

B.S.C.O.S

*British Society for
Children's Orthopaedic Surgery*

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*Meeting Hosted by
Mr Alwyn Abraham*

*Held at
Leicester Tigers,
Welford Road, Leicester LE2 7ER*

Friday 28th June 2013

Email address for CPD certificate :

Your feedback is essential to enable us to continue to organise meetings to the highest standards. Please take time to complete this form and return it to the registration desk as your leave. Please feel free to add any comments you may have.

Please circle the appropriate mark: 1 = Poor / 5 = Excellent

Date of Meeting : Friday 28th June 2013

	Poor			Excellent	
1. Overall assessment of the course	1	2	3	4	5
2. Course Organisation	1	2	3	4	5
3. AV Facilities	1	2	3	4	5
4. Quality of Chairing	1	2	3	4	5
Speakers/Presentations					
5. Mr Piers Mitchell (Peterborough) King Richard III and his scoliosis	1	2	3	4	5
6. Mr Ed Bache (Birmingham) Advances in the management of Morquio Syndrome	1	2	3	4	5
7. Mr Rob Hill (<i>GOSH</i>) Lengthening and Deformity in the Upper limb	1	2	3	4	5
8. Prof Benjamin Joseph (<i>Manipal, India</i>) Orthopaedic intervention in skeletal dysplasias – why, when and how?	1	2	3	4	5
9. Mr Bill Bryson Bear attacks and the perfect doctor	1	2	3	4	5
10. Scientific Sessions	1	2	3	4	5

Additional Comments for Friday 28th June 2013

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British Society for Children's Orthopaedic Surgery

Friday 28 June 2013

Leicester Tigers, Welford Road, Leicester LE2 7ER

Time	Description	Faculty
08:00 – 08.45	Registration, Breakfast & Coffee	
08:45 – 09:00	Welcome & Housekeeping BSCOS travelling bursary reports	Mr Alwyn Abraham (<i>Leicester</i>) Mr Alwyn Abraham, Mr Alpesh Kothari and Mr Guy Atherton
09:00 – 09:15	King Richard III and his scoliosis	Mr Piers Mitchell (<i>Peterborough</i>)
09:15 – 09:45	Advances in the management of Morquio Syndrome	Mr Ed Bache (<i>Birmingham</i>)
09:45– 09.55	Paper 1: Subcapital osteotomy for severe unstable slipped capital femoral epiphysis, 57 single surgeon case series (A Hashemi-Nejad)	The Royal National Orthopaedic Hospital, Middlesex
09:55 – 10:05	Paper 2: Study to determine the rate of recurrence of coronal plane deformity in children treated with “guided growth” using 8-plates, from the time of implant removal to skeletal maturity. (M. Ahmad, M.Acharya, AL Clarke, JA Fernandes, S. Jones)	Sheffield Children’s Hospital, Sheffield
10:05 – 10:15	Paper 3: Is congenital talipes equinovarus a risk factor for pathological DDH? A 20-year prospective, longitudinal observational study. (S. J. Hughes, R. S. Jugdey, Q.Choudry, R.W. Paton)	East Lancashire Hospitals, Blackburn, England
10:15 – 10:25	Paper 4: Outcomes of arthroscopic shoulder stabilisation in adolescents playing contact sports. (Matthew F Nixon (1), JF Keenan (2) , Lennard Funk (3)	Manchester Children’s Hospital
10:30 – 11:00	Coffee & Exhibitions	
11:00 – 11:30	Lengthening and Deformity in the Upper limb	Mr Rob Hill (<i>GOSH</i>)
11:30 – 12:00	Orthopaedic intervention in skeletal dysplasias - why, when and how?	Prof Benjamin Joseph (<i>Manipal, India</i>)
12:00 – 12:30	Bear attacks and the perfect doctor	Mr Bill Bryson (<i>Norfolk & USA</i>)
12:30 – 13:00	Business meeting	Mr Mark Flowers (<i>sec. BSCOS</i>)
13:00 – 14:00	Lunch inc UK DDH @ 1300 and UK SCFE SSG@1330	

Time	Description	Faculty
14:00 – 14:10	Paper 5: Periacetabular osteotomy through a minimally invasive approach - early clinical and radiological results. (S Abouel-Enin, CM Blakey, T Cooper, S Madan)	Doncaster Royal Infirmary, Doncaster Sheffield Children’s Hospital, Sheffield
14:10 – 14:20	Paper 6: Prophylactic pinning for slipped upper femoral epiphysis – Does it affect proximal femoral morphology? (G R Cousins, JGB MacLean, DM Campbell, N. Wilson)	Ninewells Hospital & Perth Royal Infirmary, Glasgow
14:20 – 14:30	Paper 7: The effects of vitamin D deficiency on the natural progression of Perthes’ Disease. (S. Al-Naser, J. Judd, NMP Clarke)	University Hospital, Southampton
14:30 – 14:40	Paper 8: Reverse Ponseti –type method for congenital vertical talus: Comparison between idiopathic and teratologic patients. (J Wright, D Coggings, C Maizen, M Ramachandran)	Barts & The London Children’s Hospital
14:40 – 14:50	Paper 9: Arthroeresis for symptomatic paediatric flatfeet – early results. (N Bali, S Maclean, H Prem)	Birmingham Children’s Hospital
14:50 – 15:00	Paper 10: Ponseti casting for club foot: above or below knee? A prospective randomised clinical trial. (S N Maripuri, PD Gallacher, J Bridgens, JH Kuiper, NT Kiely)	Robert Jones & Agnes Hunt Orthopaedic Hospital, Oswestry, Shropshire
15:00 – 15:10	Paper 11: Osteochondromas of the upper limb: natural history and functional effects. (P Jayakumar, C Hartmann, DM Eastwood)	Great Ormond Street Hospital, London
15:10 – 15:20	Paper 12: Revalidation: Measure me if you can! (A P Roberts)	Robert Jones & Agnes Hunt Orthopaedic Hospital, Oswestry, Shropshire
15:20– 16:00	Coffee	
16:00 – 16:10	Paper 13: Ultrasound use improves the accuracy of surface electromyography electrode placement over rectus femoris in children with cerebral palsy. (N Blucher, G Holmes, D Trinca, B Mwaura Kimani, A Bass)	Alder Hey Children’s Hospital, Liverpool
16:10 – 16:20	Paper 14: Percutaneous osteotomies of the femur and tibia using cooled side cutting burr. (M G Uglow)	Southampton University Hospitals Foundation Trust
16:20 – 16:30	Paper 15: A re-evaluation of commonly accepted risk factors for DDH: preliminary results of a population based cohort study. (A Roposch)	Great Ormond Street Hospital for Children, London
16:30 – 16:40	Paper 16: Screening of selected risk factors in developmental dysplasia of the hip. (CL Talbot, R W Paton)	Royal Blackburn Hospital, East Lancashire Hospitals NHS Trust
16:40 -16:50	Paper 17: Is closed reduction of DDH successful after failed harness treatment? (H J Iqbal, P Srivastava, R Davies, S Saville, C Bruce, N Garg)	Royal Liverpool Children’s Hospital (Alder Hey)

Accommodation

Leicester Hotel Accommodation – *The Ramada Encore is recommended*

NCP car parking is available approximately 30 yards away with concessionary charges for guests at Ramada Encore Leicester.

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Premier Inn City Centre	0116 242 1780	135	1 mile	www.premierinn.com/en/hotel/LEIBAR/leicester-city-centre
Mai Yango	0116 251 8898	14	1 mile	www.maiyango.com
Mercure	0116 257 5503	104	1.1 mile	www.mercure.com/gb/hotel-8324-mercure-leicester-city-hotel
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ABSTRACT PRESENTATION – PAPER 1

SUBCAPITAL OSTEOTOMY FOR SEVERE UNSTABLE SLIPPED CAPITAL FEMORAL EPIPHYSIS, 57 SINGLE SURGON CASE SERIES

Hashemi-Nejad A

The Royal National Orthopaedic Hospital, Stanmore, Middlesex, HA7 4LP

57 cases of unstable severe slipped capital femoral epiphysis were operated on by a single surgeon between 2000 and 2011. The procedure was performed through the anterior abductor sparing approach. Patients have been followed up prospectively and the results are presented at average follow up is 6.4 years with a minimum of 18 month follow to include all risks of avn.

There were 35 males (average age 13.85 years) and 22 females (average age 12.4 years). Three syndromic cases, 2 Trisomy 21 (with no avn) and one pituitary/corpus callosum agenesis (developed avn) were included.

5 patients (8.7%) developed avn, one syndromic, another with noted avn on pre-operative MRI and the third with partially healed growth plate. Excluding these patients the avn rate was 2/54 (3.7%).

Re-operations were performed on the avn group including two head neck debridements and valgus osteotomy, one head neck debridement alone and one arthrodesis. One patient is awaiting debridement and valgus osteotomy.

One patient developed chondrolysis and has had no intervention 6 years.

2 patients developed asymptomatic heterotopic bone ossification and the incidence of lateral cutaneous nerve symptoms was 35% none requiring intervention. Leg length difference was less than 1cm in those patients who did not develop avn.

This single surgeon audit shows lower risk of avn than and strengthens the argument for referral to specific centres for such conditions.

Level of evidence: IV

Word count: 249

ABSTRACT PRESENTATION - PAPER 2

STUDY TO DETERMINE THE RATE OF RECURRENCE OF CORONAL PLANE DEFORMITY IN CHILDREN TREATED WITH 'GUIDED GROWTH' USING 8-PLATES, FROM THE TIME OF IMPLANT REMOVAL TO SKELETAL MATURITY.

M Ahmad, M Acharya, AL Clarke, JA Fernandes, S Jones
Sheffield Children's Hospital, Sheffield, UK

Aim:

To determine the rate of recurrence of coronal plane deformity in children treated with 'guided growth' using 8-plates, from the time of implant removal to skeletal maturity.

Methods:

Over a consecutive 5 year period between April 2008 and April 2013 we analysed our results of guided growth treatment using 8-plates to correct coronal plane lower limb deformity. Patients with neuromuscular disorders such as cerebral palsy were excluded.

Deformity planning was performed using standardised techniques.

Our standard practice is to remove the 8-plate and screws once deformity is corrected both clinically and radiologically. Patients were followed up until either skeletal maturity or recurrence, which necessitated reapplication of the 8-plate.

We are aware of no study in which children treated with guided growth using 8-plates are followed up to skeletal maturity.

Results:

267 patients were treated with 8-plates in our unit over this 5 year period. Of the patients in whom deformity was corrected and had subsequent plates removed, we identified 41 patients who have either reached skeletal maturity or had recurrence of deformity. Six patients required reapplication of the 8-plates implant. These were young and had skeletal dysplasia. Deformity parameters were analysed both clinically and radiologically in patients who have reached skeletal maturity and showed no recurrence, which necessitated further intervention.

Conclusion:

A higher proportion of younger patients, especially a sub-group with skeletal dysplasia had recurrence of deformity necessitating reapplication of the 8-plate device. In this group we recommend removal of only the metaphyseal screw once deformity is corrected. This would allow ease of reapplication if recurrence were to reoccur.

Level of evidence: III

Word count: 262

ABSTRACT PRESENTATION – PAPER 3

IS CONGENITAL TALIPES EQUINOVARUS A RISK FACTOR FOR PATHOLOGICAL DDH?
A 20-year prospective, longitudinal observational study.

S J Hughes, R S Jugdey, Q Choudry, R W Paton
East Lancashire Hospitals, Blackburn, England

Aim:

An assessment of the relationship between pathological Developmental Dysplasia of the Hip (DDH) and Congenital Talipes Equinovarus (CTEV).

Introduction:

Traditional UK guidelines consider abnormalities of the foot to be a risk factor for DDH^{1,2}. Currently, there is controversy whether congenital foot abnormalities are true risk factors for pathological DDH^{3,4}. There is a relationship between CTCV and hip dysplasia though the relationship between CTEV and pathological DDH is less clear⁵. In a previous 11year prospective longitudinal study no case of Graf Types III, IV or irreducible hip dislocation were associated with CTEV⁵. Subsequent correspondence and case histories have challenged this view⁶

Methods:

In order to clarify this issue, a 20-year prospective longitudinal observational study was undertaken. All cases of fixed CTEV (Harold & Walker types 1 to 3) referred to the sub-regional Paediatric Orthopaedic clinic at the Royal Blackburn Hospital were evaluated, the feet and hips clinically assessed (Ortolani & Barlow manoeuvres) and the hips ultra-sounded by the senior author (RWP). Modified Graf and Härke hip ultrasound classification systems were employed. Graf Type III, IV and irreducible hip dislocation were considered pathological.

Results:

The incidence of CTEV was 1.46 per 1000 live births (nationally quoted incidence of 1 to 2 per 1000 live births⁷). There was one case of Graf Type III dysplasia with no cases of clinical hip instability. Currently, the clinical significance of this type of dysplasia is uncertain. There were no cases of Graf Type IV dislocations or radiological irreducible hip dislocation.

Conclusion:

Fixed CTEV should not be considered as a risk factor for pathological DDH and routine sonographic hip screening of CTEV should not be advocated. This is supportive evidence for the current English NIPE guidelines in which the only risk factors screened are family history and breech presentation.

Level of evidence: II

Word count: 293

ABSTRACT PRESENTATION – PAPER 4

OUTCOMES OF ARTHROSCOPIC SHOULDER STABILISATION IN ADOLESCENTS PLAYING CONTACT SPORTS

Matthew F Nixon¹, Oisín JF Keenan², Lennard Funk³.

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Keywords

Shoulder; dislocation; instability; skeletal immaturity; arthroscopic Bankart repair; outcomes

Introduction:

Non-operative management of traumatic shoulder instability in children has a recurrence rate of up to 100%. Short-term outcomes of surgery in adults results has a quoted recurrence rates of around 10%. The aim of this study was to examine the surgical outcomes of adolescent patients (aged 13 to 18 years) undergoing arthroscopic stabilisation for shoulder instability.

Methods:

All patients had a labral tear sustained whilst participating in contact sports (84% rugby). Atraumatic, primary joint hyperlaxity and dyskinetic causes were excluded. All patients had a primary arthroscopic stabilisation. Patients were reviewed in clinic or contacted by post with a standardised outcome proforma.

Sixty one shoulders in 57 patients met the inclusion criteria and were included. Mean follow up was 22 months, mean age was 16.8 (range 13 to 18), and 98% were male. All were Stanmore type 1 pathology. 16% had a concomitant SLAP repair, and 16% had a posterior labral tear.

Results:

31% (19) reported recurrent dislocation, and 11 patients required further surgery. This is significantly higher than published series for adults, despite the senior author being a tertiary specialist. Despite the high recurrence rate, the median improvement in shoulder function was 90% and the median VAS for pain was 0. The majority of patients (61%) had a full return to pre-injury sporting activities, while 23% returned to decreased sporting activity and 16% stopped. The mean post-operative Oxford instability score was 26.8 (SD 12.9 range 12 to 48). 90% of recurrent dislocations occurred whilst playing rugby, but other than this, we could not identify any significant risk factors for the 19 shoulders that had recurrent dislocations (gender, type of sport, hyper laxity, type of tear).

Conclusions:

This study demonstrates that adolescent patients have a high risk of recurrent dislocation following arthroscopic stabilisation. Patients should be appropriately counselled and alternative procedures such as the coracoid transfer should be considered.

Level of evidence: IV

Word count: 258

ABSTRACT PRESENTATION – PAPER 5

PERIACETABULAR OSTEOTOMY THROUGH A MINIMALLY INVASIVE APPROACH – EARLY CLINICAL AND RADIOLOGICAL RESULTS

S Abouel-Enin, CM Blakey, T Cooper, S Madan

Doncaster Royal Infirmary, Doncaster
Sheffield Children's Hospital, Sheffield

We report the radiological outcomes, and short-term clinical results, of 47 periacetabular osteotomies undertaken through both the traditional bikini incision, and a minimally invasive approach.

47 periacetabular osteotomies have been undertaken in 45 patients, by the senior author, between 2005 and 2013. There were 10 male and 35 female patients. The mean age at operation was 28.2 years. Since 2010 surgery has been performed through a 7-cm skin incision (31 hips), an incision coined as minimally invasive by Søballe et al when they described their trans-sartorial approach for acetabular surgery. Clinical data was collected prospectively; primary outcome measures included the young adult hip score and the hip disability and osteoarthritis outcome score. Pre- and post-operative radiographs were analysed for achieved acetabular reorientation.

At the time of follow-up the median young adult hip score had improved significantly from pre-operative values. Mean scores were 35.4 pre-operatively, and 64.25 post-operatively. Improvement in the anterior and lateral centre-edge angle was 32 and 32.9 degrees respectively through a traditional incision, and 27.1 and 30 degrees through the minimally invasive approach ($p>0.05$). No major complications occurred in any patient. Four patients complained of lateral cutaneous nerve hypoaesthesia, in two patients there was delayed union of the pubic osteotomy and in one non-union. Two patients have gone on to total hip replacement.

The minimally invasive approach is safe and allows for accurate reorientation of the acetabulum whilst minimizing tissue damage. The scar is cosmetically appealing to patients, especially the predominantly female group treated with this condition. We did not see the evidence of reduced surgical stay that has been reported by other groups utilizing a minimally invasive approach.

Level of evidence: II

Word count: 271

ABSTRACT PRESENTATION – PAPER 6

PROPHYLACTIC PINNING FOR SLIPPED UPPER FEMORAL EPIPHYSIS- DOES IT AFFECT PROXIMAL FEMORAL MORPHOLOGY?

G R Cousins, J G B MacLean, D M Campbell, N Wilson

Ninewells Hospital and Perth Royal Infirmary, RHSC Glasgow

Abstract

This purpose of this study was to investigate whether prophylactic pinning of the contralateral hip in unilateral slipped upper femoral epiphysis affects subsequent femoral morphology.

To determine the effect of prophylactic pinning on growth we compared contralateral hip radiographs of 24 proximal femora prophylactically pinned with 26 cases observed, in a cohort of patients with unilateral SUFE. Validated measurements were used to determine hip morphology; the articulo-trochanteric distance (ATD) and the ratio of the trochanteric-trochanteric distance (TTD) to articulo-trochanteric distance (TTD:ATD) in addition to direct measurement of the femoral neck length. Post-operative radiographs were compared to radiographs taken at a 12-84 months follow-up.

Comparing pinned and unpinned hips the neck length was shorter (mean 5.1mm vs 11.1mm) and the ATD was lower ($p=0.048$). The difference between initial and final radiograph TTD:ATD ratio for each case was calculated. The average was 0.63 in the prophylactically pinned group and 0.25 in the unpinned group ($p=0.07$).

When hips of the same patient were compared on final radiographs, there was a smaller difference in TTD:ATD between the two sides when the patient had been prophylactically pinned (0.7) as opposed to observed (1.47). This was not statistically significant ($p=0.14$).

Universal prophylactic pinning of the contralateral hip in slipped upper femoral epiphysis is controversial and alteration of the proximal femoral morphology is one reason for this.

Our results show that prophylactic pinning does not stop growth but does alter subsequent proximal femoral morphology by causing a degree of coxa vara and breva. Some loss of growth in the prophylactically pinned hip contributes to reduction in leg length inequality at skeletal maturity which is advantageous.

No iatrogenic complications were observed with single cannulated screw fixation. Prophylactic pinning prevents the potential catastrophe of a subsequent slip, is safe and the effect on growth is, if anything, beneficial.

Level of evidence: III

Word count: 300

ABSTRACT PRESENTATION – PAPER 7

THE EFFECTS OF VITAMIN D DEFICIENCY ON THE NATURAL PROGRESSION OF PERTHES' DISEASE

S Al-Naser, J Judd, N M P Clarke

University Hospital Southampton

Femoral head deformity can be a devastating outcome in a small percentage of patients with Perthes' disease. Deformities usually start during the fragmentation stage. In this study, we aimed to determine the effects of Vitamin D deficiency on the natural history of Perthes' disease.

Patients with Perthes' disease and Vitamin D deficiency presenting to our unit in the last 3 years were identified. All X-rays were reviewed retrospectively to determine the duration of the fragmentation and ossification stages. Treatment methods were obtained from the notes. Late presenters (i.e. after fragmentation stage) were excluded.

In our unit, Vitamin D deficiency is diagnosed if levels $<72\text{nmol/L}$. Fifteen patients (17 hips) with Perthes' disease were found to be Vitamin D deficient. Levels ranged from (18-71nmol/L). The mean length of the fragmentation stage was 15.7 months which is significantly higher than quoted literature figures (8 months). Ossification stage duration was 18.8 months which was comparable to quoted figures. However, patients with severe Vitamin D deficiency ($< 52\text{nmol/L}$) were found to have longer ossification stage (20.6 months) compared with patients with mild deficiency (52-72 nmol/L) (16.4 months). Seven out of 16 patients (44%) required surgical containment which is significantly higher than the usually low rates of surgical intervention.

The critical fragmentation stage in Vitamin D deficiency is significantly longer putting the femoral head at higher risk of deformity and extrusion. This leads to higher rates of surgical containment. Also the severity of Vitamin D deficiency might be an important determinant of the period of time required for ossification and healing.

Vitamin D level is an important prognostic factor and must be measured in all patients with Perthes' disease. Prescribing Vitamin D supplements is advisable in this group of patients. However, the effects of these supplements on the course of the disease requires further research.

Level of evidence: III

Word count: 299

ABSTRACT PRESENTATION – PAPER 8

REVERSE PONSETI-TYPE METHOD FOR CONGENITAL VERTICAL TALUS: COMPARISON BETWEEN IDIOPATHIC AND TERATOLOGIC PATIENTS

J Wright, D Coggings, C Maizen, M Ramachandran

Barts and the London Children's Hospital, Barts Health NHS Trust, London, UK.

Background:

Congenital vertical talus (CVT) is a rare deformity of the foot. It has been historically treated with extensive soft tissue releases with significant associated complications. Recently, reverse Ponseti-type casting followed by minimally invasive or percutaneous reduction and fixation has been described with excellent results in separate cohorts of either idiopathic or teratologic cases of CVT. There are currently no studies that compare the outcomes between the two types.

Methods:

We present a prospective cohort of 13 patients (21 feet) in which this technique has been used in both idiopathic and teratologic associated cases of CVT. Clinical, radiographic and parent-reported outcomes were obtained at a mean follow up of 36 months (range 8-57). Clinical and radiographic scoring was according to the system of Adelaar and parent-reported outcomes were assessed using the POSNA paediatric outcomes data collection instrument (PODCI).

Results:

Six patients (9 feet) had associated neuromuscular conditions or syndromes; seven patients (11 feet) were idiopathic. Initial correction was achieved in all patients with significant improvement in all radiographic parameters. The recurrence rate was 48%; there was no statistical significance between idiopathic and teratologic cases for rate of recurrence. Further treatment was required in the form of casting in 2 feet and open release in 6 feet. Adelaar scores were significantly lower in the recurrence group than in those with no recurrence. PODCI scores for global functioning at latest follow-up were a mean of 72 (range 18-98). Pain/comfort scoring was uniformly good with an average score of 99.

Conclusions:

The reverse Ponseti-type technique is effective in initial correction of both idiopathic and teratologic cases of CVT. Recurrence is a problem in both these groups, with higher rates than first reported in the original paper. However, these rates are less than those reported for open surgical releases.

Level of evidence: II

Word count: 295

ABSTRACT PRESENTATION – PAPER 9

OSTEOCHONDROMAS OF THE UPPER LIMB: NATURAL HISTORY AND FUNCTIONAL EFFECTS

P.Jayakumar, C Hartmann, DM Eastwood

Great Ormond Street Hospital, London, UK

Aim:

To review the natural history of upper limb osteochondromas and assess their functional effect.

Materials:

We performed a retrospective casenote review of a consecutive patient cohort presenting between 1997-2012 with upper limb osteochondromas. Indications for surgical intervention were noted and considered to be cosmetic, functional (including pain relief) and 'prophylactic' in terms of deformity prevention. All patients were invited to complete questionnaires for the PODCI, DASH, OSS and MHS scores.

Results:

We identified 102 patients (62 male: 40 female; mean age = 13.3 years; range 3–31 years). 84 patients had multiple exostoses whilst 18 had a solitary lesion. 52 patients had shoulder girdle involvement (scapula, clavicle and proximal humerus), 51 forearm (Masada I (n=31) Masada II (n=9) Masada III (n=11)), and 38 hand involvement. 46/102 patients had concurrent lower limb lesions.

56 operative procedures were performed primarily for functional benefit. Shoulder girdle procedures (n=21) improved pressure related pain, scapular pseudowinging/dyskinesia and cuff impingement. Forearm procedures (n=35) were performed for functional and prophylactic reasons and involved excision with ulnar lengthening and radial deformity correction (n=15, Masada I), realignment osteotomy or radial head excision for subluxation (n=7, Masada II) and excision with internal fixation of concomitant osteotomy (n=13, Masada I/III). No hand surgery was performed. Radial head dislocations are associated with large ulnar lesions causing shortening > 0.15 total ulnar length. Osteochondromas of the upper limb are generally well tolerated: functional effects were most commonly present in lesions involving the forearm but significant patient benefit was noted following shoulder girdle procedures. The scoring systems used failed to discriminate well between the various procedures used and the perceived benefit.

Conclusion:

Patient outcomes are related to surgical indications. Currently available PROMs are either inappropriate Qs (DASH) and / or non-validated (OSS, MHS) and / or non-specific (PODCI*) only 8 parameters for the upper extremity. Better-validated measures may be required.

Level of evidence: IV

Word count: 309

ABSTRACT PRESENTATION – PAPER 10

A RE-EVALUATION OF COMMONLY ACCEPTED RISK FACTORS FOR DEVELOPMENTAL DYSPLASIA OF THE HIP: PRELIMINARY RESULTS OF A POPULATION BASED COHORT STUDY

A Roposch

Great Ormond Street Hospital for Children, Institute of Child Health, University College London, London, UK

Introduction:

Risk factors for developmental dysplasia of the hip (DDH) in early infancy have never been validated from basic principles; their relevance remains controversial.

Purpose:

To determine risk factors for DDH using newly developed diagnostic criteria based on international consensus.

Methods:

In this population-based cohort study, 9904 babies born at a secondary care unit (2010-2012) received a standardized examination (usually within 24 hours postpartum) in which we prospectively ascertained the presence of the common risk factors for DDH (breech, family history, etc). Infants exhibiting ≥ 1 factor were eligible and underwent ultrasound testing within 8 weeks. Alpha angles were measured by surgeon/radiologist in consensus and blinded to risk factors and age. Using multivariable methods we evaluated the association of the risk factors and ultrasonographic DDH using criteria based on international consensus.

Results:

1766 (18%) newborns exhibited ≥ 1 risk factor for DDH. Of these 1489 (84%) infants participated. To date, 1296 (87%) completed the ultrasound at a mean age of 8 ± 3 weeks. Of the 1296, 55 (4%) patients exhibited alpha $< 55^\circ$ and 43 (3%) exhibited alpha $< 50^\circ$. Of all risk factors, only female gender was associated with an alpha $< 55^\circ$ (RR=2; 95% CI = 1.1, 3.5; $p=.01$). In contrast, abnormal clinical examination findings of the hip were strongly associated with DDH ($p<.0001$).

Conclusion:

In a prospective study using robust case definitions, commonly known risk factors were not clinically important markers of DDH when DDH was defined by consensus criteria. Given the generally poor and conflicting evidence on risk factors for DDH, our preliminary results suggest a new approach is needed in the risk prediction of DDH.

Level of evidence: I

Word count: 264

ABSTRACT PRESENTATION – PAPER 11

SCREENING OF SELECTED RISK FACTORS IN DEVELOPMENTAL DYSPLASIA OF THE HIP

C L Talbot, R W Paton

Royal Blackburn Hospital, East Lancashire Hospitals NHS Trust

A 15 year prospective, observational cohort study was undertaken to assess selective screening of DDH in males and females referred with risk factors only.

Individuals born breech or with evidence of a strong family history for DDH were the ‘risk factors’ studied. All were clinically examined and sonographically screened by one Consultant Paediatric Orthopaedic surgeon. Irreducible hip dislocation rate was the primary outcome measure.

From a cohort of 64670 live births, 2,984 neonates/infants, 46.1 per 1000 live births [95% CI 44.6 to 47.8 per 1000 live births] were referred and sonographically screened with ‘pure’ risk factors of breech presentation and/or family history, with clinical stability. 1360 were male, of which 4 were identified as having ‘pathological’ DDH; an incidence of 1 in 333 of those males referred [95 CI 0.001, 0.008]. 1624 were female, of which 45 were identified as having ‘pathological’ DDH; an incidence of 1 in 36 of those females referred [95% CI 0.021, 0.037]. There was a significant difference in the number of female individuals sonographically diagnosed as having ‘pathological’ DDH compared to males ($p < 0.001$). Four individuals were diagnosed with irreducible hip dislocation, 0.06 per 1000 live births [95% CI 0.24, 0.159 per 1000 live births]. All were in females. Additionally, there were 2 female individuals; both with family history of DDH (1st cousin splinted and sister splinted, respectively) as a risk factor, referred late.

Our study suggests that there is a significant difference between the incidence of female and male individuals diagnosed with ‘pathological’ DDH, in those referred purely with risk factors (breech and family history). These findings question the current screening policy for ultrasound examination of males with risk factors in the absence of clinical instability, and may influence future DDH screening programme policy.

Level of evidence: II

Word Count: 289

ABSTRACT PRESENTATION – PAPER 12

ARTHROERESIS FOR SYMPTOMATIC PAEDIATRIC FLATFEET- EARLY RESULTS

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Purpose:

To establish the early outcome, satisfaction and complications of sinus tarsi implants in the management of symptomatic flexible flatfeet for a paediatric population

Methods and results:

We included all patients aged 18 years or less who were treated for flexible flatfeet with a sinus tarsi implant between January 2010 and June 2012. We excluded patients who had a history of clubfeet or tarsal coalition.

34 patients had 59 implants. The mean age at surgery was 13.7yrs (9-17yrs), with mean follow-up of 22 months (range 10-35). Mean AOFAS improved from 65.7 to 87.9 ($p<0.001$), with an improvement in AOFAS pain scores ($p=0.0001$). Radiographic correction occurred in all feet, with average improvement of the anteroposterior talar-second metatarsal angle of 16 degrees, and the lateral talar-first metatarsal angle of 9 degrees. Implant placement satisfaction rate was 86%, with 81% claiming that they would have the procedure again. Complications included peroneal spasm (8%), extrusion (7%), revision (5%), and removal (5%). Peroneal spasm was recalcitrant in 3 of the 5 cases, and those with spasm had a higher average forefoot abduction measurement (35 degrees) than the remaining treated cases (25 degrees).

Conclusion:

In paediatric patients with flexible flatfeet, utilization of the sinus tarsi implant has good short-term outcome, with our failure and revision rates comparable to other published studies in the adult population. We introduce the concept of isolated subtalar hyperlaxity which appeared to be a distinct etiological factor. A learning curve in assessing implant size was noted. Overcorrection and implant migration were the indications for revision surgery. Severe forefoot abduction appears to have a poorer outcome, and may be associated with peroneal spasm.

Level of evidence: IV

Word count: 271

ABSTRACT PRESENTATION – PAPER 13

PONSETI CASTING FOR CLUB FOOT: ABOVE OR BELOW KNEE? A PROSPECTIVE RANDOMISED CLINICAL TRIAL

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Statement of purpose:

A randomized clinical trial was undertaken to find out if treatment time and failure rate in children treated by the Ponseti method differed between below-knee vs above-knee cast groups.

Methods and Results:

Eligible children with idiopathic clubfoot, treated using the Ponseti method, were randomized to either below knee or above knee plaster of Paris casting. Outcome measures were total treatment time and the occurrence of failure, defined as two slippages or a treatment time above eight weeks. Twenty-six children (33 feet) were entered into the trial, with a mean age of 17 days (range 1-40) in the above knee and 11 days (range 5-20) in the below knee group. Because of six failures in the below knee group (38%), the trial was stopped early for ethical reasons. Failure rate was significantly higher in the below-knee group (P 0.039). The median treatment times of six weeks in the below knee and four weeks in the above knee group differed significantly (P 0.01).

Statement of conclusion:

Below knee plaster of Paris casts in conjunction with the Ponseti method showed significantly higher rates of failure than above knee plaster casts, requiring conversion to above knee casts, and a significantly longer treatment time. This higher rate of failure of below knee casts forced an early end of the trial. This study shows that a well moulded above knee plaster cast is safe and superior to a below knee plaster cast in conjunction with the Ponseti method. We do not believe that modifying the original Ponseti method in this manner is beneficial.

Level of evidence: I

Word count: 260

ABSTRACT PRESENTATION – PAPER 14

REVALIDATION: MEASURE ME IF YOU CAN!

AP Roberts

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Purpose:

To examine the feasibility of surgical outcome measures for a children's orthopaedic surgeon when compared with other specialties.

Methods & Results:

Details of procedure codes for 2726 inpatient episodes were used to examine the distribution of procedures and the breadth of diagnoses dealt with by a variety of orthopaedic sub-specialists. The author's practice included 199 surgical cases and was compared with two arthroplasty surgeons (n=971); a spinal surgeon (n=256); a foot and ankle surgeon (n=341) and an upper limb surgeon (n=393).

Arthroplasty surgeons can report 50% of their outcomes as primary knee or hip replacements the index procedure for the author is metalwork removal (14.5%). My upper limb colleague could be judged on 25% of his cases (carpal tunnel decompression) and my spinal surgical colleague on 20% of his cases (primary posterior decompression of spinal cord). Only my foot and ankle colleague compared in terms of diversity with 9% of his cases consisting of first metatarsal osteotomy and the next 9% consisting of 1st MTPJ arthrodesis.

The proportion of multiple procedures also varies between sub-specialists with 66% of my cases being multiple compared with 38% for the arthroplasty surgeons and 42% for the upper limb surgeons. Foot and ankle has a high rate of multiple procedures (62%) and the spinal surgeons code different procedures at each level in the spine giving the high rates of multiple procedures.

Conclusion:

Outcome measures in children's orthopaedics seem problematic owing to the diverse nature of the practice and the confusion resulting from multiple procedures contributing to the outcome in 60% of cases. Either we are treated like physicians who do not have surgical outcomes to report or some goal based measure is adopted.

Level of evidence: III

Word count: 300

ABSTRACT PRESENTATION – PAPER 15

ULTRASOUND USE IMPROVES THE ACCURACY OF SURFACE ELECTROMYOGRAPHY ELECTRODE PLACEMENT OVER RECTUS FEMORIS IN CHILDREN WITH CEREBRAL PALSY

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The aim of this study was to validate the SENIAM recommendations for surface electromyography placement(sEMG) over rectus femoris(RF) muscle in healthy children and in children with cerebral palsy(CP) during gait analysis and compare placement using these guidelines to using ultrasonography.

Methods & Results:

The study included 10 healthy children volunteers and 10 CP children volunteers, aged 8-12. All the CP children had spastic diplegia, were GMFCS levels I–II and had not previously undergone surgery.

RF electrodes were placed following SENIAM recommendations. RF was then identified by ultrasound. The distance between the lateral edge of RF and the position of the sEMG electrode as per SENIAM guidelines and the width of RF was measured, to the nearest millimetre. We considered 'ideal electrode' position to be at halfway between the edges of RF (i.e. 50%).

The mean percentage difference in distance from the 'ideal electrode' position as measured by ultrasound to electrode placement following SEMIAN guidelines was 2.7% in the healthy children group compared with 19.5% in the CP group. By performing unpaired *t* tests we showed that there was no significant difference between the mean electrode position using SEMIAN guidelines and 'ideal electrode' position in the healthy children ($p=0.0531$), however the mean electrode position using SEMIAN guidelines in the CP patients was significantly different from the 'ideal electrode' position ($p=0.0001$).

Conclusion:

SENIAM recommendations for sEMG electrode placement over RF muscle were validated in 10 healthy children. We showed that ultrasonography improved the accuracy of sEMG electrode placement in children with CP, who can exhibit anatomical variation due to their condition. Accurate electrode placement will ensure that a more accurate signal is recorded which may have a direct clinical bearing on the decision to proceed with surgical intervention.

Level of evidence: II

Word count: 299

ABSTRACT PRESENTATION – PAPER 16

PERCUTANEOUS OSTEOTOMIES OF THE FEMUR AND TIBIA USING A COOLED SIDE CUTTING BURR.

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Purpose of the Study:

A cooled, side cutting burr designed for use in adult foot surgery has been used as a primary bone cutting device in children to facilitate a truly percutaneous method of performing osteotomies. Stabilisation of the femur was using a percutaneous locked nail and for the tibia percutaneous K-wires. The author describes the advantages and disadvantages of this method with results from the first cohort of patients treated.

Method:

Patients under going osteotomy of the femur, tibia and fibula using a 2mm x 20mm side cutting burr were followed prospectively and assessed for scar size, bone healing time and complications.

Results:

Thirty six osteotomies were performed in the femur and tibia in 25 patients. A fibula osteotomy was always performed with a tibial osteotomy. Scar size for the femoral osteotomy was <15mm and for the nail insertion <25mm. For the tibia & fibula the scar size was <10mm. Healing time was by 6 weeks in the tibia and in the femur was within 16 weeks in non-lengthening cases in all but 1 case of non-union (associated with Vitamin D insufficiency). Three burr bits broke during the learning curve including 2 in tibial osteotomies and 1 in the femur. Cortical thickness and slow burr speeds were associated with burr breakage. All wounds healed without infection. The optimum speed for the burr at 50 Nm of torque was established as 200 rpm in children under the age of 13 yrs. The initial recommended speed of 300 rpm increases healing time when performing osteotomies in children.

Conclusion:

Truly percutaneous surgery can be performed to osteotomise the femur and tibia using a cooled, side cutting burr with a locked femoral nail and crossed tibial wires with excellent cosmetic results and minimal complications.

Level of Evidence IV

Word count: 292

ABSTRACT PRESENTATION – PAPER 17

IS CLOSED REDUCTION OF DDH SUCCESSFUL AFTER FAILED PAVLIK HARNESS TREATMENT?

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Aims:

To assess the success rate of closed reduction after failing Pavlik harness for treatment of DDH.

Methods:

It was a retrospective review of prospectively collected data. Patient's notes/computerised records were reviewed. Radiological investigations were also reviewed. Microsoft excel used for descriptive stats.

Results:

From 1998 to 2011, 975 patients (1322 hips) were treated with Pavlik harness. Of these, 188 (20%) were male and 787 (80%) were female patients. The Pavlik Harness was successful in 92% patients and failed in 8% (102) patients. These 102 patients underwent closed reduction under general anaesthesia. Of these, the closed reduction was successful in 33 (20%) patients and failed in 69(68%) patients who then underwent open reduction.

Conclusion:

The Success of closed reduction in patients with failed Pavlik Harness is low. Closed reduction may not overcome intrinsic and extrinsic obstructing factors responsible for failure of Pavlik Harness.

Level of evidence: IV

Word count: 170