

POSTER ABSTRACTS

BRITISH SOCIETY FOR SURGERY
OF THE HAND

INTERNATIONAL GUEST HAND SOCIETY

BSSH Poster 01

An Overview of the History and Achievements of the British Society for Surgery of the Hand

◆ **Peter D. Burge, FRCS**

Surgeons with experience of hand trauma during WWII formed the Hand Club in 1952 with 12 members, some of whom had worked with Bunnell.

The Second Hand Club formed in 1956 by Stack, Flatt and others. Both clubs merged into the British Club for Surgery of the Hand in 1958, which became the British Society for Surgery of the Hand in 1969 with Guy Pulvertaft as its first President. Journal "The Hand" commenced in 1969 under editorship of Graham Stack, becoming the JHS(Br) in 1984 and subsequently the JHS(European volume).

Advanced training posts in hand surgery commenced in 1992, with trainees currently taking a Diploma in Hand Surgery (jointly between BSSH and Univ of Manchester). Biannual 2-day Instructional Courses in Manchester since 1999, at which many overseas surgeons have lectured. Landmark achievements by BSSH members include flexor tendon surgery (Pulvertaft), the first toe-to-hand transfer (Cobbett), concepts of wrist pathology (Fisk), and active mobilisation of flexor tendon repairs.

See: Barton NJ. (1998). The first 30 years of the British Society for Surgery of the Hand. J Hand Surg Br, 23: 711-723.

BSSH Poster 02

Management of the Acute Fingertip Injury with Subungual Hematoma - A Systematic Review

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Ben Dean, MD

Christopher Little, MBChB

HYPOTHESIS

The management of the acute traumatic fingertip subungual hematoma is controversial. We hypothesized that there would be no evidence to support the exploration and surgical repair of the nail bed over trephination or other non-operative techniques.

METHODS

Multiple databases were interrogated for relevant studies using a computerised or manual search. Papers reporting the management of tip laceration past the proximal nail fold, soft tissue loss or nailplate damage (including nail avulsion) were excluded. Studies without follow up were also excluded.

RESULTS

The initial search highlighted 761 papers, of which four met the study inclusion criteria. The first was a pseudorandomized study comparing trephination with nail bed exploration and repair (1); the second

pseudorandomized patients to undergo one of three different methods of subungual decompression (2); the third followed a cohort of patients managed by trephination (3); the last was a retrospective series of cases managed by trephination (4). The complication rate for all forms of treatment was low. Infection rates ranged from 0% to 4.2%; all cases resolved with oral antibiotics. Follow up ranged from 5 to 24 months. The outcomes for nail cosmesis were generally good, although the assessment tool use was varied. Roser and Gellman (1) found no difference in cosmetic outcome between nail bed repair and simple subungual decompression. Meek and White (4) showed that 11% had a major nail abnormality (Zook criteria) following trephination. Seaberg et al. (3) reported no long term nail abnormalities after trephination. Farrington (2) reported a rate of abnormal nail growth of 7%.

SUMMARY POINTS

- Final nail cosmesis does not appear to be affected by the mode of treatment.
- The acute painful subungual hematoma should be decompressed by trephination or nailplate removal.
- The presence of a distal phalangeal fracture does not mean that nail bed repair is obligatory.
- There is a need for a suitably sized randomized controlled trial comparing nail bed exploration and repair with trephination for the acute fingertip subungual haematoma, with adequate follow-up.

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BSSH Poster 03

A Dilemma: Late Appearance of a Post-Surgical Median Nerve Neuroma in a Child with Normal Function and a Contralateral Transverse Growth Arrest of the Upper Limb

◆ **Lorenzo Garagnani, MD**

Gillian D. Smith, FRCS

HYPOTHESIS

Enlargement of a nerve at the site of previous plexiform neurofibroma excision requires exclusion of malignancy. For causes other than malignancy, diagnosis and management strategies may be less clear cut and may need open multidisciplinary discussion, especially in a patient with an absent contralateral limb.

METHODS

An 11 year old boy born with a congenital transverse arrest of the left upper limb at the proximal forearm, presented with an increasing growth of a painless mass in his right palm for five months. Nine years previously he had undergone resection of a plexiform neurofibroma of the median nerve in the right hand. The tumor was excised for its entire length (7.5 cm) including the proximal part of all sensory branches and the motor branch, and cable grafted with sural nerve graft (21.5 cm in length) to reconstruct the defect. Clinically he now had normal median nerve function. An MRI scan and ultrasound scan was performed, followed by an incisional biopsy of the lesion which was reviewed by two expert Neuropathologists. The case was discussed with a multidisciplinary team of Plastic, Hand, Orthopaedic Surgeons, Neuropathologists and Radiologists. He is under continuing review.

RESULTS

The MRI was suggestive of recurrent neurofibroma, affecting the distal part of the nerve around the site of the distal anastomoses. There was no evidence of malignancy. The ultrasound scan confirmed a disorganised mass of tissue, consistent with nerve, at the distal end of the grafted nerve. The original pathology was re-reviewed. The original diagnosis was confirmed as plexiform neurofibroma and the new biopsy surprisingly returned as regenerated nerve and neuroma. Eighteen months later, the mass appears to have grown a small amount further on US and MRI scans but with no change in consistency. The patient remains asymptomatic so no intervention is currently planned.

SUMMARY POINTS

Late appearance of post surgical neuroma is rare but should be included in the differential diagnosis of tumoral nerve lesions. Surgical decision-making for a benign nerve tumor, with normal function, in a child with an absent contralateral limb is complex and requires consideration of long-term outcomes of hand function and quality of life of the patient. Multidisciplinary discussion and sharing of international expertise is mandatory in cases of such complexity and uniqueness.

BSSH Poster 04

Twin Born with a Skeletonized Hand after Laser Ablation in Pregnancy for Twin-to-Twin Transfusion

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HYPOTHESIS

Laser ablation in pregnancy, for twin-to-twin transfusion syndrome (TTTS), may contribute to limb defects in the fully formed limb, either via thrombi or disruption of the amnion producing amniotic bands. An example of this rare occurrence is reported.

METHODS

Twin baby girls were born by elective cesarean section at 32 weeks plus 6 days gestation, due to intrauterine growth retardation (IUGR) of twin 2. This was the first pregnancy of Indian non-consanguineous parents. At 16 weeks gestation, the mother underwent laser ablation of the cord to treat TTTS. Nothing abnormal in the limbs was noted on frequent ultrasound scanning but ongoing IUGR of twin 2 decided early elective delivery. At birth twin 2 required CPAP support for 24 hours for respiratory distress syndrome (RDS) but was otherwise healthy. Twin 1 was physiologically healthy but was born with a short right forearm with a tiny skeletonized hand and wrist, devoid of soft tissue cover, protruding from the forearm distally. The skeletonized hand spontaneously amputated 12 days after birth. This was retained as a specimen for histopathologic and radiographic investigations by a specialist Pediatric Pathologist. On day 14 the baby underwent formal debridement and soft tissues closure of the forearm stump. Healing was uneventful.

RESULTS

The other limbs and the proximal right limb in Twin 1 were entirely normal. Macroscopic examination of the right hand which was 0.8 x 0.7 x 0.3 centimetres in size showed it curled into a fist. Two phalanges of the thumb and three phalanges for each of the four digits were present with bony separation. All five metacarpals were present. Size was consistent with a foetal limb of 14 weeks or greater. Microscopic analysis showed tubular bones and cartilage surrounded by fibrous tissue, necrotic skin and acute inflammatory debris. The appearances were suggestive of an ischaemic vascular aetiology with secondary inflammatory changes. The differential diagnosis included amniotic band syndrome, a vascular complication secondary to twin-to-twin transfusion syndrome, elevated angiotensin levels, or laser ablation-induced thrombi.

SUMMARY POINTS

- The presence of a small skeletonized distal limb at birth is rare and may be caused by a series of different mechanisms all mediated by ischaemic vascular changes.
- Laser ablation was performed in this case, and cannot be excluded as the possible mechanism of injury.

BSSH Poster 05

The Mechanisms of Acellular Zone Formation in Sutured Tendons

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HYPOTHESIS

Wong et al¹ described a bell-shaped region around sutures in tendons that was devoid of cells in histological sections in a mouse and rabbit model. The acellular zone was found to be present in sutured tendons for up to a year. The mechanisms of the formation of this acellular zone and its persistence were unknown.

METHODS

Electron microscopic and time-lapse studies were carried out to confirm that the acellular zone formed by cell death. Microarray analysis was conducted to confirm this and to reveal potential molecular targets for future studies. Preliminary studies using an inhibitor of cell death, necrostatin-1, in cell culture media showed that the size of the acellular zone could be reduced in tendon explants.

RESULTS

Electron microscopic, immunohistochemical and time lapse studies showed that cell necrosis is the predominant mechanism for acellular zone formation. Preliminary studies suggest that necrostatin-1 may be an agent that could reduce the amount of cell death after suturing. Studies of the mechanical properties of the extracellular matrix using scanning acoustic microscopy, nanoindentation and atomic force microscopy provided evidence, which supported the notion that the compressive forces exerted, by the suture on the tendon may cause the sutured region to be mechanically hostile to cellular reinvasion.

SUMMARY POINTS

- Suturing causes cell necrosis around the suture.
- This results in an acellular area, which remains acellular for up to a year.
- This cell death that results may be amenable to attenuation using necrostatin-1, a cell death inhibitor.
- The acellular zone's persistence is most likely to be due to the suture changing the mechanical properties of the extracellular matrix making it hostile to cellular re-population.

REFERENCE

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BSSH Poster 06

Improving Productivity and Income in Hand Surgery Operating Lists by the Strategic Employment of Extra Theatre Personnel

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INTRODUCTION

In this age of austerity, with significant reductions in hospital budgets, it is important that we bring about changes that will improve theatre efficiency. Recent evidence clearly demonstrates that theatres are not being utilised optimally and that prolonged changeovers between patients in theatre accounts for much of the operating time lost within a list. It has been reported that approximately 60% of time spent in theatre is actually used for operating, with 21% of time spent on patient turn over. In 2003, the

Association of Anaesthetists of GB and Ireland published guidance on delivering safe, quality care with the optimal use of the resources available. One of the key elements that they identified was optimal staffing levels. We therefore aimed to assess the impact of a change in theatre personnel in our hand surgery lists on theatre efficiency and subsequent income generated for the trust.

HYPOTHESIS

The strategic employment of an extra porter and surgical nurse practitioner, dedicated to our operating list, will improve theatre efficiency and increase the income per operating list.

METHODOLOGY

In an attempt to increase patient turn-over, a dedicated porter was employed to transfer patients to and from theatres, and a surgical nurse practitioner was employed to assist with patient preparation and wound closure. We analysed the orthopaedic hand surgery lists that were performed in the 6 months before and 6 months after the implementation of the change in personnel. We compared the volume of procedures performed during each period and the income that was generated for the hospital.

RESULTS

19 full operating lists were performed before the change and 20 full operating lists were performed after the change. The table attached summarises the results. The extra income generated per list was 3294 (or a 27% increase in income).

SUMMARY POINTS

- Employing a porter and surgical nurse practitioner dedicated to our list resulted in substantial improvements in our productivity. The intervention resulted in an extra of 2.35 procedures per list.
- The overall extra income generated per list was 3294.
- Benefits to patients - reduced waiting times.
- Benefits to trainee surgeons - increased operating time.
- This intervention relied heavily upon good communication between surgeons, anaesthetists, theatre staff and porters.

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	Average no. of procedures per list	Average income per list	Added cost per list
Before change	5.8	£12176	0
After change	8.15	£15585	£115
Difference	2.35	£3409	£115

BSSH Poster 07

The Effect of Carpal Tunnel Release on Manual Dexterity and its Relationship to Sensory Changes

◆ Marcus Davis, MBBS, MRCS

HYPOTHESIS

Carpal tunnel release has no effect on finger dexterity. There is no inter-relationship between dexterity & sensation in Carpal tunnel Syndrome.

METHODS

A prospective study was performed to examine the effect of carpal tunnel release on sensation and dexterity. Patients hand dexterity, function, feeling and pain were assessed both pre-operatively and following a minimum of 5 months post-operatively with a questionnaire including visual analogue scores, Semmes-Weinstein and static two-point discrimination tests for sensation, and the Grooved Pegboard test for dexterity. Twenty-five patients who underwent 35 carpal tunnel releases were examined pre-operatively and reviewed at a median of 12 months post-operatively. 23 of 25 had nerve conduction studies that confirmed Carpal Tunnel Syndrome (CTS). All operations were performed as day-cases by the senior author (HJCRB) or by a trainee under his supervision under tourniquet control and loupe magnification. Comparisons of pre-operative and post-operative values have utilized the paired t-test (parametric data) or the Wilcoxon's signed-ranks test (non-parametric data). Comparisons between unpaired data at any time point have utilized Student's t-test or the Mann-Witney test. Correlation calculations were performed by the Pearson and Spearman tests as appropriate.

RESULTS

Pre-operatively, sensation was significantly ($p < 0.001$) reduced in the median nerve distribution compared with the ulnar. The pre-operative pegboard times were raised compared with age-matched controls ($p < 0.001$) The pegboard times were correlated significantly with age and median nerve sensation Surgery resulted in significant improvements in sensation in fingers supplied by the median nerve The pre-operative and post-operative sensory values ($R=0.49$, $p < 0.01$) and pegboard times ($R=0.83$, $P < 0.001$) were strongly correlated There were significant improvements in all four subjective criteria following surgery

SUMMARY POINTS

- Surgery resulted in significant improvements in sensation in the median nerve distribution correlated with a significant improvement of subjective function and pegboard times.

- The change in pegboard times due to surgery was unrelated to age, pre-operative sensory values, interval since surgery but was correlated with the pre-operative times and most marked in patients with poorer pre-operative function.
- This study has shown that carpal tunnel syndrome impairs dexterity together with median nerve sensation.
- Surgical release leads to both subjective and objective improvements in dexterity, even in the elderly and in those with severe disease.

BSSH Poster 08

Skin Cancers of the Hand- an Analysis of 545 Hand Cutaneous Malignancies

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Simon Maciburko, B.Med Sci

William Townley, MBBS

HYPOTHESIS

Skin cancers of the hand are uncommon, their natural history is poorly documented and the functional and anatomical intricacies of the hand demand special consideration when contemplating surgical management and reconstruction. Determining tumor characteristics and behavior of a large series of skin malignancies will inform future clinical practice as to the most suitable surgical management options.

METHODS

A retrospective review of surgically treated cutaneous hand malignancies in consecutive patients at the Oxford Radcliffe Hospital between 1995 and 2010. Hospital records were reviewed to determine patient demographics and details of surgical management, including margins and reconstructive technique. Histopathology reports were accessed from the hospital database to determine tumour characteristics. Outcome parameters included tumour recurrence, metastatic spread and survival. Chi square and ANOVA tests were used.

RESULTS

Four hundred and seven patients (mean age 72, 66% male, 34% female) underwent excision of 545 lesions. The most common site was the dorsum of the hand. Seventeen percent of patients had multiple hand tumours. SCC was the most common tumour (n=422) followed by BCC (61) and malignant melanoma (MM) (21). Only 46% of defects closed directly, 35% were resurfaced with a skin graft and 14% required a flap. Six percent of patients underwent amputation. Regional lymphatic spread occurred in 38% of patients with MM and 2.1% of patients with SCCs. SCCs in the dorsal danger zone of the hand between the MCPJ and PIPJ, had a greater incidence of both recurrence (3.8%) and regional lymphatic metastasis (4.6%) compared to other areas (1.0% & 1.0% respectively). Sentinel lymph node biopsies were undertaken in eight patients (1.9%); four for SCC were negative and three of four for MM were positive. Distant metastatic spread occurred in 14% of MM patients but not in any SCC patients. Death

occurred in 7 of 21 patients (32%) with MM and in 4 of 422 patients with SCC (0.9%). Excision margins reported.

SUMMARY POINTS

- SCC was the most common lesion and although regional spread was rare, tumors in the danger zone require particular attention due to higher metastasis rates.
- MM was rare but presented at an advanced stage and was associated with a poor prognosis. The high incidence of nodal disease in MM supports the use of sentinel lymph node biopsy in all hand MMs, but not for SCCs.
- The functional and anatomical intricacies of the hand lead to the majority of defects requiring soft tissue reconstruction with a graft or flap.

BSSH Poster 09

The Relationship of Limb Hypoplasia in Obstetrical Brachial Plexus Palsy with Injury Severity, Surgery, Recovery and Growth

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HYPOTHESIS

Obstetric brachial plexus palsy (OBPP) is a complex neonatal peripheral nerve injury that is transient in the majority of cases, but can have lifelong motor, sensory and developmental consequences in others. Upper limb hypoplasia in OBPP is not documented. This study evaluates the relationship of upper limb hypoplasia and the extent of plexus injury, the effect of surgery, surgical method of repair, degree of neurological recovery, and growth.

METHODS

We performed a prospective longitudinal study of OBPP patients between 1997 and 2010. Patient details and upper limb neurological and musculoskeletal examination results were recorded, noting the extent of plexus injury (Narakas classification), as well as details of any nerve repair or secondary surgery performed. The neurological recovery (range and power of motion, Mallet score, and Gilbert/Raimondo scores) and consecutive detailed measurements of both upper extremities were completed at each visit.

RESULTS

Over the study period, 50 patients with OBPP were identified and measured at routine clinic visits. All those studied had some sequelae from their OBPP. All had a degree of upper limb hypoplasia. Clavicular length was an average of 1 cm shorter than the other side. Scapula length was an average of 1 cm shorter than the other side. Apparent arm length was shorter by varying degrees and this correlated with the degree of elbow flexion, and the severity of the OBPP. Humeral length was shorter according to degree of injury and recovery. Forearm length was normal in some cases and shorter in those with more severe injuries. In general, hand circumference was normal in some and reduced in those with more

severe injuries. The degree of hypoplasia tended to be static with growth. The correlations of hypoplasia with growth, degree of recovery and surgery are shown.

SUMMARY POINTS

- The sporadic and sequential measurements of both upper extremities in a cohort of OBPP patients reveals the degree of hypoplasia suffered by these patients, and the correlation of the hypoplasia with, severity of the injury, surgery, recovery, and time.
- This data will allow surgeons and therapists increased confidence to inform parents and children of this aspect of their condition.

BSSH Poster 10

Preventing the Paintbrush: A Novel Technique for Flexor Tendon Retrieval

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HYPOTHESIS

Flexor tendon injury in Zones I-II often leads to tendon retraction. Tendon retrieval prior to repair is often difficult and may lead to further splaying of the tendon. Several techniques have been proposed to facilitate retrieval. A common problem is difficulty negotiating the tendon through the pulley system due to splaying of the tendon cut end leading to paint-brushing

METHODS

The retracted tendon is located and using a non absorbable mono-filament suture a transverse pass is made through the tendon, a locked loop is formed from each end and positioned as close as possible to the cut tendon end. The needle is removed and whilst maintaining tension the suture ends can be passed under the pulleys. With gentle traction, the tendon can be delivered. Using this suture to hold the tendon end a core suture can be inserted without the need to grip the end of the tendon with forceps.

RESULTS

We have found this technique speeds up tendon retrieval and delivery through the pulleys, preventing paint-brushing and facilitating tendon repair with minimal trauma to the tendon. We have also used this technique on both pig trotter tendon and silicone tendon models for teaching purposes.

SUMMARY POINTS

1. This technique is atraumatic.
2. This technique allows easy negotiation of tendons through the pulley system.
3. This method affords the surgeon control over the tendon to enable core suture insertion without further handling of the tendon end with forceps thus minimising iatrogenic tendon damage.

BSSH Poster 11

A Prospective Audit of Patient Satisfaction with the Component Parts of Carpal Tunnel Decompression

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HYPOTHESIS

The outcome of carpal tunnel decompression is well documented in the medical literature. It is not however well documented as to the patient satisfaction of the individual parts of the procedure. The aim of this study was to determine the level of patient satisfaction with these individual steps in order to identify individual aspects where improvements to the service could be made.

METHODS

50 patients were recruited into the study upon presentation for surgery. A questionnaire was completed immediately post-operatively. Areas of patient satisfaction measured included, tolerance of tourniquet and local anaesthetic, subjective pain scores and overall satisfaction. A subset of these patients was followed-up to discharge in order to determine satisfaction with suture removal.

RESULTS

Satisfaction levels were very high with most aspects of the patient journey. In terms of the procedure; the tourniquet and local anaesthetic were the least well tolerated, although not in all patients. Interestingly lack of tolerance of these steps showed no significant relationship to the overall patient experience. Suture removal is tolerated well by patients. Almost every patient would recommend the procedure to a friend or relative.

SUMMARY POINTS

- Poor toleration of individual component parts of carpal tunnel decompression surgery does not correlate to poor overall patient experience of the procedure.
- The benefit of striving to develop strategies to reduce patient intolerance to the component parts, for example, performing surgery without a tourniquet or warming the anaesthetic is questionable.

BSSH Poster 12

Accelerated Rehabilitation of the "Skier's Thumb Injury" in Professional Athletes

◆ **Randeep S. Mohil, FRCS T&O**

HYPOTHESIS

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 collision professional athletes. To prevent chronic painful instability, UCL reconstruction is the recommended treatment in the presence of instability. The traditional rehabilitation following thumb UCL reconstruction has been to immobilise the thumb and often the wrist in a rigid splint or cast for 4 to 6 weeks. This study reports the long term clinical outcomes of an accelerated rehab program in professional athletes who have had surgery for skiers thumb injury.

METHODS

A cohort study was performed of professional sports injury patients undergoing UCL repair by a single surgeon. Immediately following surgery, a radial blocking splint was applied in all the patients. Thumb MPJ ROM exercises were commenced at one week post-op as part of the accelerated rehab program. Patients were followed prospectively at regular intervals for clinical assessment at two weeks, one month, three months and six months and one year. Demographic data, pain scores, functional assessment, thumb ROM (including Kapandji scoring system), thumb strength (lateral, opposition and tripod pinch) and stability measuring MCP joint angulation in extension and in 30° flexion were recorded. Measures were repeated at each time point.

RESULTS

Twelve patients were recruited into the study. The mean follow up was 42 months with the longest follow-up at five years. The mean age of patient was 24 years. All twelve 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. indeed nine out of twelve patients were at Kapandji stage 9 at one month post surgery. All twelve patients returned to competitive sport at the same level prior to injury following surgery. The patients returned to competitive sport at 3.6 weeks post cooperatively.

SUMMARY POINTS

- The long term outcome of an accelerated rehabilitation program of the skier's thumb injury in professional athletes suggests that this is a safe method of returning patients to a similar level of function after surgery.
- This rehab program avoids the previously common complications of stiffness in the thumb.
- It is well understood that collagen heals faster and stronger under load and this study would support that early controlled load to the ligament is beneficial.

BSSH Poster 13

Upper Limb Salvage Following Near Skeletalisation - A Case Report and a Review of the Literature

◆ Waseem Bhat, MD, MRCS

INTRODUCTION

Upper extremity limb salvage following near total skeletalisation remains difficult. Early robust soft tissue cover is crucial to enable restoration of future function. We describe the early management of a case that was repatriated to a UK trauma centre with a review of the literature describing upper limb salvage with extensive tissue loss.

CASE REPORT

A 46-year-old right hand dominant woman suffered near total arm amputation while working in Ghana. During the accident, skin, fat and muscle were stripped from her shoulder to her wrist over the whole extensor and part of the flexor surface of her left upper limb. This exposed multi-level fractures of the humerus, radius and ulna as well as an open comminuted elbow fracture. Her ulnar nerve was avulsed. After internal fracture fixation, the degloved limb was covered completely with a single continuous myocutaneous latissimus dorsi and groin flap. The superficial circumflex iliac vessels were anastomosed distally to the radial vessels at the snuff box while the latissimus dorsi component remained on its vascular pedicle. The whole flap survived providing excellent skin and soft tissue cover for the underlying long bone and elbow fractures. As the hand was free from the trunk early mobilisation with physiotherapy was possible to prevent joint contractures. At two months the patient was pleased with the aesthetic outcome. Her elbow flexion was limited to 0-30 degrees and she continues with weekly physiotherapy to improve her function.

DISCUSSION

In 1981 Harii et al (1) first described combined latissimus dorsi musculocutaneous and groin flaps to cover large defects where one flap alone is not sufficient. They utilised their technique successfully on upper and lower extremity soft tissue defects. Two or more simultaneous microvascular free flaps have been used to reconstruct composite defects of bone, muscle and skin (2) most often one dominant vessel with two separate flaps such as a combined latissimus dorsi and parascapular flap based on the subscapular artery (3). In our case we found the combined pedicled myocutaneous latissimus dorsi and free groin flap can cover massive limb soft tissue defects that would have formerly resulted in limb amputation.

SUMMARY POINTS

The combined flap also allows for large defects to be repaired simultaneously in one operation. The technique avoids the risk of distal flap loss over an open comminuted elbow fracture and provides robust cover for future reconstruction. The combined flap can also be performed with low donor site morbidity for the patient

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BSSH Poster 14

Exploring the Anatomy of Dorsal Radiocarpal Ligament of the Wrist and its Superficial Ulnar Part: A Cadaveric Study

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HYPOTHESIS

The current study aimed to explore the morphology, arrangement and variations in the anatomy of the dorsal radiocarpal ligament (DRC). In addition this study investigated the existence of recently described superficial ulnar part of the dorsal radiocarpal ligament (superficial ulnar DRC).

METHOD

Twenty embalmed wrists from ten cadavers were utilised for the purpose of the study. None of the cadaveric specimens showed any signs of injury or disease. The dissections were performed under a self-illuminated magnifying loupe. The DRC was identified and its attachments traced from carpal bones to distal part of radius. The specimens were further explored for the superficial ulnar DRC. The anatomy, attachments, pattern and arrangement of ligament fascicles and its variation were studied. Samples of the DRC and the superficial ulnar DRC were sent for histological analysis. The sections were stained with Haematoxylin-Eosin (H and E) and collagen specific Elastin-van Geison stain.

RESULTS

In 12 of the 20 wrist joints, the DRC attached from distal radius to the lunate and then subsequently triquetrum (Mizuseki type I). In rest eight wrists, the DRC was found converging towards triquetrum with few fibres reaching the lunate and capitate. The superficial ulnar DRC could be isolated in 18 of the 20 wrist joints. The superficial ulnar DRC originated from the interosseous border of distal radius in all of the 18 cases but the insertion point showed variation. In 12 of 18 wrist joints, the superficial DRC traversed across the distal part of ulna and reached the triquetrum. In the remaining six wrist joints, the superficial ulnar DRC attached to the DRC ligament before terminating at the triquetrum. The thickness and dimensions of the superficial ulnar part of the ligaments were similar in all 18 specimens. The DRC was thicker than the superficial ulnar DRC. It was also noted that both ligaments were present at same plane and depth.

SUMMARY POINTS

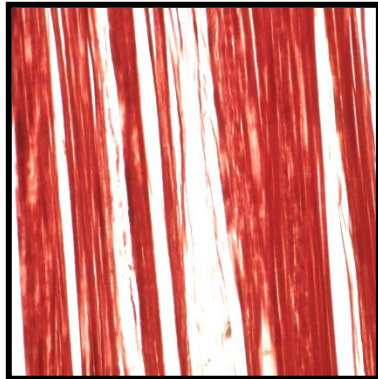
- This cadaveric study illustrates the anatomy of the dorsal radiocarpal ligament.
- In addition, we confirm with histological staining, the presence of a superficial ulnar part of dorsal radiocarpal ligament in 90% of the specimens studied.

- This study also informs us that superficial ulnar part of dorsal radiocarpal ligament lies in the same plane to that of the dorsal radiocarpal ligament unlike previously reported.
- The findings of this study may form the basis of further research to assess the contribution of superficial ulnar DRC to the wrist kinematics.

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Figure 1: Collagen specific Elastin-van Geison stain shows longitudinal fibres of superficial ulnar DRC.



BSSH Poster 15

Does the Insertion of Pyrocarbon Spacer Improve Patients Outcome after Trapeziectomy?

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BACKGROUND

Trapeziectomy for the thumb carpometacarpal arthritis is a standard procedure with good outcome, but this technique carries risk of shortening of the thumb ray (1). Trapeziectomy with interposition of a pyrocarbon spacer is a worthwhile alternative to other established operative techniques and it matches both the high and polyaxial stress on the first ray (2). We compared the outcome of trapeziectomy alone and PI2 pyrocarbon spacer insertion following trapeziectomy.

METHODS

Between 2006 and 2010, 62 patients underwent surgical procedures for first carpometacarpal joint arthritis (performed by a single surgeon) and were included in our study. Forty-one patients underwent trapeziectomy alone (Group1) before the spacers become available. Of the remaining 21 patients, 11(Group2) had stable spacer insertion. The outcome was assessed with a subjective questionnaire rated for pain, strength and stiffness. The resumption of activities of daily living was rated equally and assessed (subjective) by grip strengths. The preoperative score was calculated retrospectively based on patient's memory.

RESULTS

The mean age of the patients was 64 years (49-83). Of these 48 were female. The mean follow-up period was 37months for Group1 and 11months for Group2 (6-21months). Of these two patients in group1 had failures and had reoperation with tendon insertion. One patient in Group2 had removal of the spacer due to non specific pain. Both Group1 and Group2 had excellent or good functional outcomes.

CONCLUSION

The short term outcome of pyrocarbon spacer insertion following trapeziectomy was almost same with some increase in pincer strength and hand grip compared to the outcome of trapeziectomy alone.

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BSSH Poster 16

Iatrogenic Injury to the Ulnar Nerve during Primary Repair of the Medial Ulnar Collateral Ligament at the Elbow – An Avoidable Complication

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Hill Hastings, MD

HYPOTHESIS

Iatrogenic injury through entrapment of the ulnar nerve by a suture is a complication of primary medial ulnar collateral ligament repair at the elbow.

MATERIALS AND METHODS

Two cases of primary ulnar collateral ligament repair in association with the treatment of complex elbow fracture dislocations presented in referral post-operatively with evidence of complete ulnar nerve palsy. These cases were clinically examined and subsequently operatively explored.

RESULTS

With the evolution of surgical techniques, improved outcomes have been reported with decreased handling of the ulnar nerve during reconstruction of the ulnar collateral ligament at the elbow. In acute complex elbow fracture dislocations direct repair/reconstruction of the ulnar collateral ligament and flexor pronator origin may be required to restore elbow stability. The close proximity of the ulnar nerve to the site of the repair may however predispose it to injury by traction, implant insertion, or as in these two cases by suture entrapment. One patient was found to have a suture completely around and damaging a segment of the nerve with no conduction across the segment. Resection of the injured segment and neuroorrhaphy was required. The second patient presented with sympathetic mediated pain and dystrophy. A suture was found ligating one third of the nerve, resulting in a complete palsy that did not resolve. Both cases led to residual functional deficits and required further surgery by anterior interosseous to ulnar motor nerve transfer. A clear knowledge of the anatomy, careful identification and protection of the ulnar nerve during this procedure is required to prevent this debilitating iatrogenic injury.

SUMMARY POINTS

The ulnar nerve is at risk during primary repair of the medial ulnar collateral ligament in the trauma setting. We advocate identifying the nerve, performing an in-situ decompression to permit full visualization and protecting it through out the entire procedure. A thorough knowledge of the anatomy is an essential pre-requisite to avoiding debilitating iatrogenic injury.

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BSSH Poster 17

Mini-abdominal Flaps for Preservation of Digital Length in an 18 Month Old Child

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S. Raja Sabapathy, MCh

Hari Venkatramani, MCh

HYPOTHESIS

The mini-abdominal multiple pedicle flaps allow for provision of soft tissue cover even in the presence of differential loss of length in multiple digits

METHODS

An eighteen month old boy presented four hours after he had sustained a four-finger transverse amputation with an intact thumb to his left hand which was caught in a moving motorcycle chain. There were crush avulsion amputations of the index and ring finger through the base of the middle phalanx, through the proximal interphalangeal joint of the middle finger and through the proximal phalanx diaphysis in the little finger. The mangled, grease contaminated, amputated digits were examined thoroughly and deemed not suitable for replantation. The middle finger was primarily debrided and closed as the amputation was through the proximal interphalangeal joint and adequate soft tissue was available. The decision was subsequently made to preserve the joints and maintain the length of the other injured digits. We discuss the successful use of 3 mini abdominal flaps to maintain length of the stump remnants in the digits .

RESULTS

The mini-abdominal multiple pedicle flaps allow for provision of soft tissue cover even in the presence of differential loss of length in multiple digits and negate the need for secondary syndactyly surgery. These flaps have a number of advantages over shortening and direct closure. Every attempt is made to

maintain the maximum available length to allow for optimal eventual function of the digit. The ability to retain the base of the middle phalanx and thus the proximal interphalangeal joint of the index and ring finger has allowed the child to develop prehensile function quicker. Preserving the metacarpophalangeal joint of the middle finger retains the option of toe transfer at a later date if the parents are willing. This case is presented to highlight an established technique not commonly favoured in children and emphasize its ease of use and improved functional outcome over shortening and closure when replantation or free flaps are not feasible and soft tissue cover is required.

SUMMARY POINTS

- Replantation offers the best form of reconstruction in multi-digit amputation in a child but the severity of the crush injury in certain situations may dictate the reconstructive options.
- The mini-abdominal multiple pedicle flaps allow for provision of soft tissue cover even in the presence of differential loss of length in multiple digits whilst maintaining the option for further reconstructive surgery in the future.

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BSSH Poster 18

Sesamoid Arthrodesis of the Thumb Interphalangeal Joint - A Technique for Prevention of Hyperextension Instability

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HYPOTHESIS

Symptomatic thumb interphalangeal (IP) joint hyperextension is uncommon but may be functionally disabling. However there is little evidence of surgical treatment options. In the presence of an intact volar plate and an interphalangeal sesamoid bone, sesamoid arthrodesis allows effective joint stabilisation, maintaining a functional range of motion.

METHODS

Two young adult male patients (one being a professional golfer) presented to the outpatient clinic with symptomatic hyperextension of their dominant thumb IP joint (Case 1 = 45 degrees; Case 2 = 90 degrees). Conservative treatment with extension-blocking splints failed, confirming the indication for surgical correction. The operative technique used was an adaptation of the sesamoid arthrodesis of the thumb metacarpophalangeal (MP) joint described by Tonkin et al (1995). Through a radial approach to the IP joint capsule the sesamoid bone is fused to the neck of the proximal phalanx using a Mitek mini anchor (DePuyMitek) thus stabilising the volar aspect of the joint. Post-operative immobilisation in an extension blocking splint for six weeks is followed by active flexion and extension under the supervision of a hand therapist. The presence of a sesamoid bone at the thumb IP joint is a prerequisite for this technique. The reported incidence is variable (up to 100%) in radiological and cadaveric studies, with the majority being bilateral.

RESULTS

No postoperative complications were encountered. Both patients were evaluated at a mean follow-up of 3 years. Hyperextension had been abolished, functional range of motion had been preserved (Case 1 = 0-0-80 degrees; Case 2 = 0-0-90 degrees) and both resumed their usual level of activity.

SUMMARY POINTS

- Sesamoid arthrodesis is an effective treatment for symptomatic thumb IP joint hyperextension.
- A functional range of motion is preserved.
- A return to high level activity (e.g. professional golf) is possible.

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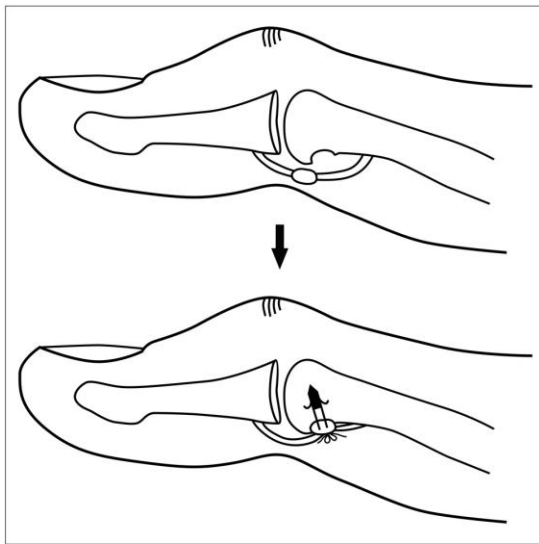


Figure 2 - Cortical breach created in proximal phalanx neck, sesamoid bone secured down with anchor.

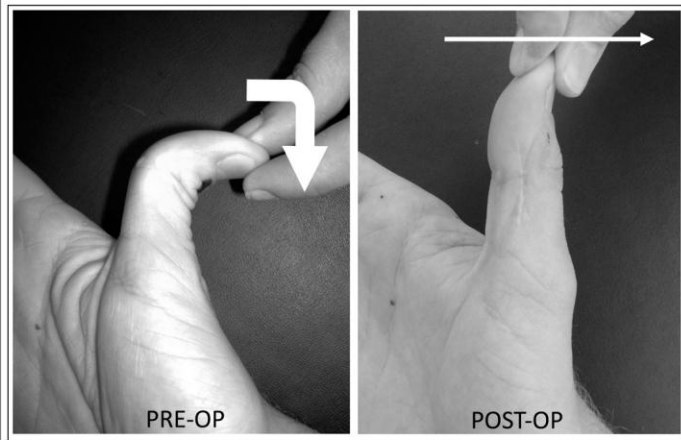


Figure 1 Demonstration of preoperative hyperextension and postoperative correction achieved (Case 2).

BSSH Poster 19

Patient Reported Outcome after Carpal Tunnel Release in the Over 75's: Is it all Bad?

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David Nairn, FRCS(Orth)

HYPOTHESIS

Carpal Tunnel release in the elderly over 75s is an useful procedure.

METHODS

We posted questionnaires to all patients who were over 75 years at the time of their surgery from 1997 to 2007. There were a total of 49 patients (65 hands) who had been operated on (open carpal tunnel decompression) over the last 10 years who belonged to this age group. We used the Brigham And Women s Hospital Questionnaire devised by Levine et al. (1993). In addition, we added subjective questions to assess patient satisfaction with the procedure. The completed questionnaires were used to

calculate the Pre and Post operative score. The average age was 80.4 years and 65% of the patients were females.

RESULTS

The mean pre operative score was found to be 3.18, which improved post operatively to 1.8. (Scale of 1 to 5, with 1 being the best and 5 the worst). Importantly, although all symptoms improved, some such as pain and numbness showed a much greater improvement than grasping power. On the Visual Analogue Scale, pain scores improved from 6.4 to 2.3 post surgery. 82 % of patients had no scar tenderness, 12 % had mild to moderate tenderness, while 6 % reported severe scar tenderness. Overall 79% of patients showed improvement, 15 % felt that the surgery had made no difference, while 6% reported worsening of their symptoms after surgery. Our study showed that 8 out of 10 elderly patients will improve after carpal tunnel release, though all symptoms are unlikely to improve. The symptom least likely to improve is weakness of the hand. The results of this study are important to counsel this sub group of elderly patients, so that they may take an informed decision on whether to proceed with the surgery.

SUMMARY POINTS

1. 8 out of 10 elderly patients will improve after carpal tunnel release, though all symptoms are unlikely to improve.
2. Though all symptoms improved, some such as pain and numbness showed a much greater improvement than grasping power.
1. The symptom least likely to improve is weakness of the hand.
2. The results of this study are important to counsel this sub group of elderly patients, so that they may take an informed decision on whether to proceed with the surgery.

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BSSH Poster 20

Appropriate Patient Positioning in Achieving Adequate Wrist Radiographs

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HYPOTHESIS

Radiographs are used on a daily basis. As a basic investigation that affects further management, it is important that they are done properly to achieve adequate views. In order to achieve a true AP and lateral radiograph of the wrist, there must be no movement at the radio-ulnar joint. Projections taken with only pronation and supination at the wrist provide two views of the radius but a single view of the ulna (Figure 1). True radiographs are achieved by rotating the humerus through 90 degrees and extending at the elbow between the two views (Figure 2). Our aim was to look at whether true lateral and AP radiographs are taken by our radiology department and to provide education in the correct method of attaining adequate wrist radiographs as they are often done incorrectly.

METHODS

Between April 2009 to November 2010, we identified all patients with ulna shortening osteotomies. This was because the plate and screws placed only in ulna making it easy to identify if two projections of the ulna have been achieved. Radiograph at first follow up were reviewed using PACS.

RESULTS

Of the 29 patients identified, 5 patients were excluded. Only 6 out of 24 patients had TRUE wrist projections.

SUMMARY POINTS

- Most radiographs taken by our radiology department were inadequate and this has to be communicated with the radiology department.
- Two different views are needed to accurately comment on radiographs and decide further management.
- Patients have to be sent back to radiology department causing an increase in clinic time, radiation to the patient and inconvenience.
- Educations regarding correct patient positioning to achieve adequate radiographs is vital in order to avoid these problems.



Figure 1 – An example of an inadequate radiograph. Note that the plate and screws do not change in either projection. The same projection of the ulna is seen.



Figure 2 - True radiographs are achieved by rotating the humerus through 90 degrees and extending at the elbow between the two views

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