits in Dupuytren's disease.

**12:50 Discussion**

# **BSSH**

The British Society for  
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- 12:52 Cleland's ligaments and Dupuytren's disease - A paradigm shift  
Mr U Rethnam, Mr D J Shewring (Cardiff)

**Introduction:** It has traditionally been accepted that Cleland's ligaments are not involved in Dupuytren's disease. There is, however, no firm evidence in the literature to support this. The aim of this study was to assess whether Cleland's ligaments are affected by Dupuytren's disease and whether this contributes to the flexion contracture of the PIP joint.

**Methods:** Twenty patients with Dupuytren's disease undergoing fasciectomy for PIP joint contracture were included. After excision of all other identifiable digital disease, Cleland's ligaments on each side of the digit were identified and assessed for involvement with disease. If the ligament was considered to be contributing to the residual contracture, it was excised and sent for histological analysis. Any further improvement of the PIP joint contracture was recorded.

**Results:** There were fourteen males and six females, mean age 62.4 (40–79). All patients had a PIP joint contracture of greater than 40° (mean 60, range 45–100°). The little finger was involved in twelve and the ring finger in eight patients. Excision of Cleland's ligaments resulted in mean further correction of 7° (range 0–15). Histological analysis suggested that Cleland's ligament was involved with Dupuytren's disease in twelve patients.

**Conclusion:** Our study suggests that Cleland's ligaments can be affected by Dupuytren's disease. As they are situated dorsal to the neurovascular bundles, a specific dissection has to be undertaken to identify them. Excision of Cleland's ligaments may yield a worthwhile further correction of PIP joint flexion contracture during digital fasciectomy.

- 12:57 Discussion

- 12:59 The true indications for Dupuytren's disease surgery: A study of patient-determined goals  
Mr J Rodrigues, Professor B Scammell, Professor T C R Davis (Nottingham)

**Introduction:** Traditional indications for surgery in Dupuytren's disease include angular deformity, as assessed by goniometry. Measuring correction of deformity is a common primary outcome measure in research. However, demonstration of cost effectiveness via improvement in quality of life may be required to secure funding for treatment in future. This study identified patients' goals from treatment for Dupuytren's contractures.

**Methods:** Patients listed for Dupuytren's disease surgery were invited to participate in this service evaluation on a voluntary basis when attending surgical pre-admission. Demographic details were recorded and angular deformity measured. Patients were asked to specify up to three goals they wanted the surgery to improve. DASH scores were also completed.

**Results:** Fifty-six patients undergoing fasciectomy or dermofasciectomy were recruited. Two patients declined to participate. Patient age ranged from 34 to 89 years. 75% were male. The mean TPED was 72°. Thirty-five patients specified three goals, and 15 specified two goals. Thirty-four different goals were described. The commonest was to improve the ability to wash oneself (58% of patients). Of the most popular nine goals specified by patients, only three were consistent with items in the URAM patient reported outcome measurement tool recently designed for Dupuytren's disease.

**Conclusions:** Patients set a wide range of goals for treatment of Dupuytren's contractures. Appreciating this variation may improve clinical practice and help generate cost effectiveness data supporting treatment. Existing tools, including the Dupuytren's-specific URAM scale, may require further development for use in the UK, or supplementation with tools incorporating patient-specified goals may be necessary.

- 13:04 Discussion

**13:06 Dupuytren's contracture fasciectomy techniques - New versus old: A study of 585 patients**

Mr B Miranda, Dr C Elliott, Mr C Kearsey, Mr D Haughton, Mr M Webb, Mr I Harvey, Mr F Fahmy (Chester)

**Background:** Several fasciectomy procedures have been described, with limited fasciectomy (LF) generally favoured for primary disease. Recurrence following fasciectomy may reach 47% over five years, depending on patient factors and operative methodology.

**Aim:** To compare the results of 3D-fasciectomy (3DF) against the traditional LF technique over a ten-year period.

**Method:** A retrospective study of two patient groups with Dupuytren's contractures, who underwent either LF or 3DF, was conducted. Demographic data, complications and recurrence were analysed using SPSS. The null hypothesis was that no differences would be demonstrated.

**Results:** Patients ( $n=585$ ) underwent 786 operations, involving 931 digits and 1274 joints. The average case-note follow-up period was 8.1 years. Manual workers comprised the largest cohort (31%), the little (53%) and ring (35%) fingers, metacarpophalangeal (49%) and proximal interphalangeal (46%) joints, were most commonly affected. Post-operative complications (14.6%) included a recurrence rate of 9.4% over four years. On comparison of both groups, there were 641 LF ( $n=470$ ) and 145 3DF ( $n=115$ ) operations performed. These two groups were matched by age, sex, patient diathesis factors, patients with primary disease and affected joints, with similar proportions of affected fingers. Post-operative complications (4.8% vs. 16.8%;  $p=0.001$ ), recurrence rates (1.4% vs. 11.2%;  $p=0.001$ ) and time to recurrence (5 vs. 4 years;  $p<0.0001$ ) were lower for the 3DF group. With recurrence excluded, there was no difference in the complications rate between the 3DF and LF groups (3.5% vs. 6.4%;  $p=0.4$ ).

**Conclusion:** The 3DF approach is associated with a lower recurrence rate and longer recurrence-free period, compared to traditional LF.

**13:11 Discussion**

**13:15 Lunch and Trade Exhibitions**

**Cochrane Collaboration**

Chairman: Professor T R C Davis

**14:00 What it can do for hand surgery**

Mr M Burton (Oxford)

**Free Papers**

**14:30 The dorso-ventral duplication: A summary of two decades of clinical interest and research**

Professor M Al-Qattan (Riyadh)

**Introduction:** The Swanson classification for congenital hand anomalies does not include the dorso-ventral duplication. The author has had a special interest in this topic with numerous publications over the last two decades. The presentation will be a summary of this work.

**Methods:** First, the basic science and embryology of development of the dorso-ventral axis of the hand will be presented. Secondly, the author's personal series of eight cases of biventral duplication (patients who have two palms and no dorsum) as well as five cases of bidorsal duplication (patients who have a palmar nail and dorsal skin on the palmar aspect of the hand) will be presented. Finally, the author's personal work searching for the genes responsible for this rare but interesting congenital anomaly will be presented.

**Results:** Dorso-ventral duplication exists in humans. Biventral duplication in humans and experimental animals are caused by mutations of the WNT-7A gene. Bidorsal duplication in experimental animals is caused by mutations of the EN-1 gene pathway. In humans, however, the error is a concurrent anomaly with other congenital hand anomalies.

**Conclusion:** The Swanson classification should include dorso-ventral duplication.

**14:35 Discussion**

**14:37 Taking on the challenge of Apert's syndrome hand anomalies**  
Mr A Fox, Miss G Smith (London)

The congenital hand anomalies associated with Apert's syndrome are well described but their wound healing is not. We retrospectively reviewed healing times and infection rates over a four-year period.

Thirty-five patients (21M and 14F) were operated on, representing 77 hands (39R, 38L). The mean age was five years and the mean age at surgery three years. There were twenty-six type I, 21 type II, and 30 type III hands. The commonest web release performed was 3rd, followed by the combination of 1st and 4th, then 1st, 2nd, and 4th. There was a need for re-release in 18% of cases (1st and 2nd most commonly). Overall infection rate was 6% with total graft loss in two cases and partial loss in ten. All patients with infections were under the age of twelve months. Total graft loss was seen in one type III and one type II hand, and seven out of the ten partial graft losses were seen in the type III hand. Mean time to healing was 6.2 weeks (type I hand 5.7 weeks, type II hand 6.7 weeks and type III hand 7.0 weeks). The quickest time to heal was 5.8 weeks for isolated 3rd web releases and the slowest time to healing was in the combination of 1st and 4th web releases (6.8 weeks).

We discuss the significance of these results and the relevance of the observation that the type III hands have higher infection rates, higher graft loss rates and are generally slower to heal.

**14:42 Discussion**

**14:44 Amniotic constriction band: Liverpool case series**  
Miss L Homer, Mr A Mishra, Professor P McArthur (Liverpool)

**Introduction:** Amniotic constriction band is one of over thirty names for the condition from the literature. It occurs in approximately one in every 15,000 live births. It is postulated to be due to torn amnion membrane from its rupture into the chorion in which the developing fetus becomes entangled. It is graded using the Patterson classification system which is comprised of four parts.

**Methods:** A case series of all patients with amniotic constriction band that presented to Alder Hey Children's Hospital was complied between the years 1993–2008. From this data was described.

**Results:** Thirty patients were identified. Of these, fifteen had amniotic constriction of the upper limb only and three of the lower limb only. Eleven had both upper and lower limb deformity while one child had a band of unlisted location. Twenty children underwent surgical intervention whilst ten to date have not had surgery. Of the group nineteen were male and eleven female.

**Conclusion:** From the results constriction band of the upper limb was the most common deformity with bands isolated to the lower limb the least common. There appear to be no gender dominance of the condition. It is also clear that there is no agreement on the nomenclature of this condition making amalgamation of the literature problematic. A consensus on this as well as a more in depth classification system is recommended.

**14:49 Discussion**

## 14:51 Pyogenic flexor tenosynovitis: Factors affecting prognosis

Dr E Karagergou, Mr K Rao, Miss K Sharma, Miss R Harper (Sheffield)

**Introduction and Aims:** The purpose of this study was to retrospectively review all patients who presented with pyogenic flexor tenosynovitis of the hand and to identify risk factors which may affect the final functional outcome.

**Material and Methods:** Between 2009–2011, 52 patients were admitted for pyogenic flexor tenosynovitis and were retrospectively reviewed. Data obtained included clinical features, co-morbidities, intra-operative findings, number of procedures, microbiology, functional outcome and amputation rate.

**Key Results:** Patients with positive cultures were associated with a higher number of operations and a worse final active range of motion. Between them, patients with group G streptococcus and streptococcus milleri had the worst final outcome. A later onset of physiotherapy was documented for the cases which had more than one procedure, and this was also correlated with a worse functional outcome. Patients with diabetes mellitus and patients on renal haemodialysis had a high amputation rate.

**Conclusion:** In patients with pyogenic flexor tenosynovitis, the presence of positive cultures may be associated with a potential worse outcome. Multiple surgical interventions for the control of infection should not delay the early onset of physiotherapy. Patients with diabetes mellitus and renal haemodialysis have a higher amputation rate and, therefore, a more aggressive initial management should always be considered.

## 14:56 Discussion

## 14:58 Paediatric flexor tendon injuries - A regional centre's experience

Mr J Griffin, Ms L Cremin, Mr R Dunn (Salisbury)

**Introduction:** Flexor tendon injuries in children account for a small but significant proportion of the hand surgeon's workload. We present the largest series of paediatric flexor tendon injuries available to date.

**Methods:** A retrospective case notes review of all patients aged 0–16 at time of admission presenting to our department with a flexor tendon injury between January 2005 and December 2011. Demographic, clinical, intra-operative and post-operative data were retrieved from case notes and collated in a spreadsheet (Microsoft Excel).

**Results:** During the study period one hundred patients sustained 167 tendon injuries. The mean age was 11.5 years. Seventy-three patients were male. Zone 2 was the commonest site of injury (31.5%) followed by zone 1 (28.8%), zone 5 (19.8%), zone 4 (7.2%) and zone 3 (4.5%). FDS/FDP injury occurred in 92 fingers. Of these, objective outcome measures were available for 31 fingers. According to the Strickland formula outcomes were: excellent in 23 fingers (74.2%), good in six fingers (19.4%) and fair in two fingers (6.5%). Subjective outcomes and complications were also recorded. Injuries to FCU (18 tendons, 10.8%), FCR (9, 5.4%), FPL (10, 6%), FPB (2, 1.2%) and FDS/FDP muscle bellies (2, 1.2%) accounted for the remainder of cases.

**Discussion:** This is the largest series of paediatric flexor tendon injuries yet published and demonstrates that excellent outcomes are achievable. However hand therapy compliance and attendance at follow-up appointments can contribute to significant complications and re-intervention.

## 15:03 Discussion

- 15:05 **The effect of sequential pulley resection on the coefficient of friction when intact and following flexor tendon repair in Zone 2: In vitro studies on paired turkey tendons**  
Miss L Hajipour, Mr B Bhowal, Mr N Taub, Professor J J Dias (Leicester)

**Aim:** Up to 50% resection of A2 pulley allows tension free gliding of the repaired flexor tendon, avoids tendon bowstring and excessive friction. This study evaluates the effect of tendon repair and sequential pulley resection separately and their contribution to the raised Coefficient of Friction (CF).

**Method:** Ten paired turkey tendon-bone-A2 pulley specimens were used. Specimens from the right feet were used as control (intact tendon) and left feet specimens had full tendon repair. Sequential pulley resections (25%, 50%, 75%) were carried out on both groups. CF was measured during the simulated activity using Uchiyama's technique at 10° and 70° of flexion and two different weights (200 and 400 gram). Data collected was analysed using SPSS (20). Non-parametric, related samples Wicoxon Ranked test was performed within and between the paired specimens.

**Results:** There was no significant increase in CF following 75% pulley resection, at both flexion angles and weights in the control group and at 10° of flexion (and both weights) in the repaired tendon group. There was a significant increase in the CF following the tendon repair (compared to control) and each sequential pulley resection at 70° of flexion and both weights. There was no significant increase in CF between 50% to 75% pulley resection.

**Conclusion:** 75% resection of the pulley shows similar CF levels compared to 50% resection. Pulley resection leads to an increase in CF at higher angles of flexion following tendon repair only. Therefore high flexion angles better be avoided during rehabilitation.

- 15:10 **Discussion**

- 15:12 **Retrospective review of central slip injury management outcomes**  
Miss S S Jing, Miss L Ygot, Mr M Sood (Chelmsford)

**Introduction:** Functional outcome of central slip injury has been poorly defined. We aim to review the surgical repair and rehabilitation of central slip injuries.

**Methods:** Retrospective three years review of acute central slip injuries management was performed including analysis of complexity of injury, surgical repair, rehabilitation protocol and functional movements of affected digits.

**Results:** Ninety-four patients with a mean age of 38.8 years (103 digits, 46.7% dominant) underwent primary surgical repair of acute central slips injuries. Sixty-one (59.2%) cases were complex, associated with capsuloligamentous or bony injuries. Commonest surgical repair and rehabilitation received were Prolene mattress suture and extensor dynamic splintage respectively. Mean follow-up was 11.2 weeks. Mean final proximal interphalangeal joint and distal interphalangeal joint flexion were 76.6° and 46.4° respectively. Mean extensor lag at proximal interphalangeal joint was 11.3°. Functional outcome using Strickland formula were 50% excellent, 29.4% good, 17.6% fair and 2.9% poor. Factors leading to poor outcome were complex injuries.

**Conclusion:** Central slip injuries are unique from other extensor tendon injuries. Bony injuries are associated with poor functional outcomes.

- 15:17 **Discussion**

- 15:20 **Refreshments and Trade Exhibitions**

**Roundtable**

Chairman: Mr I A Trail

**15:40 Cases I wish I had never started**Panel: Dr B Adams, Mr M Boeckstyns, Mr G Packer, Professor P Kopylov, Mr A Watts,  
Dr C Peimer, Mr M Hayton, Mr R H Milner**Douglas Lamb Lecture**

Chairman: Mr I A Trail

**16:30 My successes and failures in hand and wrist arthroplasty**

Dr B Adams (Iowa City, USA)

**17:00 Annual General Meeting**

(open to BSSH Members and Associates only)

**19:30 (for 20:15) Society Dinner**

National Railway Museum

08:30 Registration

### Invited Lecture

Chairman: Mr S L Knight

09:00 Flap cover in the hand

Mr C G Duff (Manchester)

### Invited Lecture

Chairman Mr D J Shewring/Mr A Watts

09:45 What's new in internal fixation

Mr M A Craigen (Birmingham)

### Free Papers

10:30 Radiation exposure during hand and wrist surgery: Large C-arm vs Mini C-arm

Mr M Vashishtha, Ms M Rostom, Mr K Hamad, Mr R Jeffers, Mr W de Jager (Bradford)

**Aims:** Published literature suggests potential advantages of using mini C-arm for upper extremity surgery. These include reduced operating times, fewer open procedures and decreased radiation dose to surgical team/patient. There is no literature showing direct comparison on real patients. This study was aimed to prospectively compare radiation exposure to patients undergoing upper limb surgical procedures (hand and wrist) using conventional C-arm and mini C-arm.

**Methods:** This is a comparative prospective study over a six-month period at an orthopaedic hand surgery unit in a UK teaching hospital. The first loop used the large C-arm for 24 mixed hand and wrist cases from October - December 2011. The second loop used the mini C-arm for 32 cases from January - March 2012. The cases included both elective and emergency procedures. Radiation exposure was measured in DAP (dose-area-product) units.

**Results:** In the large C-arm loop, 100% cases had radiation exposure documented with a mean of 5.02 units. The mean screening time was 5.73 seconds. The mean exposure in DAP units with the mini C-arm was 3.50 with 100% documentation.

**Conclusions:** The study showed a 30% decrease in mean radiation exposure in DAP units with mini C-arm. Although DAP is not an accurate indication of radiation delivered to the patient/surgical team, the information gleaned is an indication of the overall radiation that is expended and therefore potentially delivered. These results therefore support the current view that use of a mini C-arm reduces radiation exposure.

10:35 Discussion

10:37 Results of lag screw fixation for spiral fractures of the proximal phalanx

Mr U Rethnam, Mr D Shewring (Cardiff)

**Introduction:** Fractures of the proximal phalanx are amongst the most common affecting the hand. Although many of these fractures can be treated non-operatively, spiral fractures are inherently unstable and are unforgiving. There are various accepted methods for treating these fractures; the combination of a precise reduction of the inter-digitations of a fresh fracture and compression with lag screws will provide a very stable fixation and will permit immediate mobilisation.

**Materials and Methods:** Data was collected from all patients undergoing lag screw fixation for spiral proximal phalangeal fractures by a single surgeon over a seven-year period. A lateral approach was used in all cases and will be described. Patients with comminuted fractures and who defaulted review were excluded.

**Results:** There were 52 patients; a further ten were excluded. Mean age was 26.8 years (14–56). Injuries in men (37) and the small finger (33) were more common. Falls and sporting injuries accounted for most (34). Mean flexion was 88.9°, 88.9° and 67.1° at the MCPJ, PIPJ and DIPJ respectively. The PIPJ had a mean extension loss of 10.4°. There was one superficial infection. One patient needed screw removal. All fractures united.

**Conclusion:** This treatment yields satisfactory results with a low complication rate. Mobilisation can commence immediately resulting in good range of movement. A lateral approach is more difficult but avoids violation of the plane between the extensor mechanism and the periosteum, which is a potent cause of adherence and stiffness.

#### 10:42 Discussion

##### 10:44 The fate of the 'query scaphoid fracture'

Miss E Reay, Mr P Stuart (Newcastle upon Tyne)

**Introduction and Aims:** The emergence of the diagnosis 'query scaphoid fracture' has meant a large number of patients being referred to orthopaedic departments without a definitive diagnosis, and little is known about this group. These patients are often discharged with a diagnosis of soft tissue injury (STI). The aim of our study was to determine diagnosis on discharge of the group of patients referred as 'query scaphoid fracture' and to assess the defining characteristics of that group.

**Materials and Methods:** We retrospectively accessed the notes of one hundred patients consecutively referred with 'query scaphoid fracture' and followed their clinical course until discharge.

**Results:** Only 1% of the patients had a scaphoid fracture. The majority of patients were diagnosed with STI (50%), with 'exacerbation of pre-existing base of thumb osteoarthritis' the next most common diagnosis (20%). 14% were diagnosed with a different fracture and the remainder had a variety of ligamentous injuries and crystal arthropathies. The mean age of the cohort was 40 years. Those diagnosed with STI were significantly younger than the rest of the cohort ( $p<0.01$ ). Comparison of age at presentation showed those diagnosed with STI were significantly younger than those with a proven scaphoid fracture ( $p=0.01$ ).

**Conclusions:** Of those referred with 'query scaphoid fracture' only one patient was diagnosed with an actual scaphoid fracture. The group also encompassed numerous other diagnoses, the most prevalent of which was soft tissue injury (50%); a distinctive population who was significantly younger than the rest of the cohort and was predominantly female.

#### 10:49 Discussion

##### 10:51 Proximal phalangeal fractures - Tips, techniques and an appraisal of a five year multi-modality treatment series

Dr S Yalamanchili, Miss C Hughes, Mr J May, Mr R Ragoowansi (London)

**Introduction:** The purpose of this study is to compare functional outcomes amongst patients with proximal phalangeal (P1) fractures according to their mode of treatment, namely K-wire fixation, ORIF, external fixation and splinting.

**Methods:** This study was a retrospective comparative review of P1 fractures presenting from January 2007 to March 2012. Extra-articular fractures and those with associated tendon, nerve or vascular injury were excluded. There were fifty-two patients aged between 17 and 86 with a total of 63 fractures. Outcomes were assessed using evidence of clinical and radiological healing as well as the Total Active Motion (TAM) score, at three months following injury and at time of discharge.

**Results:** Of the sixty-three fractures included in the study, 41 had clear mechanisms documented, of which 13 were crush injuries and two were pathological. Fractures were classified by their radiological appearance, of which 30 were transverse, 16 spiral, seven oblique and ten comminuted. Overall, 59% had excellent outcomes at three months and 72% at final follow-up. At final follow-up

those treated with K-wires had an excellent outcome in 83% of cases compared to 78% in those with ORIF or 57% with splinting. Furthermore those with ORIF or splinting were more likely to have a fair rather than good result when compared to those with K-wire fixation.

**Conclusions:** P1 fractures are challenging, from a decision-making and a technical viewpoint. Our results underpin the superiority in overall function with K-wire fixation whilst meticulous ORIF techniques not quite translating into better function.

**10:56 Discussion**

**10:58 Outcomes of modified Brunelli procedure in professional athletes with scapholunate instability**

Miss A Williams, Dr C Ng, Mr M Hayton (Manchester)

We identified sixteen professional athletes who had undergone reconstruction of their scapholunate ligaments using flexor carpi radialis tendon graft (modified Brunelli procedure) from our prospectively managed database. All procedures were performed by the senior author. The patients were then invited to complete an online questionnaire to which 15 (94%) responded.

Between 2008 and 2011, fifteen professional male athletes (one motor cycling, one golf, two boxing, and 11 rugby) underwent modified Brunelli procedure. One patient had bilateral reconstructions. The mean age of the patients was 30 years (range 18 - 42). The mean follow-up period was 24 months (range 3 - 43 months).

The pain level was measured on a visual analogue scale. Pre-operatively the mean score at rest and on activity were 4.2 (standard error of mean 0.77) and 7.9 (0.41) respectively. At the final review, the scores improved to 0.4 (0.27) and 2.6 (0.63) respectively. Out of the sixteen wrists reconstructed, 13 (81%) were reported to have improved wrist stability and three (19%) were worse. At the final review, the mean Wrightington activity of daily living assessment for wrist function was 9.3 (0.39). The mean Quick DASH score was 7.7 (2.17). Twelve of the 15 (80%) athletes returned to play within four months of surgery. By the final review, 11 of the 15 (73%) athletes had returned to play at their pre-injury level of competition.

Modified Brunelli procedure relieves pain, improves stability and functions of the wrists in professional athletes with symptomatic scapholunate instability.

**11:03 Discussion**

**11:05 Refreshments and Trade Exhibitions**

**Base of Thumb Arthroplasty**

Chairmen: Mr R Murali/Mr S Talwalkar

**11:30 Cemented prosthesis**

Professor L de Smet (Leuven, Belgium)

**11:40 Discussion**

**11:45 Spherical arthroplasty and hemiarthroplasty**

Dr B Adams (Iowa City, USA)

**11:55 Discussion**

**12:00 Saddle arthroplasty**

Mr I A Trail (Wrightington)

**12:10 Discussion**

- 12:15 **The Elektra prosthesis**  
Dr T B Hansen (Aarhus, Denmark)
- 12:55 **Discussion**
- 13:00 **Lunch and Trade Exhibitions**
- 14:00 **Hand-over of the Presidency from Mr I A Trail to Mr S L Knight, President in 2013**

### Invited Lectures

Chairmen: Mr I A Trail/Mr R Savage

- 14:05 **Where are we with nerve conduits**  
Professor G Terenghi (Manchester)

### Free Papers

- 14:35 **Post-operative mobilisation regimens following digital nerve repair - To splint or not: A systematic review**  
Dr S Jabir, Mr F Iwuagwu (Chelmsford)

**Purpose:** There currently is a multiplicity of post-operative mobility based rehabilitation protocols following isolated digital nerve repair. The regime chosen appears to be dependent on the preference of the surgeon and unit rather than evidence based. We aim to systematically review the current evidence to provide an insight towards formulating guidelines for best practice.

**Methods:** The study was carried out in accordance with the PRISMA statement for systematic reviews. Medline, Embase, CINAHL, Google Scholar and Cochrane databases were searched from inception to June 2012. Key search terms used were: "digital nerve", "rehabilitation", "mobilization/mobilisation", "immobilization/immobilisation", "splinting", "repair".

**Results:** Four studies met the inclusion criteria and compared two of three regimens: complete immobilisation, protected mobilisation and free mobilisation. The primary outcome measured sensibility via 2PD and Semmes-Weinstein monofilament testing. There was no statistically significant difference in sensibility between either of the regimens. Secondary outcome measures included subjective measures such as cold intolerance and hyperesthesia which also showed no significant difference between protocols. One study found that stiffness was increased, and return to work delayed, when a splinting protocol was employed.

**Conclusion:** Current evidence suggests that all three protocols are equivalent in their outcomes. The stiffness and delayed return to work associated with splinting protocols indicate that free mobilisation protocols may have an advantage over them. However the limitations of current evidence mean that the hand surgeon and therapist should choose a regimen from those discussed above which is tailored to the needs of each individual patient until further evidence is gathered.

- 14:40 **Discussion**
- 14:42 **The outcome of cubital tunnel release in patients with normal nerve conduction studies**  
Mr O Donaldson, Mr D Griffith, Mr A Bebbington, Mr D Newington, Mr M Pritchard, Mr D Russell (Swansea)

**Introduction:** The aim of this study was to assess the outcome of cubital tunnel release in patients who have pre-operative normal nerve conduction studies.

**Method:** Consecutive patients undergoing cubital tunnel release with normal nerve conduction studies between 2006 and 2011 were identified. All patients underwent an open cubital tunnel release under general or regional anaesthetic. Patient outcome was determined using the Quick DASH and Modified Bishop questionnaires.

**Results:** One hundred and forty-six cubital tunnel releases in 138 patients were performed during the study period. Twenty-nine elbows in 28 patients (19.9%) had normal nerve conduction studies. Twenty-four elbows (23 patients) were available for review. Two thirds of these were right elbows with a male to female ratio of 7:16. Outcome using the modified Bishop score showed a fair result in two patients, good in eight patients and excellent in 14. The mean Quick DASH score was 27 (Range 2–77) with 20 patients achieving a score under 40. The four patients with quick DASH scores greater than 40 had evidence of proximal nerve entrapment and so may represent a “double crush” phenomenon.

**Conclusion:** Almost a fifth of patients undergoing cubital tunnel release had normal nerve conduction studies. A significant improvement was seen post-operatively in these patients. A poorer outcome was seen in patients with evidence of proximal nerve entrapment. We would, therefore, recommend proceeding with cubital tunnel release in patients with normal nerve conduction studies following appropriate investigations to rule out a more proximal lesion.

**14:47 Discussion****Invited Lecture**

Chairman: Mr I A Trail

**14:50 What's the latest in wrist arthroscopy**  
Dr David Slutsky (Harbor, USA)**15:35 Close of Meeting**

- 1 Cancellation rates of the second side procedure in staged release of bilateral carpal tunnel syndrome  
Mr E Street, Miss G Eastwood, Mr S Royle (Manchester)

**Objective:** This study assessed the rate of cancellation of second side operations in patients listed for staged bilateral carpal tunnel release. The aim was to consider the common reasons for cancellation of the second side and to assess the correlation between cancellation and the pre-operative nerve conduction study (NCS) results.

**Materials and Methods:** Cancellation rates of the second side procedure in 127 patients were assessed retrospectively. The common reasons for cancellation were noted and their frequency recorded. In the cases where the second procedure was subsequently completed, the time between the first and second procedures was recorded. The results of the pre-operative NCS were assessed and recorded as one of four outcomes.

**Results:** 39.4% of patients cancelled the original date set for the second side procedure. The most common reason for cancellation (34%) was insufficient recovery time between the two procedures. At the time of the study 26% of those who cancelled their original date had subsequently had the second procedure (average time between procedures: 11.4 weeks). There was no correlation between the NCS results and subsequent reason for cancellation of the second side.

**Conclusion:** The cancellation rates of the second side procedure in staged bilateral carpal tunnel release (CTR) are nearly 40%. Pre-operative NCS results can not be used to predict recovery or the rates of cancellation of the second side. The study suggests changes in listing policy for staged CTR which, if implemented, should significantly reduce the cancellation rates of the second side procedure.

- 2 Linear regression analysis of Hospital Episode Statistics predicts an increase in demand for elective hand surgery in England  
Dr E Bebbington, Dr N Turaga, Mr D Furniss (Oxford)

**Introduction:** Effective future workforce planning is essential to ensure high standards of hand surgery are maintained. We integrate two factors, demographic population shifts and changes in prevalence of disease, to predict future trends in demand for hand surgery in England and facilitate planning of future service provision.

**Methods:** We analysed Hospital Episode Statistics data for Dupuytren's disease, carpal tunnel syndrome, cubital tunnel syndrome, and trigger finger from 1998–2009. Using linear regression, we estimated trends in both diagnosis and surgery until the year 2030. We then integrated these calculations with age specific population data in order to estimate how this will contribute to a change in workload over time.

**Results:** There has been a significant increase in both absolute numbers of diagnoses and surgery for all four conditions. When this is combined with future population data, we calculate that, in 2030 compared to 2009, Dupuytren's operations will increase 77% (95% C.I. 47–106), carpal tunnel release 114% (87–141), cubital tunnel release 217% (159–275), and trigger finger release 147% (122–172). The total operative burden for these four conditions is calculated to increase from 86,485 in 2009 to 188,314 (163,328–212,724) in 2030.

**Conclusions:** The prevalence of these diseases in the elderly population, and increasing prevalence of predisposing factors such as obesity and diabetes may account for the current and predicted increases. Such increase in demand must be met with adequate service provision and a planned increase in hand surgeons. The most cost effective treatments must be sought, which requires high quality clinical trials.

- 3 **Carpal tunnel decompression referral criteria in the Oxford and London Deaneries**  
Mr M Pankhania, Mr A Misra (Slough)

Carpal tunnel syndrome (CTS) involves specialist management in secondary care in the NHS today. As a low priority condition, primary care trusts (PCTs) must approve funding to ensure these specialist services are financed. Delay can result when referred patients present without funding decisions. We conducted an audit of our regional PCT funding policies to review criteria to refer, recommended treatments, and adherence to best evidence.

Eight regional PCT funding policies were selected for comparison to the British Society for Surgery of the Hand (BSSH) evidence base. Policy agreement was found to concur with BSSH guidelines amongst all PCTs, in referral for decompression. Three PCTs still recommended treatment (NSAID and diuretics), which currently lacks evidence. Four PCTs did not cite any references in their policy. The individual PCT responses to our findings ranged from no intention to change policy to no response.

Regional variation in funding treatment for carpal tunnel syndrome is concerning. PCT support of inadequate treatment not only delays necessary care but is far from ideal. In the future better representation and engagement of specialists in Clinical Commissioning Groups may help remedy this situation.

- 4 **Efficacy of primary management of open hand injuries in A&E Departments**  
Miss C Tsang, Mr F Salim, Mr M Pickford (East Grinstead)

**Introduction:** Infection affecting open hand injuries adds further insult to existing trauma, negatively impacting on functional outcome and recovery. As recommended by BSSH, thorough wound washout under local anaesthetic during initial presentation should form part of the gold standard of open hand injury management. This audit aims to assess the efficacy of primary management of open hand injuries in A&E departments and minor injuries units (MIU).

**Methods:** This is a prospective audit assessing the management of acute open hand injury in A&Es and MIUs within our institute's catchment area. Paediatric and cases presenting directly to our unit were excluded. Data was collected from patients using a standardised proforma.

**Results:** Sixty cases were sampled over a seventeen week period, spanning fifteen referring units. Most patients presented to their local hospital on the day of injury and arrived at the hand unit in an average of 1.13 days (range 0–2). No washouts were performed in 12% of cases. Local anaesthetic was not used in 72% of cases receiving washouts. 50% of washouts were performed with minimal or no wound exposure. Antibiotics and tetanus prophylaxis were provided in 87% and 74% of cases respectively.

**Conclusion:** Although most patients did receive wound irrigations, the absence of local anaesthetic impedes on both the efficacy and patients' comfort during washouts. The window of opportunity to reduce bacterial load and remove debris from wounds should not be missed on patients' first presentation. This audit highlights the potential for improvement. Factors relevant and interventions addressing these will be discussed.

- 5 **Apert syndrome: A consensus on the management of Apert hands**  
Dr D Pettitt, Professor P McArthur (Liverpool)

**Introduction:** Apert syndrome is a congenital condition characterised by primary craniosynostosis, midfacial malformations and complex symmetrical malformations of the hands and feet. The hands demonstrate one of the most complex collections of congenital upper limb deformities, posing a significant challenge for the paediatric hand surgeon. This study examines the extant literature and current practice of the four UK specialist craniofacial units regarding the management of Apert hands in order to provide a basis for guideline development.

**Methods:** The current literature was reviewed. Survey-type questionnaires were distributed to the four UK specialist craniofacial units and responses analysed.

**Results:** Management of the Apert hand is largely dictated by the degree of malformation present. Although all units aim to achieve a five digit hand, variation in the timing of surgery, operative protocols and mobilisation policies exists.

**Conclusion:** The results of this study provide an interesting snapshot of the current management of Apert hands across the UK's specialist units. The four UK units remain congruent on most areas surrounding the management of Apert hands although some minor inter-unit variation exists. A multidisciplinary approach to management remains fundamental in optimising the regain of function and aesthetically acceptable hands.

**6 Percutaneous palmar fasciotomy for Dupuytren's: Complication and recurrence rate**  
Mr A J Legg, Mr R Simpson-White, Mr I Chakrabarti (Rotherham)

**Introduction:** The treatment options for palmar Dupuytren's cords continue to generate debate: percutaneous release, collagenase injection and simple fasciectomy are all options. Longer term data is still required. The aim of this study was to quantify the recurrence and complication rates for a percutaneous release method by a single surgeon.

**Methods:** From the senior author's records, we identified 74 patients who underwent primary percutaneous release of a well-defined pre-tendinous cord causing a metacarpophalangeal joint contracture of =30°, with no involvement of the proximal interphalangeal joint. The patients underwent the procedures from 1997 to 2002. Sixty-seven patient records (88 digits) were available for retrospective review. Procedures were performed in theatre under local anaesthetic, with a small blade. Notes were reviewed for evidence of subsequent surgery and for complications.

**Results:** Good on-table correction was generally achieved. Where subsequent surgery was required, this was revision percutaneous release in ten, second revision percutaneous release in one, and eventual fasciectomy in 19 (21.6%). Mean time to second surgery was 3.5 years. No complications of nerve injury or infection were recorded.

**Conclusion:** We feel that this study confirms percutaneous fasciotomy to be a safe, cost-effective method for the treatment of a simple pre-tendinous cord in the palm, with a recurrence rate over medium term comparable to other series.

**7 Treatment pathways for Dupuytren's contracture: The patients' perspective**  
Miss S Brown, Mrs K Oake, Miss S M Fullilove (Surrey)

**Background:** Despite the plethora of literature on causes and treatment of Dupuytren's disease (DD), there is very little published looking at patients' experience of living with the disease (Pratt et al 2009) and their perception of the treatment pathway.

**Objectives:** To better understand the experience of patients with DD and identify where shortfalls exist in delivery of treatment.

**Methods:** Patients were recruited and assessed using an independent market research agency. Individual qualitative, semi-structured interviews were conducted. Patients were selected to cover a range of experiences. The transcripts were analysed using interpretive phenomenological analysis methodology (Reid et al 2005).

**Results:** Ten individuals (8 males:2 females) were interviewed. Seven patients had undergone fasciectomy, four dermatofasciectomy with skin graft, one needle fasciotomy and one collagenase injection. Three received more than one procedure and six experienced recurrence. Common themes were identified and grouped as areas on the treatment pathway where patient perception and the actual experience were (1) equal, (2) had some discord or (3) were disparate. Patients generally felt that they had received good information on the 'Viking' history and causes of the

condition. However there were great differences between patients' perception and the reality of post-operative rehabilitation and time it took to return to normal function/work. There was also discrepancy between patients' understanding of recurrence and the reality of it.

**Conclusion:** Although there are areas in which patients experience clear communication about their DD, there are other aspects of the treatment pathway where a wide gulf exists between the expectation and treatment received.

**8 3D-fasciectomy: A novel approach to fasciectomy**  
Mr B Miranda, Professor F Fahmy (Chester)

**Introduction:** Dupuytren's disease is a common hand condition with various fasciectomy techniques described, each associated with unique surgical challenges, complications and recurrence rates.

**Aim:** To describe a new well defined philosophy in the surgical approach to fasciectomy and present demographic and post-operative data from a large case series.

**Method:** An illustrated approach is described, with a retrospective analysis of patients who underwent three dimensional fasciectomy (3DF). Our technique considers three main principles: the three dimensional anatomical distribution of the longitudinal, transverse and saggital fibres most likely to be involved in Dupuytren's disease, dermal involvement and the basic recommendations generally adopted in treating highly locally recurrent conditions.

**Results:** Operations (145) were performed for 115 patients (98 males, 17 females), aged  $62 \pm 1$  years, with  $2 \pm 0.1$  diathesis factors. The post-operative case note review period was  $6 \pm 0.2$  years. The little (46%) and ring (32.5%) fingers, and metacarpophalangeal (55.3%) and proximal interphalangeal (42.6%) joints were most commonly affected. The proportion of operations performed for patients with primary, rather than recurrent/secondary disease, was 84.8%. The post-operative complications rate was 4.8%, including a 1.4% recurrence rate and time to recurrence of  $5 \pm 0$  years.

**Conclusion:** 3DF provides a safe and highly efficacious well defined approach with a much lower recurrence rate compared to other surgical and non-surgical treatments. It presents a modification and evolution of currently described fasciectomy procedures, with more defined guidance to the surgical approach, involved fibres and excision margins required to complete the procedure, features that were not previously well defined in the literature.

**9 Treatment of Rolando fracture by capsuloligamentotaxis using mini external fixator: A report of sixteen cases**  
Miss S S Jing, Mr S Houshian (Broomfield)

**Introduction and Aims:** Treatment of Rolando fractures remains a challenge for hand surgeons.

**Material and Methods:** We present a case series of sixteen comminuted Rolando type fractures treated by controlled capsuloligamentous distraction (and over distraction by 2mm) using the Penning mini external fixation system. Additional Kirschner wire(s) were used to maintain fracture reduction and stability.

**Key Results:** Average time of injury to surgery time was five days. Mean age of patients was 26 years. The mean follow-up was 20 months. Excellent fracture union was achieved in all cases. All except two patients were pain free at the final consultation. The mean grip and pinch strength of the affected thumb was 96% and 93% respectively, of the unaffected thumb with a minimal loss of movements.

**Conclusion:** This technique is simple and effective. It enables immediate mobilisation of the unaffected joints, preventing stiffness and reduces post-traumatic arthritis. We recommend this distraction technique for the treatment of significantly comminuted Rolando type fractures.

## 10 Predicting functional outcome after extensor tendon injuries

Miss N Blucher, Mr M Nixon, Miss P Prowse, Miss L Feldberg (Liverpool)

**Introduction:** Injuries to extensor tendons of the hand are common. Compared with flexor tendon injuries there is very little evidence in the literature about the quality of results after repair or of other factors that might influence functional outcome. The aim of this study was to examine a large cohort of patients with extensor tendon injuries to see if there was any correlation between initial injury and prognosis.

**Methods:** We retrospectively collected data on 310 extensor tendon injuries. All injuries were treated to a standardised surgical repair and rehabilitation protocol and compared to a reliably matched control group. All patients were assessed on at least two occasions post-operatively, by a trained hand therapist. Total Active Motion (TAM) was calculated. Statistical analysis was performed on the data.

**Results:** There was a mean recovery of 59% of Total Active Motion by four weeks post injury, improving to 85% by nine weeks post injury. The strongest predictor of late poor outcome was early poor outcome. With regard to final range of movement (ROM), there was no correlation with age and gender

**Conclusions:** This study's findings identify a group of patients at high risk of poor outcomes following extensor tendon injury and enable us to potentially target specific early rehabilitation. It helps us understand the interrelationships between factors such as zone of injury, repair, rehabilitation and long-term clinical outcomes.

## 11 Volar plating for distal radius fractures - Do not trust the image intensifier when judging distal subchondral screw length

Mr D Park, Mr B Goldie (London)

**Background:** The use of the volar plate to treat distal radius fractures is increasing but despite the theoretical advantages of a volar approach, there have been reports of extensor tendon ruptures due to prominent screw tips protruding past the dorsal cortex. The valley between Lister's tubercle and the ulnar border of the radius makes it difficult to rely on fluoroscopy to judge screw length. Our aim was to quantify the dimensions of this "ulnar valley" and to demonstrate the danger of relying on intra-operative image intensification fluoroscopy to determine lengths of distal screws.

**Method:** We identified thirty-three patients with normal computed tomography (CT) scans (nine patients) or magnetic resonance images (MRI) scans (24 patients) of their wrists. We measured the depth of the valley between the tip of Lister's tubercle and the ulnar border of the distal radius. A line was drawn between the dorsal-most projection of Lister's tubercle and the dorsal-most projection of the radius at the ulna notch (L-U line). The distance between the deepest point of the "ulnar valley" and the point where it intersected the L-U line perpendicularly was defined as the "ulnar valley" (UV) depth.

**Results:** An "ulnar valley" was present in all CTs and MRIs reviewed. The average UV depth was 1.8mm (range 0.8 to 2.9mm). 39% of wrists had an "ulnar valley" depth of at least 2mm.

**Conclusions:** There was a consistent valley in the distal radius on all images examined. We demonstrate that standard lateral views or rotation of the forearm to obtain oblique views does not identify prominent screw tips and whatever the rotation of the forearm, screw tips protruding beyond dorsal cortex may look as if it is within the bone on the intra-operative image intensification fluoroscopic views, when in fact it is out. We caution against relying on fluoroscopy when judging the length of the distal subchondral screws.

12 **Step by step description of closed reduction and internal fixation of radial neck fractures in children**

Mr T Weerasuriya, Mr R Swaminathan, Dr N Pinto (Manchester)

Radial neck fractures are relatively uncommon injuries in children. The current operative fixation techniques involve the popular Metaizeau technique and a closed reduction technique, with minimum description in popular operative orthopaedic texts. We describe a technique where K-wires are used percutaneously to reduce the fracture and fix the head with a Metaizeau nail.

The technique described by us is a detailed step by step technique of:

1. How to identify the radial head by palpation and image intensifier?
2. How to position the K-wire to achieve reduction of the radial head and how to avoid damage to the posterior interosseous nerve in the process of positioning the K-wire?
3. How to maintain the radial head in reduction until the Metaizeau nail is passed to fix the head in reduction?

This technique involves the positioning of a K-wire in the angle between the displaced head of the radius and the fractured neck and using the K-wire as a lever and reducing the head into position and fixing the fracture with an intramedullary Metaizeau nail.

In a series of 53 children who had radial neck fractures in Sri Lanka and in the UK, we report 0% posterior interosseous nerve injury rates and 0% non-union rates. Six children out of 53 had malunion of the radial head which remodelled satisfactorily. The mean follow-up period of these children was six months and the age range of the children was between five and 14 years.

13 **Trends in surgical fixation for distal radius fractures**

Mr N Johnson, Miss S Vinay, Dr K McLean, Mr N Eastley, Miss L Cutler (Leicester)

**Aims:** To review the surgical treatment of distal radius fractures over a four-year period in a busy teaching hospital.

**Materials and Methods:** Theatre books were reviewed from 2007 until 2010 to capture all distal radius fractures treated operatively. Patient demographics, intervention and the grade of primary surgeon were recorded. Radiographs were reviewed to check the intervention performed and classify the fracture as intra or extra-articular.

**Results:** From January 2007 to December 2010, 679 distal radius fractures were treated operatively at Leicester Royal Infirmary. 396 were treated with volar locking plates, 219 with K-wire fixation, 60 buttress plates and four with external fixation. In 2007, 86 volar locking plates were used compared to 107 in 2010. K-wire fixation fell from 72 in 2007 to 53 in 2010. Of the 396 volar locking plates 283 fractures were intra-articular (71%). One hundred and seven of the 219 fractures treated with K-wires were intra-articular (49%). 206 (52%) of volar locking plate fixations were performed by hand and wrist consultants, 65 (16%) by upper limb consultants and 125 (32%) by other orthopaedic consultants. Fifty-two (13%) were carried out by specialist registrars alone. Nineteen K-wirings (9%) were performed by hand and wrist consultants, 14 (6%) by upper limb consultants and 186 (85%) by other orthopaedic consultants. 115 K-wiring procedures (53%) were carried out by registrars unsupervised.

**Conclusion:** With the advent of volar locking plate technology these implants have become increasingly popular, particularly for the treatment of intra-articular distal radius fractures. The increase in volar locking plate use seems to have been led by hand and wrist surgeons.

- 14     **Non-spanning mini-external fixation for unstable phalangeal fractures: Success with simplicity**  
 Miss C Middleton, Mr B Goldie (London)

**Introduction:** Phalangeal fractures account for 6–11% of all fractures. The choice of treatment for unstable fractures ranges from non-operative external traction, operative K-wires, or external and internal fixation. We present our results of static non-spanning mini external fixation (MEF) for unstable phalangeal fractures as a valuable method, with comparable long term results to other methods of fixation.

**Methods:** Twenty-eight patients who had non-spanning MEFs between 2000–2011 were retrieved from the senior author's database. Radiographs were reviewed for fracture pattern, bony alignment and MEF configuration. Fifteen patients completed a QuickDASH, a Pain Score for rest, activity and 30 minutes post-activity and range of movement (ROM) assessment. The surgical technique was daycare surgery under GA, with fracture reduction and fluoroscopic guidance of one distal and one proximal 1.8mm pin through a longitudinal incision through the extensor tendon, which allows for mobility of the finger. The MEF was removed at four weeks.

**Results:** Of the twenty-eight patients, 16 had comminuted and 12 simple fractures, six were intra-articular. One patient had an additional interfragment screw. The alignment was satisfactory in all cases. Of the fifteen patients available for review, the average Pain Score (out of a possible 10) was 0.27 at rest, 1.5 during activity and 0.47 30 minutes post activity. Eleven of 15 reported a full ROM. The average QuickDASH score was 5.75, for work 11.67, and for recreational activity 2.3.

**Conclusion:** Our results show that non-spanning MEF provides long term results which are comparable to alternate methods of fixation.

- 15     **Use of the Synthes mini-condylar plate for hand fracture fixation**  
 Mr R Simpson-White, Mr P Chapman, Miss C Edwards, Mr A Chojnowski (Norwich)

**Introduction:** A proportion of unstable peri-articular hand fractures benefit from operative stabilisation. These difficult injuries can be managed with the 1.5mm non-locking mini-condylar (blade) plate, although there is little published on the use of this device. The aim of this retrospective study was to evaluate the use and clinical results of this implant at our institution.

**Methods:** Seventeen fractures in 16 patients were identified between 2000 and 2010. Clinical records and radiographs were reviewed. The mean age of the patients was 41 (range 17–73). There were 15 proximal phalangeal fractures and two metacarpal fractures. Two procedures were for malunion correction, the others were for acute fractures (two open fractures). Five fractures were intra-articular.

**Results:** Mean follow-up time was 3.3 months (range 1–8). One patient was lost to follow-up. Of the remainder, we had three complications: one superficial wound infection, one collapse of a metacarpal head in the case of a distal, intra-articular fracture and one case of stiffness which did not respond to removal of the plate. Where radiographs were available, all fractures except the above case united without significant loss of position. Where hand therapy data was available (13 cases), mean arcs of motion at the metacarpophalangeal and proximal interphalangeal joints were 81° and 67° respectively.

**Conclusions:** This small series appears to show that the mini-condylar plate is a useful implant for fixation of peri-articular metacarpal and phalangeal fractures. If correctly used, it achieves satisfactory stability for difficult fractures, and has a complication profile similar to other hand plates.

16 **Functional outcomes in phalangeal fractures treated with the Suzuki frame**  
Miss J Piktunaite, Mr J Colville (London)

**Introduction:** The Suzuki frame has been described for the management of phalangeal fractures, however, published functional outcomes vary widely. We present our experience with the Suzuki external fixator.

**Materials:** All patients managed with a Suzuki frame over the last two years were identified and data collected on patients' demographics, mechanism of injury, complications and functional outcomes.

**Results:** Ten patients (7M:3F), with a mean age of 49.1 years (range: 21–82 years) were identified. Mean time from injury to surgery was seven days (range: 1–18 days). One patient had an extra-articular fracture and nine patients suffered intra-articular injuries. Two patients required bone grafting at the initial procedure. Mean follow-up time was 103 days (48–316 days), with physiotherapy starting 12 days post-operatively (4–28 days). All but one patient achieved bone union. Superficial infection, treated with oral antibiotics, occurred in four cases. Wire migration occurred in three cases. The mean total active range of movement of 160.7° was achieved, with the mean range of active movement at the affected joint being 61.2° (range of 20°–100°).

**Conclusion:** Our experience with the Suzuki frame for phalangeal fractures compares with the published literature. The Suzuki frame remains a viable option for the management of such challenging fractures.

17 **The flexible Asian hand**  
Mr M Shahid, Miss K Bourne, Miss S Mahroof, Mr F Wu, Mr M Lawson-Smith,  
Miss C Simpson Mr R Jose, Mr G Titley (Birmingham)

**Introduction and Aims:** The concept of the 'flexible Asian hand' is commonly mentioned amongst hand surgeons, yet has received little attention in the literature. It is thought that certain ethnic groups have a greater range of hand movements and do better post-operatively following hand injuries. Furthermore, many hand tendon rehabilitation protocols we use are based on the Caucasian population. This study looks to see if there is any difference in hand movements between ethnic groups.

**Materials and Methods:** One hundred and fifteen medical students were recruited and stratified based on gender and ethnicity (white and Asian British). All hand active finger movements were measured. Statistical analysis was done using univariate ANOVA. P values were calculated at the 1% level.

**Results and Statistics:** Out of one hundred and fifteen subjects, fifty-three were males and fifty-five were white.

- White male versus Asian male: comparing both, Asian males were more flexible.
- White male versus white female: there were nineteen hand movements where white males had significantly more flexibility.
- White female versus Asian female: Asian females had significantly more flexibility in over 70% of hand movements ( $p<0.001$ ).
- Asian female versus Asian male: comparing means, Asian females had higher values in 19/36 measurements. In total thirteen measures compared were statistically significant for a difference between them.

**Conclusion and Clinical Relevance:** These results demonstrate that there is a statistical difference in hand flexibility between Caucasians and British Asians. Hand surgeons/therapists need to appreciate that there is a variation in ethnicity and normal ranges of motion in order to maximise function after injury.

- 18      **The Swansea 'One-Stop' Carpal Tunnel Syndrome Clinic: A two-year review**  
 Mr A Bebbington, Mr D Russell, Mr D Newington (Swansea)

**Introduction:** Carpal tunnel syndrome (CTS) is a common condition prompting patient referral to hand clinics from primary care. The diagnosis by experienced general practitioners (GP) is often accurate prompting the establishment of a 'One-Stop' Clinic in Swansea for patients referred with a presumed diagnosis of CTS to be reviewed and treated the same day.

**Aim:** A two-year prospective series of patients attending between March 2010 and February 2012 was analysed.

**Materials and Methods:** 392 patients attended the clinic over this period and were seen by one of the hand surgeons at Swansea in the Surgical Day Unit. 315 patients then proceeded to surgery under local anaesthetic on the day of initial assessment and were then discharged back to the care of their GP with an 'open' Hand Clinic appointment should they wish to be reviewed.

**Results:** 207 women and 108 men were operated on with a mean age of 55 years (range 27–86). 129 patients had bilateral symptoms and were listed for 'other side' surgery 6–12 weeks after the initial operation on different day surgery lists. 77 patients (20%) did not proceed to surgery. 24 patients had resolving symptoms and were discharged, 29 cases were referred for neurophysiology and the remaining 24 patients were felt to have other diagnoses. Over 90% of patients were very satisfied with the process and the surgery had relieved their symptoms.

**Conclusion:** The Swansea 'One Stop' Carpal Tunnel Clinic model is a valuable and efficient method of treating patients with carpal tunnel syndrome.

- 19      **Palm itching in carpal tunnel syndrome**  
 Mr M Elnaggar, Mr S Ankarath (Huddersfield)

**Introduction:** Neuropathic itch is related to pathology located at any point along the afferent pathway of the nervous system. It could be related to damage to the peripheral or central nervous systems.

**Method:** A randomised, cross sectional, retrospective study in a day case surgery unit. A survey given on admission to 118 patients (confirmed to have carpal tunnel syndrome by clinical diagnosis and nerve conduction study) prior to carpal tunnel decompression, from May 2011 to August 2011.

**Results:** Sixty-two patients were found to have palm itching (51.2%). The 95 % confidence interval of this symptom in the study is 42.4 - 60.0.

	Yes	Total Asked	Percentage	Lower CI	Upper CI
Pins and needles 1st finger	86	118	72.9	64.2	80.1
Pins and needles 2nd finger	90	118	76.3	67.8	83.0
Pins and needles 3rd finger	97	118	82.2	74.3	88.1
Pins and needles 4th finger	70	118	59.3	50.3	67.8
Pins and needles 5th finger	48	118	40.7	32.2	49.7
Nighttime awakening	97	118	82.2	74.3	88.1
Weakness	95	118	80.5	72.4	86.6
Muscle wasting	28	118	23.7	17.0	32.2
Dropping objects	75	118	63.6	54.6	71.7
Itching in palm	61	118	51.7	42.8	60.5

**Discussion:** In Carpal tunnel syndrome, itchy palm symptom can be explained on the ground of sensory fibers involvement. Another explanation is, with the intermittent rise of pressure inside

the carpal tunnel, effect is on nerves, capillaries and small blood vessels with the release of neurotransmitters and chemicals that may act on receptors at the local site, skin or sensory receptors.

**Conclusion:** According to results, palm itching is frequently experienced in carpal tunnel syndrome.

**20 Accuracy of injection of the trapeziometacarpal joint - A cadaveric study**

Mr A Stevenson, Miss L Louther, Miss S Cumming, Mr D Clark, Mr R Amirfeyz (Bristol)

The trapeziometacarpal joint (TMJ) is the most commonly involved arthritic joint in the hand and is often injected in the outpatient setting. This study assesses the accuracy of TMJ injections.

Six pairs of thawed, fresh-frozen cadaveric upper limbs were placed in the anatomic position. The limbs were randomised to be injected by one of two clinicians (a senior and a junior orthopaedic trainee). The TMJ of these specimens was palpated and injected with 0.5mls aqueous jelly dyed with methylene blue. An independent investigator dissected the specimens and the location of the dye was recorded. A posterior-anterior radiograph was then taken to assess the bony anatomy of the joint and graded according to Eaton's classification.

Dye was found inside the joint capsule in ten (83%) of the twelve specimens. Using Fisher's Exact test no significant difference was found between the two injectors ( $p=0.46$ ). The two joints where the dye was extra-articular had grade III and IV arthritis, whereas all other joints were graded I.

This study shows that good accuracy of TMJ injection can be achieved using palpation in the earlier stages of TMJ arthritis, when surface anatomy is accurate enough for an intra-articular injection. This is also when synovitis is more prevalent and injections are more relevant. However the failure rate of injections increases as the disease advances.

**21 Roseland® arthroplasty for thumb carpometacarpal joint osteoarthritis: Patient outcome and satisfaction at an average of three years**

Mr T Mendes da Costa, Mr N Blewitt (Bristol)

**Introduction:** Thumb carpo-metacarpal joint (trapeziometacarpal joint) osteoarthritis is a common debilitating condition, particularly affecting elderly women. Multiple surgical options are available including trapeziectomy, interpositional arthroplasty, arthrodesis and joint replacement.

**Methods:** We report a retrospective review of twenty Roseland® trapeziometacarpal joint replacements (15 patients) with an average follow-up of 37.6 months using a quality of life questionnaire (DASH).

**Results:** Fifteen patients (13 female, two male) underwent Roseland® TMCJ arthroplasty, five bilaterally (total 20 prosthesis). Ten returned postal questionnaires, with five consenting to telephone completion. None were lost to follow-up. The average age of patients was 70.4 years (range 51–85 years), with an average follow-up time of 37.6 months (range 2–71 months). Ninety percent (18 of 20) were happy with the outcome of their operation with 85% (17 of 20) happy to recommend it to a friend or relative and who would have the operation again if needed. The average DASH score was 21.2 (Range 0–77). Eight prostheses (40%) scored under 10.1 (average population score). There were no cases of aseptic loosening, dislocation or infective complications. One patient developed chronic regional pain syndrome post-operatively, making a good recovery within three months with intensive physiotherapy. One patient required revision to trapeziectomy following trapezial fracture at 43 months, making an excellent recovery with a DASH score of 11.6 nine months post-operatively.

**Conclusions:** We recommend the use of the Roseland® (DePuy, Leeds, England) prosthesis for patients with grade III osteoarthritis of the trapeziometacarpal joint who are elderly or of low physical demand.

- 22 **Interpositional arthroplasties with Swanson prosthesis for osteoarthritis of the trapeziometacarpal joint - Early to mid-term results**  
Miss C Tsang, Mr E Avisar, Mr E Sorene (London)

**Introduction:** The trapeziometacarpal joint (TMJ) is the site most frequently requiring surgical intervention for osteoarthritis in the hand. There is a lack of consensus regarding the best treatment modality. Over the past decade, prosthesis instability has led to the lesser use of silicone implants. Our unit performed over fifty TMJ reconstructions combining the techniques of trapeziectomy, formation of a Weilby sling utilising flexor carpi radialis, stabilising the trapezial silicone implant, with good results and high patient satisfaction.

**Methods:** Results of fifty-four consecutive cases are presented. Patients with Eaton stage III and IV disease were recruited between 2008 and 2011. All procedures were performed by the senior author. The mean duration of follow-up was 12 months.

**Results:** The mean age at time of surgery was 63 years (range 45–82 years). 77% were female. Six patients elected for bilateral procedures, accounting for 22% of cases. Prosthesis subluxation occurred in two out of 53 cases, where implants were subsequently removed. Prosthetic instability was noted intra-operatively in two cases, deeming the patients unsuitable for the described procedure. First metacarpal base subluxation were pronounced in both cases. The technique was also successfully performed following removal of an Artelon spacer from previous TMJ reconstruction. There was no post-operative morbidity at time of follow-up.

**Conclusion:** The early to mid-term results of this technique are encouraging in the management of Eaton stage III and IV osteoarthritis of the TMJ. Silicone implant may remain a recommended option for treatment of TMJ osteoarthritis when surgical technique is carefully considered.

- 23 **Level of evidence in hand surgery**  
Miss M Griffin, Mr S Newman (Kingston)

**Introduction:** Evidence based medicine (EBM) is a highly desirable aspect of clinical practice, designed to ensure that patients receive the best possible care. EBM involves the use of the best available evidence, with better designed studies providing higher quality information. We wished to assess the quality of evidence currently being produced in hand surgery.

**Method:** Clinical studies relevant to hand surgery between January and June 2012 were identified from the three dedicated hand surgery journals listed on the ISI Web of Science. The top five general orthopaedic and plastic surgery journals, as ranked by Impact Factor, were also assessed. Non-clinical studies, case reports and non-systematic review articles were excluded. Studies were then appraised by two independent reviewers and allocated a level of evidence (I–IV) based on the system used by the Journal of Bone and Joint Surgery. Disagreements were resolved through discussion.

**Results:** Ninety-six studies were identified from the literature of which 86 were published in a dedicated hand surgery journal. A further six studies were found in the highest ranked orthopaedic journals with four in the highest ranked plastic surgery journals. Of the published studies, 9% were level 1, 12% were level 2, 16% level 3 and 63% level 4. No studies in non-hand surgery journals were higher than level 3.

**Conclusions:** The majority of studies published in the field of hand surgery are of low methodological quality. Most studies relating to hand surgery are published in dedicated journals rather than the general orthopaedic or plastic surgery literature.

- 24 A novel management strategy for dog bite injuries: Classification and cost assessment  
Mr O Onyekwelu, Mr A Reid, Professor D A McGrouther (Manchester)

**Aims:** To describe the injury patterns, severity, and treatment costs associated with dog bites.

**Methods:** A retrospective cohort study of seventy patients with dog bites to the hand, wrist, and forearm was undertaken using data collected from hospital records under the International Classification of Diseases (ICD-10) diagnostic code W54.0–9. Non-parametric tests were undertaken, using the Independent-Samples Kruskal-Wallis test within the SPSS package.

**Results:** We describe two distinct mechanisms that resulted in differing injury patterns - puncture bites treated by debridement (eight patients or 11.43%) with primary closure (46 patients or 65.71%); avulsion injuries required fracture fixation (five patients or 7.14%), neurosynthesis (two patients or 2.86%), and tendon repair (one patient or 1.43%) as well as skin grafts (six patients or 8.57%), or flaps (two patients or 2.86%). Higher treatment categories were associated with increasing length of stay (p-value 0.031), numerous trips to theatre (p-value 0.019), with a longer duration of intravenous antibiotics (p-value 0.05), many of which were in cases of proven wound infection. These patients were more compliant with outpatient occupational therapy (p-value 0.009).

**Conclusions:** We identify puncture or avulsion mechanisms of dog bite injuries with separate management strategies. All patients with avulsion injuries should be referred to a plastic surgery unit for reconstruction and subsequent outpatient rehabilitation.

TREATMENT CATEGORY							Total n (%)
	Debridement only n (%)	Debridement and closure n (%)	Fracture fixation n (%)	Nerve repair n (%)	Tendon repair n (%)	Skin graft coverage n (%)	Flap coverage n (%)
No. of cases	8 [11.43%]	46 [65.71%]	5 [7.14%]	2 [2.86%]	1 [1.43%]	6 [8.57%]	2 [2.86%]
Age [years]							70 (100%)
Mean	33.88	42.8	41.4	45.5	24	50.67	47
Range	19 - 64	7 - 84	24 - 69	19 - 72	24	20 - 74	30 - 64
Gender							42.29
Male	7	26	2	1	1	2	1
Female	1	20	3	1	0	4	1
Delay to presentation (days)							
Mean	0.63	0.28	2.6	0	0	0	0.44
Range	2	3	10	0	0	0	10
Number of wounded areas							
Single	3	16	2	0	0	2	1
Multiple	5	30	3	2	1	4	1
Length of stay (days)							
Mean	2.88	4.2	5.2	2	7	11.67	10.5
Range	4	43	12	0	0	17	15
Number of trips to theatre							
Mean	1.13	1.2	1.8	1	1	2.67	1.5
Total theatre time (minutes)							
Mean	32.29	46.17	74.6	27.5	80	112.7	57.5
Range	15 - 69	10 - 130	45 - 168	25 - 30	80	35 - 238	45 - 70
Duration of intravenous antibiotics (days)							
Mean	2.25	2.67	4.2	2	7	7.33	5
Range	4	8	10	2	0	10	4
Outpatient Hand Therapy							
Percentage attendance	2 [25%]	13 [28.3%]	5 [100%]	2 [100%]	1 [100%]	2 [33.3%]	2 [100%]
Percentage non-attendance	6 [75%]	33 [71.7%]	0%	0%	0%	4 [66.7%]	0%
Healthcare Resource							
Group value per patient episode (£)	1,211	1,158 - 1,823	4,381	4,554	5,433	4,336 - 6,064	1,909

**25 Space of Parona infections: Our experience in its management and outcomes**  
Miss K Sharma, Mr K Rao, Dr E Karagergou, Mr M Hobson (Sheffield)

**Background and Aims:** Space of Parona (SOP) infection is a rare, but potentially limb threatening complication of flexor tendon sheath infections. The purpose of this study was to review our experience in the management of SOP infections in the Sheffield Hand Centre and to study its presentation and outcomes.

**Method:** Data was collected retrospectively over three years for confirmed SOP infections, which was determined post-operatively if pus was present in this space. The following parameters were analysed: patient demographics, presentation, microbiology, surgical management and outcomes, which included the final active range of motion of the primary affected finger using the modified Strickland Score.

**Results:** There were nine confirmed SOP infections. 78% (7/9) reported a history of trauma. The thumb (7/9) followed by the little finger (2/9) were primarily involved in all cases. 78% presented with symptoms of acute median nerve compression in addition to forearm tenderness. Patients had a mean of two (1–5) visits to theatre for washout and debridement. Positive swabs were present in 89% (8/9) of cases of which 63% (5/8) of patients cultured  $\beta$  haemolytic streptococcus species. Average hospital stay was six days (3–12) and final active range of movement of the affected finger ranged from 0 to 95%.

**Conclusion:** Patients with flexor tendon sheath infections of the thumb or little finger should always be suspect for spread into the SOP. Early antimicrobial therapy directed particularly at  $\beta$  haemolytic streptococcus combined with aggressive surgical management and physiotherapy are critical to functional outcome.

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

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

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

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

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

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

27 **Technology 'app'-lied to patient reported outcomes**

Miss K Sharma, Miss K Steele, Miss P Muthayya, Mr S Alexander, Mr W Leon,  
Mr J G Miller (Sheffield)

**Introduction:** Patient outcomes and experiences are best determined subjectively and Patient Reported Outcome Measures (PROMs) are vital healthcare indicators in today's NHS. The Department of Health advocates a combination of site-specific and generic domains in assessing the value of any intervention to overall health status. Paper-based questionnaires are fraught with acceptability issues and require dedicated personnel and resources. We aim to share our experience of developing and implementing a novel iPad application-'PROMappS-Hand' (Patient Reported Outcome Measures application Sheffield) for routine use in a dedicated hand unit.

**Methods:** We have previously confirmed the POS-Hand/Arm to be a responsive and valid site-specific PROMs tool for hand surgery. We incorporated the POS-Hand/Arm, with generic (EQ-5D and HowRU) and experience (HowRwe) domains into a user-friendly iPad application, the 'PROMappS-Hand'. Patients completed the electronic survey pre- and post-operatively and data was transferred electronically to a database. Completeness of data and ease of administration was compared to a previous patient cohort that utilised a comparable paper-based questionnaire.

**Results:** Implementation of 'PROMappS-Hand' guaranteed a near-complete dataset and enabled immediate visualisation of results. In contrast, the paper-based version achieved a 46% completion rate and required additional administrative support. The iPad application streamlines data collection, retrieval and analysis for research and audit purposes within our department.

**Conclusions:** This study demonstrates the integration of modern technology for sustainable patient-centred evaluation of hand surgery. In collaboration with other hand units 'PROMappS-Hand' enables benchmarking and has great potential to improve future quality of care and patient experience in hand surgery.

28 **Online consent for day case hand surgery**

Mr D Murray, Mr T Yarashi, Mr K Hinduja (Manchester)

**Introduction:** Consent constitutes an essential part of surgery. Patients should understand procedures and complications prior to consenting. Increased pressures, overloaded clinics and increased theatre cases can lead to less time for adequate consent. An adjunct, to improve understanding, may be an online interactive programme, patients can view prior to admission.

**Aims:** Prove an increase in understanding of risks and satisfaction with consent for day case hand surgery, by providing a procedure specific, user friendly, online consent programme.

**Methods:** Thirty patients undergoing carpal tunnel decompression used the programme (author designed), prior to traditional consenting. The programme was on a tablet device (Apple ipad®). Audiovisual video with animated surgical sequences was included, explaining benefits, risks and highlighted main complications. Immediately prior to procedure patients were asked to recall main complications. Patients answered questions relating to satisfaction and compared the interactive consent with traditional consent.

**Results:** 80% preferred online consent compared to traditional consent. 70% felt more information was provided. 80% would prefer online consenting for future surgery. Recollection of risks was higher in patients using online consent, compared with traditional consent. Elderly patients had reservations, including home availability and problems using the programme.

**Discussion:** Internet access is expected in most households by 2020. We feel, and results show, interactive consenting methods to be an excellent adjunct and may even replace traditional methods in the future. This may reduce time in clinics explaining procedures. Results show increases in understanding and risk recollection using online consenting. For elderly patients, this method may have flaws.

- 29 **Management of trigger fingers: Do we need to revise the BSSH guidelines?**  
Dr A Navaratnam, Miss B De Souza (London)

**Introduction:** Trigger finger is a common hand condition and if managed well results in symptom resolution for the patient. The BSSH guidelines recommend: splintage, analgesics, steroid injections and surgery for trigger fingers. This study followed the BSSH guidelines in a tertiary hand management unit.

**Methods:** In this retrospective study, patients presenting with trigger finger between April 2008 and January 2012 were identified. Demographic data, risk factors, disease severity and details of management including analgesics, number of steroid injections and surgical treatment were recorded.

**Results:** One hundred and fifty-nine patients (201 digits) were identified, 64 males and 95 females, mean age 60 years (range 24–91 years). Anti-inflammatory analgesics alone provided successful treatment for 21 digits, of which five were from diabetic patients (DM) and one from a patient with Dupuytren's disease (DD). After a single steroid injection, symptom resolution occurred in 106 digits including seven DM, 12 from patients with carpal tunnel syndrome (CTS) and two DD. Single steroid injection was successful in significantly fewer DM digits (seven out of 20) than non-DM digits (99 out of 162) (OR 2.92, CI 1.10, 7.71,  $p = 0.03$ ). After a second steroid injection, symptom resolution occurred in 29 digits, including five DM, two CTS and three DD. Surgery was carried out in 45 digits including seven DM, five CTS and one DD.

**Conclusion:** We advocate the BSSH guidelines for trigger finger management and suggest anti-inflammatory analgesics as an option for first line treatment. We also suggest a low threshold for immediate surgical treatment in diabetics.

- 30 **Functional outcome and re-operation rate after proximal interphalangeal joint (PIPJ) arthroplasty comparing volar and dorsal surgical approaches**  
Mr M Ibrahim, Mr A Khan, Mr I Chakrabarti (Rotherham)

**Introduction:** Osteoarthritis (OA) and post-traumatic arthritis (PTA) of the PIPJ cause pain, stiffness and deformity; this can be improved by PIPJ arthroplasty through a volar (VA) or dorsal approach (DA). We compared the post-operative outcomes and the re-operation rate of these approaches.

**Methods:** All patients who underwent total PIPJ arthroplasty, using the Ascension Pyrocarbon, LPM Accis or DGT prostheses, over a ten-year-period were reviewed by an independent observer. Functional outcomes and re-operation rates were assessed.

**Results:** There were twenty replacements in 15 patients (mean age, 57.4). Average follow-up was fifty months. The VA was used in eleven joints and the DA in nine. Eleven had OA, three had PTA and one had a mixed rheumatoid/osteoarthritic picture. The mean range of movements decreased from 57° to 30° in the VA group ( $p=0.13$ ) and increased from 31° to 36° in the DA group ( $p=0.56$ ). The mean post-operative pain scores were similar: 3 for the volar and 3.2 for the dorsal group. Five patients in the former had a re-operation versus one in the latter. The mean DASH score was 49.10 for the VA group and 48.12 for the DA. This was not statistically significant. This held true when the results for the Pyrocarbon prosthesis were analysed separately. The re-operation rate in the volar group was 63%.

**Conclusions:** The dorsal approach for PIPJ replacement produces a better outcome than the volar approach.

- 31     **Functional outcome and re-operation rate after total proximal interphalangeal joint arthroplasty: Do patients with osteoarthritis have greater benefit than those with rheumatoid arthritis? - A systematic review**  
 Mr M Ibrahim, Mr I Chakrabari (Rotherham)

**Introduction:** Osteoarthritis (OA) and rheumatoid arthritis (RA) can affect the PIPJ in the hand causing pain, stiffness, weakness, destruction, instability and deformity, which can be disabling. Total PIPJ arthroplasty can provide pain relief, functional range of movement (ROM), stability, durability, improvement in function and deformity reduction. Controversy exists in the literature regarding the outcome of different types of prostheses in relation to aetiology. We aimed to systematically review existing English literature to answer our question. We hypothesised OA patients have greater functional benefit than RA patients.

**Methods:** Systematic review of the English literature was conducted. Electronic healthcare databases searches revealed seventeen eligible studies (case series) for final review and data extraction. The primary outcome measure was function. Secondary outcome measures were grip strength, pain, ROM and re-operation rate. Data was non-homogenous which led to a narrative synthesis of conclusions.

**Results:** Twelve studies reported on the post-operative ROM and revealed a trend favouring OA patients compared to their rheumatoid counterparts. OA patients were more satisfied than the rheumatoid group with a tendency to have a better function. Two studies showed a better grip strength obtained with OA joints compared to RA. Better pain relief was expressed by OA patients in four studies. Regarding re-operation rates, the results are in favour of OA with higher re-operation rates in RA.

**Conclusion:** This systematic review supported our hypothesis. Osteoarthritic patients have a tendency to obtain better functional results than rheumatoid patients with total PIPJ arthroplasty. More prospective higher level evidence is needed.

- 32     **Audiovisual distraction as an adjunct to anxiety relief in hand surgery with regional anaesthesia**  
 Mr F Wu, Mr M Shahid, Mr M Lawson-Smith, Miss S Hayward, Mr M Leonard, Dr G Rees, Mr M Waldram (Birmingham)

**Introduction:** Patients undergoing hand operation under regional anaesthesia commonly experience an element of anxiety. Distraction techniques may help to alleviate anxiety levels before and during such procedures. This study aims to report the effects of using iPads as audiovisual distraction tools on the anxiety levels of patients undergoing elective and traumatic hand surgery.

**Method:** In a randomised controlled trial (N=60), patients undergoing elective and trauma hand surgery under regional anaesthesia were allocated to receive iPads and standard care or standard care alone. Anxiety was evaluated subjectively by the patient with a visual analogue scale (VAS) and objectively by heart rate, respiratory rate and blood pressure monitoring. The measurements were taken pre-operatively, intra-operatively and post-operatively in recovery. The unpaired T-test was used to evaluate the statistical significance of differences between the groups.

**Results:** The mean pre-operative VAS scores for anxiety were similar in both groups (22 in patients with iPads, 24 in patients without iPads). Intra-operatively, patients without iPad distraction experienced higher anxiety and respiratory rate compared to patients with iPads (VAS: 39 vs 16, RR: 14 vs 12 breaths per minute). Post-operatively, patients without iPads remained with higher anxiety (VAS: 41) than patients with iPads (VAS: 16). There was no significant difference in heart rate and blood pressure between the two groups.

**Conclusion:** This study demonstrates iPads are useful audiovisual distraction tools for the alleviation of anxiety of patients undergoing regional anaesthesia during hand surgery. We recommend such devices are made available to patients to reduce anxiety during such procedures.

- 33 **Oxygen supplementation reduces tourniquet associated pain (ReTAP) - A double-blind randomised controlled trial to improve patient experience of hand surgery**  
Dr N White, Dr T Dobbs, Mr G Murphy, Mr K Khan, Miss L Cogswell (Oxford)

**Introduction and Aims:** Upper limb tourniquets provide a near-bloodless field during hand surgery. However, when used for local anaesthetic procedures tourniquets are frequently painful, limiting the length of procedure undertaken and increasing patient morbidity. The ReTAP study aimed to investigate whether oxygen supplementation could reduce tourniquet associated pain and extend tourniquet tolerance time (TTT).

**Materials and Methods:** ReTAP was a double-blind, randomised controlled trial of healthy adult volunteers. Participants received either 50% inhaled oxygen or air placebo for three minutes prior to tourniquet inflation and for up to 30 minutes while wearing an upper arm tourniquet inflated to 250mmHg. Pain scores were recorded at two minute intervals using a validated 100mm Visual Analogue Scale (VAS). The primary outcomes were (1) difference in VAS and (2) difference in TTT.

**Results and Statistics:** Fifty participants were enrolled and, after exclusion criteria were applied, 46 were analysed. Oxygen supplementation was associated with a 28.5% mean reduction in VAS compared to placebo over the entire period of inhalation ( $p=0.024$ ; T-test). Oxygen also extended TTT by a mean of one minute compared to placebo ( $p=0.541$ ; T-test), although in both groups >69% of subjects reached the maximum TTT, so differences beyond 30 minutes could not be assessed.

**Conclusions and Clinical Reference:** Oxygen is a readily available, low risk and low cost treatment that significantly reduced tourniquet associated pain in this study. It therefore has the potential to improve patient morbidity for hand surgery under local anaesthesia. Further work is required to establish whether oxygen could facilitate longer procedures without the need for general anaesthesia.

- 34 **The forearm adipofascial perforator flap a versatile reconstructive option**  
Mr M Lawson-Smith, Miss C Simpson, Mr U Anwar, Mr S Tan, Mr R Jose, Mr V Rajaratnam, Mr D Power (Birmingham)

**Introduction:** The adipofascial perforator flap is based on the reliable perforator anatomy of the axial vessels in the forearm. The flap is mobilised on a perforating vessel from a main axial artery that is identified with intra-operative Doppler. The flap may be used in a number of loco-regional configurations without sacrifice of a main axial vessel. These include to reconstruct composite tissue defects, resurface nerves following repair or revision of decompression and to interpose as a barrier following surgery for synostosis.

**Methods:** A consecutive series of adipofascial flap reconstructions were identified from a twelve-month period at the Birmingham Hand Centre. The cases were reviewed and complications and final outcome assessment recorded.

**Results:** Eleven cases were identified. In four cases the flap was used to resurface a nerve following revision decompression surgery, one case for scarring following a nerve repair, four cases for interposition following radio-ulnar synostosis surgery and one case for covering the exposed carpal bones in a soldier following a blast injury. A single case was complicated by a post-operative haematoma which was subsequently evacuated without further incident.

**Conclusion:** The adipofascial perforator flap is a reliable and versatile local option without the need to sacrifice a main forearm axial vessel.

- 35 **The application of bridge distraction osteosynthesis technique for periarticular fractures in the hand**  
Mr M Lawson-Smith, Miss C Simpson, Mr U Anwar, Mr F Wu, Mr M Shahid, Mr S Tan, Mr R Jose, Mr D Power (Birmingham)

**Introduction:** Fixation of comminuted intra-articular fractures in the hand and wrist is often more difficult when compared to long bone fractures. In the setting of comminuted periarticular

fractures there is not always unaffected bone to achieve skeletal stability. The distraction technique in which a plate is fixed to unaffected bone on the other side of the joint has previously been described in the wrist. We have applied this technique to both hand and wrist fractures not amenable to more traditional fixation.

**Methods:** A consecutive series of distraction plating reconstruction from the Birmingham Hand Centre database were reviewed.

**Results:** Ten cases of distraction plating were identified. Indications for surgery included comminuted fractures of the wrist joint, carpal metacarpal joints, PIPJ, DIPJ and thumb. All fractures united. No patients went on to develop joint arthrosis. No patients required salvage surgery in the form of joint arthrodesis.

**Conclusions:** The distraction plating technique preserves soft tissue whilst stabilising the fracture to allow bony union. Here, the plate acts as an internal external fixator. By preserving the joint surface, on removal of the metalwork the patient maintains range of motion which would otherwise be lost with a primary joint fusion. Distraction plating allows restoration of length and rotation in the setting of limited bone stock.

- 36     **The 'carpal shoot through view': Identification of dorsal screw penetration with volar locking plate fixation of distal radius fractures**  
Mr D Marsland, Mr C Hobbs, Mr P Sauvé (Portsmouth)

**Introduction:** Extensor tendon rupture and tendon synovitis following volar plating of distal radius fractures are recognised complications of volar plating secondary to dorsal compartment screw penetration. Recent studies have reported that standard intra-operative fluoroscopy is unreliable for recognising excessive screw length, because screw tips are often hidden by Lister's tubercle. We report our experience using a 'carpal shoot through view' of the distal radius to identify dorsal compartment screw penetration intra-operatively when performing volar plating of the distal radius.

**Methods:** A prospective study of twenty-six patients (mean age 60 years) with acute distal radius fractures was undertaken. Fractures were classified according to the AO classification as types 23A ( $n=4$ ), 23B ( $n=1$ ) and 23C ( $n=21$ ). Surgical fixation was performed using a Medartis volar locking plate in 25 patients and a T locking plate in one patient. In seven patients an additional lateral plate was used. Intra-operatively, after application of the plate(s), standard anteroposterior (AP) and lateral radiographs were taken, followed by the carpal shoot through view.

**Results:** In six cases (23%), the carpal shoot through view identified screws penetrating the dorsal compartment, which was not apparent on standard AP and lateral fluoroscopy views. In five of the six cases in which long screws were identified, intra-operative screw exchange was performed.

**Conclusion:** The carpal shoot through view is a valuable and reproducible adjunct for volar plating of the distal radius and helps to identify dorsal compartment screw penetration intra-operatively, potentially reducing the risk of extensor tendon injury.

- 37     **The long-term outcomes of Zone 1 flexor tendon injuries treated using micro bone anchors**  
Mr S Huq, Mr S George, Mr D Boyce (Swansea)

**Aim:** To evaluate the long-term outcome of zone 1 flexor tendon injuries treated using micro bone anchors placed in the distal phalanx.

**Methods:** During the period of 2003 to 2008, forty-one consecutive patients with Zone 1 flexor tendon injuries were treated using Mitek micro anchors. The tendons were sutured using a modified Bunnell pattern using 3–0 braided suture (Ethibond). The range of motion (ROM), Quick-DASH score, patient satisfaction and complications were recorded. The mean follow-up period

was 62 months and Moiemen and Elliot's classification was used to assess distal interphalangeal joint (DIPJ) ROM.

**Results:** Based on Moiemen and Elliot's classification, 54% of patients achieved excellent or good outcomes and 24% had poor results. The mean DIPJ and PIPJ ROM were 48.1° and 95.9° respectively with a mean flexion contracture of 8.6° at the DIPJ. The mean QuickDASH score was 12.7 with 80% of patients satisfied with their outcomes. 94% of patients returned back to work by twelve weeks. There was one tendon rupture, one superficial infection, one case of osteomyelitis and no cases of joint penetration by the anchors.

**Conclusions:** This is the largest long-term clinical study evaluating the outcomes of Zone 1 tendon injuries treated with bone anchors. It is a relatively simple technique to learn and avoids the potential complications associated with the pullout button technique. Our study demonstrated a low rate of complications and outcomes that compare favorably with other published techniques.

**38 Ultrasound scanning in follow-up of flexor tendon repairs**  
Dr F Marlborough, Mr M Bisson, Mr J Armstrong (Livingston)

**Introduction and Objectives:** Ultrasound scanning (USS) in diagnosing flexor tendon re-ruptures post repair is an area that has not been researched widely. We aimed to discover if USS could be a useful tool in follow-up of flexor tendon repairs. Specifically, diagnosis of post-operative tendon re-rupture was something we focused on.

**Method:** Over four weeks, all patients attending clinic having undergone flexor tendon repair were imaged. Two operators, FM (junior doctor) and JA (consultant plastic surgeon) visualised the scans. Data were recorded on injury method, time since repair, range of movement, volar-dorsal tendon thickness at repair site and at the corresponding undamaged tendon at the same zone on the contralateral hand.

**Results:** Sixteen patients were included, with 19 repaired tendons scanned. Longitudinal fibres glided within easily visualised healthy flexor tendons. Repaired tendons appeared thickened, and suture material was often visible on USS. Mean thickness was 4.2mm in repaired tendons versus 3.6mm in healthy counterparts (statistically insignificant). In two patients who demonstrated a lower range and power of flexion than expected at their stage post repair, USS confirmed sliding motion of the tendon, aiding to exclude rupture.

**Conclusion:** In patients who neither have clinical evidence of total tendon division nor full range of flexion suggesting successful repair, USS can prove useful in confirming or excluding re-rupture. As a quick, real-time modality it could be used in outpatient settings. Limitations include operator dependency and wound pain from pressure applied by the ultrasound probe.

**39 Early results of a multidirectional angular stable locking plate for 4 corner fusion of the degenerative wrist joint**  
Miss C Simpson, Mr M Lawson-Smith, Mr M Shahid, Mr M Waldram, Mr M Craigen, Mr D Power (Birmingham)

**Introduction:** Scaphoidectomy with four-corner fusion of the carpal bones is a well recognised management option in the degenerative wrist joint where it is desirable to preserve some wrist motion. Multiple fixation options have been attempted over the previous decades, from K-wires to staples, screws and plates. More recently, multi-directional angular stable plate osteosynthesis has been introduced, adding to the diversity of choice available to the modern hand surgeon. We present the preliminary results of the use of the Medartis APTUS® Four-Corner Fusion Plate in a tertiary referral hand centre.

**Methods:** A retrospective review of the five cases undergoing use of the Medartis APTUS® Four-Corner Fusion Plate was performed. Indications for surgery, associated procedures, and pre-operative radiographic deformity were reviewed. Time to union, complications and need for further surgery were assessed.

**Results:** The plate has been used successfully in all cases resulting in intercarpal fusion. There have been no incidences of dorsal plate impingement. No patient has required removal of the metalwork. Broken screws were seen in one case. All patients were satisfied with the outcome of their surgery.

**Discussion:** The rational of use of this particular plate will be discussed, in particular it's unique design features. The risk of dorsal impingement of the plate is minimised by seating it below the surface level of the bone. One of the attractive features of the plate is incorporation of both cortical and multi-directional locking screws, allowing compression of the carpus before application of angularly stable fixation.

- 40 **Plain radiograph vs arthroscopy in assessment of arthritic change in scapholunate ligament injury: Does arthroscopy lead to a change in management?**  
Mr S Masud, Mr A Bebbington, Mr D Newington, Mr D Russell (Swansea)

**Introduction and Aims:** Scapholunate ligament injury, if left untreated, inevitably leads to a predictable pattern of degenerative change: SLAC wrist. The radiolunate joint is thought to be universally spared. Treatment is based on staging of the condition, traditionally done using plain radiographs. In our unit patients undergo arthroscopy to assess the joint surfaces prior to definitive treatment. Does arthroscopy lead to a change in management compared with using radiographs alone? Is the radiolunate joint always spared in this condition?

**Methods:** Retrospective review of all wrist arthroscopies performed since 2003 to identify patients with complete disruption of scapholunate ligament. Blinded staging of SLAC changes on radiographs was carried out. X-ray and arthroscopic findings were correlated to see if the resulting definitive management differed.

**Results:** Two hundred and seventy-seven consecutive wrist arthroscopies were reviewed, of which 34 had complete disruption of the scapholunate ligament and plain radiographs available. Mean age was 45 years (22-70years). Twenty-two patients had normal radiographs, but three had significant radioscapoid degenerative change at arthroscopy, making them unsuitable for ligament repair/reconstruction. Twelve patients had evidence of SLAC changes on plain radiograph, with sparing of the radiolunate joint. However, at arthroscopy, six had significant degenerative change involving the radiolunate joint, making them unsuitable for scaphoidectomy and four-corner fusion and necessitating denervation/total wrist fusion.

**Conclusions:** Arthroscopy led to a change in management in nine out of 34 patients. The radiolunate joint is involved in SLAC wrist, despite normal X-ray appearances. We recommend that all cases of scapholunate ligament injury/SLAC wrist undergo diagnostic arthroscopy prior to definitive management.

- 41 **Diagnostic accuracy and usefulness of 3 Tesla MRI scan in assessment of scapholunate ligament injury and triangular fibrocartilage complex tears**  
Mr S Masud, Mr A Bebbington, Mr D Newington, Mr D Russell (Swansea)

**Introduction:** Soft tissue injuries of the wrist are common and can be difficult to diagnose clinically. MRI scan is useful for assessing wrist pathology but the sensitivity and specificity of 1.5 Tesla scanners has been only moderately good for identifying scapholunate ligament injuries (SLLI) and triangular fibrocartilage-complex (TFCC) tears. Since March 2008 a 3 Tesla MRI scanner, with a dedicated wrist coil, has been available at our institution offering more detailed and higher resolution images with the potential for improving diagnostic accuracy. The aims of this study were to assess the diagnostic accuracy and usefulness of 3T MRI for SLLI and TFCC tears when compared with the gold standard of wrist arthroscopy.

**Methods:** All 3T MRI scans of the wrist, reported by full-time MSK radiologists, were retrospectively reviewed and findings were compared with those at arthroscopy. The sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of 3T MRI were then calculated.

**Results:** Forty-five 3T MRI scans were performed. Five had longer than 12 months between the scan and arthroscopy so were excluded. One patient had no notes available. For SLLI 3T MRI had sensitivity of 71%, specificity 80%, PPV 67%, and NPV 83%. For TFCC tears 3T MRI had sensitivity of 70%, specificity 67%, PPV 92%, and NPV 29%.

**Conclusions:** 3T MRI scan has much improved sensitivity over 1.5T MRI for diagnosing SLLI and TFCC tears. It is equivalent to previous reported sensitivities of 1.5T MR arthrogram, with the added benefit of being non-invasive.

#### 42 Radiographic assessment of the thumb

Dr G Phoenix, Mr N Penney, Mr S Ball, Mr G Becker (London)

**Introduction:** A plain radiograph is commonly the initial imaging modality following acute trauma to the thumb and for elective indications such as carpometacarpal joint osteoarthritis. Its adequacy is dependent upon correct radiographic projections and in turn dependant on accurate clinical request information.

**Aim:** Consecutive anterior-posterior (AP) thumb radiographs taken in our hospital were assessed against a 'Roberts' thumb view, widely accepted as the gold standard of an AP thumb radiograph.

**Method:** Retrospective analysis of one hundred consecutive thumb radiographs was made by two independent assessors (NP and GP) for request quality and imaging adequacy, with differences arbitrated by SB. Fifty consecutive thumb radiographs were assessed post-intervention, which included educational talks to the requesters and radiographers.

**Results:** Audit: male-to-female ratio was 1:0.6. The mean age was 43 (range 18–95) years. There were 59 right and 41 left thumbs. Suspected pathological area was specified in 64 of the requests. The majority of radiographs were inadequate ( $n=33$ , 51.6%).

Re-audit: Male-to-female ratio was 1:0.7. The mean age was 48 (range 18–93) years. There were 28 right and 22 left thumbs. The specific joint / bone in the thumb were specified in most cases ( $n=40$ , 80%). Less films were considered inadequate ( $n=18$ , 36%).

**Conclusion:** The majority of AP thumb radiographs performed within our Trust, both in terms of request detail and views obtained, were inadequate (51.6%). However, following educational talks to both requesters and radiographers, adequacy improved by 15%. We would encourage all surgeons to assess the adequacy of their own imaging against the Roberts view.

#### 43 Infantile fibrosarcoma of the upper limb mimicking a vascular lesion

Miss K Dhaliwal, Mr F Andreas, Miss G Smith (London)

**Background:** Congenital infantile fibrosarcoma (CIF) is the commonest soft tissue tumour in those under one year of age. Initial presentation may mimic a haemangioma.

We present a case of CIF in the hand of a full-term male baby. He presented at birth with a red swelling on the volar aspect over the middle phalanx of the left ring finger. Within hours it grew from pea size to encompassing the whole finger and involving the palm. Due to its rapid expansion it was initially thought it was a vascular lesion. However, its atypical appearance prompted an urgent biopsy that diagnosed CIF. MRI revealed a subcutaneous mass encompassing the left ring finger to the level of the distal interphalangeal joint, extending into the radial border of the base of the little finger and distal palm at the level of the ring finger.

**Method and Results:** Initial consultation suggested that amputation would produce the best aesthetic and functional result. Following MDT discussion, it was decided to give neoadjuvant chemotherapy, followed by surgical resection. En bloc resection consisted of ring finger amputation, resection of the lesion from the palm including the common digital artery to the 4th web, interossei in 3rd and 4th webs and the radial aspect of little finger with local flap reconstruction to close the defect. No further treatment was required and hand function remains excellent.

**Conclusion:** The case highlights the importance of having a high index of suspicion regarding infantile vascular lesions. Such patients require specialist multidisciplinary management.

- 44 **The management of post-axial polydactyly (type B) in neonates: The Coventry and Warwickshire experience**  
Mr Z Ahmad, Mr A Park (Coventry)

The authors present their experience of the surgical management of accessory digits in neonates during a six-year period (2006–2012). During this period a total of 83 cases were operated on using local anaesthetic only when neonates were less than 8–10 weeks old. Through close relations with the local paediatricians this pathway enables prompt and appropriate treatment, which is safe and obviates the need for general anaesthetic. This paper highlights that, in an appropriate paediatric setting, surgical management of this condition can safely be performed as paediatric daycare procedures under topical local anaesthesia with excellent cosmetic results.

- 45 **Creating the five digit hand in Apert's syndrome – Use of the Cubefix™ external fixator system where conventional techniques were non-applicable**  
Miss K Dhaliwal, Ms G Smith (London)

**Background:** Apert's syndrome is characterised by craniofacial anomalies and syndactyly of the hands and feet. We present the case of a sixteen year old male patient with a central digital mass on the left hand, consisting of two digits, that was previously thought to be inseparable. A Cubefix™ fixator was used to create bone and soft tissue, allowing for separation of the bony mass and creation of two separate third and fourth digits of adequate size. This is the first time this device has been used for this indication in Britain.

**Method:** The Cubefix™ was in place for six months. Weekly radiographs showed progression of new bone formation and allowed monitoring of the frames position. After six months, radiographs showed significant new bone formation and ossification of the digit phalanges. On removal of the Cubefix™ there was insufficient bony integrity to release the digits without intramedullary support with K-wires. They remained in place for five months, after which separation of the digits was possible. Local flaps were used to create the web-space and full thickness skin grafts applied to the digits.

**Results:** Cosmesis of the hand was improved by creating third and fourth digits from one bony mass. This improved the patient's social confidence. The whole process took twelve months to complete. There was no effect on the ROM of the digits.

**Conclusion:** This case demonstrates the successful use of Cubefix™ in the most complex of Apert's hands. We discuss some of the problems and benefits of its use.

- 46 **Efficacy and safety of collagenase clostridium histolyticum in Dupuytren's contracture patients with up to two affected joints and moderate disease**  
Dr S Brown, Dr B Cohen, Mr R Gerber, Mr A Jenkins, Dr S Piotr, Professor D A McGrouther (Tadworth)

**Introduction:** Collagenase clostridium histolyticum (CCH, XiapeX), the only licensed pharmacological treatment for Dupuytren's contracture, works by enzymatically weakening the Dupuytren's cord. Two pivotal phase III studies (CORD I and II) demonstrated the efficacy and safety of CCH. The Scottish Medicines Consortium (SMC) accepted CCH for patients suitable for treatment with fasciectomy, but for whom percutaneous needle fasciotomy is not considered a suitable treatment, with up to two affected joints per hand and moderate disease as defined by the BSSH (either MP joints = 30° and = 60° or PIP joints <30°) ([http://www.scottish-medicines.org.uk/SMC\\_Advice/Advice/715\\_11\\_collagenase\\_clostridium\\_histolyticum\\_xiapex/collagenase\\_Xiapex\\_RESUBMISSION](http://www.scottish-medicines.org.uk/SMC_Advice/Advice/715_11_collagenase_clostridium_histolyticum_xiapex/collagenase_Xiapex_RESUBMISSION)).

**Methods:** A post-hoc analysis of data from the randomised and open-label phases of CORD I and II was performed to determine the efficacy and safety of CCH in the eligible patient population.

**Results:** Fifty-eight of the 362 (16%) patients who received CCH during the randomised or open label phases of CORD I and II met the criteria. Patient demographics and AEs were largely comparable between the eligible and ITT populations of CORD I and II. In an analysis of the primary joint, CCH was shown to reduce contracture to = 5° after the last injection in 46/57 (81%) patients, while a = 50% reduction in contracture from baseline was seen in 50/57 (88%) patients, the mean change in range of movement from baseline was 31.9° (SD = 18.57).

**Conclusions:** This analysis adds to the evidence demonstrating efficacy of CCH in broad patient population looking specifically at moderate DC, supporting the use of CCH in UK clinical practice.

**47 The simple wire interosseous fixation technique (SWIFT) for reattachment of FDP avulsions with a large bony fragment**

Mr D Markeson, Miss M Mughal, Mr P Subramanian, Mr S Iyer (London)

**Introduction:** Type 3, 4 and 5 flexor digitorum profundus (FDP) avulsion injuries normally involve a sizeable bony fragment. In the past these have been repaired with either a screw, plate or pull-out wire with a dorsal button, often in combination with a K-wire to immobilise the distal interphalangeal joint (DIP). We illustrate with two cases a simple technique for the secure repair of FDP avulsions with a bony fragment.

**Surgical Technique:** The approach is through a volar Brunner incision centred over the DIPJ. The fracture is reduced and a 19G hypodermic needle is then carefully drilled through the avulsion fragment into the main body of the phalanx. A further 19G hypodermic needle is then drilled adjacent to the first. Stainless steel wire is passed from volar to dorsal through one hypodermic needle, then back through the other hypodermic needle into the volar wound. The hypodermic needles are withdrawn and the wire is carefully tightened until the avulsion fragment lays well-reduced. Early active mobilisation is commenced from the next day.

**Results:** Both of the illustrated cases achieved a full range of motion: DIP - 0–80°, TAM – 260° and sound bony union.

**Conclusion:** In contrast to previously described techniques, our technique involves minimal dissection, has a significantly reduced risk of fracture to the bony fragment, is completely internalised thereby reducing the risk of post-operative infection and allows immediate mobilisation; above all it is SWIFT to perform.

**48 A pilot study: A retrospective review of clinical outcomes of unicortical vs bicortical fixation of phalangeal fractures in the hand**

Dr H Dong, Ms S Mahroof, Ms S Khan, Ms S Beale, Mr V Rajaratnam, Mr M Craigen, Mr R Jose (Birmingham)

**Aim:** To identify differences in outcome between unicortical fixation versus bicortical fixations of phalangeal fractures in the hand.

**Method and Materials:** A pilot retrospective review was undertaken of patients under the care of one consultant over the period of July 2007 to May 2011, identifying different fixation methods. We excluded any complex injuries (with nerve or tendon injuries). The data was obtained through a combination of clinical notes, therapy notes and X-rays.

**Results:** We identified fifty suitable patients ( $n=50$ ) with a male:female ratio of 36:14. There was a wide variety of injury mechanisms, of these, there were 36 closed injuries and 12 open injuries. We could find no statistical difference between the outcomes of unicortical and bicortical fixation (ratio 16:36) in terms of time to union, post-operative infection rates, persistent pain after six weeks, and follow-up time. There was also no difference in complication rates including removal of metalwork and tenolysis between unicortical and bicortical fixation.

**Conclusion:** We concluded there was no difference between the outcomes of unicortical versus bicortical fixations of phalangeal fractures of the hand. Further studies will be needed to identify unicortical fixation as a safe way of treating phalangeal fractures in the hand.

**49 Hand Fellowship in Cape Town**

Mr T Barabas (London)

The BSSH sponsored hand fellowship to the Groote Schuur Hospital in Cape Town is described with respect to operative exposure, volume of patients seen and the role of the hand fellow within the unit.

**50 An anatomical and clinical study of the radial collateral ligament of the thumb**

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

**Introduction and Aims:** Injuries to the radial collateral ligament of the thumb metacarpophalangeal joint are far less common than those affecting their ulnar counterparts, by a ratio of approximately eight to one. The optimal management of these injuries is still a matter under dispute, owing to the relative rarity of these injuries and a lack of studies comparing operative techniques. Further study of the anatomy of the radial collateral ligament is an area which could potentially yield results in terms of treatment of these injuries. This study aims to document the anatomy of the radial collateral ligament and the relationships of the ligament to surrounding structures in greater detail, particularly to abductor pollicis brevis.

**Materials and Methods:** Six cadaveric hand specimens were dissected at Royal Liverpool University Hospital mortuary using surgical loupes and the radial collateral ligaments were analysed in detail.

**Results and Statistics:** It was found that abductor pollicis brevis consists of two layers, the lower of which is a site of insertion for some of the fibres of the radial collateral ligament. This potentially accounts for the wasting of APB experienced by the patient suffering from rupture of the RCL used in this study.

**Conclusions and Clinical Reference:** The lower layer of abductor pollicis brevis has potential use for the reconstruction and reinforcement of chronic radial collateral ligament injuries, particularly chronic injuries in which degeneration of the ends of the ruptured ligament has occurred.

**51 A review of infection in thumb CMCJ arthroplasty using ARPE prosthesis in 263 patients over a five-year period**

Mr A Siddiqui, Miss L Onwordi, Mr G Packer (Southend on Sea)

**Purpose:** Review of infection rate in thumb CMCJ arthroplasty for arthritis using ARPE prosthesis with peri-operative and post-operative antibiotics compared to use of only peri-operative antibiotic.

**Method:** A retrospective study of case notes of 263 patients operated for arthritis of thumb CMCJ using ARPE prosthesis over a period of five years from January 2007 to October 2011 at Southend University Hospital.

**Results:** From January 2007 to October 2009, all patients undergoing prosthetic arthroplasty received Cefuroxime intravenous 1.5 gms at induction as well as two post-operative doses of intravenous antibiotics (Cefuroxime 750 mg) but no oral antibiotics. From November 2009, patients started getting only one dose of antibiotic (Cefuroxime 1.5 gm) at induction with no post-operative intravenous or oral antibiotics. The infection rate in these patients showed no statistical difference in the two groups.

**Discussion:** The use of antibiotics, at both the peri-operative and post-operative stage has been an unresolved issue in hand surgery, specially in prosthetic arthroplasty. Our study has shown that in clean, elective procedures lasting less than two hours, even involving prosthetic arthroplasty has

no higher infection rates with just a single dose antibiotic at induction. We advocate single dose antibiotic at induction in elective hand surgery involving prosthetic arthroplasty. A further dose of antibiotics post-operatively has no added advantage in preventing infection.

- 52      **The revisited Camitz opponensplasty**  
Mr R Naeem, Mr A Lahiri (Birmingham)

Thumb opposition is an essential movement for accurate grasping and complex hand movements. In long standing carpal tunnel syndrome there is weakness and wasting of the muscles supplied by the median nerve, namely the abductor pollicis brevis, opponens pollicis and partly the flexor pollicis brevis. The result is a loss of palmar abduction and opposition, ultimately leading to functional disability. The Camitz procedure is a simple tendon transfer for patients who have loss of opposition in long standing carpal tunnel syndrome. Historically the Camitz procedure restored abduction only. However, through modification with the use of a pulley, the ideal axis of opposition can be achieved. The purpose of this poster is to describe our surgical technique of the modified Camitz procedure in a patient with severe thenar wasting and weakness secondary to median nerve compression. Through high definition intra-operative photographs we will describe the procedure step by step. In addition we will review the indications, contraindications, complications and post-operative rehabilitation.

# MEETING INFORMATION

## VENUE

The meeting will be held in the Events Centre, Royal York Hotel, Station Parade, York YO24 1AA

### Car parking

There is ample car parking available at the hotel.

## 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 £50 per day. This is the day delegate rate charged to the Society by the venue for each individual attending.

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

### Registration fees

Full / Overseas / Associate Members who are Consultants	£280 Whole meeting £140 One day
Associates who are Trainees / Companion Members / Non-members UK Trainees	£155 Whole meeting £80 One day
Other Non-members	£340 Whole meeting £170 One day
Honorary / Senior Members	£50 per day
Speakers who are Research Doctors or Scientists	£50 per day

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

### Honorary and Senior members

Honorary and Senior Members will not pay a registration fee. A charge of £50 will be made for refreshments and luncheon each day. This is the day delegate rate charged to us by the venue for each delegate.

### Registration and enquiry desk

The Registration and Enquiry Desk (situated in the Oak Room) will be open at the following times:

Thursday 08:30 – 17:30

Friday 08:30 – 14:00

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

### Luncheon

Luncheon will be served in the Oak Room and the Events Centre Foyer and Bar Area.

# **MEETING INFORMATION**

## **CONTRIBUTORS INFORMATION**

### **Projection facilities**

There will be facilities for PowerPoint presentations only.

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

## **CONTINUING MEDICAL EDUCATION**

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

Thursday: 6.5

Friday: 6.0

Total: 12.5

## **SOCIETY DINNER**

Thursday, 11 October at 19:30 for 20:15

Station Hall, National Railway Museum, Leeman Road, York YO26 4XJ

Dress code: business attire

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

## **KEYNOTE LECTURES**

### **Thursday**

14:00 Cochrane Collaboration by Mr M Burton (Oxford)

16:30 Douglas Lamb Lecture: My Success and Failures in Hand and Wrist Arthroplasty  
by Dr B Adams (USA)

### **Friday**

09:00 Flap Cover in the Hand by Mr C G Duff (Manchester)

09:45 What's new in Internal Fixation by Mr M A C Craigen (Birmingham)

14:05 Where are we with nerve conduits by Professor Giorgio Terenghi

14:50 What's the Latest in Wrist Arthroscopy by Dr D Slutsky (USA)

## **SYMPOSIA**

### **Thursday**

08:30 Arthroplasty Wrist

10:00 Arthroplasty Fingers

11:45 Update on Collagenase

15:40 Cases I Wish I Had Never Started

### **Friday**

11:30 Base of Thumb Deficiency

# **MEETING INFORMATION**

## **PRIZES**

### **Journal of Hand Surgery Prize**

A prize consisting of book vouchers to the value of £500 will be awarded for the best paper presented at the meeting.

### **Poster Prize**

A prize consisting of book vouchers to the value of £250 will be awarded to the best e-Poster presented at the meeting.

## **MEETINGS**

### **Annual General Meeting**

The AGM will be held on Thursday, 11 October at 17:00 in the Events Centre (open to Members and Associates only).

### **Meetings in 2013**

25-26 April: International Centre, Harrogate  
17-18 October: Royal College of Surgeons, London (combined meeting with BAHT)

## **MEDICAL AND TECHNICAL EXHIBITION**

Firms supplying instruments, appliances, materials and books will be exhibiting throughout the two days in the Oak Room and the Events Centre Foyer and Bar Area, where refreshments and luncheon will be served. It is hoped that everyone will support this exhibition.

## TRADE EXHIBITORS

<b>ALBERT WAESCHLE LTD</b> 11 Balena Close, Crekmoor, Poole BH17 7DB Telephone: 01202 601 177, Fax: 01202 650 022, Email: roger@albertwaeschle.com	<b>STAND 4 (OAK ROOM)</b>
<b>DGL SOLUTIONS</b> 42 Ball Moor, Buckingham Industrial Park, Buckingham MK18 1RQ Telephone: 08450 664 600, Fax: 01280 824 700, Email: kings@dgl-solutions.com	<b>STAND 3 (OAK ROOM)</b>
<b>KLS MARTIN GROUP - GEBRUEDER MARTIN GMBH &amp; CO KG STAND 11 (OAK ROOM)</b> Ludwigstaler Strasse 132, 78532 Tuttlingen, Germany Telephone: 00 49 7461 7060, Fax: 00 49 7461 706 302, Email: achim.lieb@klsmartin.com	
<b>MEDARTIS LTD</b> Suite 63, Annexe 4, Batley Business Park, Technology Drive, Batley WF17 6ER Telephone: 01924 476 699, Fax: 01924 472 000, Email: nadia.gershkovich@mac.com	<b>STAND 2 (OAK ROOM)</b>
<b>MEDIRACER UK LTD</b> Technology Centre, Wolverhampton Science Park, Wolverhampton WV10 9RU Telephone: 0844 800 2617, Fax: 0844 800 2618, Email: nick@mediracer.co.uk	<b>STAND 12 (OAK ROOM)</b>
<b>MERCIAN SURGICAL</b> 10 Topaz Business Park, Topaz Way, Bromsgrove B60 0GD Telephone: 0844 879 1133, Fax: 0844 879 1155, Email: john.duffy@merciansurgical.com	<b>STAND 5 (OAK ROOM)</b>
<b>NORTHSTAR ORTHOPAEDICS LTD</b> 26 Kingfisher Court, Hambridge Road, Newbury, Berkshire RG14 5SJ Telephone: 01635 275 380, Fax: 01635 275 381, Email: sacha@northstar-ortho.co.uk	<b>STAND 9 (OAK ROOM)</b>
<b>ORASCOPTIC</b> 4 Flag Business Exchange, Vicarage Farm Road, Peterborough PE1 5TX Telephone: 01733 315 203, Fax: 01733 891 299, Email: jane.walters@sybrondental.com	<b>STAND 2 (EVENTS CENTRE FOYER AND BAR AREA)</b>
<b>OSTEOTEC LTD</b> 9 Silver Business Park, Airfield Way, Christchurch BH23 3TA Telephone: 01202 487 885, Fax: 01202 487 886, Email: susann@osteotec.co.uk	<b>STAND 10 (OAK ROOM)</b>
<b>PFIZER LTD</b> Walton Oaks, Dorking Road, Tadworth, Surrey KT20 7NS Telephone: 01737 330 511, Email: gemma.payne@pfizer.com	<b>STAND 4 (EVENTS CENTRE FOYER AND BAR AREA)</b>
<b>PRIMAL PICTURES</b> 159–165 Great Portland Street, London W1W 5PA Telephone: 020 7637 1010, Fax: 020 7636 7776, Email: dan@primalpictures.com	<b>STAND 1 (OAK ROOM)</b>
<b>SAGE PUBLICATIONS LTD</b> 1 Oliver's Yard, 55 City Road, London EC1Y 1SP Telephone: 020 7324 8608, Fax: 020 7324 8700, Email: catherine.layton@sagepub.co.uk	<b>STAND 1 (EVENTS CENTRE FOYER AND BAR AREA)</b>
<b>SMITH &amp; NEPHEW</b> Cardinal Park, Godmanchester, Huntingdon, Cambridgeshire PE29 2SN Telephone: 01480 423 200, Fax: 01480 423 201, Email: tammy.ward@smith-nephew.com	<b>STAND 5 (EVENTS CENTRE FOYER AND BAR AREA)</b>
<b>SOVEREIGN MEDICAL LTD</b> Unit 16, MII Business Link, Parsonage Lane, Stansted, Essex CM24 8GF Telephone: 01279 816 167, Fax: 01279 816 299, Email: david@sovereignmedical.co.uk	<b>STAND 6 (OAK ROOM)</b>

## TRADE EXHIBITORS

### SUMMIT MEDICAL LTD

Industrial Park, Burton-on-the-Water GL54 2HQ

Telephone: 01451 821 311, Fax: 01451 821 092, Email: info@summit-medical.co.uk

### STAND 3 (EVENTS CENTRE FOYER AND BAR AREA)

### VERTEC SCIENTIFIC

Unit 44, Easter Park, Benyon Road, Silchester, Reading RG7 2PQ

Telephone: 01189 702 104, Fax: 01189 701 861, Email: nvicars@vertec.co.uk

### STAND 7 (OAK ROOM)

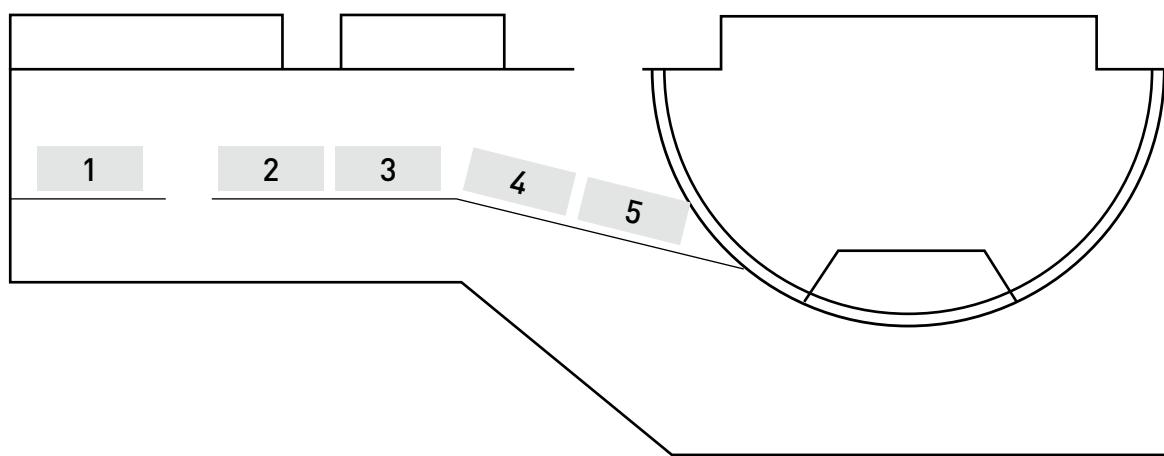
### XOGRAPH HEALTHCARE LTD

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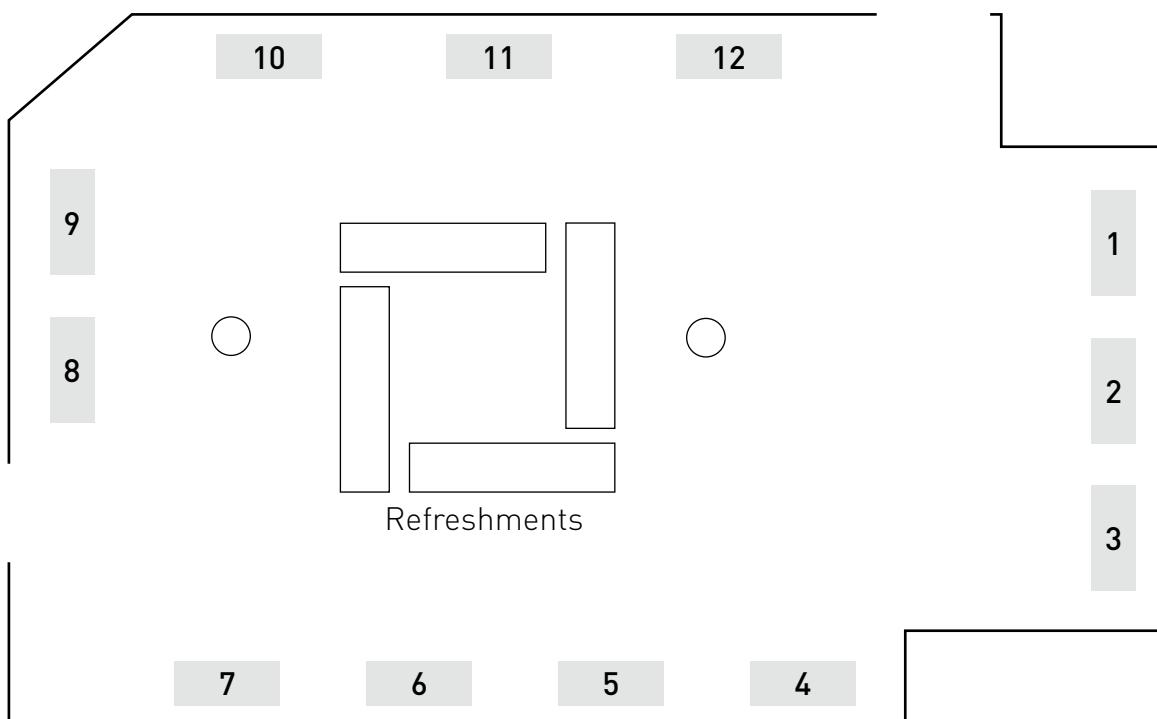
Telephone: 01666 501 501, Fax: 01666 501 502, Email: joanna.maddams@xograph.com

### STAND 8 (OAK ROOM)

### EVENTS CENTRE FOYER AND BAR AREA



### OAK ROOM





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