BSSH

The British Society for
Surgery of the Hand

BSSH/BAHT COMBINED SCIENTIFIC MEETING

11th - 12th November 2010

ROYAL COLLEGE OF SURGEONS
LONDON

PROGRAMME

BRITISH SOCIETY FOR SURGERY OF THE HAND

at the Royal College of Surgeons
35-43 Lincoln's Inn Fields, London WC2A 3PE
Tel: 020 7831 5162 Fax: 020 7831 4041
e-mail: secretariat@bssh.ac.uk

BSSH
The British Society for Surgery of the Hand

OUTLINE PROGRAMME

THURSDAY, 11 NOVEMBER 2010

09:00	Registration and Refreshments	
09:30	'In Memoriam' (Plenary)	Lecture Theatre 1
09:45	Symposium on Hand Transplantation and Composite Tissue-Allo-Transplantation (Plenary)	Lecture Theatre 1
12:15	Focal Dystonia and its Management (Plenary)	Lecture Theatre 1
13:00	Luncheon and Trade Exhibitions	
14:00	Invited Lecture (Parallel) Professor H Piza: Pollicisation and its Long-term Results	Lecture Theatre 1
14:00	BAHT Breakout Session (Parallel)	Lecture Theatre 2
14:30	Free Papers (Parallel)	Lecture Theatre 1
15:30	Examination of the Shoulder Group 1(Parallel)	Lecture Theatre 2
15:30	Refreshments and Trade Exhibitions	
16:00	Examination of the Shoulder Group 2(Parallel)	Lecture Theatre 2
16:30	Douglas Lamb Lecture (Plenary) Professor P Manske: Classification and Treatment of Congenital Longitudinal Deficiencies	Lecture Theatre 1
17:30	BSSH Annual General Meeting (open to Members and Associates only)	Committee Rooms 1 & 2
17:30	BAHT Annual General Meeting	Lecture Theatre 2
19:15	Drinks Reception	Hunterian Museum and Library
20:00	Society Dinner	Edward Lumley Hall

FRIDAY, 12 NOVEMBER 2010

08:00	Registration	
08:30	Free Papers (Plenary)	Lecture Theatre 1
10:30	Refreshments and Trade Exhibitions	
11:00	Symposium on Sports Medicine (Plenary)	Lecture Theatre 1
13:00	Awards and Prizes (Plenary)	Lecture Theatre 1
13:10	Luncheon and Trade Exhibitions	
14:00	Invited Lecture (Plenary) Professor Paul Manske: Surgical Treatment of Cerebral Palsy of the Upper Extremity in Children	Lecture Theatre 1
14:50	BSSH Guidelines on Current Practice (Parallel)	Lecture Theatre 1
15:05	Free Papers (Parallel)	Lecture Theatre 1
14:50	BAHT Breakout Session (Parallel)	Lecture Theatre 2
16:15	Free Papers (Plenary)	Lecture Theatre 1
16:50	Presentation of Top 3 Posters (Plenary)	Lecture Theatre 1
17:00	Close of Meeting	

THURSDAY, 11 NOVEMBER

09:00 Registration and refreshments

09:30 **In memoriam** (Plenary – Lecture Theatre 1)
Professor C M Dent (Mr D J Shewring)
Mr M H Kinmonth (Mr R E Page)
Surgeon Vice Admiral Sir James Watt (Mr J S Watson)

Symposium on hand transplantation and composite tissue allo-transplantation
(Plenary – Lecture Theatre 1)
Chairmen: Professor J J Dias/Miss V C Lees

09:45 Research and development in transplantation: The management of immunosuppression
Dr S Schneeberger

10:25 Bilateral arm transplantation
Professor H Piza

10:55 Feasibility of hand transplantation in the UK
Professor S P J Kay

11:10 Overview of transplantation and advise on the planning of hand and composite tissue transplantation in the UK
Professor J Neuberger

11:25 Overview of solid organ transplantation with special reference to the effects of long-term immunosupression
Dr C Leonard

11:40 Panel discussion

Focal dystonia and its management (Plenary – Lecture Theatre 1)
Chairman: Mr D M Evans

12:15 Clinical presentation and diagnosis
Mr A Graham

12:25 The causes and physiology of dystonia and what it tells us about therapy
Dr J Sussman

12:35 Treatment with Botox
Dr P Misra

12:45 Discussion

13:00 Luncheon and trade exhibitions

14:00 **Invited Lecture** (Parallel – Lecture Theatre 1)
Chairman: Professor S P J Kay

Pollicisation and its long-term results
Professor H Piza (Vienna)

THURSDAY, 11 NOVEMBER

Free Papers (Parallel – Lecture Theatre 1)

CHAIRMAN: MR D J BROWN

14:30 **Skyline view of the distal radius**
Mr J Jacob, Mr S Shetty, Mr N Clay (Rhyl)

Introduction: Extensor tendon damage is a recognised complication when using volar plates for distal radius fractures. Intra-operative detection of improper screw placement is critical. Standard lateral radiographs cannot exclude dorsal screw protrusion due to the pyramidal shape of the dorsal cortex around Lister's tubercle.

Methods: We describe a simple intra-operative fluoroscopic technique which shows the dorsal cortex of the radius. With the X-ray beam perpendicular to the operating table the arm is positioned as follows: elbow flexed 75-80 degrees, full supination of the forearm and as much wrist palmar flexion as possible.

Conclusion: In a series of twenty-five cases we have been able to see the position of the tips of the screws in all cases. It is a valuable adjunctive technique to a surgical procedure which is becoming the treatment of choice for many of these common fractures.

14:37 Discussion

14:40 **Long-term outcomes of excision of distal ulna for patients with rheumatoid arthritis**
Mrs C Ball, Mr A Jain, Dr A Freidin, Professor J Nanchahal (London)

Purpose: The aim of this study was to evaluate the long-term functional results of excision of the distal ulna in rheumatoid arthritis.

Methods: We prospectively collected data on range of motion (22 wrists), visual analogue pain scores (14 wrists), and grip strength (20 hands) in twenty-three patients (26 wrists) pre-operatively, at three months, 12 months and a minimum of five years post-operatively (range: 5.3-10.4 years). The Jebsen-Taylor hand function test was administered to nine patients at the same time points.

Results: At one year, there were improvements in forearm pronation and supination, which were maintained at final follow-up. Active radial deviation decreased at three months ($p<0.01$) and one year ($p<0.02$); this remained reduced at final follow-up. Wrist extension and active ulnar deviation showed slight improvements by one year, but reduced to levels below that measured pre-operatively by final follow-up. Wrist flexion was significantly reduced at all time points. Grip strength showed improvement from 10.0 kg (SD 4.1 kg) pre-operatively to 12.5 kg (SD 4.6 kg) one year after surgery and returned to pre-operative levels (9.5 kg, SD 5.6kg) by final follow-up. Wrist pain was significantly reduced from a mean score of 5 (SD 4) pre-operatively to 2 (SD 2) post-operatively ($p<0.01$). The Jebsen-Taylor hand function test showed improvements in writing and card turning.

Conclusions: In the long term, excision of the distal ulna in rheumatoid patients results in a sustained improvement in some aspects of hand function and a significant reduction in pain.

References:
A Jain, C Ball, J Nanchahal. Functional outcome following extensor synovectomy and excision of the distal ulna in patients with rheumatoid arthritis. J Hand Surg Br 2003; 28:531-536.
A Jain, C Ball, A Freidin, J Nanchahal. The effects of extensor synovectomy and excision of the distal ulna in rheumatoid arthritis on long-term function. Journal of Hand Surgery (Am). 2010 Sept; 35(9): 1442-1448. Epub 2010 Jul 27.
S Sharma, HR Schumacher, AT McLellan. Evaluation of the Jebsen hand function test for use in patients with rheumatoid arthritis [corrected]. Arthritis Care Res 1994;7:16-19.

14:43 Discussion

14:45 **A five-year prospective outcome study of Pi2 pyrocarbon interposition arthroplasty for the treatment of thumb carpometacarpal joint (CMCJ) osteoarthritis**

Dr L Ardouin, Dr P Bellemere, Dr F Chaise, Dr E Gaisne, Dr Y Kerjean, Dr T Loubersac (Nantes)

Introduction: Trapeziectomy with pyrocarbon implant is a recent procedure for CMCJ osteoarthritis. This study aims to report the first review of Pi2 pyrocarbon implants with a five-year follow-up.

Material and Methods: The prospective study included forty-two cases in 39 patients. Mean patient age at surgery was sixty-three years (range: 49-77 years). The implant was inserted by an anterior approach, after trapeziectomy and minimal trapezoidectomy. We performed a dorsal capsuloplasty and a ligamentoplasty using distally based strips of the APL and the FCR tendons to avoid the luxation of the implant. The assessment was based on clinical outcome, functional scores and radiographic review.

Results: The mean follow-up was 62.4 months (range: 55-83 months). A replacement of the implant was performed in one case. A CRP syndrome was identified for two patients. Overall satisfaction ranged from "very satisfied" to "satisfied" for 97% of the patients, and none were dissatisfied. Pain relief was excellent with a maximum of level 3 on a VAS. Mobility range and strength were increased and rather comparable to the opposite side. Return to full activities was complete after seventy-six days on average (range: 30-240 days). Improvement of the PRWE and the quickDash score was respectively 66% and 60%. Radiographic review reported two luxations of the implant and minimal bony remodelling for 29% of patients, without any clinical significance.

Conclusion: The Pi2 implant is well tolerated at five years. Major benefits are, preservation of the length of the thumb increasing its strength and mobility and short recovery period.

References:

1. Swanson AB. Disabling arthritis at the base of the thumb: treatment by resection of the trapezium and flexible (silicone) implant arthroplasty. J Bone Joint Surg Am. 1972; 54:456-471.
2. Szalay G, Meyer C, Kraus R, Heiss C, Schnettler R. The operative treatment of rhizarthrosis with pyrocarbon spacer as replacement of the trapezium. Handchir Mikrochir Plast Chir. 2009; 41:300-305.
3. Davis TR, Brady O, Barton NJ, Lunn PG, Burke FD. Trapeziectomy alone, with tendon interposition or with ligament reconstruction? J Hand Surg Br. 1997; 22:689-694.

14:48 Discussion

14:50 **A prospective study to evaluate the outcome of the saddle-shaped pyrolytic carbon hemiarthroplasty treating arthritis at the trapeziometa carpal joint**

Mr S Odak, Mr I A Trail, Mr K Swamy, Mrs A Birch (Wigan)

Introduction: Trapeziometacarpal (TMC) joint arthritis is a painful and disabling condition predominantly affecting older females. Arthroplasty of the trapeziometacarpal joint is a well described surgical treatment. We present our results with a minimum of one-year follow-up of saddle-shaped pyrolytic carbon hemiarthroplasty performed for the treatment of TMC joint arthritis.

Methods: Twenty-two thumbs (18 females, 4 males) with a mean age of 53 years (range 47-76 years) were assessed. A total of nineteen patients were available for follow-up. The mean follow-up period was 59.73 months (range 12-91 months).

Results: There was a significant improvement noted in pain scores (p value = 0.05). However, no such improvement was noted in range of movements, grip strength, apposition (key holding) strength and in Tripod strength. Radiologically the implant was noted to be subluxed in four patients, however, none of them were symptomatic. Five patients (26%) needed a revision procedure at a mean of six months (range 2-11 months).

Conclusion: We conclude that pyrolytic carbon saddle hemiarthroplasty does have a role in the treatment of arthritis of base of the thumb. Whilst it may not offer any significant advantage over trapeziectomy with or without interposition, in the older patient it does seem to have a role in the younger patient, who wishes to maintain grip and pinch strength. There was, however, a relatively high complication and revision rate, principally due to instability, although no significant loosening was noted. We believe that this is predominantly an issue of surgical technique rather than with the implant itself.

14:53 Discussion

14:55 **Pyrocarbon metacarpo-phalangeal joint replacements in osteoarthritis patients**
Miss L Young, Mr M Kent, Mr N Rehmatullah, Mr A Chojnowski (Norwich)

Purpose: To analyse the early results of unconstrained pyrocarbon joint replacements in patients with osteoarthritis (OA) of the metacarpo-phalangeal joints (MCPJs).

Methods: Nineteen primary pyrocarbon MCPJ replacements in 11 patients (5 men and 6 women) were reviewed, with prospective data collection. The diagnosis was primary OA in all patients. The mean age at operation was 66.4 years (range 55-82). Two patients underwent concomitant trapeziectomy and one underwent DIPJ fusion. All patients were right hand dominant - 75% underwent surgery in their dominant hand. Eleven of the nineteen joints were performed in the index finger, with the remainder in the middle finger. The mean follow-up is 22.1 months (range 11-37).

Results: At three months post-operatively, the arc of motion had improved from a mean of 320 to 450 and flexion had improved from a mean of 510 to 660. Grip strength improved from a mean of 20kg to 27kg. DASH scores significantly improved from a mean of 40 to 10 ($p=0.01$). All patients were satisfied with their outcomes and would have the surgery again if required. Post-operatively there has been no evidence of joint dislocation, resorption stress shielding, loosening, migration or heterotopic ossification. There was one intra-operative complication of fracture of the metacarpal, and one post-operative fracture of a proximal phalangeal implant at fourteen months. One patient has required revision for malrotation of the implant.

Conclusion: Our results demonstrate excellent early results of pyrocarbon MCPJ arthroplasty in osteoarthritis patients.

14:58 Discussion

15:00 **Trapeziectomy with Spongostan® as a spacer: Description of technique and clinical results**
Mr A Waton, Miss L Tourret (Sunderland)

Introduction: Arthritis of the thumb carpometacarpal joint is a common problem. Numerous techniques of trapeziectomy, with or without prosthetic spacers, have been described. Spongostan® is an absorbable, water-insoluble, porcine gelatine sponge which has been used extensively as a haemostatic agent. A recent laboratory study has shown that Spongostan® can act as a three-dimensional scaffold for a condrocyte extracellular matrix. We present a retrospective clinical analysis of a series of nineteen consecutive patients treated by a single surgeon with trapeziectomy with the use of Spongostan® as a spacer.

Methods: Nineteen consecutive patients were clinically assessed with Disabilities of the Arm, Shoulder and Hand (DASH) scores, SF36 scores, pre and post-op Visual Analogue Pain Scores (VAS) and measurements of grip strength, pinch strength and key-pinch strength.

Results: We demonstrated a statistically significant decrease in VAS (8.2 to 2.3, $p<0.001$). Mean DASH scores, grip and pinch strengths were comparable to other published series. We also demonstrated a statistically significant difference in SF36 General Health Score comparing Eaton and Glickel grade of CMCJ OA, with a better result in early-stage arthritis.

Conclusions: Our previously undescribed technique provides a good outcome for patients, significantly improving pain. Functional outcomes are comparable to other, larger studies of alternate surgical techniques. The use of Spongostan® as a spacer is significantly less expensive than recent pyrocarbon or prosthetic spacers. The results of this study suggest that trapeziectomy with the use of Spongostan® as a spacer is a good alternative to previously described surgical techniques.

15:03 Discussion

15:05 **Trapeziectomy for trapeziometacarpal joint osteoarthritis: Is there a role for ligament reconstruction and temporary stabilisation? Randomised prospective study - Six-year follow-up**
Mr H Salem, Professor T R C Davis (Nottingham)

This randomised prospective study compared two operations for the trapeziometacarpal joint osteoarthritis: trapeziectomy without ligament reconstruction or soft tissue interposition or temporary Kirschner wire stabilisation (T) and trapeziectomy with flexor carpi radialis tendon reconstruction, interposition and K-wire stabilisation (T+LRTI). We followed up one hundred and fifteen patients over five years: 59 patients with (T), 55 with (T+LRTI). No subjective or objective outcome measures recorded any significant difference between the outcomes of the two groups at three months one year or five years. 47%, 73% and 82% of the patients reported no pain or only aching after use at three months, one year and five years respectively. The DASH and Patient Evaluation Measure (PEM) scores improved at three months, one and five-year follow-up compared to the pre-operative scores. The thumb key and tip pinch at five years appeared lower than at one year but again no significant difference between T and T+LRTI. This study provided no evidence to support use of LRTI or temporary K-wire stabilisation for the treatment of trapeziometacarpal joint osteoarthritis.

References:
1. Burton, R.I. and V.D. Pellegrini, Jr. (1986). "Surgical management of basal joint arthritis of the thumb. Part II. Ligament reconstruction with tendon interposition arthroplasty." J Hand Surg Am 11(3):324-332.
2. Davis, T.R. and A. Pace (2009). "Trapeziectomy for trapeziometacarpal joint osteoarthritis: Is ligament reconstruction and temporary stabilisation of the pseudarthrosis with a Kirschner wire important?" J Hand Surg Eur Vol 34(3):312-321.
3. Gervis, W.H. (1949). "Excision of the trapezium for osteoarthirtis of the trapezio-metacarpal joint." J Bone Joint Surg Br 31B(4):537-539, illust.

15:08 Discussion

15:10 **1.5 Tesla MRI for diagnosing TFCC tears: Not as accurate as is widely thought**
Mr H Colvin, Mr A Irwin, Miss L Tourret (Newcastle upon Tyne)

Introduction: Magnetic Resonance Imaging (MRI) has been widely reported to be an accurate tool for diagnosing intra-articular wrist pathology. We studied the accuracy with triangular fibrocartilage complex (TFCC) tears in particular. The routine at Sunderland Royal Hospital (SRH) is a 1.5-Tesla MRI without a wrist coil. We use the result to guide further management and to inform patients of likely procedures, such as wrist arthroscopy and expected final outcomes.

Method: All patients who underwent wrist MRI and arthroscopy at SRH by one surgeon (LT) during May 2006 to March 2010 were included. MRI's were reported by consultant radiologists. MRI's performance was assessed and compared with the published performance from Hobby et al's meta-analysis, which reports that MRI is accurate for diagnosing TFCC tears.

Results: Forty-six patients underwent both wrist MRI and arthroscopy during the study period. With TFCC tears, MRI has a sensitivity of 0.818 (95% CI 0.478-0.968), specificity of 0.594 (95% CI 0.408-0.758), PPV of 0.409 (95% CI 0.214-0.633) and a NPV of 0.904 (95% CI 0.682-0.983). All parameters performed well with the exception of PPV that falls below the level set by Hobby et al's study, which was 0.80 (95% CI 0.7-0.9).

Discussion: The diagnostic performance of MRI was weak in terms of PPV for TFCC tears, which can lead to patients being put at risk of undergoing unnecessary arthroscopy. Future study is planned after changing to either a 3-Tesla MRI or use of a wrist coil.

15:13 Discussion

15:15 **Procedure-specific consent forms - The future of informed consent?**
Dr V Teoh, Dr S Jabir, Mr A Barabas, Dr E F O'Connor, Miss S Umarji, Mr A N M Fleming (London)

Introduction: In 2008 to 2009, clinical negligence claims cost the NHS £807 million, a 22% rise compared with the previous year. The landmark case of Chester v Afshar in 2004 extended clinicians' liabilities in cases where less than full informed consent is obtained. An adverse outcome, inadequate documentation and poor communication frequently lead to successful clinical negligence claims.

Theory and Aim: Procedure-specific consent forms (PSCFs) offer comprehensible and reproducible information. They may enhance patient autonomy and improve patient satisfaction. This study assesses the benefits of PSCFs against conventional consent forms, in patients undergoing carpal tunnel decompression (CTD) surgery.

Methodology: A prospective audit of patient satisfaction and the consent process was conducted, using questionnaires structured along the Department of Health and GMC guidelines on informed consent. We identified eighty patients, listed for CTD surgery, across the plastic, orthopaedic and neurosurgery specialties. Forty patients were randomised to each group. The intervention group received PSCFs two weeks pre-operatively, whilst the control group did not. All patients were interviewed using the questionnaires on the day of surgery.

Results: Mean patient satisfaction improved from 5.3 to 9.4 (scale 0 -10) with the introduction of PSCFs. Patients consented with conventional consent forms scored an average of 51%, rising to 89%, with the use of PSCFs. Knowledge of potential risks and common complications improved from 48% to 87%.

Conclusion: Patients appreciated the use of PSCFs as an aide memoir and information resource. These forms provide a robust means of delivering information, documenting consent and may help reduce clinical negligence claims.

15:18 Discussion

15:20 **Occult scaphoid fractures: Early MRI scan or serial X-rays?**
Mr H J Iqbal, Dr Z Syed (Prescot)

Introduction: Scaphoid fractures are the commonest carpal bone injuries. Early diagnosis is essential in occult injuries to avoid complications of under or over treatment. We aimed this study to review the effectiveness of early MRI scan in diagnosis of occult scaphoid fractures.

Methods: It was a retrospective analysis of patients attending the accident and emergency department of our hospital with suspected scaphoid injury, from June to September 2008. Patients' case notes, X-rays and MRI scan results were reviewed.

Results: During the study period, one hundred and forty-one patients had scaphoid X-rays performed. Out of these, eight (5.6%) had scaphoid fractures and 17 (12%) had fractures of adjacent bones diagnosed on the first radiograph. Seventy-one (50%) patients had negative X-rays and were discharged. However, forty-five (32%) had clinical suspicion of scaphoid fractures, but normal X-rays, and were reviewed ten days later. The second radiographs showed fractures in nine patients. The X-rays were normal in the other thirty-six patients. Fifteen patients had their symptoms settled and were discharged, but twenty-one underwent MRI scans, showing scaphoid fractures in four, other wrist injuries in ten, and the scan was normal in four patients. Change of practice from serial follow-ups and X-rays to MRI scan after first

follow-up resulted in early diagnosis of scaphoid fractures and other carpal injuries in 66.6% (14/21) of patients helping appropriate management.

Conclusion: Plain radiographs, even repeated at ten days, are not adequate to rule out a scaphoid fracture. Early MRI scan after first follow-up in an occult scaphoid fracture is better than serial follow-ups and X-rays.

References:
Use of MRI for diagnosing scaphoid fracture. Glad TH, Melhuus K, Svenningsen S, Tidsskrift for den Norske Laegeforening. 130(8):825-8, 2010 Apr 22.
Cost-effectiveness of MRI in managing suspected scaphoid fractures. Hansen TB, Petersen RB, Barckman J, Uhre P, Larsen K. Journal of Hand Surgery: European Volume. 34(5):627-30, 2009 Oct.
Diagnosing suspected scaphoid fractures: a systematic review and meta-analysis. Yin ZG, Zhang JB, Kan SL, Wang XG. Clinical Orthopaedics & Related Research. 468(3):723-34, 2010 Mar.

15:23 Discussion

15:25 **Occult scaphoid fractures could be masked by bone bruising alone and should be immobilised for a minimum period of eight weeks**
Mr D Thavarajah, Mr T Syed, Mr M Wetherill (Milton Keynes)

Introduction: Bone bruising of the scaphoid is a common term reported when MRI imaging is carried out for continued pain, in the anatomical snuff box following trauma. Is this significant? Our aim was to ascertain what percentage of bone bruising lead to continued symptoms, and resulted in secondary fracture detection.

Methods: This was a prospective study looking at MRIs of the scaphoid for one hundred consecutive patients with a suspected scaphoid fracture, and negative initial X-rays. These were followed up for at least eight weeks to ascertain whether or not they had developed into a fracture line. They were also assessed for continuity or resolution of their symptoms by way of clinical examination. Bruising was divided into different grades, and analysed to see if any particular grade was more prone to develop into a secondary fracture.

Results: All one hundred MRI scans had shown a degree of bone bruising. Bone bruising was divided into various groups and correlated with delayed fracture development. We also provide the age group of patients developing fractures. Also the time it takes for the bone bruising to develop into a fracture was studied, along with what treatment and how long it was received.

Conclusion: Bone bruising is a significant finding and can develop into a secondary fracture. It therefore needs aggressive treatment similar to an undisplaced scaphoid fracture.

15:28 Discussion

15:30 **K-wires: Buried or exposed? A cost effective approach to an old dilemma**
Miss N Bystrzonowski, Mr P Goon, Mr S Mulgrew, Mr T Oxenham, Miss A Khoo, Mr F Schreuder (Stevenage)

Objective: Hand fracture fixation frequently utilises Kirschner (K) wires. The ends are either buried or left exposed. Buried wires (BW) require removal in theatre, whereas exposed wires (EW) are removed in clinic. There is a financial implication depending on which method is used. Hence, it is essential to compare and contrast their overall cost effectiveness.

Method: A non-randomised retrospective case-control study was performed. Only closed phalangeal and metacarpal fractures treated with K-wires were selected. Open fractures were excluded. Outcomes were recorded at clinic follow-up. Complication rates were contrasted using Fisher's exact test (two-tailed). Cost analyses was performed.

Result: One hundred patients were included: 51 BW, 49 EW. Seven EW cases became infected, two required hospitalisation. In five patients the wires dislodged completely. In contrast, BW patients had no complications. The difference in complication rates was highly significant ($p<0.0001$). The total cost of treatment in two years was £18,982 (BW) and £7,114 (EW) respectively.

Conclusion: Our study highlights how closed finger fractures treated with BW cost almost three times as much as EW, resulting from extra hospital admissions and theatre sessions. EW had a high complication rate (25%): infections being the commonest problem although none suffered long term sequelae. On a purely cost basis, it is clearly of financial benefit to leave K-wire ends unburied. However, there is a significantly higher complication rate. In terms of patient morbidity and convenience, we recommend burying K-wires.

15:33 Discussion

15:35 **Early results of a new implant (non-variable pitch compression screw) for scaphoid fracture fixation**
Mr K Singisetti, Mr A Middleton (Stockton on Tees)

Introduction: Different techniques and implants exist for the treatment of scaphoid fractures. We discuss the early results of a recently introduced implant, the non-variable pitch 3.0 mm Headless Compression Screw (HCS® Synthes).

Patients and Methods: Twenty eight patients with scaphoid fractures (five acute and 23 non-unions) over a period of eighteen months were treated with HCS fixation. The series consists of two females and 26 males with a mean age of 25.6 years (range 16-55). All non-unions additionally had vascularised pedicle bone grafting. All were immobilised in a cast for six weeks and had standardised physiotherapy rehabilitation. They were seen routinely for clinical and radiological review at six weeks, three months and one year.

Results: All five patients with acute scaphoid fracture fixation had satisfactory radiological healing at a mean of eight weeks. Fifteen of the 23 non-unions were united by final follow-up. The other eight patients, although only recently operated on, show probable signs of radiological union at early review. There were no signs of loosening of the screw or loss of compression in the entire group. Our series, at least at the early stages of follow-up (mean 4.5 months), does not show any case of failure of union or fixation.

Conclusions: The Headless Compression Screw (HCS® Synthes) has predictable and satisfactory early results for scaphoid fracture fixation. Follow-up continues to assess the long term results.

References:
1. Tu YK, Chen AC, Chou YC, et al. Treatment for scaphoid fracture and nonunion - the application of 3.0mm cannulated screws and pedicle vascularised bone grafts. Injury. 2008 Oct; 34 Suppl 4:96-106.
2. Cooney WP 3rd. Scaphoid fractures: current treatments and techniques. Instr Course Lect. 2003; 52:197-208. Review.

15:38 Discussion

15:40 **Minimal invasive fixation of hamate hook fractures through a dorsal percutaneous approach using a mini compression screw: An experimental feasibility study and early clinical experience**
Mr O Scheufler, Mr S Radmer, Dr R Andresen (Berne)

Purpose: Diagnosis and treatment of hamate hook fractures are frequently delayed, because they often remain undetected on standard radiographs. When untreated or with delayed conservative treatment, those fractures are associated with high non-union rates and usually require surgical treatment with excision or open reduction and internal fixation of the hook through a palmar approach. A minimal invasive surgical technique through a dorsal percutaneous approach using a cannulated mini compression screw was developed to overcome the draw backs of the palmar approach.

Methods: In five cadaver hands, the hamate hook was osteotomised under fluoroscopic control. Then, a K-wire was advanced through the fracture and distal fragment via a dorsal percutaneous approach that guided the introduction of a cannulated mini compression screw. Each fracture was visualised by radiography and computed tomography before and after the intervention. After having established and experimentally proven the feasibility of the surgical technique, it was used in three consecutive patients with non-displaced hamate hook fractures.

Results: Minimal invasive fixation of the hamate hook through a dorsal percutaneous approach was achieved in all experimental and clinical cases. All fragments were adapted in an anatomically correct position with central screw positioning. No displacement or disruption of the cortical shell of the hook was observed. All patients were asymptomatic at one year follow-up.

Conclusions: Isolated non-displaced fractures of the hamate hook can be treated by dorsal percutaneous fixation using a cannulated mini compression screw. The advantages and limitations of this novel minimal invasive technique need to be further investigated.

15:43 Discussion

15:45 **Diagnostic comparison of 1.5 and 3 Tesla MRI - A study of findings in 130 wrist arthroscopies**
Mr V Shanbhag, Dr S Udayshankar, Mr S Malek, Mr D Newington, Mr I Russell (Swansea)

Purpose: We correlated pre-operative MRI findings with wrist arthroscopy findings to compare the diagnostic sensitivity, specificity and accuracy of 1.5 and 3.0 Tesla magnetic resonance imaging at the Swansea Hand unit.

Methods: The records and diagnostic MRI scans of one hundred and thirty patients who presented between 2003 and 2010 with wrist pain were evaluated. All these patients underwent wrist arthroscopy at our unit. Pre-operative MRI findings for the triangular fibrocartilage complex (TFCC), scapolunate and lunotriquetral ligaments were recorded and compared with findings at wrist arthroscopy. The sensitivity, specificity and accuracy for both 1.5T and 3T MRI was calculated and compared.

Results and Conclusions: The 3 Tesla wrist MRI sensitivity, specificity and accuracy are consistently higher. The trend suggests that the 3T MRI provides improved ability for detection of wrist pathology and has minimised the need for wrist arthrography.

15:48 Discussion

15:50 **The treatment of zone 1 flexor tendon injuries using micro bone anchors**
Mr S Huq, Mr J Yarrow, Dr K Nathan, Mr D E Boyce (Swansea)

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

Methods: During the period of 2003 to 2008, forty-six consecutive patients (22 lacerations and 24 closed avulsions) with zone one flexor tendon injuries were treated using Mitek micro anchors. The tendon was sutured using a modified Bunnell pattern using 3-0 braided suture (Ethibond). Patients were rehabilitated using a controlled active movement (CAM) protocol from the first post-operative day. The range of motion (ROM) at the distal interphalangeal joint (DIPJ) was assessed using Moiemen's classification.

Results: 51% of patients demonstrated excellent or good results for ROM at the DIPJ and 25% had a poor outcome. There were no significant differences in outcome between the lacerations vs. the closed avulsion group. 97% of patients returned back to work during the follow-up period. There was one case of suture rupture from the anchor at time of tendon repair and one tendon rupture during a mean follow-up period of five months. There was one case of osteomyelitis.

Conclusions: This is the largest clinical study on the use of bone anchors for zone 1 tendon injuries. It is a relatively simple technique to learn and does not damage the specialised nail bed tissues. Our study demonstrated a low rate of complications and outcomes that compare favourably with other techniques documented in the literature.

15:53 Discussion

15:55 **Dorsal-only extensor tendon repairs - Angular testing and the tension band principle**
Mr J Henderson, Dr M Sutcliffe, Mr P Gillespie (Cambridge)

Introduction: Extensor tendons distal to the MCP joints are flat and not amenable to core and epitendinous suture repairs. Mattress sutures and Kessler repairs without epitendinous suturing are often performed for extensor tendon division in the finger. Except when in full extension, the finger presents a curved surface to the tendon, and yet no in vitro tendon testing for extensor repairs over a curvilinear surface has previously been reported. We hypothesised that extensor tendons have different patterns of tension or compression on their volar and dorsal surfaces and that they might be amenable to dorsal only epitendinous repairs.

Materials and Methods: A Silfverskiold dorsal-only repair was compared with mattress and Kessler repairs in vitro on a curvilinear testing apparatus. Subsequently reverse Silfverskiold, Halsted and interlocking horizontal mattress (IHM) were tested.

Results: Dorsal only Silfverskiold epitendinous repairs were found to be significantly stronger and stiffer than mattress or Kessler repairs. The IHM was the strongest repair overall, but also technically the hardest to perform.

Conclusions: The epitendinous techniques were significantly more resistant to deformation, gapping and rupture than the conventional techniques. IHM is a relatively difficult technique to perform, and leaves a considerable amount of suture material exposed. It remains to be seen whether the additional strength translates to clinical benefits over the easier Silfverskiold techniques which may still be strong and stiff enough to allow early active mobilisation after extensor tendon repair.

15:58 Discussion

16:00 Refreshments and Trade Exhibitions

14:00 **BAHT Breakout Session** (Parallel – Lecture Theatre 2)
Military injuries
Mr D Chester

Hand therapy for military injuries
Ms H Beardshaw

15:30 Examination of the shoulder (Group 1)
Professor R Birch

15:30 Refreshments and trade exhibitions (Group 2)

16:00 Examination of the shoulder (Group 2)
Professor R Birch

16:00 Refreshments and trade exhibitions (Group 1)

16:30 **Douglas Lamb Lecture** (Plenary – Lecture Theatre 1)
Chairman: Professor T R C Davis
Classification and treatment of congenital longitudinal deficiencies
Professor P Manske (St Louis)

THURSDAY, 11 NOVEMBER

17:30	**BSSH Annual General Meeting** (Committee Rooms 1 & 2) (Open to Members and Associates only)
17:30	**BAHT Annual General Meeting** (Lecture Theatre 2)
19:15	Drinks Reception – Hunterian Museum & Library, 1st Floor, RCS
20:00	Society Dinner – Edward Lumley Hall
08:00	Registration

FRIDAY, 12 NOVEMBER

Free Papers (Plenary – Lecture Theatre 1)

CHAIRMAN: MR L MUIR/MS D PERRY

08:30 **Results of locked intramedullary nailing of metacarpal neck/shaft fractures**
Mr S Venkatachalam, Mr J Harrison (Gateshead)

Introduction: Locked flexible intra-medullary nails of metacarpal shaft or neck fractures provide stable and biological fixation and prevent significant functional deficits.

Materials and Methods: All adult extra-articular metacarpal shaft/neck fractures with rotational deformity/ significant angulation were included in the study. Twenty-six displaced metacarpal shaft/neck fractures in 22 patients were stabilised with this implant. Fourteen shaft, 12 neck metacarpal fractures of which 9 comminuted, 7 spiral and remaining oblique/transverse in nature. The nails were inserted percutaneously at metacarpal base under GA after closed reduction with image-intensifier guidance. Proximal end of the nail was locked into the bone with a locking device. A radiopaque plastic cap was applied over the cut end of the nail to minimise soft tissue irritation during rehabilitation. No external splintage/formal physiotherapy was routinely required.

Results: All fractures united by six weeks without extensor lag/rotational deformity with patients returning to their pre-morbid activities at final follow-up. There were no mal-unions/non-unions/extensor tendon adhesions in any patient. The nails were removed routinely after fracture healing at 6-8 weeks under GA. There was one deep infection and one superficial infection. Infection settled after nail removal and treatment with antibiotics. There was one patient with articular cartilage perforation of MCP joint. The locking device could not be inserted in two patients due to proximal entry point to the carpo-metacarpal joint.

Conclusions: Drawbacks include that it is a small retrospective case series. No scoring system was used pre/post-operatively to assess outcome. Locked intra-medullary nails appear to be a safe and effective implant in management of metacarpal neck/shaft fractures.

08:33 Discussion

08:35 **A safe and cost-effective method for treatment of angulated fifth metacarpal shaft fractures in the outpatient clinic**
Mr K Karuppaiah, Mr S Miranda (Middlesbrough)

Introduction: Surgical treatment is justified in patients with fifth metacarpal shaft fractures with angulation exceeding 30°, as these patients are prone to have shortening, restriction of movements, decreased efficiency of the flexor tendons and poor cosmetic results. The authors describe a new technique where these patients can be treated in the clinic non-surgically.

Material and Methods: Twenty-three patients with angulated fractures were prospectively enrolled for the study from January to December 2009. After appropriately instructing the patient, an ulnar nerve block was performed at the wrist. Once the nerve block had taken effect, the fracture was manipulated and an ulna gutter three-point moulded splint was applied in the plaster room. The reduction was then confirmed with an X-ray. The patients were seen at three weeks for splint removal and for long-term follow-up at least six months later.

Results: All the patients had a completely pain-free manipulation and complete reduction was achieved in all the patients. There were no complications related to the technique.

Conclusions: In the NHS, with pressure on resources, the authors suggest the treatment described above for these fractures be done in the clinic. It is a safe, cost-effective and easily learnt technique.

References:
1. Birndorf et al. Metacarpal fracture angulation decreases flexor mechanical efficiency in human hands. Plastic and Reconstructive Surgery 1997; 99 (4), pp. 1079-83.
2. Kelsch et al. Intramedullary K-wire fixation of metacarpal fractures. Archives of Orthopaedic and Trauma Surgery, 2004; 124 (8), pp. 523-6.

08:38 Discussion

08:40 **Effect of laceration and trimming on digital flexor tendon gliding properties: In vitro study on turkey tendon**

Mr J Kennedy, Professor J J Dias (Leicester)

Aim: To assess the effect of tendon laceration and subsequent trimming on digital flexor tendon gliding properties at the A2 pulley interface.

Methods: Twenty long turkey tendons were allocated to each of palmar, lateral and dorsal groups. Using the Uchiyama method of measuring friction, the Gliding Resistance (GR) and Friction Coefficient (FC) were recorded at intact, 50% lacerated and trimmed states over 30º and 70º of flexion and bearing loads of 2N and 4N. Events of snagging, triggering and entrapment were recorded by observation and real time graphical representations of gliding.

Results: Comparisons between angles and loads were conducted using Wilcoxon Matched Pair and Mann-Whitney U tests with a Bonferroni adjustment. A significant increase in GR and FC was found following palmar (p 0.0025) and lateral ($p<0.0006$) laceration and following palmar ($p<0.0017$) and dorsal ($p<0.0017$) trimming. No significant difference was found following dorsal laceration ($p>0.03$) or following trimming of lateral lacerations ($p>0.009$). A highly significant increase was found in GR and FC (p 0.00002) between intact and lacerated states for tendon specimens observed to glide abnormally following laceration and a significant decrease (p 0.00005) between lacerated and trimmed states compared to specimens which exhibited normal gliding.

Conclusions: Palmar, lateral and dorsal lacerations found to be gliding normally and deemed able to withstand rehabilitation should be treated with early mobilisation. Palmar and lateral lacerations found to be gliding abnormally should be trimmed.

08:43 Discussion

08:45 **Accelerated rehabilitation of the skier's thumb injury in professional athletes**

Mrs R Delaney, Mr M Hayton, Ms C Tisouri (Wrightington)

Complete rupture of the ulnar collateral ligament (UCL) of the metacarpophalangeal joint (MCPJ) of the thumb with or without the presence of a Stener lesion is a common injury amongst athletes. The traditional rehabilitation following UCL reconstruction has been to immobilise the thumb in a splint for 4-6 weeks. This study reports the long-term outcomes of an accelerated rehab programme in athletes who have had surgery for this injury.

Methods: A study was performed of sports injury patients undergoing UCL repair by a single surgeon. Patients were seen two days following surgery and a hand based removable splint applied. Thumb MPJ exercises were commenced at ten days as part of the accelerated rehab programme. Patients' pain scores, DASH, thumb ROM, strength and stability were assessed.

Results: Fourteen patients were recruited. The mean follow-up was forty-two months with the longest follow-up at five years. All fourteen patients had no clinical evidence of instability at one month post surgery. There was no significant loss of web space, span, range of movement, Kapandji score nor thumb pinch grip. All fourteen patients returned to competitive sport at a level prior to injury following surgery. The patients returned to competitive sport at 3.6 weeks post-operatively.

Summary: The long-term outcome of this rehabilitation programme following skier's thumb injury in athletes suggests that this is a safe method of returning patients to a similar level of activity after surgery and avoids the previously common complications of stiffness in the thumb.

08:48 Discussion

08:50 **The Peterborough experience - A review of hand and wrist injuries sustained during equestrian activities over a five-year period**

Mr J Crosby, Dr E Popa, Miss J Fox, Mr J Jones (Peterborough)

Introduction and Aims: Horse riding is a very popular recreational and sporting activity within the UK. Previous studies have highlighted the inherent risks but focused on broad injury patterns. The aim of our study was to evaluate hand and wrist injuries sustained during equestrian activities that required orthopaedic intervention.

Method: Over a five-year period, 50 patients presented to Peterborough District Hospital with equestrian related hand and wrist injuries. We retrospectively reviewed medical records and radiographs for demographics, mechanism, pattern of injury and management.

Results: There were fifty cases with a mean age 24.6 (range 6-73). There were five principal mechanisms of injury of which 36 cases (72%) were caused by a fall from horse, six cases (12%) by bites, five cases (10%) pulled by horse reins, two cases (4%) crush injuries and one case (2%) by being kicked. Fractures were the commonest injury (22 cases). A third involved the distal radius and 12% the phalanges (all related to rein injuries). Other types of injury included soft tissue injuries, interphalangeal dislocation and lacerations. Seven cases needed surgical intervention of which only one was a soft tissue procedure of a tendon repair and skin grafting. Twenty-two patients were treated with analgesia and 21 patients had some form of immobilisation. All received hand therapy.

Discussion: This study highlights that this enjoyable sport is the cause of significant wrist and hand injuries. Identifying methods for reducing these injuries and raising awareness of ensuring correct use of equipment would reduce morbidity.

References:

1. "The demographics of equestrian-related injuries in the United States: injury patterns, orthopaedic injuries, and avenues for injury prevention". Loder RT, J Trauma. 2008 Aug; 65(2):447-60
2. "Five year analysis of Jockey Club horse-related injuries presenting to a trauma centre in Hong Kong". Yim VW, et al. Injury. 2007 Jan; 38(1):98-103.
3. National Equestrian Survey 2006, British Equestrian Trade Association (BETA)

08:53 Discussion

08:55 **The development of a practitioner-led trauma service for closed injuries of the hand**

Mrs F Peck, Miss S Turner, Mrs A Roe, Miss V C Lees, Professor D A McGrouther, Mr J S Watson (Manchester)

Introduction: In 2005 the hand trauma service at Wythenshawe Hospital was restructured in response to concerns regarding the consistency of care for closed hand trauma cases. A pathway was developed for the referral of closed hand trauma cases from the Accident and Emergency Department. Trauma clinics were developed by the clinical specialist therapy team of three physiotherapists and one occupational therapist.

Method: Patients are referred under specific criteria, which include all types of closed fractures and soft tissue injuries distal to the carpus. They are assessed within the first week of injury and either treated conservatively or listed for surgery, after discussion with the hand surgeon. This service runs in parallel with the open injury hand trauma service, triaging patients from other trusts.

Results: Since 2007 this service has treated two thousand and ninety-two patients, 40% of the total number of hand trauma patients referred to the plastic surgery service. As confidence in the service and skills in trauma management have increased, referral criteria have changed to include increasingly complex cases. This service has improved the referral system and the continuity of care for both adults and children suffering from closed injuries to the hand. In a market aware Health Service this development has also resulted in increases in financial income for the trust.

08:58 Discussion

09:00 **An audit of punch injuries managed in the practitioner-led trauma service for closed injuries of the hand**

Mrs A Roe, Mrs F Peck, Ms S Turner, Ms E Kelly, Professor D A McGrouther (Manchester)

Introduction and Aims: In the current socio-cultural environment, alcohol and violence related injuries are an increasing problem for the NHS and regularly make headline news. One of the less serious but more prevalent consequences of this lifestyle is the punch injury. These injuries commonly present to the practitioner-led Trauma Service and have a significant impact on both the NHS and society in terms of cost and working days lost.

Material and Methods: Patients are referred via a structured pathway following direct access from Accident & Emergency. They follow a system of full assessment and radiographic examination within the first week after injury. A decision is made whether to manage conservatively or list for surgery following discussion with the surgeon.

Results and Statistics: In the three years since the advent of these clinics, to date, 28% of the total presenting cases have been punch injuries. This paper presents an audit of fifty-seven patients, between the ages of nine and 35. Their demographics, aetiology, patterns of injury, management and outcomes are discussed. 87% of these patients were managed conservatively.

09:03 Discussion

09:05 **An audit of closed proximal phalanx fractures conservatively managed by skin traction splinting**

Ms S Turner, Mrs F Peck, Mrs A Roe, Ms E Kelly, Mr S Dhillon, Professor D A McGrouther (Manchester)

Introduction and Aims: The therapy led trauma service at Wythenshawe Hospital in South Manchester sees a large variety of closed hand injuries, which have direct access from the Accident and Emergency department via a structured pathway. Fractures of the proximal phalanx are a common presenting condition to the trauma clinic.

Materials and Methods: Since 2007 we have successfully managed selected patients with fractures of the base of the proximal phalanx by conservative means: the application of skin traction and thermoplastic splinting following manipulation under local anaesthesia within the clinic. In addition to a full assessment, radiographic imaging before and after splint application is an important part of this treatment to confirm fracture reduction. The patients are followed up within the therapy-led practitioner clinics and referred for rehabilitation as required.

Results and Statistics: This paper presents the results of an audit of twenty-four patients aged between 17 and 76 with closed proximal phalanx fractures managed with manipulation and traction splintage. Their demographics, treatment and outcomes are discussed. Traction was kept in situ for an average of fourteen days before it was reduced to removable splinting to allow mobilisation.

Conclusion: Selected cases of closed fractures of the proximal phalanx can be successfully conservatively managed by the method discussed; these may include patients who are medically unfit for surgery. Hand therapists working in specialist extended roles in trauma clinics are effectively able to assess and treat these injuries in conjunction with their medical colleagues.

References:
Widgerow AD, Ladas CS (2001) Anatomical attachments to the proximal phalangeal base - a case for stability Scandinavian Journal of Plastic and Reconstructive Surgery & Hand Surgery, March Vol 135/1 (85-90)
Koul AR, Patil RK, Philip V (2009) Traction Splints: Effective Nonsurgical Way of Managing Proximal Phalanx Fractures Journal of Trauma: Injury, Infection and Critical Care, June, Vol 66(6) (1641-1646)
Reyes FA, Latta LL (1987) Conservative Managment of difficult phalangeal fractures Clinical Orthopaedics & Related Research, Jan, Vol 214 (23-30)

09:08 Discussion

09:10 **The use of the electromechanical finger prosthesis in the partial hand amputee**
Mr M Broadbent, Mr A Hart (Glasgow)

Introduction: Traditional upper limb prostheses (passive/simple functional devices) have only been indicated for a small selection of patients. Advances in construction and control mechanisms have resulted in 'bionic' electromechanical prostheses, delivering hand function to patients with absent digits or hands. The UK-based company, Touch Bionics, manufactures the motorised ProDigits partial hand prosthesis, which is custom fitted to partial hand amputees. The worldwide cohort of patients was evaluated.

Methods: Retrospective review of available demographic and outcome data (company derived).

Results: Worldwide, eighty-eight patients. Data collection was uncoordinated. No relevant data was available for 10% of cases, and detailed information only available for 35%. 94% of patients who received ProDigits prostheses were in the USA (78% male, 22% female). 25/30 patients had acquired loss: nine industrial accident; seven trauma; five sepsis; 2 military; one plexus injury. Injury to fitting time: two hundred and forty-two days to 30 years. Level of amputation: twenty trans-metacarpal; five trans-carpal; three trans-phalangeal; one thumb. Prosthesis: one thumb prosthesis; three double finger; eight triple finger; 39 4-finger; 28 5-digit prosthesis. Nineteen patients used myoelectrodes, four used FSR. Out of twenty-three patients recorded, five failed to return to work.

Conclusions: After digital/hand amputation, functional restitution is problematic. Surgical options such as toe transfer may not be applicable due to pattern of injury and co-morbidity, or are rejected by patients after informed discussion. 'Bionic' prostheses, give a further reconstructive option, and can enable return to work. Efficacy, applicability within the UK healthcare setting, and cost benefit require prospective assessment.

09:13 Discussion

Chairman: Mr C A Pailthorpe/Ms A Holdstock
Dupuytren's mini symposium

09:15 **The first genomewide association study in Dupuytren's disease**
Mr D Furniss, Dr G Dolmans, Dr H Hennies, Mr H P Giele, Professor C Wijmenga, Professor P Werker (Oxford)

Introduction: Previous efforts to understand the genetic predisposition to Dupuytren's Disease (DD) have been underpowered, and biased by an incomplete understanding of the pathophysiology. In a pan-European collaboration, including the BSSH GODD collaboration and the Dutch GODDAF collaboration, we have undertaken a genomewide association study in order to discover genetic variants which predispose to the development of DD.

Methods: DNA was collected from nine hundred and sixty Dutch patients with DD. This DNA was subjected to genomewide Single Nucleotide Polymorphism (SNP) analysis utilising Illumina CytoSNP-12 arrays, and results compared to 3,900 Dutch population controls. Replication of the results of the most

significantly associated SNPs was performed in over one thousand DD patients of British, German and Dutch origin, and compared with ethnically matched controls.

Results: On chromosome seven we found a SNP highly significantly associated with DD (p<1.35 x 10-16). Similarly, a highly significantly associated SNP was identified on chromosome 22 (p<6.81 x 10-14). Two additional DD associated SNPs were identified on chromosomes 8 and 19 (p< 5 x 10-08).

Discussion: This work provides the first unbiased, hypothesis-free, evidence of chromosomal regions implicated in the predisposition to DD. Future collaborative studies aim to define further regions associated with DD utilising larger sample sizes, and discover the underlying biological mechanisms of DD.

09:18 Discussion

09:20 **Pathophysiology of Dupuytren's disease**
Mr L Suleman Verjee, Dr K Midwood, Miss D Davidson, Professor M Eastwood, Professor J Nanchahal (London)

Introduction: Myofibroblasts are crucial in the pathogenesis of fibrosis although their exact role in the pathogenesis of Dupuytren's disease remains unclear.

Methods: One hundred and three digital cords were stained with anti-α-SMA antibody to study myofibroblast distribution. Isometric forces generated by Dupuytren's nodule-derived cells and matched dermal fibroblasts were measured in collagen gels using a culture force monitor. α-SMA mRNA and protein levels were measured by pcr and western blotting and α-SMA distribution examined using immunofluorescent labelling.

Results: 66% of cords were nodular and 34% non-nodular. There was greater digital contracture in patients with non-nodular cords (p<0.0001). Nodular cords frequently continued multiple nodules and in 95% a nodule co-localised with the PIPJ. Nodules contained 97% α-SMA positive cells compared to 8-17% in non-nodular cords. In the culture force monitor, Dupuytren's cells continued to contract over 24hr (mean: 3.3 dynes/h; max: 152 dynes/24h) whereas dermal fibroblasts reached tensional homeostasis (mean: 0.5 dynes/h; max: 52 dynes/24h) within 4-10h. Although both cell types had similar α-SMA mRNA levels, increased α-SMA protein and α-SMA localised to stress fibres was seen with Dupuytren's cells.

Conclusions: Myofibroblast contractility in Dupuytren's disease is characterised by recruitment of α-SMA to stress fibres and reflected by increased α-SMA protein, but not α-SMA mRNA. Myofibroblast-rich nodules co-localise with joints. We propose that nodular cords promote digital contracture, matrix remodelling and shortening. As fixed flexion deformities develop, reduced joint movement results in "stress-shielding" and myofibroblast apoptosis. This may explain progression from less contracted nodular cords to severely contracted non-nodular cords seen in residual end-stage disease.

09:23 Discussion

09:25 **Dupuytren's fasciectomy associated improvements in hand impairment and disability**
Mr A Lowrie, Mrs C Robertson, Mr A Tahir, Mr N Williams (Newcastle upon Tyne)

Introduction: Dupuytren's fasciectomy has been demonstrated to improve range of motion but benefits to function and activity have not been quantified. We aimed to assess these benefits in terms of impairment and disability.

Methods: Consecutive patients presenting for fasciectomy were prospectively assessed pre-operatively, six weeks and six months post-operatively. All patients received hand therapy for the duration of the study. Hand impairment was calculated from range of motion and sensation measurements using the American Medical Association scoring system. Disability was rated using the DASH questionnaire.

Results: Thirty-five digits were treated in 21 patients. Mean age was sixty-seven. Seven patients were employed. Impairment scores improved from 10% pre-operatively to 6% at 6 weeks and 4% at six months ($P<0.01$). Mean DASH score was 40 pre-operatively and at six weeks but fell to 33 at six months ($P<0.05$). Cases with a delayed improvement in DASH included the two cases with complications of delayed healing.

Conclusions: The lag between improvement in impairment and improvement in disability emphasises the need for ongoing hand therapy in these cases. These data confirm the functional and societal value of Dupuytren's fasciectomy.

09:28 Discussion

09:30 **The functional and quality of life impact of Duputryen's disease**
Mrs D Perry, Miss J Wilburn, Miss R Crawford, Miss E Cunliffe, Professor J K Stanley, Professor S McKenna, Mr A Bayat (Manchester)

Introduction: Dupuytren's disease (DD) can be a debilitating condition affecting the quality of life (QoL). There are no previously reported studies of QoL in relation to DD.

Aim: To determine patients' views on the impact of DD in terms of functioning and QoL.

Methods: In-depth, qualitative interviews were conducted with DD patients (n=34, 73.5% male; age 41-80 years; mean 64.2; SD 12.5) attending outpatient clinics. The interviews were audio-recorded and transcriptions produced. Thematic analysis of the transcripts identified key impact areas. Interpretive phenomenological analysis (IPA) was then performed to determine the meaning and importance patients ascribed to the areas of impact identified.

Results: Duration of DD was between 0.5 and 40 (mean 12.6; SD 9.9) years. Twenty (62.5%) rated their DD mild, five (15.6%) moderate, four (12.5%) quite severe and three (9.4%) very severe. Key areas of functional impairment were: difficulty gripping, holding and opening items, personal care, dressing (particularly putting on gloves) and work life. IPA analysis revealed that the most profound impacts of DD were related to the disruption caused to everyday life, increased self-consciousness in both social and work environments and the need to adapt the way in which tasks were performed in order to fulfil needs.

Conclusion: The interviews provided a rich source of information about the impact of DD and the concerns of affected individuals. This data will be used to generate content for new DD-specific patient reported outcome scales of functioning and quality of life suitable for use in clinical studies and trials.

09:33 Discussion

09.35 **Recurrence of Dupuytren's disease in the West Midlands: A retrospective case series and literature review**
Mr E Jenner, Miss K Campbell, Mr J Nancarrow, Mr D Chester (Birmingham)

Introduction and Aims: Recurrence after surgery for Dupuytren's disease is common, with figures of 15% at twenty-seven months and 50% at five years reported. We aimed to provide up-to-date recurrence data for our population from the West Midlands, compare this to the literature and assess the impact of known risk factors for the development of Dupuytren's disease on recurrence.

Materials and Methods: In this retrospective case series we review eighty-nine cases of Dupuytren's disease (mean follow-up 7 (SD 5) years) managed by one surgeon using standard limited fasciectomy.

Results and Statistics: There was recurrence of Dupuytren's disease in 26.7% of cases with median time for recurrence of 6.74 years. Neither patient-specific (e.g. family history, diabetes) nor disease-specific (e.g. diathesis, severity of contracture) risk factors had a significant effect on the probability of recurrence. A review of the literature, using the search terms "Dupuytren's Disease" and "recurrence" identified

thirty-five studies with follow-up times from six months to 20 years. Regression analysis of recurrence and mean follow-up time showed a highly significant ($p<0.001$) positive relationship.

Conclusions: Our results allow more informed discussion of the risks and benefits of surgery between surgeon and patient. The population specific recurrence data can be used as an auditable standard in the absence of official guidance. Additionally we have produced a literature review that provides a cross-population standard for all types of Dupuytren's surgery.

References:

1. McGrouther DA. Dupuytren's Contracture. In: Green DP, Hotchkiss RN, Pederson (eds) *Green's Operative Hand Surgery* Vol I., 5th Edn. New York: Churchill Livingstone, 2004.
2. Dias JJ, Braybrooke J. Dupuytren's Contracture: An Audit of the Outcomes of Surgery. J Hand Surg Br. 2006 Oct, 31(5):514-21
3. Bayat A, McGrouther DA. Management of Dupuytren's Disease - Clear Advice for an Elusive Condition. *Ann R Coll Surg Engl* 2006; 88:3-8

09:38 Discussion

09:40 **SCoRD - A multi-centre, pragmatic, randomised, controlled trial of post-operative splinting after fasciectomy or dermofasciectomy for Dupuytren's contracture**
Dr C Jerosch-Herold, Professor L Shepstone, Mr A Chojnowski, Ms D Larson (Norwich)

PIP joint mini symposium

09:55 **Joint replacements**
Ms S Mee, Mr R Eckersley (London)

10:15 **An evaluation of patient satisfaction following proximal interphalangeal joint arthroplasty using the Swansons and Neuflex prosthesis**
Mrs L Ingham, Mr V Shanbhag, Mr D Russell, Mr D Newington (Swansea)

Aim: To compare and contrast the Neuflex and Swansons prosthesis, using patient satisfaction as an outcome measurement, following PIPJ arthroplasty in the hand.

Method: A two-year retrospective audit of patients' pre-operative and post-operative notes was conducted. Diagnosis, reason for intervention and type of prosthesis used intra-operatively was identified. An anonymous postal questionnaire examined patient rational for surgery and their satisfaction with rehabilitation and outcomes including cosmesis, pain and function were evaluated. The quick Dash was also scored, with the patients retrospectively rating their answers for pre and post-surgical intervention. We compared the basic differences between the prosthesis and considered any effect on patient outcome as measured by patient satisfaction.

Results: Twenty-one patients were identified for the study in a two-year time period (14 patientsNeuflex prosthesis, 7 patients Swansons). The differences between the prosthesis and their applications in clinical practice is presented. All questionnaires were returned. Pain and reduced function rated highly for choosing surgical management. Seventy-eight percent of patients reported adequate to good pre-operative information and most patients reported satisfaction with therapy gained post-op. A good proportion of patients reported satisfaction with their overall outcome and patients had good to acceptable results for cosmesis, pain and function, which did not appear to be significantly affected by type of prosthesis.

Conclusion: The limitations of this study are identified and further study modifications are discussed. PIPJ arthroplasty is a useful operation demonstrated by positive patient satisfaction, affected minimally by the type of prosthesis used.

10:18 Discussion

10:20 **Medium-term outcome and complications of Ascension PIPJ arthroplasty**
Mr A Watts, Mr A Hearnden, Mr I A Trail, Mr M Hayton, Professor J K Stanley (Wrightington)

Aims: The aim of this study is to report the medium term outcome and complications from Pyrocarbon proximal interphalangeal joint (PIPJ) arthroplasty at a single unit.

Methods: A retrospective case note review was performed on seventy-two patients with an average age of 57 years (range 24-79) who had undergone 97 Pyrocarbon PIPJ arthroplasties. The patients were identified from a prospective database. All patients had been followed for a minimum of two years. Patient demographics, diagnosis, implant revision and re-operation were recorded. Subjective outcome had been evaluated at latest follow-up with Disabilities of Arm Shoulder and Hand score, Patient Evaluation Measure, and visual analogue scores of pain, satisfaction and appearance. Subjective outcome was range of PIPJ movement and grip strength.

Results: The principle diagnosis was primary osteoarthritis in forty-three patients (60%), post-traumatic in 14 (19%), rheumatoid arthritis in 9 (13%) and psoriatic arthritis in 6 (8%). The average follow-up was fifty-six months (24-108). Twenty-two digits (23%) had undergone re-operation and thirteen (13%) had undergone revision at an average of 15 months (range 0-60). There was no significant difference in pre and post-operative range of movement. The average DASH score was 27/100 and the average pain score 0/10. On average patients reported being very satisfied with the outcome and 76% would have the same operation again.

Conclusion: The survival of Pyrocarbon PIPJ arthroplasty is good in the medium term with high patient satisfaction. Patients should be advised that the procedure achieves good relief of pain but does not improve range of movement.

10:23 Discussion

10:25 **Uncemented surface replacement of the proximal interphalangeal joint: Early radiographic lucencies**
Mr H Cottam, Mr J Nicholl (Tunbridge Wells)

Uncemented surface replacement arthroplasty (SRA) of the proximal interphalangeal (PIP) joint has raised concern, and we publish our series of uncemented SRA of the PIP joint, to emphasise an early high rate of radiographic lucencies.

This is a retrospective review of twenty-one consecutive joints implanted into 14 patients. An independent observer reviewed patients to obtain range of motion, pain scores and the DASH score. Radiographs were evaluated for evidence of loosening and prosthesis subsidence.

Twenty joints were reviewed (one patient lost to follow-up). The mean follow-up was thirty-one months (range 13 to 66 months). The average range of PIP joint motion went from 47° pre-operatively to 40° at time of review. 70% of joints had no pain at rest, and 55% remained pain-free with activity. The average DASH score was 28 (6 to 60). No arthroplasties have been revised. One joint underwent open reduction for dislocation in the immediate post-operative stage. Evaluation of the post-operative radiographs revealed lucency around the proximal component in 48% and in 62% around the distal component. There was subsidence of the proximal component in 38% and in 24% of the distal component.

Our findings demonstrate an alarming early presence of radiographic loosening and subsidence. This lack of osseointegration may be predictive of the patients that proceed to failure, seen with longer follow-up. Whilst there is preservation of the range of motion of the PIP joint and reasonable pain scores, this study adds weight to the existing reservations regarding uncemented implantation.

10:28 Discussion

10:30 Refreshments and Trade Exhibitions

FRIDAY, 12 NOVEMBER

11:00 **Symposium on sports medicine** (Plenary – Lecture Theatre 1)
Chairman: Mr M Hayton

The goalkeeper's hand
Mr D A Campbell

The cricketer's hand
Mr C Heras-Palou

The rugby hand and wrist
Mr G E B Giddins

The boxer's hand
Mr M Hayton

The golfer's wrist
Dr R Hawkes

Imaging the sporting hand and wrist
Mr P O'Connor

13:00 **Awards and Prizes** (Plenary – Lecture Theatre 1)
Chairmen: Mr J S Watson/Ms S Taylor

BSSH Diploma in Hand Surgery

BAHT Newly Accredited Therapists

Hand Therapist of the Year

BAHT Natalie Barr Award

13:10 Luncheon and Trade Exhibitions

14:00 **Invited Lecture** (Plenary – Lecture Theatre 1)
Chairman: Mr J S Watson

Surgical treatment of cerebral palsy of the upper extremity in children
Professor P Manske (St Louis)

CHAIRMAN: MR P D BURGE

14:50 **BSSH guidelines on current practice** (Parallel – Lecture Theatre 1)
VTE prophylaxis and operating on a patient on Aspirin or Warfarin or Clopidogrel
Mr D Warwick

Free Papers (Parallel – Lecture Theatre 1)

15:05 **Long-term clinical and radiological outcome after treatment of Kienböck's disease in forty-five patients**
Dr S Stahl, Ms M Merz, Dr C Meisner, Dr M Pfau, Professor H E Schaller (Tübingen)

Introduction: A retrospective analysis was undertaken to determine the long-term results of treatment in forty-eight patients with KD (Kienböck's disease).

Methods: Forty-eight patients had an extensive clinical and radiological examination. Staging was performed according to the Lichtman classification. Outcome evaluation involved range of motion, VAS assessment of pain, grip strength, DASH score, overall satisfaction (would repeat surgery?) and a detailed radiologic evaluation.

Results and Statistics: The mean age of the patients (male: 32/48, female: 16/48) was thirty-six years, the youngest was 18 and the oldest 58 years. Follow-up averaged 6.8 years. Surprisingly we observed a progression of the disease at follow-up in most patients on conventional X-ray after radial shortening osteotomy (13/14 patients), after vascularised bone graft (3/4 patients) and after vascularised bone graft

combined with radial shortening osteotomy (2/3 patients). Because the therapies indicated correlate with the disease's stage we evaluated the average clinical results according to the treatment assignment (STT arthrodesis n=17 and radial shortening osteotomy n=14 at stage IIIa or IIIb, wrist denervation n=6 at stage IV, vascularised bone grafts n=4 at stage I or II). No significant differences were found regarding clinical outcome parameters among the four largest treatment groups.

Conclusions: Our results show that the progression of KD could not be stopped or reversed either by radial shortening osteotomy or by vascularised bone graft or both. This review of our long-term results of both surgical and non-surgical methods reveals that all patients did relatively well from the standpoint of pain relief no matter what was offered.

15:08 Discussion

15.10 **Use of extensor compartmental vascularised bone grafts for the treatment of Kienböck's disease**
Dr A Kodama, Professor T Sunagawa, Dr O Suzumi, Dr Y Nakashima, Dr Y Kadonishi, Professor M Ochi (Hiroshima)

Introduction: We examined our experiences in using extensor compartmental artery (ECA) bone grafts for the segmented lunate bone union and revascularisation in patients with Kienböck's disease.

Methods: We assessed ten wrists of ten patients with Kienböck's disease who had received ECA bone grafts between 2003 and 2009. Nine patients underwent reconstruction with the fourth and fifth ECA, and one patient with the distal reverse fourth ECA. Pre-surgical and post-surgical clinical evaluations were performed using Mayo wrist scores. The carpal height ratio, Stahl's index, and radioscaphoid angle were also determined from pre-surgical and final follow-up radiographs. At the time of surgery, three cases were classified as Litchman stage II; 1, stage IIIA; and 6, stage IIIB. The average age was 24.9 years. The mean duration of follow-up was 14.5 months.

Results: At the final follow-up examination, the patients' grip strength had improved from 47% to 74.5% of the unaffected side, while their range of motion had improved from 91.0° to 112.2°. The average Mayo wrist score had improved from 56.0 to 78.0. According to these scores, one patient showed excellent results; four good results; and five fair results. Stahl's index also improved significantly. Two patients showed further collapse on post-surgical radiographs. Seven patients showed bone union on radiographs or computed tomography images. Three patients showed signs of osteoarthritis in the lunocapitate joint on post-surgical MRI.

Conclusion: Although ECA bone grafting requires a special surgical technique, it is a reliable method for the treatment of Kienböck's disease.

15.13 Discussion

15.15 **Results of capito-hamate lengthening osteotomy fixed with Herbert screw to compensate for decreased carpal height in advanced Kienböck's disease**
Dr M Quolquela (Tanta)

Introduction and Aim: In Kienböck's disease without arthritis, collapse of the lunate results in decreased carpal height with subsequent increased scaphoid flexion. The latter results in arthritis at the radio-scaphoid joint. Traditionally, treatment aims to correct sacphoid malrotation and keeping it in position by scapho-trapezio-trapezoid fusion. Our hypothesis is that it is logical to correct the primary decreased carpal height rather than the secondary scaphoid malrotation. This is accomplished through capitate and hamate (as capito-hamate joint is immobile) lengthening osteotomy.

Patients and Methods: Eighteen patients with Kienböck's disease stage IIIB with an average age of 25.6± two years had an average total wrist movement of 58.2º ±3º. Grip strength was a mean of 47% to the contralateral side. Radioscaphoid angle was an average of 73º±3°. Through dorsal approach, a transverse osteotomy was made at capitate waist and hamate. Tricortical iliac crest bone graft was inserted in the

osteotomy gap to lengthen the capitate to the extent that the radioscaphoid angle was corrected under image intensifier. Herbert screw was inserted through the capitate across the graft. Movement started ten days post-operatively.

Results: Average follow-up period was 22±3 months. Average post-operative total movement arc was 79.5º±2°. Grip strength had a mean of 77% of contralateral side. Average radio-scaphoid angle was 48.8º±3°. Radiological healing of the osteotomy was confirmed in fifteen patients. Mayo modified wrist score improved from a mean of 58±2 pre-operatively to 83±2 post-operatively.

Conclusions: In advanced Kienböck's disease, capito-hamate lengthening osteotomy restores carpal height thus correcting scaphoid overflexion.

15.18 Discussion

15.20 **Evaluation of early wrist motion following the use of multiple Herbert screws as a means of fixation in scaphoid excision and four-corner bone fusion**
Dr M Quolquela (Tanta)

Introduction and Aim: Scaphoid excision and four-corner fusion aims to improve range of movement and to alleviate pain in SNAC wrist. Use of multiple K-wires necessitates prolonged wrist immobilisation with stiffness. Spider plates are expensive with frequent hardware complications. We hypothesise that use of Herbert screws ensures good compression at fusion site and reduces stiffness due to early post-operative mobilisation.

Patients and Methods: Fifteen patients with scaphoid non-union and radioscaphoid arthritis had an average age of 26.3±2 years. Average total wrist movement arc was 48.7º ±2º. Grip strength had a mean of 39.4% of normal side. Through dorsal approach, after removal of scaphoid, the cross shaped joint between lunate, triquetrum, capitate and hamate were decorticated. A Herbert screw was inserted across the capitolunate joint with another one crossing the triquetrum, hamate and capitate. Splinting for two weeks was followed by gentle wrist movement.

Results: Average follow-up period was twenty-six months (range 13 to 35). Average post-operative total wrist movement arc was 76.7º±2° (range 55º to 95º). Grip strength had a mean of 78% of contralateral side. Healing of fusion took six to 9 weeks (average 7.2 weeks). Mayo modified wrist score improved from a mean of 43 (range 30 to 50) pre-operatively to 76 (range 60 to 85) post-operatively (P=0.03).

Conclusions: Use of multiple Herbert screws as a means of fixation in scaphoid excision and four-corner fusion allows adequate compression at the fusion site with rapid healing and early wrist movement with decreased stiffness.

15.23 Discussion

15:25 **Nerve transfers vs nerve grafting for shoulder reconstruction in supraclavicular brachial plexus injuries**
Mr W L Lam, Professor D Chuang (Taiwan)

Introduction: Shoulder function restoration is an important priority for patients with supraclavicular brachial plexus injuries (BPI). Traditionally, proximal root exploration has been advocated to identify suitable donor stumps for nerve grafting (NG), although this has recently been challenged by the increasing popularity of nerve transfers (NT) with cited advantages such as easier dissections and healthier donors. This study compares the outcome between NT versus NG for restoration of shoulder function.

Methods: Between 2003 and 2006, fifty-six patients received surgery for supraclavicular BPI, as divided into three groups. Group 1 (n=37) underwent NT using the spinal accessory (SAN) or phrenic nerve (PhN); group 2 (n=11) underwent NG from the proximal C5 stump; and group 3 (n=8) received NT with

accompanying partial C5 NG contributions. Outcomes were assessed in terms of shoulder abduction, with >90° considered a favourable result within a follow-up period of four years.

Results: Overall, results from NG (96.4°) were better than NT (87.6°), although the best results were from the combined NT/NG group (106°). There was no significant difference, however, between these groups (p=0.729). In addition, no significant difference was found when comparing the proportion of patients in each group who achieved a good result (>90°, p=0.786).

Conclusions: Our study revealed no significant difference between NG and NT for shoulder abduction. Proximal stump dissection is recommended, however, to spare the SAN as a future free functioning muscle neurotizer, if necessary. Furthermore, the C5 stump dissection provides a potential donor for elbow flexion, as well as concomitant identification of C6 as another intra-plexal source for neurotization.

15:31 **Treatment and surgical outcomes of infraclavicular brachial plexus: A single departmental experience in ninety patients**
Dr T-C Lu, Mr W Lam, Professor D C C Chuang (Taiwan)

Introduction: Management of infraclavicular brachial plexus injuries (BPI) remains surgically challenging. Injury sites are often densely scarred and heavy muscle cover limits surgical access. Furthermore, there is a high incidence of fractures, vascular injuries and extensive nerve damage requiring lengthy nerve grafts. This study retrospectively reviewed the outcomes of infraclavicular BPI patients who presented to a single department.

Methods: From 1984-2008, one hundred and fifty-two patients underwent surgery for infraclavicular BPI. Results available in ninety patients with follow-up of at least three years demonstrated different nerve reconstructions using conventional nerve grafts (n=115), neurolysis (n=26), direct repair (n=4), nerve transfers (n=12) or vascularised nerve grafts (n=7). A score of >M3 (within 3 years) was considered successful using a modified Medical Research Council grading system.

Results: Mean operating time was 9.3 hours. Vascular injuries and fractures were associated in 22.6% and 64.1% of cases respectively. Proportion of successful reconstructions in the musculocutaneous (94%, n=34), axillary (88.4%, n=44) and radial nerves (92.3%, n=14) were significantly better than median (55%, n=11) or ulnar nerves (40%, n=5) in terms of strength (p=0.012), as well as speed of recovery (>M3 within one year, p<0.001). Free-functioning muscle transfers were necessary in ten patients following poor hand recovery.

Conclusions: Infraclavicular BPI reconstruction, although more technically demanding, is a worthwhile procedure. Results are usually better than primary tendon transfers, particularly for proximal targets like musculocutaenous or axillary nerves, although augmentation of median/ulnar nerve reconstructions with tendon transfers or free-functioning muscle transplantations may be necessary and are not uncommon.

15:37 Discussion

15:40 **A simple bridging suture to shorten nerve graft length and to secure the nerve repair: An intra-operative experience based on thirty cases of obstetrical brachial plexus palsy (OBPP)**
Mr A Hweidi, Dr F Sulieman, Professor P McArthur, Professor S Hweidi (Egypt/Jordan)

Background: The most widely used technique for bridging defects in the brachial plexus is the use of cable nerve grafts. The size of the defect together with the limited length of donor nerves are commonly encountered problems. Our work aimed to develop a new method to overcome these problems.

Method: A comparative study was conducted between two groups of babies with OBPP, each consists of 15 infants. In all patients nerve grafting was indicated. In group (A) the defects were measured directly after neuroma excision without any attempts to approximate the retracted ends of the nerves, this was followed by reconstruction of the gaps by cable grafts. In group (B) we did the same but we took measurements after using a bridging stay suture between the two ends, just to overcome the retracted distance without any further tension on the nerves.

Results: There was a significant decrease in the length of the cable nerve grafts, from an average of 29.5mm in group A to 14.2mm in group B, about 50% difference. Subsequently, the number of cables per nerve graft was increased, from average of 2.2 to 3.2 cables in each graft.

Conclusion: This simple suture can prevent retraction of the nerve ends after repair with fibrin glue, decrease the length of the cable grafts and increase the number of cables per graft. All are crucial factors for favourable clinical results.

15:43 Discussion

Carpal tunnel syndrome (6 papers)

15:45 **Recurrent carpal tunnel syndrome - Analysis of the causes and outcome after vascularised hypothenar fat pad flap surgery**
Mr K Karuppaiah, Dr M Ahmed, Mr R Nanda, Professor J Stothard (Middlesbrough)

Aims: Our objective is to identify causes for recurrence and to evaluate the results of our technique.

Material and Methods: We retrospectively analysed eighteen patients (12 females; 6 males) who had both clinical and electrophysiological confirmation (7 focal entrapments; 11 severe entrapments) of recurrent carpal tunnel syndrome. In all the patients, after releasing the nerve, a vascularised fat pad flap was mobilised from the hypothenar region and sutured to the lateral cut end of the flexor retinaculum. All patients were assessed post-operatively for relief of pain, recovery of sensory and motor dysfunction.

Results: The average age was sixty-one years and dominant hand involved in 13/18. The average time between the first and second surgery was fifty-nine months. Intra-operatively ten had completely reformed retinaculum, two partially reformed (proximally) and five had scar tissue between the cut ends and one had scar tissue and fibrosis around the nerve. All patients had improvement of symptoms post-operatively. Ten had complete recovery immediately after surgery. The remaining patients had severe focal entrapment and had scar tissue intra-operatively. The patients with delayed recovery had high incidences of a) early recurrence (average nine months), b) diabetes mellitus c) obesity/over-weight and d) cervical spine problems.

Conclusions: The hypothenar fat pad transposition flap provides a reliable source of vascularised local tissue that prevents scar formation and helps nerve gliding. 80% of the patients in whom recurrence occurred within a year had poorer/delayed recovery.

15:48 Discussion

15:50 **Deprivation, occupation and carpal tunnel syndrome**
Mr P Jenkins, Mr A Watts, Miss J McEachan (Dunfermline)

Introduction: Carpal tunnel syndrome is a common neuropathy of the median nerve. Deprivation has an association with the aetiology of several other musculoskeletal conditions and can predict outcome from treatment. The aim of this study was to describe the epidemiology of carpal tunnel syndrome in a UK regional audit database, with particular reference to deprivation and occupation.

Methods: All patients in our region, who had been diagnosed with carpal tunnel syndrome over six years, were recorded in a prospective database. Deprivation was measured using the SIMD (Scottish Index of Multiple Deprivation) methodology and occupations were classified into eight domains using the NS-SEC (Office for National Statistics) self-coded classification system. The DASH score was used to measure functional impairment.

Results: There were one thousand five hundred and sixty-four patients diagnosed with CTS with an overall annual incidence of 82/100,000 population (range 17 to 168 per 100,000 between different geographical areas). There was a statistically significant correlation between deprivation and incidence of CTS, ranging from 81/100,000 in the most deprived patients to 62/100,000 in the least deprived ($r=0.21$, $p<0.001$). Functional impairment was higher in the most deprived group compared with the least (DASH 56 vs 48 $p=0.001$)

Conclusions: There is an association between deprivation, the incidence of carpal tunnel syndrome and functional impairment at presentation. There is a tenfold difference in the incidence of CTS between the geographical area with the lowest incidence and the area with highest incidence. The incidence is highest in the most deprived groups.

References:

de Krom MC et al. Carpal tunnel syndrome: prevalence in the general population. JAMA 1999;282(2): 153-8

Stevens JC et al. Carpal tunnel syndrome in Rochester, Minnesota, 1961 to 1980. Neurology 1988, 38(1):134-8

Silverstien BA et al. Occupational factors and carpal tunnel syndrome. Am J Int Med 1987; 11(3):343-58

15:53 Discussion

15:55 **Predicting failure after steroid injection for carpal tunnel syndrome**

Mr P Jenkins, Mr A Watts, Miss J McEachan (Dunfermline)

Introduction: Steroid injection for carpal tunnel syndrome (CTS) is an alternative to operative management for CTS and has fewer potential complications. The aim of this study was to use survivorship methodology to determine the need for reintervention after eight hundred and thirty-two primary steroid injections for carpal tunnel syndrome.

Methods: Eight hundred and thirty-two opted for primary injection over a six-year period in a prospective regional CTS database. Kaplan-Meier survivorship methodology was used to examine the five-year endpoints of "any reintervention" or "eventual open decompression". Cox proportional hazards models were used to identify independent predictors of these endpoints.

Results: At five years, 58% of patients had required a subsequent procedure and 33% progressed to carpal tunnel decompression. Multivariate analysis showed the independent risk factors for a further injection were older age ($p<0.001$), bilateral disease ($p=0.032$) and male gender ($p=0.011$). Risk factors for eventual open decompression were increased BMI ($p=0.017$), severe nerve conduction impairment ($p=0.001$) and female gender ($p<0.001$), whereas those with no nerve conduction impairment had a reduced risk of subsequent decompression ($p=0.006$) (Figure 1). There were seventy-two patients (8.7%) with negative nerve conductions studies, of which five progressed to decompression.

Conclusions: Steroid injection is a useful treatment for CTS, but the need for reintervention is high. Reintervention may be avoided by identifying those at higher risk of open decompressions earlier (young age, females, unilateral disease, high BMI and severe nerve conduction impairment). Nerve conduction studies (NCS) are useful in predicting the need for eventual decompression.

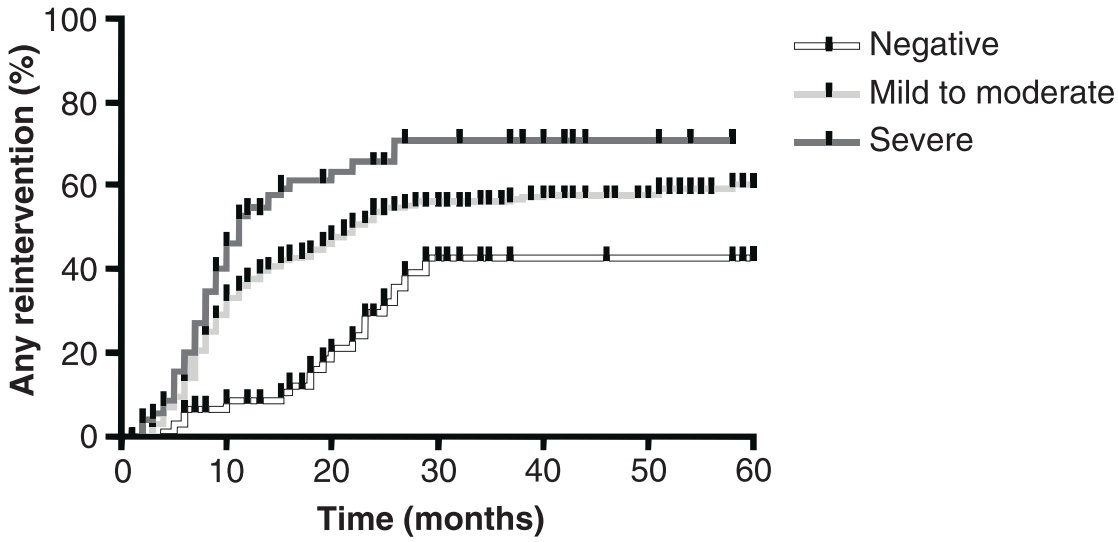

Figure 1: Risk of any reintervention after primary steroid injection, grouped by nerve conduction study results

References:
McGrath MH, Local steroid therapy in the hand. J Hand Surg (Am) 1984; 9(6):915-21
Hui AC et al. A randomised controlled trial of surgery vs steroid injection for carpal tunnel syndrome. Neurologyo 2006; 64(12):2074-8
Ly-Pen D et al. Surgical decompression versus local steroid injection in carpal tunnel syndrome. Rheumatology (Oxford) 2005; 44(5):647-50

15:58 Discussion

16:00 **Patient satisfaction following carpal tunnel decompression performed by clinical nurse practitioner and orthopaedic trainees: A comparison study**

Mr D Murray, Mr Q Choudry, Dr A Roushia, Miss N Kelham, Mr B Sylvester (Manchester)

Carpal tunnel decompression is one of the commonest elective orthopaedic procedures. Trained clinical nurse practitioners (CNP) are employed to perform cases to reduce surgeons' workload.

We have prospectively looked at patient satisfaction following carpal tunnel decompression and compared results between SpR, SHO and CNP.

Forty-four patients undergoing carpal tunnel decompression completed satisfaction questionnaires following surgery. Local anaesthetic was administered ten minutes before surgery. Above elbow tourniquet was used. Patients were randomised to operating surgeon.

Mean tourniquet time was 9.8 minutes performed by SpRs, compared to 12.3 and 10 minutes by SHO and CNP. 18% found the tourniquet performed by SpRs uncomfortable, compared with 23% performed by CNP. 85% were very satisfied overall, with the remaining 15% being satisfied in the CNP group, compared to 94% being very satisfied with the remainder being satisfied in the SpR group. 15% complained of mild discomfort with regards to local anaesthetic in the CNP group compared with 23% in the SpR and SHO groups.

100% of patients were either very satisfied or satisfied with their procedure overall in all groups, regardless of tourniquet times, allowing us to draw the conclusion that tourniquets and local anaesthetic are adequate adjuncts.

In terms of patient satisfaction immediately following procedure, CNP have equal outcomes as compared with SpR, and better outcomes when compared with SHO. CNP offer a good strategy to reduce waiting times, at no detriment to the patient, in terms of satisfaction at least. There is an argument that junior trainees will miss out on training.

16:03 Discussion

16:05 **Results of a single stage clinical pathway for carpal tunnel syndrome**
Mrs C Ball, Mr M Pearse, Professor J Nanchahal (London)

Introduction: Carpal tunnel syndrome (CTS) is the commonest hand disorder. The clinical pathway traditionally involves multiple hospital appointments and lengthy waiting times for neurophysiological tests. Previous accelerated "one stop" clinics have not included nerve conduction studies within the single-stage clinical model.

Materials and Methods: We piloted a single visit pathway for patient assessment and treatment in a consultant-led clinic. Data collected pre-operatively and at one year included: Boston Carpal Tunnel Questionnaire (BCTQ) and Michigan Hand Outcomes Questionnaire (MHQ), Picker satisfaction scores, pinch and grip strength and sensation. Patients were assessed clinically and underwent nerve conduction studies using a portable device (Neurometrix™) by the hand therapist. Surgery was performed under local anaesthesia using a dual theatre setting to maximise throughput.

Results: Eighty-four patients (92 hands) completed one year follow-up. There was significant improvement in all domains of the BCTQ, MHQ, grip strength and sensation. There were no significant adverse effects and no re-admissions. The mean operating time was 13min, mean tourniquet time was 2.6min and mean patient turnaround time was 15min. Patient satisfaction as assessed by the Picker questionnaire was very high.

Conclusion: We have shown that a highly efficient clinical service, involving both diagnostics and treatment, can be delivered at a single hospital visit whilst maintaining optimal outcomes and high patient satisfaction. More recently the pathway has been extended to include trigger digits.

16:08 Discussion

16.10 **Cost-effectiveness of portable automated nerve conduction studies for management of carpal tunnel syndrome**
Dr R Bindra (Chicago)

Introduction and Aim: Although the diagnosis of carpal tunnel syndrome is clinical, electrophysiological testing is recommended prior to surgery. Typically, the patient is referred to a neurologist for these tests necessitating additional clinic visits. As an alternative, the NC-Stat system provides a portable automated device for nerve testing that can be used in the hand clinic. The aim of this study is to examine the cost-effectiveness of portable automated nerve testing for patients with a clinical diagnosis of carpal tunnel syndrome.

Methods: The records of fifty-two consecutive carpal tunnel release procedures performed over an eighteen-month period were reviewed retrospectively. All patients had pre-operative nerve conduction studies, thirty with conventional and 22 with portable testing. Relief of symptoms at six weeks and three months post-operatively was recorded. Facility and physician charge data for both types of electrophysiological testing were obtained.

Results: Of the fifty-one records available, all but one patient had satisfactory symptomatic relief six weeks after surgery. Symptom relief persisted through the three-month visit. The one patient without relief had been tested with conventional NCS and had severe prolongation of conduction. The typical

neurology physician charge at our institution for performing and interpretation of electrical testing was $944.00 for a bilateral upper extremity nerve test procedure. The additional facility charge was $796.00. The physician reimbursement for performing the NC-Stat test was $520.00 and the facility charge was $602.00.

Conclusion and Clinical Relevance: Portable automated testing is cheaper than, and as effective as, conventional testing in managing patients with carpal tunnel syndrome.

16.13 Discussion

14:50 **BAHT Breakout Session** (Parallel – Lecture Theatre 2)

Partial hand & upper limb amputees: Therapy
Ms F Carnegie

Partial hand & upper limb amputees: Prosthetics
Mr I Jones

Free Papers (Plenary – Lecture Theatre 1)

CHAIRMAN: MR C HERAS-PALOU/MR N GAPE

16:15 **Push CMC custom splint for CMC osteoarthritis**
Mrs N Koekebakker, Mrs J Colditz (Amsterdam)

Introduction: An off-the-shelf splint for non-surgical treatment of osteoarthritis to only immobilise the CMC joint is not available. The hand therapists often make their own splints from thermoplastic material (Colditz, 2000) or they use a commercially available splint that will support more joints than just the CMC joint (Weiss, 2004). Together with Judy Colditz and Nea International, our hand therapy practice, 4hands, has been involved in the development of an off-the-shelf splint that only immobilises the CMC joint.

Study Population and Method: As part of the development, a pilot study was conducted with the prototype of the splint to assess patients' experiences with the splint. Thirteen patients were asked to wear this new splint, using the same protocol as for the splint they had been using. At intake the following data were recorded at the impairment level: VAS for pain, opposition score (Kapandji), grip and pinch strength in the three pinch positions. The DASH was used to evaluate activity. The patients were asked to keep a diary to record their experiences. Final evaluation took place after six weeks, at which time all measurements were repeated and patients were asked to give a grade to the use of the splint.

Results: At impairment level there were no significant changes. At the activity level, however, significant improvement was noticed (p=0.012). The mean satisfaction score was 8.2 (Dutch scoring system max. = 10). The results of the pilot study were used to further develop the unique Push CMC splint.

References:
Colditz J C. The biomechanics of a thumb carpometacarpal immobilisation splint: Design and fitting. J Hand Ther 2000; 13:228-235.
Weiss S, LaStayo P, Mills A, Bramlet D. Splinting the degenerative basal joint: Custom-made or prefabricated neoprene? J Hand Ther 2004; 17:401-406.

16:18 Discussion

16:20 **The Jebsen-Taylor hand function test: A standardised approach**
Miss D Curran, Mr D Harte, Professor P Hamill (Portadown)

Introduction: The Jebsen-Taylor Hand Function Test (JTHFT) is a seven part, timed diagnostic test. Results from administering the test can be compared with published normative data. The aim of this study was to investigate if integrating a template to the testing procedure leads to a significant reduction in the time taken to administer compared to current practice.

Methodology: A standardising template was made from transparent plastic. Markers were used to highlight where each test item should be located. Three therapists completed ten timed trials each in test preparation and setting up subtests 2, 3 and 6 with and without the template. Photographs were taken to illustrate accuracy of item placement without the template.

Results: A one tail t-test (Mann-Whitney test) evaluated the changes in the mean ($p< 0.05$) and median ($p< 0.05$) time taken to administer the test. We can conclude that the template significantly enhances efficiency. Overall, the total time taken to prepare the test and to administer the selected subtests was reduced by approximately 43%. Photographic evidence illustrates that in the absence of a template, items are not positioned accurately.

Conclusion: Healthcare settings are increasingly demanding of clinicians to assess and treat patients within tight schedules while simultaneously producing evidence of treatment effectiveness and patient progress through the use of outcome measures. Initial findings show that the standardising template for the JTHFT is both efficient and effective, and is a low-cost alternative which should be welcomed by clinicians and healthcare managers alike.

References:
Jebsen RH, Taylor N, Trieschmann RB, Trotter MJ, Howard LA (1969) An Objective and Standardised Test of Hand Function. Archives of Physical Medicine and Rehabilitation, 50, 311-319
Lynch KB, Bridle MJ (1989) Validity of the Jebsen-Taylor Hand Function Test in Predicting Activities of Daily Living. Occupational Therapy Journal of Research, 9 (5): 316-318
Sears ED & Chung KC (2010) Validity and Responsiveness of the Jebsen-Taylor Hand Function Test. Journal of Hand Surgery, 35 (1): 30-37

16:23 Discussion

16:25 **Ulna shortening - Not a benign procedure!**
Mr R Kakwani, Mr L Irwin, Miss L Tourret, Mr A Stiratt (Newcastle upon Tyne)

Objective: Retrospective study to assess the outcomes of ulnar shortening for TFCC tear and distal radial malunion.

Method: Retrospective note and X-ray review of all patients undergoing ulnar shortening over a ten-year period along with a clinic assessment and scoring to date. The ulnar shortening was performed using the Stanley Jigs (Osteotec). A 5-6 holed DCP was used to stabilise the osteotomy site. Physiotherapy was commenced immediately following the surgery to promote prono-supination and wrist exercises.

Result: Twenty-eight patients studied with one subsequent death. Thirteen patients with an average age of 53 years underwent ulnar shortening for distal radius malunion, whereas 15 patients with an average age of 47 years had a primary indication of ulnar abutment with TFCC tear. Six patients underwent re-operation for non-union. Two patients needed plate removal for prominent metal ware. Patients undergoing the procedure for TFCC deficiency compared to radial malunion did worse on functional scoring (DASH & SF36). Failure to place an interfragmentary screw was associated with a higher risk of non-union.

Conclusion: Ulnar shortening is not a benign procedure, especially for the treatment of TFCC insufficiency. Interfragmentary screw placement is important in avoiding non-union.

16:28 Discussion

16:30 **Modified Brunelli procedure for scapholunate instability - Mid-term results**
Mr K Singisetti, Mr S Swarna, Mr I Hugh (South Shields)

Introduction: Scapholunate instability is a common form of carpal instability and Brunelli procedure has been advocated as a surgical intervention for this difficult problem.

Materials and Methods: Twenty-five patients with clinical and radiological diagnosis of scapholunate dissociation were included in the study. Mean age of the patients was thirty-seven years. All the patients were treated by modified Brunelli procedure, with the flexor carpi radialis tendon being passed through a drill hole in scaphoid and sutured to radiotriquetral ligament. All patients had a wrist arthroscopy prior to the index procedure and associated injuries recorded. The average post-operative follow-up for the patients was sixty months.

Results: Patient rated wrist evaluation score improved from an average of pre-operative score of 108 to a post-operative score of 33.8. The hand grip strength improved in twenty-two out of 25 patients. Twenty-one (84%) patients were satisfied with the procedure and would undergo the operation again if required.

Conclusion: This case series reaffirms the current literature regarding efficacy of modified Brunelli procedure in scapholunate instability. Early and midterm results suggest this procedure to be a useful option in carefully selected patient groups.

References:
1. Brunelli G and Brunelli G. A new technique to correct carpal instability with scaphoid rotatory subluxation: a preliminary report Journal of Hand Surgery 1995 20A, S82-S85
2. Green DP. Carpal dislocations and instabilities in Green DP (Ed.). Operative hand surgery 1993 3rd Edn New York Churchill Livingstone 1 pp. 861-928

16:33 Discussion

16:35 **The management of the failed total wrist replacement - The Wrightington experience**
Mr R Mohil, Mr I Nwachuku, Mr S Talwalkar, Mr A Hearnden, Mr M Hayton, Mr I A Trail (Wrightington)

Background: Total wrist arthroplasty is still in its infancy compared to hip and knee arthroplasty. Published results are few and far between for total wrist replacements in general. Even scarcer are studies looking at revision total wrist replacement surgery. This study looks at the Wrightington experience of the management of the failed total wrist replacement.

Methods: In this study, twenty-nine patients with twenty-nine total wrist replacements were identified as having had a failed total wrist replacement. All patients were reviewed with follow-up radiographs and clinical examination. Minimum follow-up was one year. Assessment of the patients was with the Disabilities Arm Shoulder Hand (DASH) and Wrightington Wrist Outcome (WWO) questionnaires. Radiological analysis was done using the Cobb and Beckenbaugh method.

Results: Twenty-nine patients were identified as having had a failed total wrist replacement. Twenty were female, nine male. Twenty-six were rheumatoid patients. One had a diagnosis of post-traumatic osteoarthritis, two with primary osteoarthritis. Mean age was sixty-four years. Eight were revised to an arthrodesis. Four had an excisional arthroplasty. Three had a capsulotomy to improve on range of movement. One had an insert exchange. The largest group in our series, thirteen, had revision to another wrist replacement.

Summary Points:
- Revision of the failed total wrist arthroplasty is a difficult problem
- All patients in this small series to date appear to have good clinical outcomes
- Revision to another wrist replacement appears no worse in the short term

FRIDAY, 12 NOVEMBER

16:42 Discussion

16:50 **Presentation of top 3 posters** (Plenary – Lecture Theatre 1)

17:00 Close of Meeting

POSTERS

1. **A Review of the implementation of generic hand therapy for patients post Dupuytren's fasciectomy**
Miss C Cheng, Miss B Ellis (Poole)

Introduction and Aims: Historically, hand therapy at Poole Hospital was delivered by both occupational therapists and physiotherapists, undertaking complementary roles. Following training, a generic, single therapist approach for patients post Dupuytren's fasciectomy was introduced. A review following implementation was undertaken to determine cost, outcomes, intervention required, comparing this with existing data.

Methods: Five hours training of physiotherapists and occupational therapists was undertaken. Patients were reviewed following treatment, assessing range of movement, satisfaction and Quick DASH functional outcome. Amount of treatment required and cost of implementation was calculated.

Results: Thirty-one patients were referred over nine months. Range of movement data was available on thirty (97%) patients. Eight patients (26%) maintained full intra-operative correction and achieved full flexion, 15 patients (48%) maintained full intra-operative correction and achieved functional flexion and seven patients (23%) had minimal loss of intra-operative correction and functional flexion. Satisfaction responses were received from twenty-two patients (71%) with all responses being "very good" or "good". Twenty of the 22 respondents recorded Quick Dash scores of < 25 (no to mild difficulty). Mean treatment time was one hundred and seventeen minutes compared with previously 240 minutes. Mean treatment cost using the hourly rate of the relevant staff was £45.7 per patient compared to £94 representing £48.30 (51%) saving per patient.

Conclusion: Positive cost benefits of the introduction of a generic approach for this patient group have been demonstrated. Training costs were quickly recouped. Patients benefitted from requiring fewer attendances, outcomes and satisfaction were good. Therapists welcomed the improved skill levels which will be transferable.

2. **Application of plaster of Paris (POP) extension cylinders for the treatment of PIPJ flexion contracture following zone II flexor tendon repair**
Miss A Kyle (Swansea)

Aim: To illustrate the application of plaster of Paris (POP) extension cylinders and demonstrate its effectiveness in the treatment of proximal interphalangeal joint (PIPJ) flexion contracture following zone II flexor tendon repair.

Method: A single case study design has been used. Assessment of PIPJ range of movement was completed by the treating therapist using a goniometer.

Results: Following zone II repair of the flexor digitorum profundus to the right ring and little fingers the patient followed a controlled active movement regime. Eight weeks post surgery he presented with 30° and 50° flexion contractures of the ring and little finger PIPJs respectively. Night extension splinting achieved 15° of improvement in both joints, however, progress ceased after three weeks and the joints had a solid end feel. Subsequently POP extension cylinders were applied and replaced every five to seven days resulting in a further 15° and 20° of improvement in the ring and little finger respectively. The outcome of treatment with POP was full extension of ring finger PIPJ and a 15° residual flexion contracture of little finger PIPJ.

Conclusion: POP is an effective alternative to night extension splinting which may prove useful when joints have a solid end feel and are non-responsive to static progressive splinting. The use of POP may be deemed cost effective as it is less expensive than thermoplastic, however, this should be balanced against the need for more frequent visits to the Therapy Department for replacement POP every five to seven days.

3. **An unusual presentation for Ewing's sarcoma in upper limb peripheral nerves**

Ms A Mohan, Mr A Jalgaonkar, Mr D Park, Mr W Aston, Professor T Briggs, Dr R Tirabosco (London)

We describe two cases of Ewing's sarcoma (ES) mimicking a peripheral nerve sheath tumour of the upper limb. Ewing's is a rare presentation in adults, with local recurrence and a propensity to metastasise.

Case 1: A 22-year-old female student with a history of non-specific elbow pain, but development of progressive ulnar nerve symptoms and swelling. Following a biopsy and staging investigations, she started adjuvant chemotherapy and underwent an extraosseous excision with sacrifice of the ulnar nerve. Follow-up at six months demonstrated residual numbness but some motor function in the ulnar nerve distribution, therefore she has deferred further reconstructive surgery at present.

Case 2: An elderly lady with a history of pain and a mass in the upper limb. Following a review of the imaging and biopsy, the histological diagnosis confirmed intraneural ES and she underwent a wide excision, sacrificing the radial nerve, with adjuvant radiotherapy. Post-operatively she had ongoing physiotherapy and planning for nerve and tendon reconstructive surgery.

This is a rare and highly malignant tumour, which can present with commonly encountered symptoms. Despite the paucity of literature for intra-neural Ewing sarcoma or the extended family of peripheral primitive neuroectodermal tumours (PNET), the applied treatment strategy emphasises the role for early, aggressive local control through surgery and adjuvant chemotherapy and radiation. This can be associated with high morbidity in the context of peripheral nerve tumours, but early aggressive management can lead to a better prognosis.

4. **Dupuytren's fasciectomy - Can we improve the patient experience?**

Mrs S Gillespie, Mrs F Cashin, Mr D Brown (Liverpool)

A previous audit demonstrated that despite consultation in clinic, the majority of pre-op patients were unable to retain information regarding the reason for surgery, structures affected, limitations that surgery would impose on them and the importance of long term rehabilitation. There is evidence to show that patients respond more effectively, are less anxious and have less pain if they are aware of what to expect post-operatively. As a result of these findings, it was decided to pilot a pre-op education group. The aim was to improve preparation of the patients with a view to enhancing their peri-operative experience and hence the results of treatment. This poster explores the value of a pre-op education group.

Method: A prospective study using self reported questionnaires was performed over a six month period with the trial group. The questionnaires were identical to those used in the original audit.

Results:

- Patients in the trial group demonstrated an increased knowledge of their condition.
- They were better prepared for surgery emotionally and practically.
- This is reflected in specific patient comments and in the table below

Patient knowledge and awareness of the implications of surgery	Education Group	Non-education Group
Name of condition	82%	68%
Structures affected	64%	14%
Wound care	96%	59%
Regular therapy	100%	41%
Splintage	91%	50%
Early mobilisation	82%	45%
Long term scar maintenance	82%	27%
Coped at home	100%	82%
Need for compliance with availability for therapy i.e. holiday plans, work, other commitments	98%	2%

Summary:

- This study has shown a clear benefit to patients attending a pre-op group in this case.
- It is likely that similar pre-op education will benefit all patients undergoing other surgical treatments that require complex and/or intensive post-op hand therapy.

5. **Clinical and radiological outcomes following corrective osteotomy for distal radial malunion**

Mr C Ingham, Mr P Johnston, Mr M Sommerlad, Miss D Larson, Mr A Chojnowski (Norwich)

Introduction: We present results from a series of patients with symptomatic distal radial malunions. We aimed to objectively measure improvement in radiological and clinical parameters following corrective osteotomy.

Methods: Between January 2005 and October 2008, fifteen patients underwent corrective osteotomy, using locking plates. The mean age was forty-eight years. The mean time from injury to corrective osteotomy was twelve months. Radiological parameters measured included ulna variance, radial inclination and palmar angulation. Clinical parameters included range of motion, grip strength and DASH score measured pre-operatively and three months post-operatively.

Results: Mean change in radiological parameters was 2mm increase in ulnar variance, a 9° improvement in radial inclination and a 23° improvement in palmar angulation. The only statistically significant change in range of movement was an increase in supination - 55° pre-operatively improved to 73° post-operatively. DASH scores improved from a mean pre-operative measurement of 51 to a post-operative measurement of 15. The mean improvement in grip strength was 8kg. We found a positive correlation between age and time to union/graft incorporation (R2 = 0.47). The average time to union was sixteen weeks.

Conclusion: Our results show a significant improvement in both radiological and clinical outcome measures following corrective surgery. These results support the use of corrective osteotomy following distal radial malunion.

6. **SCRAPS: Scaphoid radiological prognostic score - A new scoring system for scaphoid non-union**

Miss M Fawzy, Mr O Branford, Dr P Brooks, Mr F Schreuder (Stevenage)

A new Computed Tomography (CT) scan scoring system for scaphoid non-unions was developed by the senior author, using predictor variables identified in the published literature, such as pre-operative radiological signs of increasing degeneration, and the anatomical location of the fracture. An inter-observer agreement of 93% was found by a group of consultant hand surgeons, radiologists and their speciality trainees, who scored the pre-operative CT scans.

The scoring system is as follows:

1) Radiological non-union of waist or distal pole: lucency only (no collapse/sclerosis/cyst formation secondary changes)
2) Radiological non-union of waist or distal pole: sclerosis of edges (no collapse or cyst formation)
3) Radiological non-union of waist or distal pole: sclerosis, and cyst formation (no collapse) OR radiological non-union of proximal pole: lucency only (no cyst formation or collapse)
4) Radiological non-union of waist or distal pole: collapse of scaphoid fragments OR radiological non-union of proximal pole: sclerosis/cyst/collapse
5) Loss of carpal height and/or secondary OA changes (early SNAC wrist)

We hope this new radiological scoring system will prove to be a simple and reliable adjunct in predicting the rate of post-operative union, and thereby influencing management options such as the use of vascularised bone grafts for those with higher scores, and higher risk of persistent non-union.

7. **Reliability and responsiveness of PEM and QuickDASH in day-case hand surgery**
Mr P Johnston (Cambridge)

Between 1 June 2010 and 30 June 2010, a consecutive series of two hundred and twenty patients undergoing day-case hand surgical procedures was asked to complete Patient Evaluation Measure (PEM) and QuickDASH (revised Disabilities of Arm, Shoulder and Hand) patient-centred questionnaires. All were invited for follow-up and one hundred and twenty-three patients completed post-operative questionnaires for comparison. Pre-operative correlation between scores was high with an R2 value of 56%; post-operative (at a mean seven weeks) R2 was low at 9%. Change in PEM versus change in QuickDASH for carpal tunnel release (86 procedures) showed no correlation. Other data comparing these outcome scores including effect size, responsiveness to change, reliability and validity is presented. Twelve of the pre-op PEM and 27 of the pre-op qDASH scores were incomplete, necessitating exclusion from the analysis. Similar fall-out rates amongst the post-op series were seen. In conclusion, both measures appear valid and reliable measures of static hand dysfunction but the PEM was more frequently filled in correctly, suggesting patients find it an easier score to administer. The lack of consistency in post-operative scores may represent the relatively short time to follow-up.

8. **Variation of compressive force along the Acutrak 2 bone screw**
Mr H K Sugathan, Mr M Kilpatrick, Dr T J Joyce, Mr J Harrison (Gateshead)

Introduction: Acutrak 2 screws have been used for scaphoid fracture and non-union fixation for several years. To our knowledge the variation in compressive force along the screw has not been investigated.

Aims:

1. To measure variance in compression along the length of the Acutrak 2 screw and locate point of greatest compression.
2. To identify the region of the screw which produces the greatest compression, and discuss the relevance of this to the placement of the screw for scaphoid fractures.

Materials and Methods: Laboratory model set up to test the compressive forces along the screw with Sawbone blocks of varying width. The Acutrak 2 screws were introduced in the standard method. Forces were measured using load cell films introduced between the Sawbone block and were plotted as a graph along the whole length of the screw.

Results: Maximum compression was at the waist (middle) of the screw. Compressive forces were higher in the proximal half of the screw compared to the distal. Minimum compression produced at either end of the screw.

Conclusions: There is variation in compression along the length of the Acutrak 2 screw and the maximum compression obtained in the middle third of the screw. Compressive forces were higher in the proximal half of the screw. We suggest for maximum compressive force to place the fracture of the scaphoid at the waist of the Acutrak screw. If this is not possible, place fracture towards the proximal end of the screw.

9. **Are we publishing our abstracts presented at British Society for Surgery of the Hand (BSSH) meetings?**
Mr N Kain, Mr A Mishra, Professor P McArthur (Liverpool)

Purpose: Publication of presented abstracts at the BSSH meetings is a desirable end-point. Whilst acceptance of abstracts is subject to rigorous review, publication is subject to further peer-review and extensive scrutiny such that acceptance gives further credibility to the study. We aimed to assess the publication rates for abstracts presented at BSSH meetings and compare to other specialties.

Methods: We retrospectively analysed all abstracts from the Autumn 2006, Spring 2007 and Autumn 2007 meetings. We used Pubmed the database, using keywords and authors' names to determine publication of abstract. Podium presentations and posters were both included.

Results: The publication rates of abstracts presented were 30% for Autumn 2006, 26% for Spring 2007 and 24% for Autumn 2007. This gave a mean publication rate of 27%. The average time for publication of abstract for each meeting were 20 months, 14 months and 12 months respectively, giving a mean of 15 months.

Conclusions: The publication rate of 27% is low compared to other specialties. It may be that the scrutinising process is more rigorous compared to other specialties or that fewer abstracts are submitted for publication. Although we allowed three years for publication, the trend of increasing publication rate with longer time interval may reflect on studies which are yet to be published.

10. **Treating hand contractures in children with 'oyster' splints**

Mr M Nicolaou, Ms L Cremin, Mr M Richards, Mr P Grew, Mr R Dunn (Salisbury)

Introduction: Treating hand contractures following burns, trauma or congenital causes in young children is challenging, primarily due to lack of compliance. A number of different methods have been proposed over the years with variable results. We propose the use of 'oyster' splints made of acrylic material.

Material and Methods: A custom impression of a child's hand is firstly taken and a model is poured from this impression. This model is then manipulated in the laboratory to correct the deformity. The splint is then constructed, using vacuum forming technology. Over the course of the last five years we had ten patients. The splints were applied for a period of up to a year and secured in place. They were worn for up to twenty hours a day and removed for hand hygiene, exercise, stretching and supervised activities.

Results: The overall range of movement improved in all cases with widening of the first web space, improved extension, flattening of palmar skin and stretching of scarring. The compliance was 100%

Conclusions: 'Oyster' splints are an effective method for treating children with digital and palmar contractures secondary to burns, congenital pathology or trauma and are well tolerated.

11. **Early results of pyrocarbon proximal interphalangeal joint replacement from a District General Hospital**

Dr J Giddie, Mr T Halsey, Mr J Crosby, Mr G Pathak, Mr P Gillespie, Mr J W M Jones (Peterborough)

Background: Proximal interphalangeal joint replacements are effective in the treatment of arthritis and act primarily to relieve pain. We retrospectively reviewed the radiological and functional outcome of thirty-three proximal interphalangeal joint replacements in a series of 29 patients.

Method: All patients who underwent pyrocarbon PIP joint arthroplasty by three senior authors between 2004 and 2010 were reviewed. Indications for surgery were painful, degenerative or post traumatic joints with loss of function. Clinical assessment included range of motion, degree of pain and deformity pre and post-operatively. Patient evaluation measure questionnaires were collected and overall patient satisfaction was assessed. Radiographs were reviewed for evidence of loosening, fractures and dislocations.

Results: Twenty five women (86%) and four men (14%) with an average age of 64 years, range (45 - 78) were followed up for a mean of 20 months (range 3 - 56). A majority of patients reported a complete resolution of their symptoms, with particular emphasis on pain relief. The results will be discussed in relation to current literature.

Conclusions: Our experience of the pyrocarbon PIP joint replacement over the six years confirms this implant relieves pain, improves the arc of motion, corrects deformity and provides satisfactory function to a majority of patients. However, it is a technically demanding procedure with a 7% revision rate in this series.

12. **Intra-articular proximal interphalangeal joint (PIPJ) fracture management: A case study from the therapist's perspective**

Mrs G J Imenez, Miss K Fournier, Mr R Ragoowansi (London)

Introduction: PIPJ fractures are renowned to be complex to treat. Studies have described various types of external fixations with the emphasis on surgical techniques, however, little has been published on the post-operative rehabilitation and factors influencing the outcome.

Material: Reported is the case of a right handed, thirty-four year old male who presented three weeks post intra-articular PIPJ fracture of the right ring finger, who was treated with a dynamic external fixation described by Hynes and Giddins. The pre-operative range of motion was 0/54 degrees at the PIPJ (extension/flexion). Rehabilitation was initiated one day after the surgery when a hand-based thermoplastic splint was made to protect the finger between the active exercises provided. The patient demonstrated good understanding of the rehabilitation and excellent adherence with his home exercise programme.

Results: The range of motion at eleven weeks post-operatively was 6/86 degrees at the PIPJ and 0/44 degrees at the distal interphalangeal joint and this was expected to improve. This is above published results for a similar surgical technique. The patient had returned to work at two weeks post-operatively and reported minimal pain. In total, he had eleven therapy sessions, four consultant visits and five X-rays.

Conclusions: Pre-operative range of motion, good communication between the surgeon, patient and therapist and compliance appear to be link with this excellent outcome. This case-study should assist the surgeon and therapist in the planning and post-operative care of patients with this type of injury.

13. **The use of a silicone flexor tendon as a teaching model for flexor tendon repair - A clear view**

Mr W Holmes, Mr O Hughes, Mr H Tehrani, Mr A Mishra, Mrs J McPhail, Professor P McArthur (Liverpool)

Introduction: Flexor tendon repair is a fundamental skill to be learned by all trainee hand surgeons. Whilst trainees should demonstrate competency with repair techniques, training time and opportunities are becoming ever-limited. Various teaching models exist, but difficulties lie in assessing suture position in opaque materials or tendons. We present a novel teaching tool, manufactured in clear silicone and representative of a tendon, that allows complete visualisation of all suture material, thereby allowing a full unobstructed assessment of tendon repair and appreciation of the techniques demonstrated.

Method: A novel silicone-based tendon model was developed by our prosthetics unit that provides similar consistency to human tendon. Four-strand cruciate repair and Silfverskiold repair techniques were taught to a variety of surgical trainees at differing levels (N=10) on a large scale clear model for easy visualisation. Trainees then carried out the repair on actual size models.

Results: By using the clear silicone tendon teaching model, trainees were able to fully visualise their repair and ascertain errors in suture placement. In practice the model ensured a shorter learning curve, quicker time to competency than compared to conventional models, and carried high trainee satisfaction.

Conclusions: The described novel tendon teaching model is economical and easy to produce, circumvents the logistical difficulties posed by animal tendon models, and mimics in-vivo tendon repair. Its unique colourless property allows all suture material to be visualised - even the core suture. We recommend this model when training and assessing hand surgeons.

14. **Rehabilitation after surgery for zone II flexor tendon injuries in children**
Mrs K Cook (Epsom)

Introduction: The principles for post-operative rehabilitation in the paediatric population following a zone II flexor tendon injury in the hand are similar in those in adults. However, differences in anatomy and tissue healing as well as difficulties with comprehension and cooperation means that post-surgical hand therapy in children can be challenging and is different from that used in adults.

Method: This poster briefly reviews the relevant anatomy of the finger flexor tendons specific to the paediatric hand, alongside the most common mechanism of injury. A review of the literature regarding therapeutic intervention is undertaken and the design of splint fabrication and period of immobilisation are discussed.

Results: The literature reports that in the case of a very young or uncooperative child, or if the tendon has been repaired with less than a strong 4-strand suture, a cast immobilisation protocol for four weeks should be followed. However, in a strong 4-strand or more suture and a cooperative child and family, an early passive protocol is recommended. The splint design and rehabilitation protocol varies and will be presented and critically reviewed.

Conclusions: The literature is not conclusive on post-operative rehabilitation but general consensus is that if there is any doubt about cooperation of the child or the parents, or if the tendon has been repaired with less than a strong 4-strand suture repair, it is recommended to follow a cast immobilisation protocol for four weeks. Following this, the child can be allowed normal, unrestricted use of the hand.

15. **The Sauvé-Kapandji procedure for the treatment of congenital Madelung wrist deformity**
Mr V Shanbhag, Mr A Ved, Mr I Russell, Mr D Newington (Swansea)

Introduction: Madelung deformity is the result of a congenital alteration of growth in the distal radial epiphysis, which can produce cosmetic and functional problems in the wrist. Treatment can be difficult and remains controversial.

Materials and Methods: Between 1995 and 2008, ten patients with Madelung deformity were treated with a Sauvé-Kapandji procedure. This involves reduction and fusion of the distal radioulnar joint and the creation of an ulnar pseudarthrosis to allow forearm rotation. At diagnosis, all the patients had typical bilateral Madelung's deformity, with one side more symptomatic, often correlating with the greatest deformity. Patients had significant dorsal prominence of the head of the ulna, accompanied with pain and limitation of forearm rotation, due to the disruption of the distal radioulnar joint.

Results: All patients improved significantly, with an increase in forearm rotation and grip strength. Patients also confirmed cosmetic benefit with an improvement in the appearance of the wrist. Pain was also eliminated and the incidence of complications was very low - although two patients required remedial surgery due to bony ingrowth at the 'pseudarthrosis gap'. We present this series of patients with a mean follow-up of over eight years, along with a review of the current available literature.

16. **Development of a patient-focused hand clinic website**
Mr R Stevens, Miss E Askouni, Miss N Bystrzonowski, Miss K Owers, Mr G Bantick (London)

Aim: To survey hand clinic patients about their Internet use and what information should be included on a hand clinic website.

Method: Patients attending hand clinics were invited to participate in an anonymous survey that had local audit committee approval. The survey comprised fifteen questions about their Internet use and demographics.

Results: From two hundred and eighteen patients, 190 patients completed the survey (response rate of 82%) and of these, 115 were male (60.5%) and 75 were female (39.5%), with ages as distributed in Table 1. One hundred and seventy-two (90.5%) were fluent in English and only 25 (13.2%) considered themselves to have a disability. One hundred and seventy-one (90%) had access to the Internet with 154 (81.1%), 84 (44.2%), 10 (5.3%), 9 (4.7%) and five (2.6%) accessing the Internet at home, at work, at school, at a library or Internet café and using a mobile device respectively. One hundred and fifty-seven (82.6%) had an e-mail address. One hundred and four (54.7%) used the Internet to access health-information, whilst only 55 (28.9%) accessed information about hand conditions or surgery. Although ninety-seven (51.1%) were aware that our Trust has a website and only 54 (28.4%) had accessed it 157 (82.6%) would access a website for hand clinic patients and largely agreed with the information that should be included on it (Table 2).

Conclusion: The majority of hand clinic patients had access to the Internet and would use a hand clinic web site. There was general consensus about the information that should be included on such a website.

Table 1: Age distribution of patients

Age Range (Years)	Number (%) of Patients
15-19	11 (5.8%)
20-29	37 (19.5%)
30-39	50 (26.3%)
40-49	31 (16.3%)
50-59	28 (14.7%)
60-69	18 (9.5%)
70-79	13 (6.8%)
80-89	1 (0.5%)
Over 90	1 (0.5%)

Table 2: Information on hand clinic web site

Item of Information	Number (%) of Patients
Who we are	115 (60.5%)
What we do	128 (67.4%)
Where we are	113 (59.5%)
How to contact us	135 (71.1%)
How to receive treatment by us	125 (65.8%)
Information about hand conditions and surgery	147 (77.4%)
Information about our treatments	136 (71.6%)
Links to recommended web sites	110 (57.9%)
Other *	18 (9.5%)

*Examples include hand exercises, frequently asked questions and online results

17. **Role of scaphoid motion during thumb opposition**

Professor T Sunagawa, Professor Y Koike, Dr Y Nakashima (Hiroshima)

Introduction: The purpose of this study was to clarify the role of scaphoid motion during thumb opposition with our original system that can calculate the rotation angle of hand bones in vivo.

Materials and Methods: The CT data from the distal forearm to the tip of the thumb of ten right hands in two positions of active and maximum radial abduction and palmer abduction of the thumb were taken, to reconstruct the 3D image of radius, ulna, scaphoid, trapezium and first metacarpal. The outline of radius and ulna in two positions were superposed to set three axes and that of each carpal and metacarpal bone were matched to measure the rotation angle. The z-axis was the long axis of the distal part of the radius, the x-axis was the line parallel to the anterior edge of the radius and being perpendicular to the z-axis. The y-axis was the line perpendicular to the other two axes. The positive data meant flexion around x-axis, abduction around y-axis, and pronation around z-axis.

Results: The average rotation angle (degrees) of scaphoid was 2.5 around x-axis, 2.7 around y-axis, and -3.5 around z-axis. That of the first metacarpal was 44.7, 32.0 and 15.9 respectively.

Conclusion: It may be most important that the scaphoid rotated in the opposite direction to first metacarpal around the z-axis, and this may be for the stability of the thumb ray during thumb opposition. The scaphoid may play an important role in the modification and the stabilisation of the thumb ray during thumb opposition.

18. **Outcome following screw fixation and non-vascularised bone grafting for scaphoid non-union – Three-year follow-up study**

Mr A Maclean, Mr N Howells, Mr N Blewitt (Bristol)

Introduction: Scaphoid injuries remain a challenge in both diagnosis and subsequent management. Untreated scaphoid non-union leads to inevitable osteoarthritis. Non-unions are picked up via an established management pathway in our trust and treated surgically with a standardised technique of non-vascularised bone grafting and retrograde screw fixation.

Methods: Patients who underwent primary screw fixation and grafting for scaphoid non-union between 2004 and 2008 were reviewed. These patients were followed up clinically and radiologically. They were assessed for time to union, complications, DASH score, patient satisfaction and return to work. In addition, comparisons were made between the use of Herbert screw and Twinfix screw fixation, and between tricortical iliac crest graft and corticocancellous distal radial bone graft.

Results: Forty-two consecutive patients underwent surgery, of which 35 (83%) were available for follow-up. Mean follow-up was thirty-nine months (range 13-72). Thirty-one (89%) patients had gone on to radiological union. Of those united the mean DASH score was 11. Mean time to union was 4.4 months (range 2-15 95% CI 3.3 - 5.5). 95% of patients were satisfied with their operation and would recommend it to a friend in the same situation. No significant difference in outcomes was identified between Herbert screw and Twinfix screw fixation or between iliac crest and distal radial bone grafting techniques.

Conclusions: This study has shown encouraging results for an established protocol for management of scaphoid non-union. Outcomes are as good as any published comparable series in the literature and provide further support to the use of this technique.

19. **Fracture dislocation of the elbow joint: Our experience**

Mr H Lykostratis, Mr S Penna, Mr G Al-Yassari, Mr V Gade, Mr J Perez (Harrow)

Fracture dislocations of the elbow are significant injuries with a potential for bad outcome if left untreated. Incidence of these injuries is around 6-8 per 100,000 population. The aim of our study is to present outcome following management of fracture dislocations of the elbow.

Methods: A retrospective case note review of thirty-two patients admitted to our hospital with elbow fracture dislocation was carried out.

Results: Thirty-two patients (17 male, 15 female) were reviewed, average age was 47. Mechanism of injury included mechanical fall (24/32), road traffic accident (5/32), and sports injuries (3/32). Associated injuries include fractures of radial head (17/32), coronoid (3/32), olecranon (3/32), radial neck (1/32), trochlea (1/32), capitellum (1/32) and proximal ulna (2/32). These injuries were managed by reconstruction and fixation (28/32), manipulation under anaesthesia (2/32) and conservative management (2/32). Patients waited on average eight days (SD=8.03) for surgery. Average follow-up before discharge was 7.48 months (SD=2.94). Average fixed flexion deformity at discharge was 20.86° (SD=18.42)) and average flexion was 123.28° (SD=16.27). In the patient group who had no reconstruction and fixation average fixed flexion deformity was 16.67 (SD=11.54) and average flexion was 110 (SD=10). Three patients who underwent reconstruction had pain and discomfort at six months post-op. One patient who had conservative management went on to have non-union of radial head fracture with significant pain at six months post injury. Four patients required removal of metal work.

Conclusion: This case series shows overall good outcome following surgical management of fracture dislocation of the elbow with a good range of motion and limited permanent deformity.

20. **A comparison of the ulnar neuropathy at the elbow (UNEQ) scoring system with the QuickDASH scoring system**

Mr A Wong, Mr S Kumar, Mr K Vishwanathan, Mr V Gedela, Mr M Webb (Chester)

Introduction: A new questionnaire (ulnar neuropathy at the elbow questionnaire - UNEQ) is a self-administered questionnaire which is disease specific and includes nine questions and considers numbness and tingling in the fourth and fifth fingers, elbow pain and modification of pain and paraesthesia with elbow position.

Methods: We enrolled thirty consecutive patients with mean age of 47 (range 20-88) who had undergone cubital tunnel release under general anaesthetics as a day case operation. Twenty-seven patients had both pre-operative and post-operative outcome scores measured by QuickDash and a new questionnaire (ulnar neuropathy at the elbow questionnaire - UNEQ).

Results: Mean of the post-operative follow-up was twelve months (range 2-19 months). There was significant improvement in the symptoms severity following cubital tunnel release as shown by QuickDash and UNEQ, with p values of 0.001 (95% CI 8.94-29.18) and 0.010 (95% CI 1.28-8.65). Guyatt responsiveness index [GRI], paired t test and anchor-based methods (correlation and receiver operating curves [ROC]) showed that the ulnar neuropathy at the elbow (UNEQ) scoring system (GRI - 1.5, correlation coefficient - 0.47, AUC - 0.82) was more responsive than QuickDASH (GRI - 0.9, correlation coefficient - 0.41, AUC - 0.77).

Discussion: Further studies are needed to test its responsiveness to clinical changes and it can be used to measure subjective discomfort in patients with cubital tunnel compression.

21. **A novel technique of flexor tendon reconstruction using fascia lata graft**

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

Introduction: We present a novel technique of second stage flexor digitorum profundus (FDP) reconstruction in a deficient palmaris longus patient. The plantaris muscle was very thin and unsuitable for reconstruction. A fascia lata graft was harvested and fashioned to reconstruct the FDP tendon to the left ring finger.

Methods: A thirty-year old right hand dominant with FDP injury secondary to glass laceration in zone 3 of his left ring finger, who previously had first stage tendon rod, presented very late for second stage after four years. He was counselled on the risks and benefits of reconstruction. At surgery, the previous wounds were explored. The proximal stump was significantly scarred with minimal excursion. Palmaris longus was absent and plantaris was small and too thin for reconstruction. A strip of fascia lata was harvested from the right thigh using tendon stripper and was gently twisted after doubling up for tendon reconstruction. The harvested graft was secured to the remnant FDP tendon distally and proximally with Pulvertaft weave.

Results: The patient commenced early active immobilisation under close supervision of the specialist hand therapists. He has had no problems with his rehabilitation to date. He is satisfied with his surgery.

Conclusion: This case demonstrates a viable alternative to palmaris longus or plantaris reconstruction of the flexor tendon. This is useful as patients may have an absent or deficient palmaris longus or plantaris. Early results appear encouraging. This may be an additional valuable alternative when palmaris or plantaris is not an option.

22. **Four decades of wrist arthroplasty for rheumatoid arthritis: What is the evidence? – A systematic review**

Mr D Thavarajah, Mr T Syed (Milton Keynes)

Introduction: The worldwide prevalence of rheumatoid arthritis is 1% with the wrist being the most commonly involved joint. Pain, reduced function and deformity open up the surgical options of arthroplasty or arthrodesis. The wrist is an important joint for function, and this function should be preserved particularly as there is a high prevalence of involvement of the remaining joints of the upper limb. We carried out a systematic review to see the outcome of arthroplasty in rheumatoid arthritis patients.

Methods: MEDLINE, EMBASE and CINAHL searches using the keywords 'Wrist and Arthroplasty' and 'Wrist Joint and Replacement' and were limited to original clinical research articles involving humans that were published in the English language. Demographic, complications and post-operative satisfaction were recorded. Review articles and case reports were excluded.

Results: Nineteen relevant studies. Five hundred and twenty rheumatoid wrists. Post arthroplasty pain: 260 with mild pain and 29 with moderate/severe pain. Complications post arthroplasty: minor complication: 27, major complication: 124. Requiring revision: 105. Requiring arthrodesis: 44. Satisfaction post-operatively: satisfied 233, dissatisfied 40.

Conclusion: This systematic review is limited by the retrospective nature of the data. Newer prosthetic designs provide a functional range of motion, better wrist balance, reduced risk of loosening, and better implant stability than older designs. The success of total wrist arthroplasty depends on appropriate patient selection, careful pre-operative planning, and sound surgical technique. According to patient satisfaction, which would be a good surrogate marker of outcome, 233/273 (85%) were satisfied.

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 £40.00 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.

	Registration Fee
Full / Overseas / Associate Member and Other	£380 Whole meeting £190 day
Trainees, (UK only) Companion Members	£180 Whole meeting £90 One day
Hand Therapists	£180 Whole meeting £90 One day
Honorary, Senior Members Speakers who are Research Doctors or Scientists	£40 per day

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

REGISTRATION AND ENQUIRY DESK

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

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

The telephone number of the Registration and Enquiry Desk during the Meeting is:
020 7405 3474 (ask for BSSH registration desk).

HONORARY AND SENIOR MEMBERS

Honorary and Senior Members do not pay a registration fee. A charge of £40.00 will be made for refreshments and luncheon each day. This is the day delegate rate charged to us by the venue for each delegate.

VENUE OF SCIENTIFIC MEETING

The meeting will be held in Lecture Theatres 1 and 2 of the Royal College of Surgeons.

CONTRIBUTORS INFORMATION

Projection Facilities

There will be facilities for PowerPoint presentations only. The audiovisual is being undertaken by the Media Resources Department at the Royal College of Surgeons. An information sheet has been previously sent to all speakers. Should you have any questions please contact: -

Matt Misik: 020 7869 6734, or by email: media@rcseng.ac.uk

PowerPoint Checking

Facilities to view presentations will be available in Committee Room 3, close to the Lecture Theatres, thirty minutes before the start of the first session each day. Speakers have been asked to submit their presentations in advance of the meeting.

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 Edward Lumley Hall, where refreshments and luncheon will be served. It is hoped that everyone will support this exhibition.

LUNCHEON

Luncheon will be served in the Edward Lumley Hall.

POSTER PRESENTATIONS AND POSTER PRIZES

Posters will be displayed in the Webb Johnson Hall. 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. The authors of the best three posters will be asked to give a short presentation at the end of the meeting on Friday afternoon. The authors of the best poster will receive a prize of £150.00 and the two runners-up will receive £50.00 each.

JOURNAL OF HAND SURGERY PRIZE

A prize consisting of book vouchers up to the value of £500.00 will be awarded to the presenter of the best paper at the Meeting.

DOUGLAS LAMB LECTURE

This will be delivered on Thursday at 4.30pm by Professor Paul Manske, entitled:- Classification and Treatment of Congenital Longitudinal Deficiencies

GUEST LECTURES

Thursday at 2.00pm: Lecture by Professor H Piza, entitled:- Pollicisation and its Long-term Results

Friday at 2.00pm: Lecture by Professor Paul Manske, entitled:- Surgical Treatment of Cerebral Palsy of the Upper Extremity in Children

BSSH ANNUAL GENERAL MEETING

The BSSH Annual General Meeting will be held on Thursday, 11 November at 5.30pm in Committee Rooms 1 & 2 (open to Members and Associates only).

BAHT ANNUAL GENERAL MEETING

The BAHT Annual General Meeting will be held on Thursday, 11 November at 5.30pm in Lecture Theatre 2.

TRADE EXHIBITORS

ACUMED **STAND NO 7**
Huebner House, The Fairground, Weyhill, Andover, Hants SP11 0QN
Telephone: 01264 774 450, Fax: 01264 774 477, Email: bob@acumed.uk.com
Contact: Mr R Cradduck

ALBERT WAESCHLE LTD **STAND NO 3**
11 Balena Close, Creekmoor, Poole BH17 7OX
Telephone: 01202 601 177, Fax: 01202 650 022, Email: Robert@albertwaeschle.com
Contact: Mr R Wood

BAHT – EDUCATION SUBCOMMITTEE **STAND NO 21**
PO Box 304, Woodbridge IP12 9EX
Telephone: 01394 610 131, Email: bahthandtherapy@googlemail.com

BENECARE MEDICAL **STAND NO 10**
Branson Street, Branson Court, Manchester M40 7FP
Telephone: 0161 273 6789, Fax: 0161 273 1400, Email: lee.garlick@benecaremedical.com
Contact: Mr L Garlick

BIOMARIN EUROPE LIMITED **STAND NO 16**
164 Shaftsbury Avenue, London WC2 8HL
Telephone: 020 7420 0800, Fax: 020 7420 0829, Email: apisuk@bmrn.com
Contact: Ms A Pisuk

BVM SURGICAL LTD **STAND NO 8**
Suite 442, Andover House, George Yard, High Street, Andover, Hampshire SP10 1PB
Telephone: 0844 443 8604, Email: colin@bvmsurgical.co.uk
Contact: Mr C Lloyd

EVIDENT **STAND NO 20**
57 Wellington Court, Wellington Road, London NW8 9TD
Telephone: 020 7722 0072, Fax: 020 7722 0976, Email: hmc@evident.co.uk
Contact: Ms L Caley

INTEGRA **STAND NO 6**
Newbury Road, Andover, Hants SP10 4DR
Telephone: 01264 345 739, Fax: 01264 363 782, Email: leanne.gray@integra-ls.com
Contact: Ms L Gray

IPRS GROUP **STAND NO 1**
Suffolk House, Little Blakenham, Suffolk IP8 4JU
Telephone: 0870 756 3750, Email: info@iprsgroup.com
Contact: Ms N Bowser

IPRS Mediquipe Ltd distributes leading edge equipment for the objective functional assessment of human performance. We are the sole UK distributor of both Biodex and BTE equipment.

Mediquipe Ltd provides a nationwide network supported by experienced engineers. This network is able to provide support, training and maintenance to all of its customers. As part of our commitment to our customers, Mediquipe hosts frequent User Group Meetings with highly qualified guest speakers and practical hands-on demonstrations of the complete range of equipment.

IPRS Mediquipe Ltd is proud to supply equipment across a range of markets, including:

- *NHS*
- *Private practices*
- *BUPA*
- *Universities*
- *Premiership football clubs*
- *British Olympic Society*
- *Research establishments*
- *Premiership rugby clubs*
- *Elite sports academies*

KARL STORZ ENDOSCOPY (UK) LTD **STAND NO 18**
392 Edinburgh Avenue, Slough SL1 4UF
Telephone: 01753 503 500, Fax: 01753 578 124, Email: agraley@karlstroz-uk.com
Contact: Ms A Graley

MEDARTIS LTD **STAND NO 5**
Suite 63, Annexe 4, Batley Business Park, Technology Drive, Batley, West Yorkshire WF17 6ER
Telephone: 01924 476 699, Fax: 01924 472 000, Email: anna.walsh@medartis.com
Contact: Mrs A Walsh

MEMOMETAL UK LTD **STAND NO 11**
14 Brewery Court, Theale, Reading RG7 5AJ
Telephone: 01189 033 280, Fax:01189 033 289, Email: info-uk@memometal.com
Contact: Ms L F Beaujoie

MERCIAN SURGICAL LTD **STAND NO 14**
10-12 Wolverhampton Road, Warley, Birmingham B60 1PZ
Telephone: 0121 429 1133, Fax: 0121 429 4983, Email: johnduffy@merciansurgical.com
Contact: Mr J Duffy

MOBILIS ROLYAN – PATTERSON MEDICAL LTD **STAND NO 17**
Nunn Brook Road, Huthwaite, Sutton in Ashfield NG17 2HU
Telephone: 08448 730 035, Fax: 01623 558 820, Email: alwyn.richards@patterson-medical.com
Contact: Mr J A Richards

Mobilis Rolyan, part of Patterson Medical, is a leading supplier of physiotherapy products. Our diverse and comprehensive splinting range includes best-selling thermoplastics like Aquaplast, Ezeform, SanSplint, and more, all with different handling characteristics reflecting the varying needs of clinicians today. All our thermoplastics are produced to the highest standards and a special Anti-Microbial component is available on most materials. Other hand therapy products we offer include pre-cut & pre-formed splints, kits & accessories for dynamic splinting, a large choice of padding & strapping materials, and quality heat pans & heat guns. Mobilis Rolyan also offers local workshops in static or dynamic splinting. Please visit our stand to see our complete range. Stand 17.

NORTHSTAR ORTHOPAEDICS **STAND NO 12**
Northstar House, 26 Kingfisher Court, Hambridge Road, Newbury, Berkshire RG14 5SJ
Telephone: 01635 275 380, Fax: 01635 275 381, Email: julie@northstar-ortho.co.uk
Contact: Mr D Roberts

OSTEOTEC LTD **STAND NO 13**
9 Silver Business Park, Airfield Way, Christchurch, Dorset BH23 3TA
Telephone: 01202 487 885, Fax: 01202 487 886, Email: andy@osteotec.co.uk
Contact: Ms J Janeczko

PROMEDICS ORTHOPAEDIC **STAND NO 4**
Port Glasgow Industrial Estate, Gareloch Road, Port Glasgow PA14 5XH
Telephone: 01475 746 413, Fax: 01475 746 411, Email: juliej@promedics.co.uk
Contact: Mr F Simpson

SOVEREIGN MEDICAL LTD **STAND NO 9**
Unit 16, M11 Business Link, Parsonage Lane, Stansted, Essex CM24 8GF
Telephone: 01279 816 167, Fax: 01297 816 299, Email: charlotte@sovereignmedical.co.uk
Contact: Ms C Fisher

TOUCH BIONICS **STAND NO 15**
Unit 3, Ashwood Court, Oakbank Park Way, Livingston EH53 0TH
Telephone: 01506 445 480, Fax: 01506 439 698, Email: sif.finnboga@touchbionics.com
Contact: Ms S Finnboga

VERTEC SCIENTIFIC **STAND NO 2**
Unit 44, Easter Park, Benyon Road, Silchester, Reading RG7 2PQ
Telephone: 01189 702 104, Fax: 01189 701 861, Email: nviccars@vertec.co.uk
Contact: Mr K Lakin

VIVOMED LTD **STAND NO 19**
2 Brannish Road, Downpatrick BT30 6LL
Telephone: 028 4461 7472, Fax: 028 4461 7472, Email: info@vivomed.co.uk
Contact: Mr R Lennon

TRADE EXHIBITION FLOOR PLAN

1. IRPS Group
2. Vertec Scientific
3. Albert Waeschle Ltd
4. Promedics Orthopaedic
5. Medartis Ltd
6. Integra
7. Acumed
8. BVM Surgical Ltd
9. Sovereign Medical Ltd
10. BeneCare Medical
11. Memometal UK Ltd
12. Northstar Orthopaedics
13. Osteotec Ltd
14. Mercian Surgical Ltd
15. Touch Bionics
16. Biomarin Europe Ltd
17. Mobilis Rolyan (Patterson Medical Ltd)
18. Karl Storz Endoscopy (UK) Ltd
19. Vivomed Ltd
20. Evident
21. BAHT Education Sub-Committee

at The Royal College of Surgeons 35-43 Lincoln's Inn Fields London WC2A 3PE
Telephone: 020 7831 5162 Fax: 020 7831 4041
Email: secretariat@bssh.ac.uk Web: http://www.bssh.ac.uk