

# BSSH

The British Society for  
Surgery of the Hand

## SCIENTIFIC MEETING

12th - 13th November 2009

CROWNE PLAZA HOTEL  
NOTTINGHAM

### PROGRAMME



**BRITISH SOCIETY FOR SURGERY OF THE HAND**

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**OUTLINE PROGRAMME****SCIENTIFIC MEETING : 12/13 NOVEMBER 2009****THURSDAY, 12 NOVEMBER**

- 08.30 Registration
- 09.00 Group meetings:  
1) Dupuytren's disease controversies *Royal Suite*  
2) Reconstruction of the upper limb  
using vascularised tissue, part 1 *Highgrove*  
3) Fractures around the proximal interphalangeal joint *Hampton & Windsor*
- 10.45 Coffee and exhibitions
- 11.10 Welcome by the President
- 11.15 Lectures: *Royal Suite*  
1) Indications and results of dermofasciectomy  
Mr A M Logan, Norwich  
2) Hand transplantation in the UK  
Professor S P J Kay, Leeds  
3) The challenges of the proximal phalangeal shaft fracture  
Mr D Shewring, Cardiff
- 12.15 Free papers
- 12.45 Luncheon and exhibitions
- 13.45 BSSH Annual General Meeting *Royal Suite*  
(open to members and associates only)
- 13.45 Registrar Symposium – BSSH Teaching for Registrars *Hampton & Windsor*  
Mr S M Turner, Member of the Education and Training Committee  
Members of the Education and Training Committee
- 14.45 The BSSH – Genetics of Dupuytren's Disease (GODD) Study  
Mr H P Giele, Mr D Furniss
- 14.50 Douglas Lamb Lecture: *Royal Suite*  
Psychiatric disorders in the upper extremity  
Dr Peter J Stern, Cincinnati, USA
- 15.35 Tea and exhibitions
- 16.05 Hunterian Lecture: *Royal Suite*  
The interplay between hypoxia, angiogenesis and inflammation  
in rheumatoid hand disease  
Mr Mo Akhavan
- 16.50 Free papers

**OUTLINE PROGRAMME****FRIDAY, 13 NOVEMBER**

- 08.30 Registration
- 09.00 Group meetings:-  
1) Brachial plexus *Hampton & Windsor*  
2) Ulnar-sided wrist problems: case-based discussions *Royal Suite*  
3) Flexor tendon repair *Highgrove*
- 11.00 Coffee and exhibitions
- 11.20 Group meetings continued:-  
1) Brachial plexus continued *Hampton & Windsor*  
2) Reconstruction of the upper limb  
using vascularised tissue, part 2 *Highgrove*  
3) Scaphoid fracture and nonunion *Royal Suite*  
1) Management of acute displaced fractures  
2) Vascularised bone grafts
- 13.00 Luncheon and exhibitions
- 13.55 Induction of new President
- 14.00 Invited Lecture:  
Current perspectives in the management of small joint injuries and arthrosis  
Dr Peter J Stern, Cincinnati, USA
- 14.30 Lectures  
1) Injury to axillary nerve and infraclavicular brachial plexus,  
surgical indications and approaches  
Mr T Hems, Glasgow  
2) Immediate reconstruction of single digit amputations using toe transfers  
Mr M Sood, Chelmsford  
3) Indications and outcomes for surgery for scapholunate dissociation  
Mr I A Trail, Wigan
- 15.30 Free papers
- 17.00 Tea and close of meeting

**THURSDAY, 12 NOVEMBER**

- 08:30 Registration
- 09:00 **GROUP MEETINGS**
- Group Meeting 1: Dupuytren's Disease Controversies** *Royal Suite*
- 09:00 Current Concepts of Aetiology  
Professor D A McGrouther, Manchester
- 09:20 Needle Fasciectomy & Collagenase Treatment  
Mr L C Bainbridge, Derby
- 09:35 Segmental and Open Fasciectomy  
Mr P McArthur, Liverpool
- 09:50 Discussion
- 10:00 Dermafasciectomy – How I Do It  
Mr R H Milner, Newcastle-upon-Tyne
- 10:10 Dealing with the Contracted PIPJ  
Mr J S Watson, Manchester
- 10:25 Discussion
- Group Meeting 2: Reconstruction of the Upper Limb using Vascularised Tissue, Part 1** *Highgrove*
- 09:00 Reconstruction of Segmental Bony Defects of the Upper Limb  
Mr M Sood, Chelmsford
- 09:10 Reconstruction of Segmental Bony Defects – Tips and Techniques  
Mr G Packer, Southend
- 09:20 Free Vascularised Bone Grafts for Scaphoid Non-union  
Mr M Sood, Chelmsford
- 09:30 Free Vascularised Bone Grafts for Scaphoid – Tips and Techniques  
Mr G Packer, Southend
- 09:40 Cases and Discussion  
Mr M Sood, Mr G Packer
- 09:55 Free Functioning Muscle Transfers for Restoration of Movement in the Upper Limb following Brachial Plexus Injury and Volkmann's Ischemic Contracture  
Professor S P J Kay, Leeds
- Group Meeting 3: Fractures around the Proximal Interphalangeal Joint** *Hampton & Windsor*
- Condylar Fractures: My Approach to them/How I do them
- 09:00 Subcondylar Phalangeal Neck Fractures and Undisplaced Unicondylar Fractures  
Mr G Giddins, Bath
- 09:07 Displaced Unicondylar Fractures  
Mr D Shewring, Cardiff
- 09:14 Bicondylar Fractures  
Mr N Downing, Nottingham
- 09:21 Cases and Discussion  
Middle Phalangeal Base Fractures: My Approach/Philosophy
- 09:45 Dorsal Fractures/Dislocation  
Mr N Downing, Nottingham
- 09:52 Pilon Fractures  
Mr G Giddins, Bath
- 09:59 Die-punch Fractures  
Mr D Shewring, Cardiff
- 10:06 Cases and Discussion
- 10:45 Coffee and Exhibitions
- 11:10 Welcome by the President

**THURSDAY, 12 NOVEMBER****LECTURES** *Royal Suite***CHAIRMAN: PROFESSOR D A McGROUTHER**

- 11:15 1) Indications and Results of Dermofasciectomy  
Mr A M Logan Norwich
- 11:35 2) Hand Transplantation in the UK  
Professor S P J Kay, Leeds
- 11:55 3) The Challenges of the Proximal Phalangeal Shaft Fracture  
Mr D Shewring, Cardiff

**FREE PAPERS****CHAIRMAN: MISS B JEMEC / PROFESSOR J J DIAS**

- 12:15 **Operative Techniques for Primary Dupuytren's Disease: A Systematic Review**  
Mr G Becker, Professor T R C Davis (Nottingham)

**Aim:** There is no consensus on the ideal operation for primary Dupuytren's disease of the hand. The purpose of this systematic review was to evaluate the strength of evidence supporting individual procedures, with the rates of recurrence and complications.

**Method:** We searched Pubmed and EMBASE for any papers in English containing 'Dupuytren' in the citation. Papers not involving surgery or clearly involving surgery for recurrent disease were excluded. The remaining papers were then obtained and examined to see if they should be included.

**Results:** The initial search produced two thousand one hundred and fifty-four references, of which 675 referred to Dupuytren's disease of the hand. Two hundred and thirty-three had no abstract, of which 94 possibly referred to surgery, and so were obtained. The remaining abstracts were read, and potential papers obtained. After final exclusions, fifty-seven retrospective case series, eight prospective case series, four prospective quasi-randomised controlled clinical trials and only one prospective randomised controlled clinical trial (which compared skin closure methods) were included. There was wide disparity in scoring systems, definition of recurrence and recording of complications. Mean follow-up ranged from three weeks to 12.6 years, and recurrence from 0 to 71%.

**Conclusions:** There are currently no Level 1 studies comparing surgical techniques for the treatment of primary Dupuytren's disease of the hand, and the available evidence does not support one procedure above another, other than to show a particularly high recurrence rate after percutaneous needle fasciotomy. We propose a minimum data set for inclusion in future studies.

- 12:22 **Outcome of Check-Rein and Volar Plate Release Procedure for PIPJ Contractures**  
Mr D Selvan, Mr A Mishra, Mr I Khan, Mr A Iqbal (Liverpool)

**Methods:** Our study sample comprises of twenty patients (7 post traumatic and 12 with Dupuytren's disease, 1 congenital) between 2005 and 2007. Flexion deformity ranged from forty to 90 degrees for a period ranging from 6 to 30 months. Complete intra-operative correction was achieved in all with check-rein, volar plate and flexor sheath release. Skin tightness was addressed with Y-V plasties in majority. Early mobilisation with static splintage was used post-operatively. Follow-up ranged from six to 24 months.

**Results:** The majority of our patients maintained correction with only two recurrences which were minor.

**Summary Points:**

\*PIPJ contracture is a complex problem known for poor outcome

\*Complete intra-operative correction is crucial and is usually achieved with sharp release of check-rein and volar plate through flexor sheath.

\*Addressing skin tightness and post-operative mobilisation with splintage helps in maintaining long-term correction.

## THURSDAY, 12 NOVEMBER

12:30

### The Effects of Steroid Injections in Trigger Finger - An Ultrasonic Evaluation

Mr G Howell, Miss S Akthar, Mr D Williams, Dr S Ali, Mr D Redfern (Preston)

**Methods:** Patients presenting with a clinical diagnosis of trigger finger, with no history of intervention were selected for this study. Prior to injection they underwent US to assess the area and diameter of the flexor tendons and to assess the A1 pulley thickness. The finger was then injected with 40mg depo-medrone and 1% lidocaine. Patients were followed up at six weeks with a second scan.

**Results:** Seventeen patients were recruited with 18 affected digits (5 were lost to follow-up). Following injection, all had an improvement in their symptoms (7 full resolution, 6 partial resolution) but four required further intervention.

#### Ultrasound Measurements:

	Pre injection	Post injection	P value
Flexor tendon cross section area (cm <sup>2</sup> )	0.199	0.159	0.011
Flexor tendon diameter (cm)	0.421	0.340	0.003
Pulley thickness (cm)	0.089 (n=9)	0.055 (n=7)	0.032

**Conclusion:** Steroid injection is an effective first line treatment for trigger finger and works by altering the anatomy of the flexor mechanism. In particular the flexor tendon diameter and cross sectional area are decreased, and to a lesser extent the A1 pulley thickness is reduced. Attempts were made to assess the length of any tendon swelling, but changes were diffuse and discrete nodules were not identified.

12:37

### Hand Trauma Splinting Guidelines for Immediate Management

Mr N Sivathanan, Mr J Ahmed, Mr W Maamoun, Mr S Aleksyeyenko (London)

**Introduction:** Hand-trauma is a common presentation in the emergency department and over £100 million is spent annually on the management of such injuries in Great Britain. Appropriate early management is important for preventing further damage and has significance on subsequent progress. Yet a clear algorithm for deciding upon what mechanism of early splinting is required is not available in most institutions, and confusion exists for many clinicians.

**Methodology:** We performed a prospective study primarily assessing the appropriateness of the splints applied to patients with closed hand injuries. Depending on the criteria met, the splints were rated as: appropriate; satisfactory; unsatisfactory. Educational intervention was subsequently provided for relevant doctors and nurses, based around our illustrated flowchart that covered what method of hand-splinting needs to be done during the initial presentation. Our algorithm was also distributed throughout the emergency department and made available on the hospital's intranet. The audit loop was closed after two months.

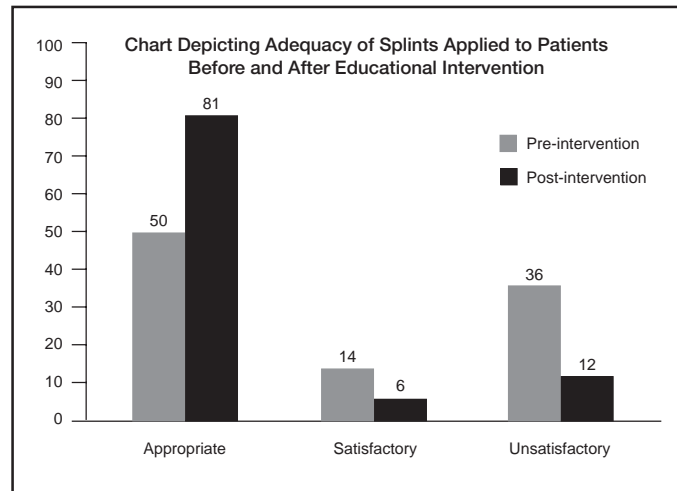
**Results:** Seventy-two patients were reviewed in the pre-intervention phase: 50% of these splints were appropriate, 14% were satisfactory, and 36% were unsatisfactory. Fifty-nine patients were evaluated in the post-intervention phase: 81% of these splints were appropriate, 6% were satisfactory, and 12% were unsatisfactory.

**Conclusions and Clinical Reference:** We achieved a 67% reduction in unsatisfactory practice after our educational-intervention and the ready availability of guidelines. Many hand surgery units receive referrals from other hospitals and need to provide unambiguous advice without frequently being able to review the patients. Our simple poster facilitated easier communication, and optimised patient-safety.

(see chart on next page)

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12:37 continued



12:45 Luncheon and Exhibitions

13:45 **BSSH ANNUAL GENERAL MEETING**  
(open to Members and Associates only)

13:45 **REGISTRAR SYMPOSIUM – BSSH TEACHING FOR REGISTRARS**  
Mr S M Turner  
Members of the Education and Training Committee

14:45 **THE BSSH – GENETICS FOR DUPUYTREN’S DISEASE (GODD) STUDY**  
Mr H P Giele, Mr D Furniss (Oxford)

14:50 **DOUGLAS LAMB LECTURE:**  
**Psychiatric Disorder in the Upper Extremity**  
Dr P Stern, Cincinnati

15:35 Tea and Exhibitions

16:05 **HUNTERIAN LECTURE:**  
**CHAIRMAN: PROFESSOR J K STANLEY**  
**The Interplay between Hypoxia, Angiogenesis and Inflammation in Rheumatoid Hand Disease**  
Mr M Akhavan, London

**FREE PAPERS**

**CHAIRMAN: MISS V C LEES / MR R ECKERSLEY**

16:50 **The BSSH Census 2009**  
Mr D Shewring, Mr J Hobby, Professor J Dias (Cardiff)

An online census has been conducted by the BSSH of the workforce in substantive posts in the UK. This has been done through the membership of the BSSH, BOA and BAPRAS. The census sought to obtain information about the current workforce, intensity and volume of work and junior support, in both the elective and emergency spheres. It is hoped that this will inform workforce planning. The findings will be presented and discussed with a short open forum for discussion.

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**16:58      A Prospective Analysis of Referrals to a Tertiary Hand Trauma Service: The Impact of Emergency Nurse Practitioners**

Miss C McGoldrick, Miss L Damkat-Thomas, Mr H Lewis (Belfast)

**Introduction:** Emergency nurse practitioners (ENPs) have recently been introduced in Northern Ireland to deal with minor injuries. This study aimed to assess the impact that the grade of referrer had on the quality of referral made to the regional hand trauma clinic.

**Methods:** A prospective data collection was performed. An independent score for the quality of history, examination and initial management was calculated and a subjective analysis of referral appropriateness was recorded.

**Results:** Data from one hundred patients was analysed. The majority of referrals were made by nurse practitioners (52%) of which 24% of referrals were deemed to be inappropriate. However, of those inappropriate referrals, almost 70% were made by ENPs. There was no significant difference between doctors and ENPs when the independent quality score was analysed. Drug history was most poorly recorded (24% of referrals) and a high proportion of patients did not receive antibiotics (18%), had their tetanus status clarified (26%) or were informed about fasting (46%).

**Discussion:** This study has shown that the majority of referrals to our tertiary hand trauma service are now generated by ENPs, with a disproportionately higher number of inappropriate referrals coming from this source. While the standard of information and initial management was within safe standards of practice, several elements of management impacted on efficiency of 'downstream' care. This finding is reflected in the literature with regards to other specialties, but is the first report in the setting of hand trauma.

**17:07      A Survey of the Organisation and Management of Hand Trauma in the British Isles**

Mr R Davies, Mr K Anderson, Mr A Iqbal (Prescot)

**Introduction and Aims:** There is a lack of clear evidence and hence consensus on the acceptable delay and best practice for hand trauma management. This is primarily due to the diverse nature of such injuries. We sought to reach a national consensus to establish best practice guidance.

**Materials and Methods:** A questionnaire was distributed nationally amongst fifty-six plastic surgery units. One part was designed to ascertain the current standard of care delivered across units. A second part aimed to establish what current providers regard as best practice.

**Results:** The return rate was 91%. 72% of responses were from consultants. On average, 3.5 cases/100,000 population are treated each week. 75% are assessed within 24 hours of injury and most are operated on within 48 hours. 80% of units have dedicated weekday trauma lists, with 90% having to share theatres out-of-hours. Theatre availability is the commonest cause of delays. Delays are most commonly resolved by adding trauma cases to elective lists and only occasionally are extra sessions instated. Delays of 34-41 hours are considered acceptable for clean injuries, and 10 hours for contaminated injuries and bites. 82% believe that wounds should be washed with tap water in A&E and 59% that wounds should be explored under local anaesthesia in A&E.

**Conclusion:** Trauma care across the country varies considerably. Using this data, we can construct consensus guidelines regarding the organisation and management of a trauma service, based on demand and clinical priority.

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17:15

**A Short-term Review of the Finsbury Proximal Interphalangeal Joint Replacement**

Mr M Broadbent, Mrs A Birch, Mr I Trail (Wrightington)

**Introduction:** The Finsbury Proximal Interphalangeal Replacement (PIPR) is a new implant introduced in the last three years. It is an anatomical surface replacement with fully conforming joint contact area, accurate press fit stem and geometry to help preserve collateral ligament attachments.

**Methods:** In this study, eighteen consecutive patients, with 43 joints, were prospectively reviewed from January 2006 to April 2009. Minimum follow-up was one year. Assessment of the patients was with the Michigan Hand Assessment Questionnaire (MHQ) along with range of movement, pinch and grip.

**Results:** The cohort consisted of twelve patients with osteoarthritis, 5 with rheumatoid arthritis and one with gout. There were five men and 13 women. Mean age was sixty-eight in the OA group and 69 in the RA group (range 50 – 76 years). There were two revisions: at 6 months and 2 years. MHQ subgroup results: overall function +18 points; ADL combined +17 points; pain +31 points; satisfaction +31 points; MHQ score +22 points. Overall movement increased by 11 degrees (+15 degrees in OA, -4 degrees in RA). Grip increased by 1.73 kg. Tripod pinch increased by 0.5 kg.

**Conclusion:** PIPRs have been known to have disappointing results. Overall, the results of this implant were encouraging, especially in the OA group: there was improvement in pain, function and range of movement. In some patients the outcome was varied and it was felt that this may be due to the new surgical technique, which improved with experience and a better appreciation of soft tissue balancing.

17:24

**The Outcome following Neuflex Metacarpophalangeal Joint Arthroplasty in Primary Osteoarthritis**

Mr A Gul, Mr R W Trickett, Mr I D Russell, Mr D P Newington (Swansea)

**Aim:** To evaluate the functional outcomes following Neuflex interposition arthroplasty for the treatment of primary metacarpophalangeal joint osteoarthritis.

**Methodology:** Since 2002, all twelve (8 male: 4 female) patients treated at the Swansea Hand unit were reviewed with follow-up radiographs and clinical examination. The mean age of the patients was sixty-eight, with a minimum follow-up of 2 years. The Michigan Hand Score (MHS) was also used to assess functional outcome in each patient.

**Results:** The pre-operative range of movement improved from a mean arc of 10-35 to 10-70 degrees, and at this stage, appears to be sustained. There was also significant improvement in the scores for pain, overall hand function and activities of daily living as assessed by the MHS.

**Conclusion:** This study confirms the role of silastic one piece interposition arthroplasty in the treatment of primary osteoarthritis of the metacarpophalangeal joint. It highlights good clinical outcomes and mirrors the accepted practice and results seen in the treatment of rheumatoid MCP joint disease.

17:32

**Is Pyrocarbon Interposition Arthroplasty Better than Simple Trapezeotomy?**

Mr T Colegate-Stone, Mr S Garg, Mr G Mani (Sidcup)

**Introduction:** Trapeziometacarpal joint arthrosis is a common pathology. For the few that require intervention, current surgical options include: partial or complete trapezeotomy with or without interposition.

**Aim:** To perform a prospective cohort comparative analysis of simple trapezeotomy and trapezeotomy with pyrocarbon interposition.

**Methods:** Thirty-eight consecutive patients underwent surgery for trapeziometacarpal joint osteoarthritis [34 women, 4 men; average age 59 years; age range 38-81 years; simple trapezeotomy (n=14); trapezeotomy with pyrocarbon interposition (n=24)]. The patients were assessed using objective and subjective tools

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pre-operatively, at six and 12 months post-operatively. Objective assessment was performed measuring pinch, key, tripod and power grip strength. Subjective scoring assessment was performed with the Quick Disabilities of the Arm, Shoulder, and Hand (Q-DASH) questionnaire and the visual analogue score (VAS) for patient perceived pain. At each time interval, statistical differences were sought between the two subgroups using paired Student's t-tests and Mann-Whitney–Wilcoxon testing.

**Results:** No significant difference between the two subgroups was noted at any time interval regarding Q-DASH score, VAS, pinch, key, tripod or power grip strength. A significant difference ( $p < 0.05$ ) was found on comparing the respective pre-operative and twelve-month subjective scores (Q-DASH score and VAS) in both subgroups. Of the pyrocarbon subgroup seven had related complications (5 required pyrocarbon excision secondary to painful prosthesis dislocation and 2 pyrocarbons were displaced on radiography).

**Conclusions:** We suggest that pyrocarbon interposition does not significantly improve post-operative function, requires a longer operation with a high post-operative risk of pyrocarbon displacement and need for revision surgery.

17:41

**Ligament Reconstruction of the Trapeziometacarpal Joint for Early Arthritis**

Miss P Rust, Mr S Tham (Melbourne)

**Introduction:** Osteoarthritis (OA) of the base of the thumb is a common condition in older women. However, although thought to be uncommon in younger patients, we noted in clinical practice a number of young females who had symptomatic unstable early trapezio-metacarpal joint (TMJ) OA. The aetiology is uncertain, but Eaton originally suggested that TMJ OA is due to ligament instability, which has been corroborated recently. Various ligament reconstructions to address this condition have previously been described. These are reviewed in light of the current understanding of the anatomy.

**Methods:** The senior author developed an alternative method of ligament reconstruction to stabilise a subluxed TMJ, which focussed on creating a more “anatomical” stabilisation. Since then, seven procedures have been carried out on six patients. The patient age range was 31–46 years, none had generalised ligamentous laxity and two cases were post traumatic. All patients had a failed course of non-operative treatment.

**Results:** The average follow-up was eighteen months with a range of 12–28 months; one patient failed to attend follow-up. Using a visual analogue pain score the average pre-operative rest pain was 6.4 and activity pain 7. Post-operatively, average rest pain scores reduced to 0.8 and activity pain 2.8. The tip and lateral pinch grips improved by an average of 92%. CT scan confirmed reduction of TMJs in all cases.

**Conclusion:** For patients with early onset TMJ OA associated with joint subluxation, our early results suggest that ligament reconstruction using the technique described reduced pain and increased strength.

17:49

Discussion

18:05

Close

**FRIDAY, 13 NOVEMBER**

- 08:30 Registration
- 09:00 **GROUP MEETINGS**
- Group Meeting 1: Aspects of Brachial Plexus Surgery**  
**Chairman: Mr G Broome**  
Timing of Surgery for Adult Supraclavicular Injuries
- 09:00 Introduction  
Mr T E J Hems, Glasgow
- 09:05 Biological Factors in Timing of Surgery  
Mr A M Hart, Glasgow
- 09:15 Discussion
- 09:25 Value of Pre-operative Investigations – MRI, CT Myelography, Neurophysiology  
Mr M Fox, Stanmore
- 09:35 Discussion
- 09:40 The Case for very early Surgery  
Professor S P J Kay, Leeds
- 09:50 Discussion
- 09:55 Timing of Surgery and Outcome – Data from Stanmore  
Professor T P Carlstedt, Stanmore
- 10:00 Discussion
- 10:10 Illustrative Case Presentations: Panel of Speakers to give Opinion on Management  
Professor T P Carlstedt, Stanmore and Miss G Bourke, Leeds
- 10:30 Considerations in Timing of Surgery  
Mr T E J Hems, Glasgow
- 10:40 Discussion
- 10:50 How Old is “TOO OLD” for Nerve Reconstruction  
Dr A Bhatia, Joshi Hospital, Pune, India
- Group Meeting 2: Ulnar-sided Wrist Problems** *Royal Suite*  
Case-based Discussions  
Mr C Heras-Palou and Mr G E D Giddins
- Group Meeting 3: Flexor Tendon Repair** *Highgrove*
- 09:00 Management of Acute Flexor Tendon Injuries  
Pulley Venting, Multi-strand Repair, the Little Finger and other Controversies –  
Cases, Personal Philosophy and Evidence Base  
Mr M Pickford, East Grinstead and Mr F Iwuagwu, Chelmsford
- 09:30 Panel Discussion and further Cases
- 10:00 Delayed Flexor Tendon Reconstruction  
Staging, Children, Junctures and other Controversies –  
Cases, Personal Philosophy and Evidence Base  
Mr W De Jager, Bradford and Mr A Fleming, London
- 10:30 Panel Discussion and further Cases
- 11:00 Coffee and Exhibitions

**FRIDAY, 13 NOVEMBER****11:20 GROUP MEETINGS****Group Meeting 1: Brachial Plexus (Part 2) Hampton & Windsor**

11:20 Guest Lecture: Shoulder Reconstruction for Obstetric Brachial Plexus Palsy –  
Indications for Nerve Repair, Soft Tissue Releases and Tendon Transfer  
Dr J Bahm, Aachen

12:00 Discussion and OBPP Case Presentation  
Mr G E D Giddins, Bath, Dr J Bahm, Aachen and Mr M Sinisi, Stanmore

**Group Meeting 2: Reconstruction of the Upper Limb using Vascularised Tissue (Part 2) Highgrove**

11:20 Free Tissue Transfers for Resurfacing of the Upper Limb  
Mr V Ramakrishnan, Chelmsford

11:50 Questions

11:55 Cases and Discussion

12:10 The Mini Groin Flap in Reconstruction of Hand Defects  
Mr M Tare, Chelmsford

12:20 Palmar Flap based on the Superficial Palmar Branch of the Radial Artery for  
Reconstruction of Digital Defects  
Mr F C Iwuagwu, Chelmsford

12:30 Free Venous Flaps for Hand Reconstruction  
Mr M Pickford, East Grinstead

12:40 Cases and Discussion

**Group Meeting 3: Scaphoid Fractures – Non-union and Malunion Royal Suite**

11:20 Diagnosis of Acute Displaced Fractures and Outcome of Non-operative Treatment  
(Union Rate and Effect of Malunion)  
Professor T R C Davis, Nottingham

11:30 Techniques of Operative Fixation for Acute Displaced Fractures: How I do it  
Mr D A Campbell, Leeds

11:40 Discussion and Cases

12:10 Vascularised Bone Graft: How I do it  
Mr D A Campbell, Leeds

12:20 Vascularised Bone Graft: Why I don't do it  
Professor T R C Davis, Nottingham

12:30 Discussion and Clinical Cases

13:00 Luncheon and Exhibitions

**13.55 INDUCTION OF NEW PRESIDENT**

14:00 **INVITED LECTURE** Royal Suite

**CHAIRMAN: MR P D BURGE****Current Perspectives in the Management of Small Joint Injuries and Arthrosis**

Dr P Stern, Cincinnati, USA

**LECTURES:****CHAIRMAN: MR J S WATSON**

14:30 1) Injury to Axillary Nerve and Infraclavicular Brachial Plexus, Surgical Indications and Approaches  
Mr T E J Hems, Glasgow

14:50 2) Immediate Reconstruction of Single Digit Amputation using Toe Transfers  
Mr M Sood, Chelmsford

15:10 3) Indications and Outcomes for Surgery for Scapholunate Dissociation  
Mr I A Trail, Wigan

FRIDAY, 13 NOVEMBER

**FREE PAPERS****CHAIRMAN: MR I S H MCNAB / MR M A PICKFORD**

15:30

**Human Cadaveric and Magnetic Resonance Imaging (MRI) Quantification of Dorsal Root Ganglion (DRG) Volume and Sensory Neurons of the Upper Limb**

Mr C West, Mr A Hart, Professor G Terenghi, Professor M Wiberg (Umeå)

**Introduction:** Neuroprotective pharmaceutical agents administered after peripheral nerve injury have potential to improve sensory recovery by eliminating neuron death. We are now developing new non-invasive assessment tools to assess neuron death in-vivo for clinical application and to evaluate neuroprotective agents in human trials. We successfully used MRI to measure sensory neuronal loss after nerve transection through the volumetric analysis of DRG in rats, and are now developing this MRI technique in human subjects. This cadaveric study aims to justify the principle of volumetric analysis for neuron quantification in humans with sensory neuron counts and morphometric analysis of upper limb DRG.

**Method:** A 3.0 Tesla MRI scanning protocol was developed for imaging and volumetric quantification of human C5-T1 DRG. Bilaterally C5-T1 DRG were harvested from five human cadavers and processed for morphometric analysis, stereological sensory neuron counts and DRG volume quantification.

**Results:** MRI in patients can provide high resolution imaging of C5-T1 DRG suitable for volumetric quantification. In total 425,409 (SD 15,596) sensory neurons run within the brachial plexus to supply the upper limb, the largest contribution coming from the C7 DRG with a significant difference in number of neurons at each segmental level ( $p < 0.0001$ ). DRG volume correlates well with sensory neuron counts ( $r = 0.7533$ ,  $p < 0.0001$ ), with good comparability between left and right sides (no significant difference [ $p = 0.15$ ]) and low variability in quantification.

**Conclusion:** Volumetric analysis of C5-T1 DRG is a legitimate proxy measurement of sensory neurons for human clinical study with reference to the contralateral uninjured side as a valid control.

15:37

**Is Patient Experience in Carpal Tunnel Syndrome Consistent with the Anatomy of the Median Nerve?**

Mr D Clark, Mr R Amirfeyz, Professor G Bannister, Mr I Leslie, Mr R Bhatia (Bristol)

**Introduction and Aims:** Clinician expectation and anatomical studies suggest that the distribution of sensory dysfunction in carpal tunnel syndrome (CTS) should be confined to the thumb, index, middle and half of the ring fingers. We mapped the distribution of disturbance to evaluate the accuracy of these assumptions.

**Material and Methods:** We evaluated sixty-four wrists in 64 patients with nerve conduction study confirmed CTS. Each patient filled out a Katz hand diagram and we collated the distribution of pain and non-painful (tingling, numbness and decreased sensation) sensory disturbance. Frequency of reporting was analysed, dividing symptoms into thenar and hypothenar eminence, distal palm, each digit, posterior hand and forearm.

**Results and Statistics:** Non-painful sensory disturbance occurred in all patients. The index finger was the most common location (94%), followed by the middle finger (91%), the distal palm (84%), the ring finger (72%), the thumb (69%), the thenar eminence (63%), the little finger (39%), the dorsal hand (31%), the hypothenar eminence (25%) and the forearm (13%). Pain was less common, reported in 59% of cases. Pain occurred most frequently over the wrist crease (33%), followed by thenar eminence (27%), the forearm (20%), the middle finger (23%), the index finger (22%), the ring finger (19%), the distal palm (16%), the thumb (14%), the dorsal hand (11%), the little finger (11%) and least frequently the hypothenar eminence (6%).

**Conclusions and Clinical Reference:** In CTS, sensory disturbance occurs most frequently in the median nerve distribution; however it occurs almost as often elsewhere. An atypical distribution of symptoms should not discourage diagnosis of CTS.

**FRIDAY, 13 NOVEMBER****15:45 Design and Development of a Device to Directly Measure Intrinsic Hand Muscle Strength**

Mr S Xu, Mr M Miller, Miss C Kaffes, Mr N Shah, Miss A Morse, Miss B Lacy, Dr G Gogola (Houston, Texas)

**Introduction and Aims:** Intrinsic hand muscles are critical for dexterity and precision movements. Deterioration leads to functional loss of the hand. The manual muscle test is subjective and lacks sensitivity. Pinch/grip devices fail to isolate the intrinsic muscles.

**Materials and Methods:** We report the construction of a novel device composed of three components. First, a novel pegboard is used to restrain and isolate individual fingers. A detachable plastic enclosure incorporates a load cell, circuitry and battery. The patient pulls against an adjustable Velcro strap attached to the enclosure. This “make” test is self-correcting and eliminates off-axis loading. Also, the enclosure is able to move 360° in the x-y plane and up the z axis facilitating testing for both hands and accommodating a wide range of hand sizes and morphologies. With custom software, a PDA displays readings on a digital gauge and calculates peak force. The device also generates patient-specific data files with relevant identifiers. Clinically, we measured thumb palmar abduction, thumb opposition, hypothenar and 1st dorsal interosseus strength with the device.

**Results and Statistics:** Load cell output was highly linear ( $r^2 > 0.99$ ). Calibration interpolation demonstrated a  $\pm 40$  gram confidence interval (95%). Successful pilot testing with four-year-olds through adults proved feasibility. Each hand took under five minutes to test.

**Conclusions:** The reliable quantification of the intrinsic hand muscles is useful for diagnosis, surgical decision-making and rehabilitative tracking. This device will be helpful in managing patients with hand trauma, peripheral nerve injury, spinal cord injury, and muscular dystrophy. Clinical validation with children and adults is ongoing.

**15:52 Ligamentotaxor®: A New Tool for Finger Ligamentotaxis**

Mr M Joseph, Mr R Milner, Miss A Cooper, Mr A Ramsden (Newcastle upon Tyne)

**Introduction:** Dynamic external fixators are an effective treatment of complex intra-articular fractures of the interphalangeal joints. Many constructs require complex bending of K wires. A new commercial design of construct has been used, the Ligamentotaxor®. The system uses two transverse K-wires with robust metal coils to maintain adjustable ligamentotaxis. A simple guide to ensure parallel placement of the K wires is provided and only four 90° wire bends are required.

**Methods:** Seven consecutive patients with pilon fractures of the middle phalanx were prospectively treated using the Ligamentotaxor® by four surgeons. The frame was removed after four weeks.

**Results:** The Ligamentotaxor® was used in six males and one female whose average age was 28. The mean follow-up was six weeks. The average range of movement was 17°- 79° at the PIPJ and 10° - 49° at the DIPJ. The guide block improved K-wire accuracy and speeded placement. Bending of the K-wires was simpler and quicker than a Suzuki frame. The device was compact, robust and allowed simple post-operative tensioning. However, the coils prevented lateral X-ray interpretation post-operatively and assessment of dorsal volar displacement. No dorsal blocking K-wire was used.

**Conclusion:** The Ligamentotaxor® is simple, easily adjustable, robust and quick to use for the surgeon. The guide block allows accurate placement of wires. The device is well tolerated by the patient and the physiotherapists gave positive feedback. The disadvantages of the system are post-operative radiographic assessment and cost. Cases and radiographs will be discussed.

**16:00 The Creation of the Neo-Thumb by Distraction Osteogenesis - The Sheffield Experience**

Mr S Rannan-Eliya, Mr S Bostock (Sheffield)

The human hand is both a sensory organ and a tool for power, precision, and communication. The opposing thumb contributes 40% of hand function. Its loss is severely disabling, and restoration of even limited thumb function is invaluable.

Multiple techniques exist, ranging from pollicisation of an index, free flap importation of chimaeric bone and soft tissue, through to toe-to-hand transfer. However each brings particular deficiencies and complications. Nor is such high intensity surgery desired by the patient.

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One 'local' alternative is the lengthening, by distraction osteogenesis of the 1st metacarpal remnant. Less invasive, it involves only the already compromised digit, and creates a sensate post covered with durable skin.

We present four patients for whom thumb distraction was the preferred option between 2005 and 2008. Three losses were following work trauma, and a 4th along with all other digits following a catastrophic auto-immune induced ischaemic episode. Following metacarpal osteotomy, subsequent distraction occurred over six weeks with consolidation periods ranging from 4 – 12 months, achieved a mean length increase of 2.1 cm (range 1.9 – 2.2). One patient required ORIF of a fractured regenerate at 4.5 months. No other significant complications or other adjustments to the distracted bone occurred. Web space deepening with a radial forearm flap occurred in one case.

There is high satisfaction with the aesthetic and functional outcome, with maintenance of good sensation and a return to use of the reconstructed hand in most activities of daily living. This technique is a valuable adjunct to our reconstructive armoury.

16:07

**Arthroscopically Confirmed Carpal Softening in Elite Gymnasts**

Mr R Bryant, Mr S Turner (Coventry)

**Introduction:** The senior author has looked after elite British gymnasts for over 17 years. Carpal softening had been noticed arthroscopically even with normal MRI scans. Its possible significance will be discussed.

**Methods and Results:** Twenty-one wrist arthroscopies were performed in 17 gymnasts over the last 10 years. Referral to us occurred at the end of a chain of therapists/specialists when persistent pain prevented training. Average age at surgery was 17.5 years (12 males and 5 females). Most presented with dorsal or ulnar sided wrist pain and restricted extension. Fourteen wrists had pre-operative MRI, with four showing abnormalities of the TFCC. Fifteen wrists had carpal softening on probing of the lunate (all cases) and the triquetrum (some cases). None had reported corresponding MRI findings. Dorsal synovitis and ulnar sided fibrosis was also common and was treated with debridement.

**Discussion:** Massive forces are transmitted across the wrist joint during certain routines. Carpal softening is worrying in such a young group. We avoid training for six weeks or until pain free to avoid further damage. One gymnast continued training and repeated arthroscopy at six months revealed almost complete sloughing of the radio-carpal joint cartilage.

**Conclusions:** A gymnast with symptoms sufficient to prevent training must be taken seriously. MRI failed to pick up evidence of carpal softening that was present in 71% wrists. We recommend a low threshold for early wrist arthroscopy. No literature guides us on how to manage these cases but caution must be used on advising return to training.

16:15

**Ulna Shortening Osteotomy: Comparison of 5-hole and 6-hole Dynamic Compression Plate Fixation**

Mr R Trickett, Mr A Gul, Mr D Newington, Mr D Russell (Swansea)

**Introduction:** Ulna shortening is increasingly used in the treatment of ulna sided wrist pain associated with ulna positive variance. Various techniques to shorten the ulna have been described; and a popular method relies upon the Stanley jig. This allows accurate parallel osteotomies and pre-drilling of the screw holes for the application of a 5-hole dynamic compression plate. This construct permits four cortices either side of the osteotomy and an oblique lag screw.

**Aim:** To assess union rate in ulna shortening osteotomy using 5-hole and 6-hole dynamic compression plate fixation.

**Method:** All cases of primary ulna shortening performed in the Morrison hand unit were retrospectively analysed between April 2006 and January 2009. Clinical notes and radiographs were reviewed to assess the incidence of bony union. Prospective data collection remains ongoing.

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**Results:** A total of twenty-five patients were identified: 14 patients underwent fixation with a 5-hole plate and 11 patients with a 6-hole plate. All patients were followed up until union or revision surgery. There were six non-unions in the 5-hole group (42%) and 0 non-unions in the 6-hole group (0%). This was statistically significant using the two tailed Fisher's Exact Probability Test ( $p < 0.05$ ).

**Clinical Relevance:** The cases of non-union will be discussed including the methods of implant failure. Implications for practice, particularly regarding the role of dynamic locking compression plates will be explored.

16:22

**The Outcome of the Four-corner Fusion Procedure at a Minimum of Ten Years**

Mr A Watts, Mr G Bain (Adelaide)

**Background:** Fusion of the midcarpal joint and scaphoid excision is a salvage option for patients with advanced carpal collapse. This study aims to report the clinical outcomes of four-corner fusion at one, two and a minimum of ten years.

**Methods:** A cohort study was performed of patients undergoing a four-corner fusion procedure using bone graft and 3M Shapiro staples by a single surgeon. Patients were followed prospectively at one, two and a minimum of 10 years post-operatively by an independent observer. Demographic data, pain scores, range of wrist movement, grip and pinch strength, and functional scores were recorded. Measures were repeated at each time point in addition to patient satisfaction scores.

**Results:** Thirty-one patients of 35 recruited (89%) were followed to ten years. The mean age was forty-seven years. The pain scores decreased from a median pre-operative score of 6/10 to 0/10 at one year. Wrist flexion decreased post-operatively by an average of 22%. The average patient reported satisfaction score was 8/10. There was no significant change in pain scores, wrist function, satisfaction or range of movement between one and 10 years. Of the thirty-five patients recruited two patients had gone on to a total wrist fusion, one died at 7 years after index surgery without any further intervention and the outcome at 10 years was unknown for three patients.

**Discussion:** The outcome of the four-corner fusion procedure is favourable at one year and does not deteriorate significantly between one and ten years. There is a low rate of conversion to total wrist fusion.

16:30

**CT Scanning in Acute Scaphoid Waist Fractures. Can it Predict Union?**

Mr A Bebbington, Mr N Downing, Mr J Oni, Professor T R C Davis (Nottingham)

**Introduction:** Prediction of union of scaphoid fractures can be difficult. Traditionally scaphoid waist fractures are treated with 6-8 weeks immobilisation and can be expected to have an 85% union rate. Assessment of union on plain radiographs can be challenging indeed it has been suggested that only the absence of frank signs of non-union can be used to infer radiological union. The aim of this study was to assess whether CT scans of acute scaphoid waist fractures at four weeks could be used to predict union.

**Method:** One hundred and sixty-seven consecutive scaphoid waist fractures underwent CT scans at 4 weeks after injury. Twenty-nine of these were displaced as seen on CT scan by 2 blinded observers. Four of these were either lost to follow-up or had incomplete data available for study leaving a cohort of 25 fractures. Degree of sclerosis and resorption/cyst formation at the fracture site on both proximal and distal fracture fragments was identified (%fracture width). Dorsal cortical gapping and translation in mms was measured.

**Results:** 14/25 united and 11/25 did not. Degree and severity of sclerosis and bone resorption was not significantly different between groups. Dorsal gapping averaged 1.9mm in those that eventually united, but averaged 2.9 mm in those that didn't. Translation was 0.7mm and 1.9mm respectively.

**Conclusion:** Using CT scans at four weeks only the degree of displacement (dorsal gapping  $> 2$ mm, translation  $> 1$ mm) can be useful in predicting a fracture that may go on to a non-union and that sclerosis and bone resorption are not helpful.

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16:37 **Undisplaced Scaphoid Waist Fractures - Can Outcome be Predicted with a Four-week CT Scan?**  
Professor T R C Davis, Mr J Geoghegan, Mr M Woodruff, Mr R Bhatia, Mr J Oni, Mr N Downing  
(Nottingham)

**Introduction and Aims:** Does assessment of union on Week 4 CT scans predict the outcome of undisplaced scaphoid waist fractures which are treated non-operatively in a below-elbow plaster for 4-8 weeks?

**Material and Methods:** Fifty-nine scaphoid waist fractures were prospectively recruited and CT scanned at 4 weeks: "Union" and displacement were assessed on these scans by two experienced observers. Forty-three of the 59 fractures were undisplaced and 26 of these were mobilised at 4 weeks, 2 at 5 weeks, 4 at 6 weeks, 1 at 7 weeks and 11 at 8 weeks. Radiographic follow-up ranged from fifty-three to 795 days.

**Results:** The assessment of union had good reproducibility ( $\kappa = 0.77$ ). Thirty-seven of the 43 undisplaced fractures were classed as "united" on the 4 week CT scan and all 37 actually united, even though 25 of these were only immobilised for 4 weeks. One of the six fractures, which was classed as "not yet united" on the Week 4 CT scan, failed to unite, such that the 4 week CT scan had 88% sensitivity, 100% specificity and 100% positive and 17% negative predictive values for predicting the outcome of the undisplaced fractures.

**Conclusions and Clinical Relevance:**

- a) The outcome of non-operative treatment of undisplaced scaphoid waist fractures can be predicted by assessing fracture union on a week 4 CT scan.
- b) If the week 4 CT scan shows union, then further immobilisation of undisplaced fractures may be unnecessary: all such fractures which were mobilised at week 4 actually united.

16:45 Discussion

17.00 Tea and Close of Meeting

## POSTERS

**1 Complications and Outcome after Treatment of Distal Radial Fractures with a Volar Locking Plate**

Mr H Gbejuade, Mr S Kaleel, Mr P Crossman (Ipswich)

The use of volar locking plates for distal radial fractures has been increasing, but there have been reports of complications requiring surgical intervention. We aimed to assess complications and outcomes associated with the use of one such implant (DVR plate) at our hospital.

Of a consecutive series of seventy-one patients (74 fractures) treated by various surgeons using a DVR plate, case notes of 70 patients (73 fractures, mean age 56 years, 69% female) were reviewed at a mean of 23 months. X-ray images were studied and patients completed a standardised questionnaire by telephone.

Minor transient complications were noted in eighteen patients (25%); 2 patients (3%) developed a complex regional pain syndrome. Further operations were required in seven patients (10%). There were no infections or tendon ruptures.

X-ray images showed 15% fractures were extra-articular (AO type A), 85% intra-articular (24% type B, 61% type C). Reduction of the radius was variable: e.g., mean ulnar variance 0.7 mm (-2.5 – 9), mean volar tilt 6o (17 to -20). Of intra-articular fractures, 34% had an intra-articular step/gap of 2 mm or more.

Of respondents to the telephone survey, 64% denied any pain; 85% rated grip strength as good, 97% denied problems in activities of daily living, 88% were very satisfied overall; 98% said they would recommend their treatment.

We found a modest rate of complications associated with the use of the DVR plate and articular reduction was variable. Despite this, function appeared to be good and satisfaction was high.

**2 Does Suture Pretensioning Reduce Plastic Deformation during Cyclical Loading?**

Mr G Smith, Mr R Anakwe, Mr R Wallace, Ms J McEachan (Dunfermline)

**Introduction and Aims:** Suture materials are selected for their intrinsic and handling properties. Materials selected for tendon repair are subjected to repeated cyclical loading during modern active rehabilitation regimes. Tendon repairs commonly fail at the knot by breaking or knot slippage. Suture materials also demonstrate plastic deformation during loading and this may contribute to gap formation. This study investigates whether the plastic deformation demonstrated by two commonly used suture materials during loading can be reduced by simple manual pre-tensioning.

**Material and Methods:** Two commonly used suture types were selected: Polypropylene (Prolene) 3/0 and Polyester (Ethibond Excel) 3/0. Twenty lengths of each were knotted with a standard surgical knot. The suture length was measured and the knotted suture was subjected to a standardised cyclical loading regime on a materials testing machine. This was designed to represent the finger flexion forces in an active rehabilitation programme for tendon repair. Half of the sutures in each group were manually pre-tensioned before the knot was formed and half were knotted without pre-tensioning. Suture measurements were repeated after loading.

**Results and Statistics:** Pre-tensioning did not produce any significant difference in plastic deformation for Ethibond sutures. Pre-tensioned Prolene sutures demonstrated significantly less plastic deformation than Prolene sutures knotted without being pre-tensioned.

**Conclusions and Clinical Reference:** Plastic deformation of Prolene suture is reduced by simple manual pre-tensioning. This may reduce gap formation at the site of a tendon repair.

**3 Early Active Mobilisation following Ulnar Collateral Ligament Repair in the Thumb MCPJ – A Randomised Controlled Trial**

Miss R Taghizadeh, Mr R Milner (Newcastle upon Tyne)

**Introduction:** Injuries of the ulnar collateral ligament (UCL) of the thumb joint are common. Surgery is indicated for a complete rupture of the ligament. We studied the outcome of early protected mobilisation following UCL Mitek fixation compared to that of standard immobilisation.

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**Methods:** A randomised controlled study was undertaken of patients with a complete UCL rupture who underwent reattachment of the ligament with a Mitek bone anchor. Patients were seen at day 3-5 post-operatively and randomised to: group A) early protected mobilisation and physiotherapy within a thermoplastic splint for four weeks, or group B) standard rehabilitation with immobilisation in a cast for four weeks. Follow-up was continued until completion of rehabilitation. Outcome measures included range of movement, joint stability, time of return to normal function and patient satisfaction.

**Results:** The study included thirteen patients (9 male, 4 female) with mean age of 39 years (range 20-72). The mean time from surgical repair to full return of function was found to be 5.6 weeks in group A compared to 9 weeks in group B. The mean total number of visits was five in group A compared to seven in group B. Patient satisfaction was higher in the early active motion group. No complications were noted in either group.

**Conclusion:** Early protected mobilisation following Mitek repair of UCL was associated with a quicker recovery of function.

4 **An Educational Poster to Improve Preservation and Safe Transfer of Amputated Digits**  
Mr D Ng, Mr M Tare (Chelmsford)

**Introduction:** Amputated digits for potential replantation have often arrived at our hand trauma centre inappropriately preserved, making them unsuitable for replantation. Despite verbal instructions over the phone at the point of referral, the methods of preservation actually adopted by the referring hospitals have been inconsistent. The aim of this project is to design a poster to educate referring clinicians by explaining the process of preservation and transportation of amputated digits.

**Materials and Methods:** A poster was designed with a step-by-step pictorial guide to how an amputated digit should be preserved. In a separate column, a guide to initial management was provided, along with indications and contraindications to replantation, and contact details. Copies of the poster were then sent to referring A&E departments in hospitals within our region of cover. The referring clinicians were asked to refer to the poster in their respective A&E departments dispatching the amputated digit. On arrival to our hand trauma centre, the methods of preservation and transportation were documented.

**Results:** Following the distribution of the poster, the amputated digits have been correctly preserved in all five subsequent referrals so far.

**Conclusions:** Based on our early results, the poster has been effective in educating A&E clinicians and facilitating the appropriate preservation and safe transfer of amputated digits. We recommend a nationwide distribution of this poster in all A&E departments.

5 **An Experimental Study to Determine the Reliability, Accuracy and Sensitivity of the Weighted Tape Measure and Inter Rater Reliability when using the Tool to Measure Digital Circumference**  
Mrs V Jansen, Professor F Burke, Ms M Bradley, Mrs E Radbourne, Mrs E Jo, Mr A Fakis (Derby)

**Introduction:** An experimental study was undertaken to assess if a weighted tape measure, used with a protocol, could provide accurate and reliable circumferential measurements (CM's) of swollen digits.

**Method:** In phase one, accuracy and sensitivity was determined by two raters measuring 16 steel bars of known circumferences and comparing the known measurements to those taken with the tool. In phase two, rater reliability was assessed by three raters measuring 12 prosthetic digits. In phase three, 27 swollen digits were measured by three raters to assess reliability of the raters and tool and method of use in a clinical setting. The analysis of reliability was based on the intraclass correlation coefficient (ICC) and the 95% confidence interval was constructed for estimating the precision of the ICC estimates.

**Results:** There was near perfect agreement between the measurements taken and the actual circumference of the steel bars (ICC 0.99). A true change of 2mm can be detected with the same rater and a change of

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3mm can be detected with a different rater. On swollen digits the ICC values were significantly ( $p < 0.001$ ) greater than the lower limit of 0.9 for both inter and intra rater reliability with narrow 95% confidence intervals.

**Discussion:** The weighted tape measure has been shown to be accurate and reliable when used with a protocol for measuring swollen digits. It is easy to use and may become a clinically useful tool. Issues around the validity of using CM's are discussed.

6 **Is Objective Assessment of Sensory Loss in Agreement with Patient Experience in Carpal Tunnel Syndrome?**

Mr D Clark, Mr R Amirfeyz, Mr I Leslie, Professor G Bannister, Professor R Bhatia (Bristol)

**Introduction and Aims:** Patient reported symptoms elicited during a focussed history are the foundation of a diagnosis of carpal tunnel syndrome (CTS) but patient experience varies considerably. Assessment can be undertaken by subjective measures such as Katz hand diagram or objective measures such as pressure aesthesiometry and two point discrimination (TPD). To minimise discrepancies in reporting some authors advocate objective measurement.

**Material and Methods:** We assessed sixty-four wrists in 64 patients with nerve conduction study confirmed CTS and 64 patients in the normal population. We tested sensibility at the tip of each digit and in the palm with Semmes-Weinstein Monofilament (SWM). There is controversy whether a SWM cut of 3.61 (0.4g) is the upper limit of normal or the lower limit of abnormal, we considered both eventualities. We assessed two-point discrimination in the palm and made subjective assessment with Katz hand diagram.

**Results and Statistics:** Sensitivity and specificity of each objective test and the correlation between subjective and objective tests were evaluated. When 3.61 was considered normal the sensitivity was poor (best 28% at thenar eminence) and when 3.61 was considered abnormal the specificity was poor (best 14% at index finger). Sensitivity of TPD was 50%. Best correlation between subjective diagram and SWM test was with a 3.61 cut off as normal at the thenar eminence, Kappa value 0.044. The correlation between the subjective testing and the TPD was 0.067.

**Conclusions and Clinical Reference:** Objective measures are neither a suitable single test nor a surrogate for subjective testing.

7 **Emerging Patterns of Upper Limb Blast Injury in Military Personnel**

Mr J Granville-Chapman, Mr D Stitson, Mr S Hettiaratchy (Frimley)

Foot detonated landmines and Improvised Explosive Devices (IEDs) have been shown to cause specific injury patterns in civilian populations. Lower limb injuries predominate and there is a low incidence of upper limb injuries.

We have noted that, in military casualties injured while on foot in Afghanistan, a different injury pattern is emerging. These patients have a high incidence of upper limb injuries, in particular hand injuries, in addition to the expected pattern of lower limb injuries. This has not been documented previously.

We suggest this emerging pattern may be due to the fact that military personnel were carrying weapons at the time of the explosion and that this keeps the upper limbs within the blast zone. These upper limb injuries add significantly to the injury severity, complexity of management and morbidity of these casualties.

8 **Therapy Management of PIP Joint Arthroplasty Management: A Survey of Therapist's Perspectives**

Miss H Hanscombe (Leicester)

**Introduction and Aims:** Post-operative PIP joint arthroplasty results in the literature are variable, with unpredictability in outcomes leading to a lack of routine practice (Branam et al 2007, Bravo et al 2007, Linscheid et al 1997, Johnstone 2001, Stutz et al 2005, Tuttle and Stern 2006, Rizzo and Beckenhaugh

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2007). The majority of current practice is based upon the surgeons' or therapists' opinions and therefore differs from centre to centre. The aims of this study are to provide an overview of what practice is currently occurring nationally, including therapists' opinions and rationale.

**Method:** Participants were recruited via a postal questionnaire, targeting experienced hand therapists. Members of the British Association of Hand Therapists (BAHT) were used as the sample population. Thirty-seven responses were received that met the inclusion criteria, which was an acceptable amount for such a study design.

**Results:** The following table presents the overview of splinting/regimes in use.

Type of splint	Number of responses (n)	Percentage (%)
Volar extension splint	14	37.83
Dynamic extension splint	9	24.32
Short arc of motion splints	5	13.51
Dorsal blocking splint	2	5.41
Capener	2	5.41
Bedford / buddy strapping	2	5.41
Nil	3	8.11

As shown, there is a wide variety of regimes in use. This mirrors the literature, with poor consensus in practice. The most common splint type is a volar extension splint, similar to that described by Johnstone (2001).

**Conclusion:** Overall, the overview of national current therapy management for PIP joint replacement is variable and differs from published literature. Pre-operative deformity and feedback from surgeons regarding confidence in stability is essential to tailor regimes to patients needs. Suggestions for future practice are made.

9

### A Survey of Orthopaedic Trainees' Experience of the Performance-based Assessment Component of the Orthopaedic Curriculum and Assessment Project

Miss C Simpson, Mr A Ajis, Mr D Brown (Liverpool)

Performance Based Assessments (PBAs), a key component of the Orthopaedic Curriculum and Assessment Project (OCAP), act as formal structured assessments that on an individual basis provide structured formative feedback and, over time, can provide a more summative, competency-based portfolio of the trainees' abilities.

**Method:** An anonymous online survey was completed by Orthopaedic Higher Surgical Trainees within Mersey Deanery.

**Results:** A response rate of 66% (44 trainees of 67) was obtained. No trainees believed the documentation accurately reflected feedback given. Less than half believed that the PBA was both a training and assessment tool. Twenty-eight (64%) felt that the feedback they were given was put into practise in future procedures, however, 14 trainees (32%) felt that PBAs are a paper-filling exercise only. Thirty-three trainees (79%) said there was a lack of time during the operating day to complete the PBA exercise immediately after performing the procedure.

**Conclusions:** PBAs were designed as, predominantly, a form of formative assessment where structured feedback helps trainees learn more effectively. Summative assessment, where the trainee demonstrates the attainment of certain criteria (i.e. "signing off"), can only occur by building up a portfolio of PBAs. Our results suggest that these evaluations are, however, perceived as purely summative. To ensure that these assessments are truly formative and, therefore, to avoid wasting an important educational opportunity further education and training of both trainees and trainers is required.

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**10 A Randomised Control Trial of the Effects of Exsanguination versus Elevation prior to Tourniquet Inflation on Patient Perceived Pain**

Mr A Jafri, Mr P Baker, Dr K Mozolowski, Mr A Mahon (Durham)

**Introduction:** Tourniquets are frequently used to provide a clear surgical field. Scintigraphic techniques have demonstrated that exsanguination significantly reduces the blood volume in the upper limb more than elevation. We hypothesised that minimising blood volume within the limb may have an effect on the level of pain patients experience and that by using an exsanguinator to achieve this, the pain experienced would be reduced when compared to elevation.

**Materials and Methods:** Twenty volunteers (40 arms) were recruited allowing comparison between the two interventions between each volunteer. The sequence of experiments was determined by randomisation. Primary outcome measure was pain VAS. Secondary outcomes were time for normal sensation to return following deflation and tourniquet tolerance. A qualitative description of the individuals experience was noted.

**Results:** There was no difference in patient perceived pain between elevation and exsanguination at any time point ( $p>0.05$ ). No statistical difference when prior experience of the tourniquet and arm dominance were considered. The mean pain VAS rose above 50/100 at 14 minutes. Parasthesia was experienced initially in the ulnar nerve distribution at ten minutes. Median nerve symptoms followed as the experiment neared conclusion (20mins). Following deflation normal sensation returned at a mean of 8.7 minutes.

**Discussion:** There is no benefit to the patient, in terms of pain experienced, whether elevation or exsanguination is utilised prior to tourniquet application for LA procedures. A tourniquet is well tolerated for up to 14 minutes. The decision as to the most appropriate method should be left to the discretion of the operating surgeon.

**11 Bioabsorbable Interference Screw Fixation of Distal Biceps Ruptures through a Single Anterior Incision: A Case Series and Literature Review**

Mr W Eardley, Mr S Odak, Mr R Jeavons, Mr J McVie (Darlington)

**Objective:** We present the first prospective clinical series with objective assessment of acutely ruptured distal biceps tendons repaired using a biotenodesis screw through a single anterior incision.

**Methods:** Fourteen tendon ruptures in 14 male patients representing all ruptures referred to the senior author over a two-year period. A modification of the approach described by Mazzocca is utilised with Bio-Tenodesis screw for fixation. Clinical review was at two and 6 weeks, 3 and 6 months. Goniometric measurement was performed and DASH and MEPS were used for scoring. Function at six months was the primary end point, identified as most appropriate duration for final assessment by previous studies. There was no loss to follow-up.

**Results:** Mean age 41.9 years. All patients had a mechanism of eccentric extensile loading, nine in the dominant limb. Four smoked tobacco and 2 used anabolic steroids. Average Body Mass Index was 32 and average time to surgery was 10.4 days. Mean post-operative flexion 130°, extension 0°, supination 74° and pronation of 66°. The mean DASH score was 6.97, MEPS 96. One patient developed heterotrophic ossification requiring no further intervention. Parasthesia of the lateral cutaneous nerve of forearm occurred in eight patients, but resolved in all cases.

**Conclusion:** The clinical and patient assessed function resulting from this technique is excellent, and complications are minimal. This is a safe and successful approach and fixation option for the surgical management of distal biceps tendon ruptures.

**POSTERS****12 Surgical Tip: A Modified Tie-Over Dressing for Skin Grafts after Dermofasciectomy**

Mr R Anakwe, Ms E Graham, Ms J McEachan (Dunfermline)

Tie over dressings are commonly used to protect skin grafts in the early post-operative phase. These dressings remain popular and they find particular application in our practice for skin grafts after dermofasciectomy for Dupuytren's disease. Common combinations include tulle grass, scrub sponge or cotton wool coated in proflavine, povidone-iodine or paraffin jelly. The application of the tie-over dressing allows persistent gentle compression of the skin graft, reducing movement between the graft and wound bed, minimising dead space, reducing haematoma and seroma formation and improving graft take.

These dressings commonly dry out however or become encrusted with exudate. They can be uncomfortable when removed in the outpatient department and can damage the graft where they become adherent.

We describe a modification of the tie-over technique to minimise these problems using a Mepitel-surgical sponge dressing. This technique is simple, reproducible and produces excellent results. It is easily removed in the outpatient department and patients report little discomfort.

**13 Current Practice of Primary Flexor Tendon Repair in the U.K.**

Mr A Lahiri (Birmingham)

Flexor tendon injury is one of the most common acute injuries treated by a hand surgeon. Despite a considerable amount of research in the last twenty years, the ideal technique for flexor tendon repair and subsequent rehabilitation remains a matter of much debate. The latest IFFSH flexor tendon committee report (June, 2007) highlights the lack of consensus.

To investigate the current practice of flexor tendon repair among the hand surgeons in the United Kingdom, a questionnaire survey was undertaken.

This same survey was undertaken six years ago. Hand surgeons were identified from the list of members of BSSH. A one-page postal questionnaire covering different aspects of flexor tendon repair was sent to all hand surgeons in the United Kingdom.

The findings were presented in the combined BSSH/ASSH meeting in 2004 which highlighted the vast range of practices undertaken by the hand surgeons at each step of tendon repair and rehabilitation. The survey also showed the inter-specialty differences between the hand surgeons from plastic surgery and orthopaedics.

The current survey used the same questionnaire with a few additional questions. This retained the form of a short simple questionnaire consisting largely of tick-boxes with space for comments. The surveys were sent out by email and/or post and the replies were analysed.

The results demonstrate the changing practices in the United Kingdom compared to findings of the previous survey, but still a large degree of variation in technique. The results will be presented along with a review of the important publications from recent years.

**14 Thumb Carpometacarpal Osteoarthritis: Trapeziectomy versus Trapeziectomy with PI2 Arthroplasty**

Mr M Maru, Dr P Jethoo, Ms L Tourret, Mr M Jones, Mr L Irwin (Sunderland)

**Methods:** A cross-sectional observational study involving thirty-three patients (36 thumbs). Eighteen thumbs had trapeziectomy alone and 18 had trapeziectomy and PI2 implantation. Clinical review including DASH and SF-36 score was performed at a mean follow-up of eighteen months. Pain level was assessed using Visual Analogue Scale (VAS) and satisfaction of the surgery using the Likert 5-point scale.

**POSTERS**

**Results:** There were thirty women and 3 men. The average age at follow-up was sixty-one years (range 45 to 75). The mean DASH score at follow-up was 26.8 for trapeziectomy alone group and 35.4 for the PI2 arthroplasty group. Pre-operative to post-operative VAS for pain showed an improvement from fair to excellent in 60% of patients in trapeziectomy alone group and 30% of the patients in the PI2 arthroplasty group. There was no significant difference in the SF-36 scores between the two groups in all health domains. Six out of 16 (38 %) patients in the PI2 group had multiple surgeries mainly due to dislocation or subluxation of the implant. The overall Likert 5-point scale scores were highest for trapeziectomy alone group with 70% very satisfied compared to 40% in the PI2 arthroplasty group.

**Conclusion:** The high rates of subluxation and dislocation observed in the early cohort resulting in multiple surgeries may be attributed to steep learning curve of the surgical technique and creation of a shallow groove for the implant. Simple trapeziectomy provides satisfactory outcome in more than 80% of the patients.

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**Revision Carpal Tunnel Release: Analysis of Reasons for Failure**

Mr T Opara, Mr M Katchburian (Maidstone)

**Introduction:** Carpal tunnel syndrome is the commonest peripheral nerve compression neuropathy. Carpal tunnel release (CTR) is a very successful operation. Failed CTR mainly presents as persistence of symptoms, recurrence and new symptoms. The commonest presentation is persistence of symptoms suggested to be due to inadequate release of transverse carpal ligament (TCL), and ante brachial fascia (ABF).

**Aim:** We were looking at the rate of recurrence after CTR and the levels of skills of the primary surgeon.

**Materials and Method:** In a retrospective study we reviewed forty-nine cases of failed CTR in Kent and Sussex area in the South East of England covering the period between 1978 and 2008. The data was generated from the revision open CTR operation notes following referral to the specialist hand surgeon in the region.

**Results:** There is thirty-four female and 13 male with age range of 41 to 90. The time between primary CTR to revision CTR is three months to 30 years. In our series, more than 55% was due to persistence. Incomplete division of TCL was noted in over 55% of cases and intact ABF in 34% of cases. In 49% of cases of recurrent carpal tunnel syndrome post CTR the primary surgery was done by GPs.

**Conclusion:** This questions the role of GPs with special interest (GPSI) and surgical care practitioners as surgeons. Is this “a tip of the iceberg”? This initiative is target driven not patient centred.

**MEETING INFORMATION****REGISTRATION FEES**

**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 £90.00 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.

	<b>Registration Fees</b>
Full / Overseas / Associate Member and Other	£410 Whole meeting £215 One day
Trainees, (UK only) Companion Members	£230 Whole meeting £125 One day
Honorary, Senior Members Speakers who are Research Doctors or Scientists	£ 90.00 per day

**Reduced Registration Fees**

The Council of the Society agreed that Members and Associates who attended the whole of the 2009 Spring Scientific Meeting in London (Combined ASSH/BSSH Meeting), should receive a reduced registration fee for either the 2009 Autumn Scientific Meeting in Nottingham or the 2010 Spring Scientific Meeting in Manchester, if they attend the whole of either meeting.

The agreed reductions are:

Full Members and Associate Members (Consultants):	£200.00
Associate Members (Trainees) and Overseas Members:	£100.00

Please note, however, only Members and Associates who register for and attend the whole meeting are eligible for the reduced registration fees.

**REGISTRATION AND ENQUIRY DESK**

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

Thursday	8.30 am – 5.00 pm
Friday	8.30 am – 3.00 pm

The telephone number of the Registration and Enquiry Desk during the Meeting is:  
07930 509646 (BSSH mobile telephone number).

**HONORARY AND SENIOR MEMBERS**

Honorary and Senior Members will not pay a registration fee. A charge of £90.00 will be made for refreshments and luncheon each day. This is the day delegate rate charged to us by the hotel for each delegate.

## VENUE OF SCIENTIFIC MEETING

The plenary sessions will be held in the Royal Suite.

The following group meetings will take place:-

THURSDAY: 9 am to 10.45 am

Dupuytren's disease controversies *Royal Suite*

Reconstruction of the upper limb using vascularised tissue *Highgrove*

Fractures around the proximal interphalangeal joint *Hampton & Windsor*

FRIDAY: 9 am to 11 am

Brachial plexus *Hampton & Windsor*

Ulnar Border Wrist Pain, acute and chronic *Royal Suite*

Flexor Tendon Repair *Highgrove*

FRIDAY: 11.20 am – 1.00 pm.

Brachial plexus *Hampton & Windsor*

Reconstruction of the upper limb using vascularised tissue *Highgrove*

Scaphoid fractures non union and malunion *Royal Suite*

## CONTRIBUTORS INFORMATION

### Projection Facilities

Projection of presentations will be by Power Point only. The AV will be provided by PSAV Presentation Services. Questions should be addressed to: jaymie@psav.com

Speakers should e-mail their presentation to this e-mail address at least two days before the event. Guarantee cannot be given that presentations sent the day before an event or brought on the day can be tested.

### **SPEAKERS ARE ASKED TO KEEP STRICTLY TO THE TIME ALLOCATED FOR THEIR PRESENTATION**

### MEDICAL AND TECHNICAL EXHIBITION

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

### POSTER PRESENTATIONS AND POSTER PRIZE

Posters will be displayed at the rear of the Royal Suite Bar.

Authors of posters are asked to 'man' their posters during the second half of lunchtime on Thursday and/or Friday in order to provide opportunity for discussion between delegates and authors. A prize of £250 will be awarded for the best poster.

### JOURNAL OF HAND SURGERY PRIZE

A prize consisting of book vouchers up to the value of £500, will be awarded to the presenter of the best paper at the Meeting.

### DOUGLAS LAMB LECTURER

This will be delivered on Thursday at 2.45 pm by Dr Peter Stern, M.D. entitled:-  
Psychiatric Disorders in the Upper Extremity.

### HUNTERIAN LECTURE

This will be delivered on Thursday at 4 pm by Mr Mo Akhavan, FRCS, entitled:-  
The interplay between hypoxia, angiogenesis and inflammation in rheumatoid hand disease.

**MEETING INFORMATION****SOCIETY DINNER**

**Thursday, 12 November at 19.30 for 20.00 hrs**  
**The Council House, Old Market Square, Nottingham NG1 2DT**

The Society Dinner is open to Honorary, Senior and Full Members and Associates, all of whom may invite guests. Lounge suits should be worn.

This is within walking distance of the Crowne Plaza. Please see the map at the rear of this programme.

**LUNCHEON**

Luncheon will be served in the restaurant on the first floor.

**ANNUAL GENERAL MEETING**

The meeting which is open to members and associates only, will be held on Thursday, 11 November at 1.45 pm in the Royal Suite.

**CAR PARKING**

There is ample car parking available at the Crowne Plaza Hotel.

**HOTELS**

Crowne Plaza Hotel  
Wollaton Street  
Nottingham, NG1 5RH  
Tel.: 0871 942 9161  
Fax.: 0115 947 5667

Days Hotel Nottingham  
17-31 Wollaton Street  
Nottingham, NG1 5FW  
Tel: 0115 912 8000  
Fax: 0115 912 8080  
E-mail: [reception@dayshotelnottingham.co.uk](mailto:reception@dayshotelnottingham.co.uk)

This hotel is five minutes walk from the Crowne Plaza. Average room rate is £50.00 per night.

Holiday Inn Express  
7 Chapel Quarter, Chapel Bar  
Nottingham, NG1 6JS  
Reservations: 0871 423 4931

This hotel is five minutes walk from the Crowne Plaza. Average room rate is £59.00 per night.

**DIRECTIONS**

From Nottingham City Station.

A tram commences at the Station. To reach the Crowne Plaza Hotel, you should disembark at the Royal Centre (a two minutes walk from there). Cost is approximately £1.20 and tickets can be purchased on the tram.

**FUTURE MEETINGS – 2010**

- 22/23 April – Wythenshawe Hospital, Manchester
- 11-13 November – Royal College of Surgeons, London (Combined with BAHT)

**CONTINUING MEDICAL EDUCATION**

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

Thursday: 7.0      Friday: 6.5      Total: 13.5

LOCATION MAP



- |   |   |
|---|---|
| <p><b>KEY:</b></p> <ol style="list-style-type: none"> <li>1. Station (Carrington Street)</li> <li>2. Crowne Plaza (Wollaton Street, NG1 5RH)<br/><i>There is a multi-storey car park next to the hotel.</i></li> <li>3. Harts Restaurant<br/>(1 Standard Court, Park Row, NG1 6GN)</li> </ol> | <ol style="list-style-type: none"> <li>4. Council House<br/>(Old Market Square, NG1 2DT)</li> <li>5. Days Hotel<br/>(12-31 Wollaton Street, NG1 5RH)</li> <li>6. Holiday Inn Express<br/>(7 Chapel Quarter, Chapel Bar, NG1 6JS)</li> </ol> |
|---|---|

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Contact: Ms L Howard

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Contact: Mrs A Walsh

**MEMOMETAL UK LTD****STAND NO 7**

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Contact: Ms S Glendenning

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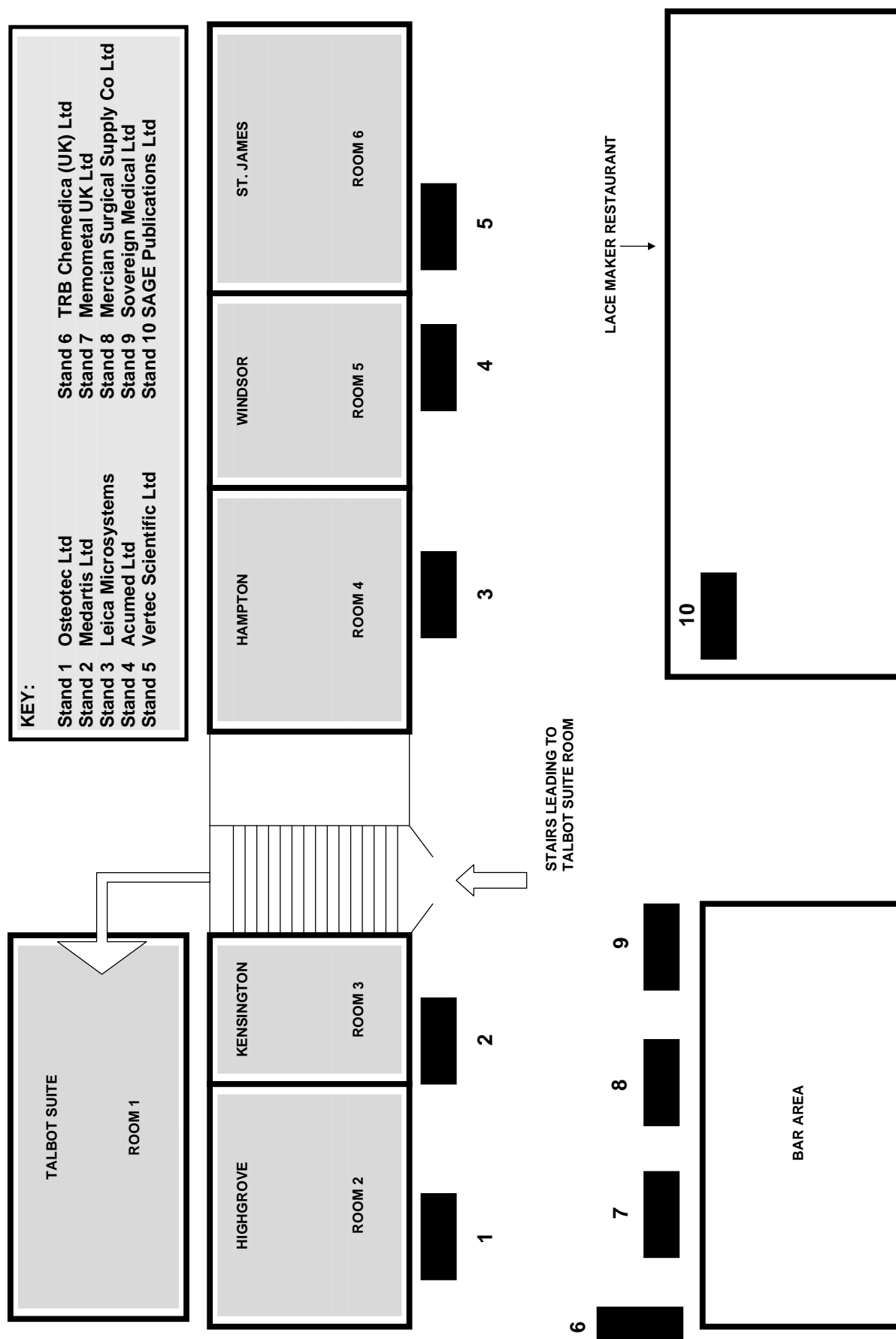
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