

**SATURDAY, JUNE 2**

**0700 - 1800** Registration **Lower Level Convention Centre**  
**0800 - 1600** Partners' Hospitality Suite Open **Barrington Suite, Delta Barrington**  
**0700 - 0830** Instructional Course Lectures (concurrent sessions)

ICL-07: Adult Reconstruction **Mariner 2**  
ICL-08: Trauma **Mariner 3**  
ICL-09: General: Tumour and Tissue Banks **Mariner 4**  
ICL-10: Paediatric **Mariner 5**  
ICL-11: Foot and Ankle **Highland 9**  
ICL - 12: Principles and Practice of Orthopaedic Research: A Primer **Highland 8**

**0840 - 0855** COA Welcome and Opening Remarks **Port Royal B**  
**0900 - 1600** Exhibits Open **Metro Centre**  
**0855 - 0955** Symposium #3: Access to Care/Alternative Care Models **Port Royal B**  
**0955 - 1010** Presentation by the Canadian Military - Afghanistan **Port Royal B**  
**1010 - 1035** President-Elect Address and Transfer of Office **Port Royal B**  
**1035 - 1100** Health Break and Poster Session with Exhibitors **Metro Centre**

**Please visit the COA's industry partners in the Metro Centre**

**1100 - 1230 Concurrent Paper Sessions**

**1100 - 1230** **Session 6: Arthroplasty Hip** **Port Royal B**  
**Moderators: Steven J.M. MacDonald, Olga L. Huk**

**Paper 060** Predicting Future Need for Total Hip and Knee Replacement from Now to 2015<sup>2</sup>  
**1100-1106** **R. B. Bourne, C. K. Anderson, B. M. Chesworth, L. E. Hornick, G. S. Zaric, London, ON**

26,725 Ontarians were waiting for THR and TKR surgery on any given day in 2004-05. Each month, the number of new decisions for surgery exceeded the actual number of surgeries by over 20%, adding another 500 patients to the wait list. We predict the population >55 years of age will increase by 3.4% annually and the willingness of patients to consider TJR surgery will increase by 8.7%/year To reduce wait times and establish a steady state of waiting (less than 6 months wait), more than 50,000 surgeries per year must be provided within 5 years and 70,000 total joint replacements per year by 2014-15. The number of surgeons will have to double within five to seven years. The results of this queuing theory analysis predict a substantial need for markedly increased THR and TKR volumes and orthopaedic manpower over the next decade.

**Paper 061** Heterotopic Ossification After Hip Surface Replacement Arthroplasty: A Prospective, Randomized Study<sup>2</sup>  
**1106-1112** **M. Lavigne, P. A. Vendittoli, R. B. Siva Rama, Montreal, QC**

Two hundred and ten hips were randomized to receive uncemented metal-on-metal THA or metal-on-metal SRA. Standard radiographs were assessed for HO by 2 reviewers at the latest follow-up. The incidence of HO was 38.5% in the SRA group compared to 32.6% in the THA group ( $p=0.5$ ). However, there was a significant difference in severity grades for the 2 groups ( $p=0.02$ ). According to Brooker's classification, nearly half of HO was of grade 2 in SRA and of grade 1 in THA. SRA was associated with significantly higher rates of severe HO (grades 3 and 4) than THA (12.5% vs. 2.2%;  $p=0.009$ ). SRA results in more severe HO than THA. An extensive surgical approach, additional soft tissue release and the blunt damage occurring in gluteal muscles with SRA may signal the induction of more severe HO.

**Paper 062**  
**1112-1118** Patient-Reported Outcomes as a Quality Indicator of Standardized Care Plans for Total Joint Replacement  
*N. Mahomed, Ottawa, ON*

On average greater than 50% of people were discharged home from acute care and over 50% of those individuals receiving inpatient rehab were discharged in 7 days, with 80% discharged by day 10. 349 (73%) of those accrued (mean age 69, 222 females) completed 3 month follow-up Those discharged home have mean pain and physical scores of 82.7 and 78.7% (where high scores are better pain relief and function) and those receiving inpatient rehab have pain and function scores of 78.6 and 72.4%. These values are within our a priori CI for outcome. 13% reported dissatisfaction with rehabilitation planning and care. This model of care has achieved the goals of increasing the proportion of people discharged home following TJA and decreased rehabilitation LOS with increased system capacity for rehabilitation. The patient outcomes are maintained.

**1118-1123** Discussion

**Paper 063**  
**1123-1129** Cost-Effectiveness of Antibiotic-Impregnated Bone Cement Used in Primary Total Hip Arthroplasty for Osteoarthritis  
*J. Cummins, S. Finlayson, S. Kantor, I. Tomek, Lebanon, NH*

A Markov decision model was used to determine whether antibiotic-impregnated bone cement (ABC) is a cost-effective strategy for primary total hip arthroplasty in patients with osteoarthritis. The model tabulates costs and quality adjusted life years (QALYs) accumulated by each patient to evaluate the cost-effectiveness of each strategy. Rates of revision for infection and aseptic loosening were derived from the Norwegian Arthroplasty Register. ABC is less expensive and more effective than standard cement when all revisions are considered, making the use of ABC the dominant strategy. When only revision for infection is considered, the use of ABC has an incremental cost-effectiveness ratio (ICER) of \$37,335 per QALY compared to cement without antibiotics – which compares favorably with the cost-effectiveness of accepted medical procedures. Use of ABC for primary THA is cost-effective over a wide range of assumptions. Notably, when all revisions are considered, ABC is less costly and more effective than use of standard cement over the life span of the patients.

**Paper 064**  
**1129-1135** The Prostalac Hip: Outcomes 10-15 Years After Two-Stage Revision for Hip Infection  
*T. Kostamo, C.P. Duncan, D.S. Garbuz, B.A. Masri, Vancouver, BC, G. Biring, Berkshire, UK*

We report the outcomes 10-15 years after two stage revision for hip infection in 103 consecutive patients. 10 patients had re-infection, 6 of whom responded to repeat surgery with no further sequelae. Two patients required resection arthroplasty, one patient underwent hip disarticulation after eventual failure of treatment and bone loss, and one immunocompromised patient developed osteomyelitis and was subsequently lost to follow-up. Long-term success rate for two stage- revision is thus 90.3 %, or 96.1% with additional surgery. Since then, 3 patients required revisions for aseptic loosening, 1 for recurrent dislocation. We were able to follow up 41 patients, 85 % of whom were able to provide health-related quality of life outcome scores. 39 patients were deceased, with their outcome confirmed via their last follow-up or with family members, for a total follow-up rate of 78 %. 23 patients were lost to follow-up, but required no revision surgery and had no recurrent infection at our centre. Two-stage revision for hip infection is a predictable and lasting solution for patients with this difficult problem.

**Paper 065**  
**1135-1141** Extended Trochanteric Sliding Osteotomy for Revision Total Hip Arthroplasty  
*G. Lim, D. Backstein, P. Boscainos, A. E. Gross, O. Safir Toronto, ON*

Background: The purpose of the study was to compare the rate of union, factors affecting the rate of union, and complications, namely hip dislocations, in the modified extended sliding trochanteric osteotomy, as performed by the senior author, with other similar studies. This osteotomy differs from those previously described, by preserving the posterior part of the greater trochanter and its attached external rotators, the aim being to minimise the rate of hip dislocation. Methods: We reviewed the results of 48 extended sliding trochanteric osteotomies performed between March 2000 to March 2006. The mean age at the time of revision surgery was 69 years. The indications for revision surgery were aseptic loosening in 41 cases, infection in 3 cases, peri prosthetic femoral fracture in 3 cases, and recurrent dislocation in one case. Results: The rate of union at a mean follow up of 28 months was 95.8%. The hip dislocation rate was 6.2%. Conclusions: Our series of extended sliding trochanteric osteotomies shows a low dislocation rate by way of preservation of the attachment of the external rotators, and exhibits a union rate comparable to that of other series.

**1141-1145** Discussion

**Paper 066**  
**1145-1151** The Use of Retransfusion Drains in Arthroplasty- RCT  
*G. Wood, A. Kapoor London, ON, A. Javed, Blackpool, UK*

This study was a prospective randomised controlled study following the use of retransfusion drains in 80 hip and knee arthroplasty patients. The 2 groups were to receive drain removal at 6 or 24 hours. The amount drained, retransfused, Haemaglobin levels, allogenic transfusion, complications and rehabilitation analysed. Both groups were comparable and no significant difference was seen between the two groups when the recovery, complications and heamaglobin levels were compared. Differences were seen between the hip and knee patients. Patients were followed up for 2 years and this study concludes that retransfusion drains offer no advantage in the arthroplasty patients' care.

**Paper 067**  
**1151-1157** Transfusion Patterns in Total Joint Arthroplasty: A Prospective Study of 1642 Patients<sup>2</sup>

*T. Bell, R. B. Bourne, S. J. MacDonald, R. W. McCalden, D.D. R. Naudie, F. Ralley, London, ON*

Purpose: The purpose of this study was to evaluate the impact of dalteparin use on transfusion rates and blood loss in patients undergoing primary total joint arthroplasty at our center.

**Paper 068  
1157-1203**

Factors Affecting the Volume of Acetabular Bone Resection in Hip Arthroplasty<sup>2</sup>

*M. Lavigne, N. Nuno, D. Plamondon, P. A. Vendittoli, R. Winzenrieth, Montreal, QC*

The factors influencing acetabular bone resection during acetabular cup implantation in THA or hip resurfacing (SRA) include the design of the component and technique of implantation. The impact of these variables on bone resection was simulated with a computer model. Bone loss of 2742mm<sup>3</sup> was calculated for the 165°, 4mm thick, 54mm cup, and deepening of reaming by 1 and 2mm would result in bone loss of 3780mm<sup>3</sup> (+38%) and 5076mm<sup>3</sup> (+85%), respectively. When oversizing to a 56mm 165° component, 4998mm<sup>3</sup> (+82%) of bone was removed. For a 54mm, 5 mm thick component sustaining an angle of 180°, the bone loss would reach 12 410mm<sup>3</sup> (+450%). The surgical technique (avoiding over deepening and oversized components) should minimize bone loss. This knowledge is of particular importance in hip resurfacing since the acetabular component size depends on the selected femoral component size.

**1203-1208**

Discussion

**Paper 069  
1208-1214**

Results of Total Hip Arthroplasty for Developmental Dysplasia of the Hip Following Conversion of Failed Femoral Osteotomy

*N. Aslam, E. Schemitsch, K. Tokunaga, J. Waddell, Toronto, ON*

The purpose of this study was to evaluate the effect of previous femoral osteotomy on the outcome of total hip replacement performed for degenerative arthritis secondary to developmental dysplasia of the hip. Patients with a prior femoral osteotomy have no significant difference in functional outcome, overall complication rate or revision rate compared to controls. However, there is a significant increase in femoral fracture and operative time. Previous femoral osteotomy does not compromise the functional outcome of subsequent total hip arthroplasty.

**Paper 070  
1214-1220**

Long-Term Survivorship of the Mallory-Head Calcar-Replacing Hip Prosthesis - 4 to 15 year Follow-up

*D. Simon, P. Beaulé, W. Castle, R. Feibel, P. Kim Ottawa, ON*

Cementless femoral fixation is the gold standard in revision hip arthroplasty. Distal fixation is achieved using either a cobalt chrome or titanium stem. The purpose of this study is to report the long-term survivorship and clinical outcome of a titanium, long-stemmed, calcar-replacement femoral component. Eighty-one patients (average 74yrs) underwent revision hip arthroplasty with the Mallory-Head calcar-replacement femoral component. Most revisions were for aseptic loosening or periprosthetic fracture, with a low incidence of perioperative complications. At a mean follow-up of 7.4 years, radiographic and clinical outcome has been analyzed. Overall survival of the Mallory-Head implant at 5 years is 95% and 87% at 10 years, with a mechanical failure rate of 7.4%. Although the results are encouraging, it would appear that

proximal load-bearing fixation with the calcar-replacement stem is not as reliable as distal fixation. Our overall and mechanical failure rates are somewhat higher than those of the implant developers.

**Paper 071  
1220-1226**

Superior Outcomes Associated with the Limited Incision Anterolateral Intermuscular Approach (MIS Watson-Jones Approach)

**N. Greidanus, G. Biring, C.P. Duncan, D. Garbuz, B.A. Masri, Vancouver, BC**

This single incision, anterolateral intermuscular approach (AL-IM) utilizes the interval between gluteus medius and tensor fascia lata. The aims of the study were to compare the quality of life, satisfaction and complications of this approach with two commonly used limited incision transmuscular (TM) approaches, the mini-posterior (P-TM) and the mini-direct lateral (L-TM). 199 patients receiving MIS THA surgical procedures were evaluated prospectively (63 AL-IM, 68 P-TM and 68 L-TM). The outcome variables were WOMAC function, pain, stiffness, SF-12 (physical & mental), Oxford-12, satisfaction and radiological outcome. Parametric and non-parametric analyses were performed. There were no significant differences between groups in baseline characteristics including age, sex, BMI, co-morbidity, or pre-op WOMAC, SF-12, Oxford-12 ( $p > 0.05$ ). However, the AL-IM group was associated with superior outcomes ( $p < 0.05$ ) in WOMAC function, WOMAC pain, global WOMAC, Oxford-12 and SF-12 physical component. In the short term the AL-IM approach provides significant improvements in quality of life scores over other limited incision approaches. It provides minimal soft tissue disruption and maintains the abductor musculature and posterior soft tissue envelope, with similar complications and radiological outcomes.

**1226-1230**

Discussion

**1100-1230**

**Session 7: Spine**

**Port Royal C**

**Moderators: Edward P. Abraham, Kevin R. Gurr**

**Paper 072  
1100-1106**

The Impact of Wait Time on Outcome in Patients Undergoing Elective Posterior Lumbar Spinal Surgery

**A. Yee, H. Ahn, J. Braybrooke, J. Finkelstein, M. Ford, A. Gallant Toronto, ON**

Surgery for degenerative lumbar conditions can afford pain relief and positively impact physical function. Little is known regarding the impact of wait time to surgery on patient derived functional outcome following spinal surgery. This study evaluated the impact of wait time to surgery on patient derived functional outcome scores in patients undergoing elective posterior lumbar spinal surgery for degenerative conditions of the spine. A longer wait time to spinal surgery can negatively influence surgical results as quantified by patient derived functional outcome measures. Surgery resulted in the greatest improvement in pain severity and physical aspects of function, however, these areas also appeared the most impacted by a longer wait to surgery.

**Paper 073  
1106-1112**

Does Presence of "Significant Back Pain" Affect Outcomes in Lumbar Decompression Surgery?<sup>2</sup>

**A. Crawford, S. Dagenais, A. Gruszczynski, E. K. Wai, Ottawa, ON**

Although many authors have emphasized the importance of lumbar spinal decompression surgery for "leg dominant pain", there is little objective evidence on the outcomes of surgery for varying degrees of

back pain compared to leg pain. Moreover, it is unclear whether patients with radicular or claudication type leg pain, presenting with significant back pain as well, would benefit from surgical decompression. This study evaluated the outcomes of patients with (i.) leg dominant pain compared to patients with (ii.) leg pain along with significant back pain. The results demonstrate that presence of significant back pain, despite presence of leg pain, is a strong predictor of poorer post-operative results. Further research is required to determine if the current long waiting lists are a causative factor for development of significant back pain in surgical candidates.

**Paper 074**  
**1112-1118** Improvements in Back Pain Following Enrolment in a Multidisciplinary Weight Management Programme – Early Results<sup>2</sup>  
*E.K. Wai, R. Dent, H. Dornan, A. Gruszczynski, L. Vexler, Ottawa, ON*

Weight loss is commonly recommended as a treatment for back pain. However, there is little literature to support this. A recent systematic review has identified only studies relating to bariatric surgery. There are no other studies that address whether weight loss improves back pain. 45 consecutive consenting patients were recruited and followed using standardized and validated outcomes instruments after enrolment in a tertiary multidisciplinary weight management program. A substantial number of these patients had moderate or severe back pain and disability. After 12 weeks in the program, there were significant improvements in the severity and prevalence of back pain and disability. This is the first study to provide empirical evidence on the positive effects of a weight loss program on back pain. These results lay the groundwork for longer follow-up and comparative studies.

**1118-1123** Discussion

**Paper 075**  
**1123-1129** Spinal Fusion in Obese and Morbidly Obese Patients Using Synframe  
*R. Vaidya, S. Bartol, J. Carp, A. Sethi, S. Sethi, Detroit, MI*

Obtaining good surgical access is a major problem in obese and morbidly obese patients undergoing spinal surgery. This study reports our experience in this group of patients undergoing spinal fusion with the use of synframe retractor system. Seventy seven patients with a Body mass index (BMI) of more than 30 were included in the study. Information regarding age, weight, height, gender, time in surgery, procedure start and end time, and departure were recorded. ASA scores, number of preoperative morbidities, and intraoperative blood loss was also noted. The synframe retractor system was used on all the patients. The surgical set up time averaged 66.5 minutes. There was no significant difference in the surgical time and blood loss with the use of the synframe retractor system between obese and normal weighted patients. However, significant differences were observed between obese and morbidly obese patients. No significant weight loss was recorded in the obese and morbidly obese patients following surgery. Complication rate was higher in these patients which could be attributed to the higher incidence of comorbidities. The synframe retractor system provided a stable operative field with minimal personnel and a smaller incision.

**Paper 076**  
**1129-1135** Trends in Lumbar Spinal Fusion and Surgeon Factors in Spinal Stenosis Surgery<sup>2</sup>  
*S. S. Bederman, J. A. Finkelstein, M. Ford, H. J. Kreder, I. Weller, A. J.M. Yee, Toronto, ON*

Our objective was to evaluate recent trends in lumbar fusion and determine how surgeon factors influence reoperation for spinal stenosis (SS) surgery. Using administrative databases (April 1, 1995 to December 31, 2001), we analyzed trends in spinal fusion and surgeon variables (specialty, volume) as predictors of patient reoperation for SS. From 6128 patients identified (4200 decompressions and 1928 fusions) we found an increased rate of fusions performed over the study period. Orthopaedic specialty and higher surgical volume were associated with an increased proportion of fusions. Reoperation rate was higher for decompressions at 2 years but not at long-term follow-up. Lower surgical volume resulted in a higher reoperation rate, however, specialty had little impact. Due to increasing rates of spinal fusion, the benefit of improved long-term survival in SS surgery with higher volume surgeons requires more detailed analysis before policy recommendations can be made.

**Paper 077**  
**1135-1141** Transforaminal Lumbar Interbody Fusion Using Unilateral Pedicle Screws and a Translaminar Screw  
**A. Sethi, S. Lee, R. Vaidya, Detroit, MI**

The purpose of this study was to investigate the efficacy and fusion rates of a unilateral pedicle screw construct supplemented with a translaminar screw in transforaminal lumbar interbody fusion (TLIF). Nineteen patients were included in the study. There were 12 males and 7 females with an average age of 45 years and follow up of 22 months. In all patients lumbar fusion was supplemented with a posterior construct of unilateral pedicle screws and a contralateral translaminar screw fixation. Oswestry disability index scores (ODI), VAS for pain, a pain diagram and radiographic examination were recorded preoperatively and at every postoperative visit. The construct of unilateral pedicle screws supplemented with a translaminar screw led to fusion in all our cases. Sixteen of the nineteen patients showed improved pain scores. We concluded that the construct of a unilateral pedicle screw supplemented with a translaminar screw provides adequate stiffness of the spine for fusion and requires lesser soft tissue dissection with a 56% reduction in cost.

**1141-1146** Discussion

**Paper 078**  
**1146-1152** Clinical Correlation of Radiologic Spinal Stenosis After Standardization for Vertebral Body Size  
**A. Athiviraham, C. Scott, D. Soboleski, D. Yen, Kingston, ON**

123 consecutive patients with claudicant pain and radiologic confirmation of neural impingement were enrolled prospectively. Functional disability was assessed using the Roland Morris Questionnaire and radiographic parameters were determined using CT or MRI. There was no significant correlation between functional disability and radiologic stenosis, even after correcting for congenital variation in individual vertebral body size. However, patients with more severe stenosis below a cross-sectional area critical threshold of 70mm<sup>2</sup>, have significantly greater functional disability.

**Paper 079**  
**1152-1158** Potential Triaging of Lumbar Spinal Surgery Consults  
**E.K. Wai, Ottawa, ON**

The wait times between referral and initial consultation for a spinal surgeon are amongst the highest in the country. Moreover, the vast majority of patients seen by spinal surgeons are not considered appropriate surgical candidates and hence do not benefit from the

surgeon's expertise in surgical management. Identifying inappropriate patients as a method of "triage" may help reduce the wait times. This paper examined two possible "triage" mechanisms – (i.) questionnaire and (ii.) screening by an acute spine pain centre and has demonstrated in multiple settings that a simple questionnaire of three questions can identify patients requiring surgery and may be more specific than standard referrals, CT/MRI scans, or pain specialist's assessments. Further work is required to refine this screening process and evaluate it prospectively.

**Paper 080  
1158-1204**

Interim Evaluation of Prospective Multi-Centre Outcome Study of Anterior Lumbar Plating for One and Two Level Degenerative Disc Disease<sup>2</sup>

*P. Perkins, Reading, PA, T. Burd, Omaha, NE, P. Huddleston, Rochester, MN, K. Knapp, West Chester, PA, D. Kovalsky, Mt. Vernon, IL, S. Robbins, Milwaukee, WI, K. Wood, Boston, MA.*

This is a multi-center, prospective nonrandomized study of treatment for 1 and 2 level degenerative disc disease between L2 and S1. Patients will be followed for a minimum of 2 years. The primary objective is to measure fusion success in patients with lumbar degenerative disc disease using the ATB and ALIF/FRA Spacer. The secondary objective is evaluation of the patient's quality of life, pain and function. Study endpoints include 6, 12 and 24 month radiographic fusion (primary, evidenced by CT) and quality of life, pain and neurological status, (secondary). Patient diagnosis, demographics and study complications will also be recorded. In every case, the ATB plate and an ALIF/FRA Spacer (one per level) will be implanted. To date 131 patients have undergone surgery. Patients that have returned for 12 month follow-up (n=41) have had a fusion success rate of 81%.

**1204-1208**

Discussion

**Paper 081  
1208-1214**

Complications of Anterior Cervical Discectomy and Fusion Using Recombinant Human Bone Morphogenetic Protein-2

*A. Sethi, S. Bartol, J. Carp, J. Craig, R. Vaidya, Detroit, MI*

This study reports the adverse effects of rhBMP-2 when used in anterior cervical fusion. Forty-six patients with anterior cervical discectomy and fusion were included in the study. Twenty-two patients treated with rhBMP-2 and PEEK cages were compared to twenty-four in whom allograft spacers and demineralized bone matrix was used. Patients filled out Oswestry score questionnaires, VAS for arm and neck pain and had radiographs pre-operatively and at every follow up visit. There was significant improvement in pain scores in both groups of patients. Radiographic examination following surgery revealed end plate resorption in all patients in whom rhBMP-2 was used which was often mistaken as infection by the radiologist. The allograft patients showed a progressive blurring of the end plate-allograft junction. Dysphagia was a common complication and it was significantly ( $p < .02$ ) more frequent and severe in patients in whom rhBMP-2 was used. Post operative prevertebral swelling was also greater in the rhBMP-2 group. The cost of implants was three times higher in PEEK cages and rhBMP group. Despite providing consistently good fusion rates the use of rhBMP-2 in cervical fusion has some adverse effects and a higher cost.

**Paper 082  
1214-1220**

Post-Operative Change in Quality of Life: A Comparison Between Primary Hip and Knee Osteoarthritis and Spinal Stenosis

*R. Rampersaud, R. Barron, J.R. Davey, S.J. Lewis, N. Mahomed, B.*

Ravi, Toronto, ON

This study assessed the impact of surgical treatment for spinal stenosis compared to total hip and knee arthroplasty in improving patients' self-reported quality of life. An age/sex matched cohort (n=90) of patients who had undergone elective primary 1-2 level spinal decompression or without fusion for spinal stenosis and elective primary total hip (n=90) and knee (n = 90) arthroplasty for osteoarthritis were compared at two year follow-up. The mean preoperative Physical Component Summary (PCS) / Mental Component Summary were as follow: Spine -32/43; Hip -30/45; Knee 31/46 (p > 0.5)]. With the exception of the knee MCS (p=0.2), postoperative scores were significantly improved for all groups [Spine -40/53; Hip - 43/51; Knee 39/48 (p < 0.001)]. The results of this unique study show that surgical intervention for spinal stenosis has a similar positive effect compared to total joint arthroplasty.

**Paper 083**  
**1220-1226**

Dalhousie University Spine Database: Prospective Analysis of Disability, Pain, Depression, and Patient-Perceived Influence of Referral Delay on Outcome

**D. Costain, D. Alexander, M. Gross, W. Oxner, Halifax, NS**

With increasing wait times for access to spinal surgical evaluation, we were interested in determining the patient's and surgeon's attitude towards delay in definitive management. 242 new consultations for spine complaints were seen by two orthopaedic surgeons over a two week period in 2005. Patient and surgeon questionnaires were obtained, revealing that only a small percentage of patients were booked for surgery. Patients and surgeons felt that the delay in consultation was not acceptable in 63% and 39% cases, respectively. 26% patients felt that the delay negatively altered their outcome. Data suggest that improvements in referral pattern are necessary to avoid widespread patient dissatisfaction.

**1226-1230**

Discussion

**1100 - 1230**

**Session 8: Paediatrics – Moderators: James G Jarvis, Mariner 2**  
**Ron El-Hawary**

**Paper 084**  
**1100-1106**

The Prevalence of Non-Accidental Injury in Toddlers with Femoral Fractures - The Calgary Experience

**C. Hui, N. Cooper, S. Goldstein, J. Howard, E. Joughin, Calgary, AB**

The purpose of this study was to determine the prevalence of non-accidental injury in toddlers (birth to two years old) presenting with a femur fracture to a single institution within a Western Canadian population. A retrospective case-control study was performed for children who presented during the years 1994 to 2005. The primary outcome measure was the prevalence of non-accidental injury associated with femur fracture. Secondary outcome measures included: patient demographics, injury characteristics, radiologic and other work-up, and suspicion of abuse. The overall prevalence of non-accidental injury was 11% (14/127 patients) and 17% (10/60 patients) in children under 12 months. Multivariate analysis determined that delayed presentation (p=0.001), mechanism of injury (p=0.02) and other associated injuries (p=0.003) were the only independently significant risk factors for abuse. Toddlers who present with femoral fracture are at risk for associated non-accidental injury though perhaps this risk is not as high as previously thought. Regardless, a high index of suspicion is mandatory when these children are encountered and careful screening

with a thorough history, physical examination, and other investigations where indicated, are warranted to rule out associated child abuse.

**Paper 085**  
**1106-1112** Outcome of Proximal Femoral Resection for Severe Spastic Hip Disease

*M. Sabo, T. Carey, K. Leitch, London, ON*

Chronic spastic hip dislocations in patients with spastic quadriplegia can cause significant morbidity with pain, infections, skin breakdown. Eight children who had undergone the Castle procedure were reviewed clinically and radiographically for the success of the surgery. Caregivers were surveyed regarding pain, complications, and overall satisfaction post-operatively. Five of eight children had good outcomes with reduced pain and minimal complications. Average heterotopic ossification was Brooker 1, and a functional range of motion was noted in all. Seven of eight parents were at least somewhat satisfied with the procedure and five of eight would recommend it to others for similar indications. The Castle procedure achieved its goals in five of the eight children, with treatment failure in one, and mixed results in the remainder.

**Paper 086**  
**1112-1118** Correction of Angular Deformity in Adolescents by an Open Wedge Osteotomy Technique

*R. B. Willis, Ottawa, ON*

This paper describes a technique for correction of angulation deformity in adolescents employing a special plate in conjunction with an open wedge osteotomy. Indications for corrective osteotomy included adolescent Blount's disease, growth arrest after physeal injury and development deformity. Ten of the eleven patients had restoration of the mechanical axis with one patient having residual genu varum of 5 degrees. All patients healed uneventfully in 8 to 10 weeks and two patients have required a secondary procedure to remove the relatively high profile plate & screws. This technique should be considered for the adolescent at or near skeletal maturity with an angulatory deformity of up to twenty degrees. The technique allows early healing and restoration of function.

**1118-1123** Discussion

**Paper 087**  
**1123-1129** A Clinicoradiologic Study of the Shoulder in Apert Syndrome<sup>2</sup>

*L. Murnaghan, B. B. Forster, R. Hawkins, B. J. Sawatzky, C. H. Thurgur, S. J. Tredwell, Vancouver, BC*

The purpose of this study was to provide a comprehensive radiographic, clinical, and functional description of the shoulder in Apert Syndrome. A cohort of nine Apert Syndrome patients (ages 9-27) followed at a tertiary care facility was included in this prospective study. Patients were clinically assessed with physical examination and completion of two validated functional assessment tools, the Shoulder Pain and Disability Index (SPADI) and AAOS Paediatrics Questionnaire (PODCI). Radiographs were obtained of both shoulders and a standardized protocol MRI was performed on the dominant shoulder of all participants. All patients had some degree of functional impairment attributable to their shoulder pathology. MR imaging of the shoulder revealed a new finding of inferior glenoid inclination (7/9 patients), which has not been described in the literature. Radiographs confirmed previous imaging findings of gleno-humeral dysplasia. The novel MRI component demonstrated consistent inferior glenoid inclination, which may be a significant factor in their shoulder impairment. MR imaging revealed no

significant soft tissue or degenerative abnormalities to account for their clinical disability. The global functioning of patients with Apert syndrome is equivalent to patients with juvenile rheumatoid arthritis.

**Paper 088  
1129-1135**

Type III Supracondylar Fractures of the Humerus in Children: an Analysis of Closed Versus Open Reduction

*P. J. Moroz, S. Al-Amir, R. Baxter Willis, Ottawa, ON*

Clinical and radiographic outcomes of Type III supracondylar fractures in children are compared based on operative approach: open versus closed reduction and pinning. Open cases achieved somewhat better clinical results overall but with no worse a complication profile compared with closed reduction cases. The threshold for open reduction of these sometimes difficult fractures should be lowered. Operative approach in most open cases is determined by the fracture pattern and the resulting soft tissue damage remaining.

**Paper 089  
1135-1141**

Management of Late Presenting Displaced Supracondylar Elbow Fractures - A Novel Technique

*K. Pruthi, New Delhi, India*

Delayed presenting supracondylar elbow fractures in children is a unique problem, but not uncommon in our hospital settings. Most of the clinicians wait for the fracture to unite and resort to osteotomy for cubitus varus at a later date. We have made an effort to develop a technique which would allow us to manipulate and reduce the fracture through a limited incision. This technique has been successful in manipulation of fractures presenting as late as 4 weeks after the trauma. Through this paper we have tried to analyse the performance of this surgery.

**1141-1145**

Discussion

**Paper 090  
1145-1151**

Effects of Serial Casting with and without Botulinum Toxin Injections as Interventions for Spastic Ankle Equinus<sup>2</sup>

*T. Carey, K. Leitch, C. Scholtes, F. Stephenson, London, ON*

Ankle equinus contractures are a common clinical problem encountered in children with cerebral palsy. A review of the literature shows mixed results regarding improvements in contractures obtained with serial casting with or without Btx-A injections. Therefore, the objective of this study was to examine passive range of motion at the ankle and gait characteristics in children with CP who have undergone serial casting treatment for ankle equinus, either with or without Btx-A injections to the plantarflexors. Fifty SC treatments with or without Botox from our centre were examined. Eighteen of these treatments were SC only and 32 of the treatments were SC with Btx-A injections. Results from SC only and Btx-A and SC were not significantly different based on the results. Similar ranges of motion at the end of the treatment were obtained from both treatments, and the treatments have similar success rates. Based on these results, it appears that both types of interventions resulted in significant changes in ankle passive range of motion. Future work is needed to further explore the outcomes associated with serial casting only and Btx-A and serial casting treatments.

**Paper 091  
1151-1157**

Gait Analysis of 5-Year Old Children with Clubfoot Treated with the French Functional Technique

*R. El-Hawary, Halifax, NS, K. Jeans, L. A. Karol, B. Stephens Richards, Dallas, TX*

Currently, clubfoot is initially treated with non-operative methods including Ponseti casting and the French functional technique. The gaits of 33 patients (52 clubfeet) treated with the French functional technique were studied. At age 2 years, the majority of these patients had normal sagittal plane ankle motion. Gait disturbances, when present at this age, were generally ankle equinus, foot drop and in-toeing. By the age of 5 years, 71% of these patients underwent surgery for their clubfeet. When re-tested in the gait laboratory at age 5 years, the proportion of feet with normal sagittal plane ankle motion did not change significantly, however, their resultant gait disturbances, when present, were predominantly calcaneus rather than equinus and foot drop. This technique may result in equinus gait in a small proportion of patients. By subsequently treating these patients surgically, over-lengthening may occur and result in calcaneus gait. The French originators of this technique now incorporate an early gastrocnemius fascial lengthening as part of their technique. This modification should improve the gait characteristics observed at 2 years of age and should decrease the necessity for late surgery that may have contributed to the gait characteristics observed at 5 years of age.

**Paper 092**  
**1157-1203**

Pedobarographic Profiles of Children with Clubfeet  
**D. Jacks, C. Alvarez, A. Black, M. DeVera, Vancouver, BC**

Clubfoot is a complex three-dimensional deformity that is difficult to assess by clinical examination and conventional radiography. Pedobarography has been established as a useful technique for measuring pressure profiles of the foot, however its utility in the clubfoot population has not been established. Pedobarographic profiles were obtained for clubfoot patients aged 18 months to 4 years (n = 190) and compared to aged matched controls (n = 82). Each foot was divided into five segments (heel, medial and lateral midfoot, medial and lateral forefoot) and each segment was analyzed for timing of initiation of force, timing of termination of force, force distribution, and impulse. 9 of 25 variables were found to be significantly different in the clubfoot population (p < .05). The heel showed a reduced force and impulse. The lateral midfoot showed an increased force and impulse with an earlier initiation and later termination of forces. The medial forefoot showed a decrease force and impulse with a later initiation of force.

**1203-1207**

Discussion

**Paper 093**  
**1207-1213**

Early Follow-up of the Fibular Sparing "Z" Osteotomy Ankle Arthrodesis: Clinical Outcome and Gait Analysis.  
**M. Glazebrook, J. Amirault, K. Arsenault, A. Hennigar, A. Raizah, K. Trask, Halifax, NS**

The Fibular Sparing "Z" Osteotomy (FSZO) technique for ankle arthrodesis utilizes a lateral approach where the fibula is osteotomized and reflected posteriorly on a soft tissue hinge to allow easy access to the ankle joint for an anatomic arthrodesis. Outcome assessment of patients (n=10) treated for end stage ankle arthritis using a FSZO ankle arthrodesis at 6 months follow up revealed a significant improvement in the health related quality of life (SF36) and joint specific (American Orthopedic Foot and Ankle Society Ankle-Hindfoot, Ankle Osteoarthritis Scale, Foot Function Index) clinical outcome scores. The 6 month gait assessment showed improvement in surge, lurch, and functional leg length difference. The FSZO ankle arthrodesis technique provides improvement in clinical outcome scores and a more efficient gait at early follow up.

Superior Mesenteric Artery Syndrome Complicating Spinal Fusion in Children

**Paper 094**  
**1213-1219**

**J.G. Jarvis, S. Sathiaselvan, Ottawa, ON**

Superior mesenteric artery (SMA) syndrome is a rare medical complication of scoliosis surgery. In order to delineate the clinical features, progression and treatment of duodenal obstruction due to SMA syndrome after spinal fusions and to determine the relationship between spinal deformity correction and SMA syndrome, a retrospective study of all patients developing SMA syndrome following spinal fusion was conducted at a tertiary care centre. Charts were reviewed and the information gathered was divided according to non-orthopaedic and orthopaedic parameters. Radiographic correction of the thoracic and lumbar spine was calculated for the coronal and sagittal planes. There were five female and three male patients. BMI index average was 17.6. This study identified purely asthenic body habitus (low BMI) and significant coronal correction in the lumbar region as risk factors for the development of SMA syndrome after spinal fusion.

**Paper 095**  
**1219-1225**

Reconstruction of Syndactyly and Polysyndactyly of the Toes Using a Dorsal Pentagonal Island Flap: A Technique that Allows Primary Skin Closure Without the Use of Skin Grafting.

**L. Yi-Jia, T. L. Chuan, L. E. Hin, Republic of Singapore**

Syndactyly and polysyndactyly of the feet are common congenital conditions of the foot. A dorsal flap is traditionally used for the web space reconstruction, with skin grafts for the bases of the toes. Skin grafting has associated morbidity, and can result in pigmentation mis-match. Single-stage direct closure using a specially designed dorsal pentagonal island flap has advantages including a reduction of morbidity from avoidance of skin grafting, and shorter surgery. Four patients with 6 feet were included in the study. The average duration of follow-up was 19.8 months. At final follow-up, all patients had acceptable web depth and pulp contour. The distance between bilateral proximal inter-phalangeal joints of adjacent toes, and the web slope of the reconstructed web space were compared. Complications included partial synechia, cellulitis and keloid formation.

**1225-1230**

Discussion

**1100-1230**

**Session 9: Trauma Upper Extremity**

**Highland 6/7**

**Moderators: Edward J. Harvey, Roderick D. Martin**

**Paper 096**  
**1100-1106**

Effects of Screw Position on Construct Stiffness, Bone Strain and Plate Strain in Fracture Fixation with Locking Plate

**M. Prud'homme Foster, S. Papp, P. Poitras, Ottawa, ON**

Biomechanical stability is important for fracture healing. With standard plating, longer plates with screw spread increases initial stability; this has not been tested with locking plates. This study investigated the effects of screw spread on construct stiffness and bone and plate strain during fixation of a diaphyseal fracture using a 12-hole locking plate. Fifteen measurements were performed in four-point bending on each of four screw configurations over three trials in comminuted and whole bone models. The stability of three screws placed far from the fracture gap was 30% lower than three screws with spread ( $298.9 \pm 20.3$  vs  $209.0 \pm 10.0$  N/mm) in the comminuted model ( $p < 0.05$ ) while bone strain was higher ( $23.3 \pm 13.8$  vs  $6.2 \pm 2.5$  mm/mm) in the whole model ( $p < 0.05$ ). There were no significant differences in plate strain between

configurations, and no differences in stiffness between three and six screws. The differences in stability provided by the screw configurations may influence fracture healing.

**Paper 097**  
**1106-1112** The Effect of Associated Injuries on the Outcome of Patients with Distal Humeral Fractures  
*J. L. Howard, J. Agel, D. P. Barei, C. Coles, Rochester, MN*

This study was designed to answer the question "Is there a difference in outcome following operative management of AO type C distal humerus fractures for patients with associated injuries compared to those with isolated injuries?". Outcomes for isolated distal humeral fractures in this study were comparable to previously published literature. Patients who sustained associated injuries at the time of distal humeral fracture had more stiffness and a worse outcome on a global outcome score, but a similar outcome on a limb specific outcome score.

**Paper 098**  
**1112-1118** Fixation of Long Bone Segmental Defects: a Biomechanical Study<sup>2</sup>  
*E.H. Schemitsch, D. Garneau, Montreal, QC, P. A. Cole, St. Paul, MN, R. Zdero, Toronto, ON*

This study aimed to determine the biomechanical properties of three constructs used for fixation of complex segmental bone defects, such as occurs in recalcitrant non-unions. A transverse mid-shaft osteotomy was performed in fifteen 3rd generation large composite femurs. A 12mm segmental defect was created. Fixation was undertaken as follows: Construct F (Fibula): Lateral non-locking plate and intramedullary fibula strut Construct LP (Locking Plate): Lateral locking plate Construct S (Strut): Lateral non-locking plate and medial cortical strut The struts were fashioned from 3rd generation composite bones to simulate allograft struts. Axial, Torsional and Bending Stiffness as well as Load-to-Failure were determined using an Instron 8874 Materials Testing Machine. Overall, construct S was the stiffest, construct F intermediate and construct LP the least stiff. Both construct S (6108 N) and construct F (5344 N) had a greater Load-to-Failure than the LP construct (2855 N) (p=0.005 and 0.001 respectively). In addition to biomechanical data, anatomic and biologic factors need to be considered before choosing one of the above constructs.

**1118-1123** Discussion

**Paper 099**  
**1123-1129** Volar Versus Dorsal Locking Plate Fixation of Dorsally Unstable Distal Radius Fractures: A Biomechanical Study  
*D. Young, R. Feibel, S. Papp, P. Poitras, N. Ramachandran, Ottawa, ON*

Purpose: There is theoretical concern that volar plating has a disadvantage in cantilever bending when axially loaded dorsal to the neutral axis. This has implications for post-operative rehabilitation protocols and overall outcomes related to maintenance of reduction. Most recent biomechanical studies have compared volar locking plates to traditional dorsal non-locked plates. The purpose of this study was to compare the biomechanical stability of volar and dorsal locking plate fixation in a model of dorsally unstable distal radius fractures.

**Paper 100**  
**1129-1135** Percutaneous Pinning of Intra Articular Fractures of Distal Radius  
*D. Pulisetty, J. G. Ramon, East St. Louis, IL*

This prospective study examines the outcome of closed pinning of the

unstable intra articular distal radius fracture. Sixty two patients (52 below 50 years age) were operated upon using closed percutaneous technique. Only k wires were used. In a two step technique the articular surface is held with transverse pins. Then, transosseous intramedullary pins were inserted from radial and dorsal aspects of the distal radius to provide the all important axial stability. With a mean follow up of 6 months, all fractures had healed. No loss of reductions, no radial cutaneous nerve, no tendon related complications, or reoperations were encountered. Two wrists with concomitant unstable distal ulnar fractures required external fixator. Minimal subsidence from a 'concentric collapse' compresses the fracture. The collective length of k wires sustains the reduction. With a learning curve involved, once this tissue sparing inexpensive technique is mastered, excellent result is always assured.

**Paper 101**  
**1135-1141**

The Radiographic Quantification of Scapular Winging Following Malunion of Displaced Clavicular Shaft Fractures.

*J. A. Hall, M. Faruggia, M. D. McKee, D. Pearce, J. Potter, Toronto, ON*

Fourteen patients with symptomatic midshaft clavicle malunions demonstrating scapular winging were analyzed with a rigid and reproducible CT protocol. The mean time from fracture was 29 months. There were 11 males with a mean age of 33.1 years. The mean clavicular shortening was 17mm. The mean anterior-rotation through the malunion was 9 degrees, and showed a trend toward significance (P=0.1). The distal fragment was anteriorly translated 13.5mm relative to the opposite normal shoulder. The scapula was displaced laterally 10.3mm from the nearest spinous process, superiorly 16.3mm and 12.2mm off the chest wall on average compared to the opposite normal shoulder. Ours is the first study to document and quantify scapular malalignment in this clinical setting. Since most shoulder musculature is scapular based, identification and quantification of scapular malalignment may have important ramifications in decision-making regarding treatment of clavicle fractures and malunions.

**1141-1145**

Discussion

**Paper 102**  
**1145-1151**

Surgical Site Marking in 2006: Compliance or Complacency?

*E. Pally, G. Johnston, Saskatoon, SK*

25% of orthopedic surgeons in practice for 25 years will likely perform at least one wrong site surgery, risk factors including emergency surgeries, excessive time pressures, multiple surgeons or procedures, unconscious patients, and arthroscopy. The Canadian Orthopedic Association initiated a skin marking protocol in an effort to prevent wrong site surgery. The purpose of this study was to investigate the site marking practice for emergent and non-emergent orthopedic surgery at the authors' orthopedic teaching program. One author recently attended surgeries at two hospitals, documenting the presence or absence of an unambiguous mark in the draped surgical field. Although emergent and elective cases were "chosen", there was no intentional selection bias. Forty-eight surgeries by 11 surgeons were evaluated. After draping a mark was visible in 67% of emergent cases, and in 90% of non-emergent cases. Nine cases had no mark visible. The authors suggest that surgeons were near fully "compliant" with the COA protocol in non-emergent cases, but "complacent" in emergent ones. Wrong site surgery is an event that results in irrevocable harm to the patient - orthopaedic surgeons should recognize the value of pre-operative skin marking for all procedures, and re-evaluate their own personal practices.

**Paper 103**  
**1151-1157** Too Good to Be True? An Evaluation of Statistically Significant Findings in Orthopaedic Trauma Randomized Trials  
*M. Bhandari, J. Siegel, J. Sung, P. Tornetta III, Hamilton, ON*

Our review suggests that statistically significant results in orthopaedic trials have the following implications-1) they may not always represent clinically important differences, 2) small trials with large treatment effects (>50% relative risk reduction) may be inflated estimates of the true effect. Readers should interpret the results of such small trials with these issues in mind.

**Paper 104**  
**1157-1203** The Effect of CAOS Techniques on Trainee Learning  
*W. Gofton, Ottawa, ON, D. Backstein, A. Dubrowski, F. Tabloie, Toronto, ON*

Rapid advances in computer-assisted surgery (CAS) have led to increasing integration of this technology into the orthopaedic training environment. The real-time feedback provided by CAS improves performance; however, it may be detrimental to learning. The primary purpose of this study is to determine if the form of feedback provided by computer-assisted technology (concurrent visual feedback) compromises the learning of surgical skills in the trainee. Forty-five residents and senior medical students were randomized to one of three training groups; Conventional (CT), Knowledge of Results (KR) and Computer Navigation (CN), and trained to determine acetabular cup positioning on a bench model. In this study computer navigation was found to improve performance without an effect on learning as determined by retention testing. However, until further work clarifies the effect of concurrent augmented feedback on intra-operative learning, educators need to also be aware of the potential detrimental effects.

**1203-1207** Discussion

**Paper 105**  
**1207-1213** Complications of Arthroplasty for Proximal Humeral Fractures: A 2 to 10 Year Multicentre Follow-up Study  
*R. Bicknell, P. Boileau, B.J. Burger, C. Chuinard, J.S. Coste, W.J. Willems, Nice, France*

The purpose is to report the complications following arthroplasty for proximal humeral fractures. In a multicenter study, 406 patients were prospectively evaluated. Three hundred patients with an average follow-up of 45 months (range, 24-117) were available for review. At follow-up, the average Constant score was 54 points (range, 14-95) and active forward elevation was 103° (range, 10°-180°). Eighty-one percent were satisfied or very satisfied. We observed a 59% rate of late complications, including a high rate of tuberosity-related complications (72% malunion or nonunion). Initial tuberosity malposition was present in 35% of the patients. Secondary migration despite initial good positioning was observed in 24%. Tuberosity complications were associated with a poor final Constant score, motion and shoulder pain (p=0.001). Re-operation was performed in 5.3% of the cases. In comparison with those immobilized, patients mobilized with 'early passive motion' had twice the incidence of secondary tuberosity migration (27% versus 14%, p=0.004).

**Paper 106**  
**1213-1219** Indomethacin Decreases Cell Damage Due to Elevated Compartment Pressure: An Intravital Videomicroscopy Study  
*A. Manjoo, A. Badhwar, A. Bihari, D. Sanders, London, ON*

Elevated intracompartmental pressure (ICP) results in muscle damage. Because previous studies identified inflammation associated with elevated ICP, we wished to determine whether administration of indomethacin reduces muscle damage from elevated ICP. 16 adult rats were randomized to 4 groups: control, indomethacin only, elevated intracompartmental pressure only, and indomethacin plus elevated intracompartmental pressure. After 45 minutes, hindlimb fasciotomy was performed, and intravital videomicroscopy was used to measure capillary perfusion, inflammation, and muscle cell damage. Rats with elevated intracompartmental pressure treated with indomethacin demonstrated improved perfusion and markedly reduced muscle damage compared to animals with elevated ICP only. However, there was no difference in inflammatory activation comparing indomethacin treatment to no treatment. Treatment of elevated ICP with indomethacin improved microvascular perfusion and reduced cell damage. The protective mechanism of indomethacin is unknown but may have important future clinical benefit.

**Paper 107  
1219-1225**

A Randomized Trial of Open Reduction Internal Fixation versus Total Elbow Arthroplasty for Distal Humeral Fractures in Elderly Patients<sup>2</sup>  
**C.J.H. Veillette**, Rochester, MN, M. D. McKee, L. Wild, Canadian Orthopaedic Trauma Society, Toronto, ON

We conducted a prospective randomized controlled trial to compare functional outcomes, complications and reoperation rates in elderly patients with displaced intra-articular distal humerus fractures treated with open reduction internal fixation (ORIF) or primary semi-constrained total elbow arthroplasty (TEA). Five patients randomized to ORIF were converted to TEA intraoperatively. This resulted in 15 patients (average age 77 years) in the ORIF group and 25 patients (average age 78 years) in the TEA group. MEPS was significantly improved at 3, 6, 12 months and 2 years in patients with TEA compared with ORIF. DASH scores showed a significant improvement for TEA compared with ORIF between 6 weeks and 6 months but not at 12 months and 2 years. Reoperation rates for TEA (3/25) and ORIF (4/15) were not statistically different. TEA for the treatment of comminuted intra-articular distal humeral fractures provides improved functional outcome compared with ORIF.

**1225-1230**

Discussion

**1230 - 1315**

Lunch with Exhibitors

**Metro  
Centre**

**1315 - 1345**

COA Business Meeting  
**All members please attend**

**Port Royal B**

**1230 - 1315**

Executive Committee/ New Member Lunch  
(Joined in past six years)

**Highland 10**

**1345 - 1715**

SUBSPECIALTY HALF DAYS

**1515-1545**

Break and poster session with exhibitors  
**Please visit the COA's industry partners in the Metro Centre**

**Arthroplasty Subspecialty Half Day  
Paper times 1445-1545 and 1645-1715**

**Port Royal B**

**Paper 108  
1445-1451**

The 20-25 Year Outcome of the HD-2 Matte Finished Cemented THR  
**M. Skutek**, R.B. Bourne, A. Burns, S. Kearns, G. Krishna, C.H.

Rorabeck, London, ON

The purpose of this study was to analyse the 20-25 year outcomes of 195 cemented, matte finish, HD-2 THRs performed in 166 patients with osteoarthritis of the hip by two surgeons. The 195 THRs (166 patients) were followed prospectively by clinical assessment using the Harris Hip Score (HHS) and radiographic analysis. 149 patients (90%) died with their implant still functioning or still had a successful implant at 20-25 years follow-up. Ten patients (6%) underwent a revision for aseptic loosening. Radiographically, 85% of the acetabular components and 94% of the femoral components were well fixed. At twenty five years, the calculated cumulative survival rate revealed excellent results for revisions (83%±6, any cause) and aseptic loosening (86%±6, femoral component, 93%±3, acetabular component). The surviving patients had a good mean follow-up and radiographic fixation, proving the exceptional long-term success of this implant.

**Paper 109**  
**1451-1457**

Wear Performance of Highly Crosslinked Polyethylene in Total Hip Arthroplasty: A Prospective Randomized Controlled Study at 5 Years Minimum Follow-Up<sup>2</sup>

**R.W. McCalden**, R. B. Bourne, K. Charron, D. Chess, S. J. MacDonald, C. H. Rorabeck, London, ON

This study reports on the clinical and wear performance of a prospective randomized controlled trial comparing highly cross-linked (XLPE) to conventional polyethylene (PE) in total hip arthroplasty at five years minimum follow-up. 50 patients received a PE liner (2.5 MRads; gamma-in-nitrogen sterilization) and 50 patients received a XLPE liner (10Mrads; gas-plasma sterilization). At average follow-up of 6.0 years (range 5.1-6.8 years), there were no differences in Harris Hip, WOMAC or SF-12 scores. XLPE had a significantly lower ( $p=0.03$ ) steady-state head penetration rate of 0.018 mm/year compared to 0.050 mm/year for PE (approximately 64% reduction). Thus, mid-term follow-up appears to demonstrate a significant wear reduction (based on head penetration rates) afforded by first generation XLPE. Long-term follow-up is required to demonstrate the clinical benefit of this new material.

**Paper 110**  
**1457-1503**

Ceramic-On-Ceramic Bearing Surfaces in Total Hip Arthroplasty: Is It a Safe Option for the Younger Patient?

**A. Alturki**, G. Dobbin, R.K. Leighton, M.C. McCaffrey, Kelly Trask, Halifax, NS

The ideal bearing surface for total hips is debatable. Ceramic-on-ceramic bearings have gained increased popularity because of low wear rate. However, ceramic fractures with subsequent catastrophic failures have been reported. Methods: prospectively collected data for 75 ceramic-on-ceramic total hip replacements with minimum follow up of 18 months. Average age at time of surgery was 47 years. Results: complications : One posterior dislocation, two intra-operative calcar fractures that needed wiring, one intra-operative fracture of the acetabular liner, two cases of impingement (one of which resulted in a revision), and another revision for periprosthetic fracture. No revisions were performed for loosening or catastrophic failures. No wear, loosening, or osteolysis was seen on radiographs. Conclusion : Ceramic-on-ceramic bearing surfaces in total hip arthroplasty are a safe option with outcome equivalent to standard THR in the short term. It may provide a more durable prosthesis for younger patients.

**Paper 111**

Early Results of a Hip Resurfacing Trial<sup>2</sup>

**1503-1509** *P.R. Kim, P. Beaulé, A. Conway, Ottawa, ON, M. Dunbar Halifax, NS, Y. Laflamme, Montreal, QC*

A prospective multicenter trial was undertaken to assess the outcome of hip resurfacing arthroplasty. To date 188 patients have been enrolled. Revision surgery has been performed in 9 patients (4.8%). Four for acetabular loosening, 2 for neck fracture, 1 for femoral loosening, 1 for impingement and 1 for persistent pain. Eight other patients have undergone re-operation without revision. The high early revision rate appears to be mainly technique related. Hip resurfacing is associated with a steep learning curve. The overall clinical results have shown very good return of function. We continue to perform hip resurfacing but caution should be used when first undertaking this procedure.

**1509-1515** Discussion

**Paper 112**  
**1645-1651** Do Metal Ion Levels in Metal-on-Metal THAs Change Over Time – Midterm Results of a Prospective Randomized Clinical Trial

*S. MacDonald, R. B. Bourne, D. Chess, R. W. McCalden, C. H. Rorabeck, A. Thompson, London, ON*

Purpose: We performed a prospective, randomized, blinded clinical trial comparing metal versus polyethylene bearing surfaces in patients receiving a THA.

**Paper 113**  
**1651-1657** Metal Ion Levels Following Hip Resurfacing Arthroplasty  
*P.R. Kim, P. Beaulé, A. Conway, Ottawa, ON, M. Dunbar, Halifax, NS, H. Hrushowy, Ottawa, ON, Y. Laflamme, Montreal, QC*

A prospective study was undertaken to determine the levels of cobalt and chromium in the serum, erythrocytes and urine of patients undergoing metal on metal hip resurfacing arthroplasty. A significant increase in ions was seen in all patients. Median serum cobalt levels increased from 1.1 ug/l at one year to 1.6 ug/l at two years. Median serum chromium levels increased from 1.9 ug/l at one year to 3.3 ug/l at two years. Median erythrocyte cobalt levels increased from 1.0 ug/l at one year to 1.3 ug/l at two years. Median erythrocyte chromium levels remained stable at both one and two year follow-up (1.2 ug/l). No correlation was seen between ion levels and patient activity, implant position, clinical scores or BMI. Further study is required to determine the clinical significance of these elevated ions.

**Paper 114**  
**1657-1703** Metal Ion and Oxidative Stress Marker Levels in Blood of Patients After Hip Resurfacing: a Comparison with 28 mm- and 36 mm- Head Metal-on-Metal Hip Prostheses<sup>1</sup>

*J. Antoniou, O.L. Huk, F. Mwale, A. Petit, D. J. Zukor, Montreal, QC*

In the present study, we compared the concentrations of metal ions in blood of patients with articular surface replacement (ASR®, DePuy Orthopaedics) and metal-on-metal (MM) total hip arthroplasty (THA). Since metal ions are potent inducers of oxidative stress, total antioxidant, peroxide, and nitrotyrosine levels (oxidative stress markers) were also measured in plasma of the patients. Our results show that, at 1 year post-operation, the concentration of ions in patients with ASRs is similar than those in patients with MM THAs. Moreover, results suggest that metal ions liberated from MM bearings do not induce damage to macromolecules by oxidative stress in plasma of patients.

**Paper 115**  
**1703-1709** Serum Cobalt and Chromium Levels after Hip Resurfacing with the Cormet 2000: Effects of Gender and Femoral Head Size<sup>2</sup>  
*D.G. Allan, B. W. Dyrstad, J. C. Milbrandt, B. K. Parsley, Springfield, IL*

Metal-on-metal (MOM) hip resurfacing devices are known to release metal ions locally and into the systemic circulation. Previous studies suggest that larger prosthetic head size will correlate to reduced wear properties and may result in lower systemic release of metal ions. This project assessed the effect of femoral head size on serum cobalt (Co) and chromium (Cr) levels in subjects after unilateral hip resurfacing with the Cormet 2000 prosthesis.

**1709-1715** Discussion

**Trauma Subspecialty Half Day - Presented by Port Royal C**  
**Canadian Orthopaedic Trauma Society**  
**Paper times 1445-1515**

**Paper 116**  
**1445-1451** Innovative Mini Invasive Technique for Proximal Humerus Fracture Fixation With a Locking Plate – Multi-Centres Study  
*D. Rouleau, B. Benoit, G. Berry, E. Harvey, G. Y. Laflamme, R. Reindl, Montreal, QC*

A multicentres prospective study was undertaken to evaluate the safety and the functional results of a new surgical technique for proximal humerus fixation. The proposed technique used a minimally invasive approach and fixation with a locking plate. 30 patients were operated using this technique. At the last follow-up (average 19 months, 12 months minimum), the median Constant score was 68 points, with an age adjusted score of 76. The mean DASH score was 27 points. All fractures healed within the first 6 months with no loss of correction. There was no axillary nerve damage. The authors concluded that it is a safe and reliable surgical technique. Special surgical pearls must be taught to protect axillary nerve and to give a reliable fixation.

**Paper 117**  
**1451-1457** Challenging the Dogma of the Seven Centimetre Rule: A Prospective Study Evaluating Incision Placement and Wound Healing for Tibial Plafond Fractures  
*J. L. Howard, Rochester, MN, J. Agel, D. P. Barei, S. K. Benirschke, S. E. Nork, Seattle, WA*

This prospective observational study was designed to report the soft tissue complications after fixation of tibial plafond fractures in an effort to challenge the current recommendation that a seven centimeter skin bridge represents the minimum safe distance between surgical incisions. Despite a measured skin bridge of less than seven centimeters in 85% of instances, the soft tissue complication rate was low in this group of patients. With careful attention to soft tissue management and surgical timing, incisions for plafond fractures may be placed less than seven centimeters apart, allowing the surgeon to optimize exposures based on the pattern of the injury.

**Paper 118**  
**1457-1503** What Should We Do with the Syndesmosis Screw?  
*A. Manjoo, D. Sanders, C. Tieszer, London, ON*

Screw fixation of the injured syndesmosis restores stability, but may reduce motion. We wished to determine whether functional and radiographic results are improved by removal of syndesmosis screws.

107 adults with ankle fractures requiring syndesmosis screw fixation between 2001 and 2005 were retrospectively studied. Functional outcomes were measured using the Lower Extremity Measure (LEM) and the Olerud Molander ankle score (OM). Radiological review [N=107] included tibiofibular clear space, tibiofibular overlap, and medial clear space. Overall, functional outcomes were improved in patients with broken, loosened, or removed screws compared to those with intact screws. The tibiofibular clear space was narrowed in patients with intact screws compared to removed, broken or loosened screws. Patients with broken, loosened or removed syndesmosis screws had better functional outcome compared to intact screws. The syndesmosis allows fibular rotation, shortening and translation during gait; the presence of an intact syndesmosis screw may restrict this motion.

**Paper 119**  
**1503-1509**

Functional Outcome of Supracondylar Femur Fractures

**S. Ward, N. Aslam, D. Beaton, B. Escott, E. Kovacs, M. McKee, E. Schemitsch, J. Waddell, Toronto, ON,**

To evaluate functional outcome following supracondylar femur fracture, we collected clinical and patient-based outcome data from 61 patients who had sustained supracondylar femur fractures between 1990 and 2004. Mean SF-36 V2 scores were lower than Canadian population norms indicating decreased function or greater pain, while mean SMFA scores were higher than published population norms indicating greater impairment and bother. At the univariate level, the presence of complications was a significant predictor of both the SMFA bother and dysfunction scores, while positive smoking status was a significant predictor of the bother score. Based on a multivariate linear regression model, the presence of complications and positive smoking status were both significant predictors of a higher SMFA bother score. In the multivariate model for SMFA dysfunction score, the presence of complications and the presence of comorbidities were significant predictors of a higher score. Comparing SF-36 and SMFA scores with published population norms, supracondylar femur fractures were associated with residual impact. Based on our analysis, smoking, the presence of medical comorbidities at the time of fracture, and the occurrence of complications following fracture repair were the main predictors of poorer patient outcomes following supracondylar femur fracture.

**1509-1515**

Discussion

**Sports Medicine Subspecialty Half Day**  
**Paper times 1345-1415 and 1645-1715**

**Highland 6/7**

**Paper 120**  
**1345-1351**

An RCT Comparing the Effectiveness of Functional Knee Brace to Neoprene Sleeve Use Following ACL Reconstruction<sup>2</sup>

**T. Birmingham, D. Bryant, P. Fowler, J.R. Giffin, S. Griffin, A. Kirkley, R. Litchfield, London, ON**

The primary objective of this study was to compare postoperative outcomes in patients using an ACL functional knee brace and patients using a neoprene knee sleeve. 150 patients were randomized to receive an ACL functional knee brace (n=76) or a neoprene sleeve (n=74) at their 6 week postoperative visit following primary ACL reconstruction. Patients were assessed preoperatively, 6 weeks, 6, 12, 18 and 24 months postoperatively. Outcome measures included disease-specific quality of life (ACL QOL), KT 1000 and single limb forward hop test administered by a blinded research assistant. There

were no significant between-group differences for any of the outcomes at 1 and 2-year follow-ups. Confidence intervals for between-group differences are narrow and exclude clinically important differences. These findings suggest a functional knee brace does not result in superior outcomes over a neoprene sleeve following ACL reconstruction.

**Paper 121**  
**1351-1357**

A Comparison of Delays for Anterior Cruciate Ligament (ACL) Reconstruction and the Occurrence of Meniscal Injury in Two Canadian Provinces<sup>2</sup>

**D. Chan, I. Assiri, K. Gooch, N. Mohtadi, J. Sun, Calgary, AB, P. Guy, Vancouver, BC**

This study determined if length of time between index injury and ACL reconstruction(ACLR) correlates with incidence of meniscal surgery in Alberta, and compared the results to a previously-reported study based in Quebec. Alberta Health and Wellness databases were searched for primary ACLR cases between 2002-2005. Dates of initial injury evaluation, meniscal procedures and ACLR were identified. Over a 3-year period, 3382 ACLRs were performed in Alberta, 3812 in Quebec. Of these, 76% in Alberta and 45% in Quebec required meniscal procedures. On average, Albertans waited 1389 days from injury to ACLR versus 422 days in Quebec. Alberta patients not requiring meniscal procedures waited 1212 days, requiring meniscal repair-1143 days, and requiring meniscectomy-1519 days, compared to 251, 413 and 676 days in Quebec, respectively. Three-percent in Alberta had ACLR

**Paper 122**  
**1357-1403**

Prediction of Anterior Cruciate Ligament Hamstring Autograft Size Using Preoperative Magnetic Resonance Imaging

**S. D. M. Wotherspoon, J. R. Giffin, P. J. Fowler, R. B. Litchfield, M. Neligan, K. R. Willits, London, ON**

To predict hamstring autograft size preoperatively for ACL reconstruction, the relationships between patient body size (BMI, height, and weight) and harvested graft size was defined, as well as the relationship between the preoperative MRI cross-sectional area (CSA) of hamstring tendons and harvested graft size. 104 patients (62M, 42F) were analyzed. Cross-sectional area (CSA) of the semitendinosus and gracilis was measured on a single axial MRI image at the level of the knee joint and compared to the diameter of the four-strand hamstring autograft measured intra-operatively. Body size is a poor predictor of hamstring graft size in ACL reconstruction. MRI assessment of hamstring tendons can be a useful tool for preoperative planning. When the total CSA of hamstring tendons was greater than 12mm<sup>2</sup>, a graft of 7.0mm or greater could be predicted 93% of the time.

**Paper 123**  
**1403-1409**

Changes in Knee Joint Moments and Muscle Activity during Walking Following Combined ACL Reconstruction and HTO<sup>2</sup>

**C. Kean, T.B. Birmingham, J. Garland, J. R. Giffin, T. R. Jenkyn, I. C. Jones, London, ON**

This quantitative gait analyses study of 18 patients suggested that peak knee flexion and adduction moments and the extent of quadriceps-hamstring co-contraction ratio during walking decreased 1-year following combined simultaneous ACL reconstruction (hamstring autograft) and medial opening wedge HTO. These findings are consistent with an overall reduction in knee joint loading during walking following this combined procedure.

1409-1415 Discussion

**Paper 124**  
**1645-1651** The Instability Severity Index Score (ISIS Score): A Rational Approach for Patient Selection in Arthroscopic Bankart Repair  
*F. Balg, Sherbrooke, QC, P. Boileau, Nice, France*

Even with modern suture anchor techniques, recurrence represents the leading complication of arthroscopic anterior shoulder stabilization, emphasizing that it cannot apply to all patients and selection must be done. A case-control study was undertaken, comparing patients identified as failures after arthroscopic suture anchor Bankart repair with those who had a successful result. 131 consecutive unselected patients were followed for at least 2 years. Age below 20 yo, involvement in athletic competition, participation in contact or forced-overhead sports, presence of shoulder hyperlaxity, Hill-Sachs lesion visible on AP external X-ray, and loss of inferior glenoid sclerotic contour on AP x-ray were all factors related to increased recurrence. These factors were integrated in an ISIS score and tested retrospectively on the same population. Patients with a score of 6 or less had a recurrence risk of 10% and those over 6 had a recurrence risk of 70%.

**Paper 125**  
**1651-1657** Do Males Really Have a Better Outcome Than Females Following High Tibial Osteotomy? A Cohort Study  
*P. J. Fowler, D. Bryant, B. Chesworth, London, ON*

To examine the effect of gender on outcome of high tibial osteotomy (HTO) for varus gonarthrosis at a minimum 2 year follow-up, the strength of the association between post-operative WOMAC osteoarthritis index scores and the independent variables of gender, age, BMI, time (months from surgery) and pre and post operative mechanical axis angles (MAA) measured on standing double-leg hip-to-ankle radiographs was estimated using multipel linear regression. This analysis revealed that none of the independent variables contributed significantly to the WOMAC outcome scores. The results of this study indicate that gender is not a significant predictor of outcome following medial opening wedge HTO.

**Paper 126**  
**1657-1703** Do Anthropometric Features Affect the Graft Thickness in ACL Reconstruction?  
*S. Thomas, R. Bhattacharya, D.J. Kramer, Tynemouth, UK*

Study done to assess the influence of anthropometric measurements on the graft thickness obtained at ACL reconstruction surgery. Data from fifty one consecutive patients who had undergone ACL reconstruction by the same surgeon using double loop hamstring grafts were analysed. The body mass index, height and weight of these patients were correlated with the graft thickness obtained during surgery using non parametric tests (Spearman's coefficient). There was statistically significant positive correlation between the body weight and graft thickness ( $r = 0.32$ ,  $p=0.02$ ,  $n= 51$ ). There was however, no correlation between the body mass index and height with the graft thickness. Anthropometric measurements do not have as much influence on the thickness of the graft as would have been assumed, in ACL reconstruction surgery. Although the body weight has a positive correlation, the BMI and height do not seem to have any appreciable influence on graft thickness.

- Paper 126**  
**1703-1709** An 8-week Prospective Analysis of Changes in Pain, Disability and Psychosocial Factors Following ACL Reconstruction.  
*D. A Tripp, Kingston, ON, C. Coady, G. Reardon, W. D. Stanish, M. J. L. Sullivan, Halifax, NS*
- This study examines changes in pain, disability and psychological variables from per-op to 8 weeks post-op assessment as well as predictors of disability at 8 weeks post-op. 54 recreational athletes provided measures (mean age = 25 years; 29 males). Results showed significant changes in pain, depression, anxiety, catastrophizing over time. Functional disability did not change significantly from pre-op to 8 weeks post-op. Regression analysis showed that 8 weeks functional disability was best predicted by 48 hour pain and catastrophizing. Results suggest that pain and psychological variables may affect behaviours related to better post-op disability at 8-weeks post-op.
- 1709-1715** Discussion
- MANUS Upper Extremity Subspecialty Half Day Highland 8**  
**Paper times 1545-1640**
- Paper 127**  
**1545-1551** Anatomic basis and clinical application of the interosseous muscle flap in the hand  
*M. Tang, H. Sun, S. F. Morris, Taizhou, China, Halifax, NS*
- Paper 128**  
**1551-1557** Spontaneous Flexor Tendon Ruptures of the Hand: A Case Series and Review of the Literature  
*A.J. Bois, G. Johnston, D. Classen, Saskatoon, SK*
- Paper 129**  
**15:57-16:03** Successful Treatment of Complicated Nonunions of the Scaphoid with a Vascularized Bone Graft: Surgery for Proximal Pole Nonunions and Revision After Failed Initial Surgery.  
*S. Van den Dungen, K. Latendresse, S. Gagnon, Montreal, QC*
- 1603-1613** Discussion
- Paper 130**  
**1613-1619** Fragment Specific Fixation of Distal Radius Fractures  
*C. V. A. Bowen, J. F. Haasbeek, J. Reed, Calgary, AB.*
- Paper 131**  
**1619-1625** Influence of the Radial Head on the Stability and Loading of the Latitude Total Elbow Arthroplasty  
*J. R. Brownhill, J. Pollock, L. M. Ferreira, J. A. Johnson, G. J. W. King, London, ON*
- Paper 132**  
**1625-1631** Lateral Collateral Ligament Repair of the Elbow Using Transosseous Sutures Restores Joint Kinematics and Stability  
*G. S. Fraser, J. E. Pichora, L. M. Ferreira, J. R. Brownhill, J. A. Johnson, G. J. W. King, London, ON*
- 1631-1640** Discussion
- COA-COFAS Foot and Ankle Subspecialty Half Day: Mariner 2**  
**Research, Tips, Tricks, and Getting Down to Business**  
**Paper times 1345-1435**
- Paper 133**  
**1345-1355** The Role of Ultrasound in Predicting Outcomes of Nonoperatively Treated Achilles Tendon Ruptures<sup>2</sup>  
*M. Snider, D. Bryant, P. Fowler, R. Giffin, A. Spouge, K. Willits, London,*

ON

The presence of a large gap on ultrasound has often been used as an indication for operative intervention. This study examines the relationship between gap size and functional outcomes in non-operatively treated achilles tendon ruptures. Patients randomized to non-operative treatment were reassessed at 3 months, 6 months and 1 year post injury. Ultrasound measures consisted of tear location and gap size in neutral, plantar flexion, and dorsiflexion of the ankle. Outcome measures were re-rupture rates, complications, range of motion, calf circumference, strength, and functional outcome scores. Twenty-five patients had complete data for analysis. Tear location and functional outcomes scores were not significantly related to plantar flexion or dorsiflexion gap size. All patients had either good or excellent results at 1 year. Isokinetic strength, range of motion, and calf circumference measurements were all greater than 90% relative to the contralateral extremity. In conclusion, gap size was not significantly related to functional outcomes. Non-operative treatment produced very good results at 1 year follow-up with low complication rates. These results suggest that ultrasound estimation of gap size and location may be of limited clinical value in the management of achilles tendon ruptures.

**Paper 134  
1355-1405**

The Safety and Costs of Achilles Tendon Surgery: Comparing Patients Enrolled in a Randomized Clinical Trial to Those Outside of the Trial<sup>2</sup>

*D. P. Goel, D. Chan, N. Mohtadi, K. Watson, Calgary, AB*

Patients with an acute Achilles tendon rupture are admitted to hospital for surgical repair in Calgary, Alberta. The primary objective of this observational cohort study was to compare patients involved in a randomized clinical trial (RCT) to all other non-study patients (NSP) treated between October 2002 and September 2005 . A total of 282 patients met the inclusion criteria. The total cost for outpatients was \$18,409 and \$18,701 for RCT and NSP, respectively. The cost for overnight patients in each group was \$7,419 (RCT) and \$379,496 (NSP). If all overnight patients in each group were treated as outpatients, the total savings would be \$235,545. Surgical treatment of Achilles tendon rupture can be performed safely and at less cost on an outpatient basis. Participation in this RCT has allowed us to recommend a change in the standard of care in Calgary.

**Paper 135  
1405-1415**

A Prospective, Randomized Trial Comparing Early Weight-Bearing versus Non-Weight-Bearing After Achilles Tendon Rupture Repair<sup>2</sup>

*A. Suchak, L. Beaupre, G. Bostick, D. Durand, N. Jomha, Edmonton, AB*

The objective of this study was to determine the effect of early weight bearing on the postoperative recovery after surgical repair of ruptured Achilles tendons. A prospective, randomized controlled trial of 110 patients with Achilles tendon ruptures undergoing surgical repair was performed over a three year period concluding in May 2006. Patients were randomized to either weight bearing or non weight bearing at the initial postoperative visit and compliance was monitored with a pressure sensor in the fixed-hinged ankle foot orthosis. Patients were assessed at 6, 12 and 26 weeks postoperatively for 1) re-rupture rate, 2) strength of calf musculature 3) ankle range of motion , 4) complications, 5) return to sporting activities, and 6) return to work. In addition, health-related quality of life was measured using the SF-36 and AOFAS Ankle-Hindfoot Scale. Thus far, no re-ruptures in either group have occurred. Once data analysis is completed, comparisons of patient satisfaction, strength, range of motion, complications, return to sport and return to work will be

discussed. We believe this study will provide a definitive answer on the safety of early weight bearing after surgical repair of Achilles tendon ruptures.

**Paper 136**  
**1415-1425** A Multicentered Prospective Clinical Outcome Cohort Study: Ankle Arthroplasty versus Fusion  
**M. Glazebrook, T. Daniels, C. J. Foote, D. Stevens, K. Trask, A. Younger, Halifax, NS**

This is a multicentered prospective clinical outcome study comparing the surgical treatment of patients with EAA using an ankle arthrodesis or total ankle arthroplasty. Preoperatively, all patients had significant physical and psychological morbidity. Approximately 25% of patients were three standard deviations below population values, indicating increased risk of mortality. There was a significant improvement in the health related quality of life (SF36v2) and joint specific (Foot Function Index, Ankle Osteoarthritis Scale, American Orthopedic Foot and Ankle Hindfoot Scale and the AAOS Foot and Ankle Baseline Questionnaire) clinical outcome scores at 6 and 12 months follow up but no consistent difference was noted between the 2 cohorts. This is the first multicentered prospective clinical outcome study that demonstrates equal efficacy for early follow up of patients treated for EAA with total ankle arthroplasty or ankle arthrodesis.

**Paper 137**  
**1425-1435** Outpatient Percutaneous Flexor Tenotomies for Management of Diabetic Claw Toe Deformities with Ulcers  
**T. Daniels, A. M. McLaren, E. Tamir, Toronto, ON**

Diabetic patients may present with claw toe deformities and ulcers at the tip of the deformed toe due to increased pressure. This retrospective review has demonstrated that a percutaneous flexor tenotomy with osteoclasia of the PIP joint performed in an outpatient clinic is a safe and effective method to off-load the tip of the toe such that ulcer healing can occur. The presence of osteomyelitis is not a contraindication for this technique; however, an increased healing time can be expected.

**Paediatric Subspecialty Half Day** **Mariner 3**  
**Paper times 1345-1515**

**Paper 138**  
**1345-1357** Cost-Effectiveness Analysis of Prophylactic Pinning of the Contralateral Hip Following Unilateral Slipped Capital Femoral Epiphysis  
**D. Davidson, A. Anis, C. Brauer, K. Mulpuri, Vancouver, BC**

A cost-effectiveness analysis was undertaken to investigate prophylactic pinning of the contralateral hip in slipped capital femoral epiphysis. The outcome utilities and probabilities from a previously reported decision analysis were utilized. Costing data were obtained from our center. The results indicated cost savings following prophylactic pinning but improved health following observation. The incremental cost-effectiveness ratio for observation, compared to prophylactic fixation, was less than the accepted \$50,000 per quality adjusted life year gained threshold. For this reason, this study did not find evidence in support of prophylactic pinning of the contralateral hip.

**Paper 139**  
**1357-1409** The Effect of Surgical Timing on Operative Time and Quality of Reduction  
**L. Murnaghan, A. Byrne, K. Mulpuri, B. L..T. Slobogean, S. J. Tredwell, Vancouver, BC**

The purpose of this study was to determine the influence of the elapsed time from injury to surgery of Gartland Type III supracondylar fractures on operative time and quality of reduction. Of the 112 subjects, 61 patients were treated in less than 8 hours (Group 1), and 51 treated after 8 hours (Group 2). There were 61 girls and 51 boys, with a mean age of 6 yrs. There were no cases of compartment syndrome. The mean time from injury to surgery was 670 minutes (min = 128, max = 3117). The mean for Group 1 was 341 minutes and 1065 minutes for Group 2. The mean operative time was 33.29 minutes, (min=10, max =82). The mean operative time in Group 1 was 33.13 minutes and 33.38 minutes in Group 2. There was no significant difference between the two groups. Radiographic analysis revealed the following means: Baumann's angle (m = 70.26), humero-capitellar angle (m= 36.19), Gordon Index (m=33.78), Griffet Index 1 (m=0.88) and Griffet Index 2 (m=2.55). Comparison of the radiographic parameters and indices demonstrated no significant difference between the two groups.

**1409-1419** Discussion

**Paper 140** BackPack Study

**1419-1431** *J.L. Leahey, J. Amirault, C. Ramier, Halifax, NS*

Studying the Body's Center of Mass (COM) provides summary insight into the body's ambulation efficiency. COM symmetry in forward and vertical dimensions, horizontal power and overall velocity will alter when the system is stressed, such as ambulating with increasing Back Pack loads. Ten normal 12 y/o individuals had their COM monitored, while 5% incremental increases in their body mass up to 25% above normal was carried. Three Back Pack styles were compared (2-Strap, 1-Strap and Hipster). Data was collected with the waist worn WPGM tm and analysed with Gaitview tm software. Results show that the overall effect of increasing body mass by 25% was to decrease velocity by 8% ( $r^2 = 0.9641$ ). Velocity reduction occurred with step length reduction ( $r^2 = 0.9924$ ). With increasing loads forward asymmetry increased 45 % ( $r^2 0.9526$ ) and vertical asymmetry rose 105% ( $r^2 0.9565$ ). ANOVA showed the 2-Strap had significantly less COM effect compared with the 1-Strap and Hipster. Significant changes in the COM symmetry occurred at Back Pack loads of 10-15% above normal age-match control (N=48) levels. A 2-Strap Back Pack with loads of <15% mass above the individuals mass is recommended.

**1431-1441** Discussion

**Paper 141** Methodological Quality Assessment of Randomized Controlled Trials in Paediatric Orthopaedics

**1441-1453** *S. Dulai, R.D. Beauchamp, K. Mulpuri, B. L..T. Slobogean Edmonton, AB*

The promotion and practice of evidence-based medicine necessitates a critical evaluation of medical literature including the "gold standard" of randomized clinical trials. The purpose of this study was to assess and describe the quality of randomized clinical trials published in the last ten years in journals with high clinical impact in pediatric orthopedics. All of the randomized clinical trials in pediatric orthopedics published in five well-recognized journals between 1995-2005 were reviewed using the Detsky Quality Assessment Scale. The mean percentage score on the Detsky Scale was 53% (95% CI: 46%-60%). Only seven (19%) of the articles satisfied the threshold for a satisfactory level of methodologic quality (Detsky >75%). The majority of randomized clinical trials in pediatric orthopedics that are published in well-recognized, peer-

reviewed journals demonstrate substantial deficiencies in methodologic quality. Particular areas of weakness include inadequate rigor and reporting of randomization methods, use of inappropriate or poorly-described outcome measures, inadequate description of inclusion and exclusion criteria and inappropriate statistical analysis. Further efforts are necessary to improve the conduct and reporting of clinical trials in this field in order to avoid inadvertent misinformation of the clinical community.

**Paper 142  
1453-1505**

Inter-observer and Intra-observer Agreement in the Radiographic Diagnosis of Avascular Necrosis of the Femoral Head Following Slipped Capital Femoral Epiphysis

**D. Davidson, R.D. Beauchamp, R. Ghag, K. Mulpuri, S. J. Tredwell, Vancouver, BC**

The inter- and intra-observer agreement for the radiographic diagnosis of avascular necrosis of the femoral head following slipped capital femoral epiphysis was investigated in this study. Two experienced pediatric orthopaedic surgeons were the observers. Both the inter- and intra-observer agreement was high, indicating substantial agreement regarding the radiographic diagnosis of avascular necrosis of the femoral head in this patient population. Further study is required to determine if similarly high agreement exists between less experienced observers.

**1505-1515**

Discussion

**1600 - 2200**

Exhibitors Move Out

**1900 - midnight**

***COA Lobster Bash at the Cunard Centre at Pier 23  
Don't forget to bring your tickets with you!***