

## WELCOME MESSAGES

It is my pleasure to welcome everyone to our great city and to our annual scientific meeting. Dr. Kelley DeSouza and his Local Arrangements Committee have worked hard to put on a meeting with some western hospitality where we can renew old friendships and make some new ones. Dr. James Powell's team has delivered a diverse and provocative scientific program, which should meet your needs for continued professional development. Thanks again for supporting our association and I hope you have a great weekend here in Calgary.

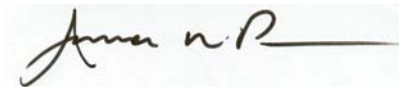


Robert M. Hollinshead, M.D., F.R.C.S(C)  
President

Dr. Kevin Hildebrand and I extend warm greetings to all of you who have travelled to Calgary for the CORS and COA meeting. With this condensed program we think that you will be in the position of having to make choices on which part of the program to attend as many of the simultaneous sessions will appeal to you.

We are pleased to have Mr. Ronan Treacy from Birmingham England demonstrating his technique of hip resurfacing. We are also very pleased to have Professor Reinhold Ganz from Bern, Switzerland join us as the Macnab Lecturer to speak on his experience with acetabular osteotomies and hip impingement. One further symposium moderated by Dr. James Waddell on the introduction of new technology I anticipate will be a highlight scientific forum as we try to find a better way to assess the rapidly expanding new technology available for practicing orthopaedic surgeons. The abstracts that were submitted to both CORS and the COA this year were absolutely outstanding and we hope you enjoy both the scientific meeting as well as the social activities.

Sincerely,



James N. Powell, M.D., F.R.C.S(C)  
COA Programme Chair

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## Meeting Information

### REGISTRATION

<b>On-Site Registration</b>	Thursday, June 17 <sup>th</sup>	1400 – 1800
	Friday, June 18 <sup>th</sup>	0700 – 1800
	Saturday, June 19 <sup>th</sup>	0700 – 1800
	Sunday, June 20 <sup>th</sup>	0700 – 1200

### ACCREDITATION

Meeting participants must wear name badges to attend all official meeting functions and to enter the exhibit hall.

### TICKETS

Meeting registrants must purchase tickets for ICLs and optional tours, as well as the Fun Night.

### BUSINESS MEETINGS

CORS	Friday, June 18 <sup>th</sup>	1245 – 1330
COA	Saturday, June 19 <sup>th</sup>	1100 – 1200

### CORS and COA POSTERS

Posters can be viewed for the duration of the meeting in the Exhibit Hall.

Please note that presenters are responsible for the set-up and removal of their posters.

### SPEAKER READY ROOM

**TELUS 108**

Hours:	Thursday, June 17 <sup>th</sup>	1500 – 1800
	Friday, June 18 <sup>th</sup>	0700 – 1800
	Saturday, June 19 <sup>th</sup>	0700 – 1800
	Sunday, June 20 <sup>th</sup>	0700 – 1200

### MESSAGE BOARD

Message boards will be available to all delegates in the Registration area and outside the Exhibit Hall doors.

### PARTNERS' HOSPITALITY SUITE

**NEILSON 1 & 2  
HYATT REGENCY HOTEL**

A hospitality suite featuring refreshments and snacks will provide a location for catching up with old friends and meeting new ones.

Hours:	Friday, June 18 <sup>th</sup>	0800 – 1600
	Saturday, June 19 <sup>th</sup>	0800 – 1600
	Sunday, June 20 <sup>th</sup>	0800 – 1200

## **CPD CREDIT**

This educational event is approved as an Accredited Group Learning Activity under Section 1 of the Framework of CPD options for the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada. The participant will receive one credit per hour for activities attended in this programme.

## **DISCLAIMER**

The material presented at the 59<sup>th</sup> Annual Meeting has been made available by the Canadian Orthopaedic Association for educational purposes only. The material is not intended to represent the only, nor necessarily best, method or procedure appropriate for medical situations discussed, but rather is intended to present an approach, view, statement, or opinion of the faculty which may be helpful to others who face similar situations. The COA disclaims any or all liability for injury or other damages resulting to any individual attending the Annual Meeting and for all claims which may arise out of the use of the techniques demonstrated therein by such individuals whether these claims shall be asserted by physician or any other person.

## **DISCLOSURE**

Presenters who have an asterisk (\*) by their paper or poster have indicated that they or their programme (Department) received something of value associated with the content of their presentation. Something of value is defined as any item, payment, or service valued in excess of \$500.00. The COA does not intend this identification to decrease the value of their presentation or to imply bias. It is intended solely for information.

## **COURSE EVALUATION**

Registrants will be asked to complete course evaluation forms that will assist in developing future COA/CORS programmes. Please take the time to do this.

## **LEARNING OBJECTIVES**

By participating in this conference, participants will:

- Review and evaluate the results of clinical advances in the diagnosis and management of common orthopaedic diseases in the areas of traumatology, arthroplasty, foot and ankle, spine, sports medicine, paediatrics and tumour.
- Update and expand their understanding of the advances in basic science research in musculoskeletal health and disease. Apply this understanding to current clinical challenges and the improvement of patient outcomes.
- Establish strategies that balance both benefit and risk in the care of specific orthopaedic maladies and describe the expected patient outcomes.
- Gain knowledge of innovative ideas from thought leaders in the major sub-specialties
- Benefit from opportunities to strengthen professional relationships.
- Compare and Evaluate the latest in orthopaedic equipment and services,

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**Special thanks** to the following surgeons who graciously gave their time to proofread the French translations for the Preliminary and Final Programmes.

Constantin Stanciu, MD  
Michel Fallaha, MD  
Marc Isler, MD  
Gregory K. Berry, MD

Pierre Guy, MD  
Guy Grimard, MD  
André Perreault, MD

## ACKNOWLEDGEMENT TO OUR SPONSORS

It is with the support of our sponsors that we are able to offer a quality, cost-effective meeting. We believe that the partnership of the Health Care Industry and Health Care Providers is fundamental in achieving our objectives.

We therefore welcome Industry participation in supporting educational and various other programme activities in addition to highlighting their products at our Annual Meeting. Thank you.

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### GOLD SPONSORS



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**CANADA**

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**Local Arrangements Committee**

LAC Chair		F. Kelley deSouza
Programme Chairs		James N. Powell, COA Kevin A. Hildebrand, CORS
Coordinator		Caroline Eagles
Opening Ceremonies		Norman S. Schachar
LAC Dinner		Gregory A. Abelseth
Fun Night		Jason R. Werle Susan Reader
Partners Committee	Colleen deSouza Roosalie Abelseth Karen Ashbee Mary Bazant Diane Bell Karen Berger Kim Boorman Debbie Bray Connie Burkart Kerry Cundal Norma Dougall	Kathleen Doyle Jane Edwards Evelyn Fairbanks Kathy Hildebrand Cindy Hu Susan Hollinshead Elaine Lam Louisa Powell Kathy Schachar Sue Timmerman Sandra Werle
Members		Cyril B. Frank Iain S. Russell
Industry		Bonnie Dittmer, Pfizer Canada Layn Kattler, Stryker Canada
CONA		Alison Shaw Bill Grudecki
COA		Doug Thomson Yuri Kojima
The Pinnacle Group		Chris Pipe Ellen Ruberg

## Invited Guests

### **Sister Association Presidents:**

American Orthopaedic Association (AOA)  
American Academy Orthopaedic Society (AAOS)  
Australian Orthopaedic Association (AustOA)  
British Orthopaedic Association (BOA)  
New Zealand Orthopaedic Association (NZOA)  
South African Orthopaedic Association (SAOA)

Dan M. Spengler, MD  
Robert Bucholz, MD  
Kalev Wilding, MD  
David Jones, MD  
Barry Tietjens, MD  
Lou van Wyk, MD

### **Provincial Presidents:**

Newfoundland and Labrador  
Prince Edward Island  
Nova Scotia  
New Brunswick  
Québec  
Ontario  
Manitoba  
Saskatchewan  
Alberta  
British Columbia

Robert Russell, MD  
Barry E. Ling, MD  
Ross K. Leighton, MD  
Andrew Berkshire, MD  
Raymond Hould, MD  
David I. A. Wismer, MD  
Dimitros Balageorge, MD  
William A. Silver, MD  
Donald A. Dick, MD  
Kenneth F. Hughes, MD

### **Presidential Guest Speaker**

Hon. Michael J.L. Kirby, Senator

### **Special Guest**

Hon. Gary Mar  
Minister of Health & Wellness, Alberta

### **Canadian Orthopaedic Residents Association (CORA)**

President

Markku T. Nousiainen, MD

### **Guest Lecturers:**

RI Harris Lecture  
Ian Macnab Lecture  
J.É. Samson Award

Cyril B. Frank, MD  
Reinhold Ganz, MD  
Mohit Bhandari, MD

### **President's Awards:**

President's Award of Excellence  
President's Award of Merit

Robert Y.H. McMurtry, MD  
Robert É Turcotte, MD  
Geoffrey H. Johnston, MD

### **Travelling Fellows:**

ABC Travelling Fellows (Visiting)

Craig Michael Bell, MD  
Bill Donnelly, MD  
Robert Neil Dunn, MD  
Muhammed Tahir Khan, MD

Daniel Edward Porter, MD  
John A. Skinner, MD  
Fares S. Haddad, MD

Hong Kong Ambassador

Wai-Man Tang, MD

**INSTRUCTIONAL COURSE LECTURES At-A-Glance**

**FRIDAY, JUNE 18<sup>TH</sup> - 0700 – 0830**

<p>ICL #1 General Session</p> <p>Informed Discharge: Obligation to Patients &amp; Surgical Follow-Up</p> <p><u>Claude F. Martin</u> James Peacock</p>	<p>ICL #2 Trauma</p> <p>Fracture Rounds – Polytrauma</p> <p><u>Hans J. Kreder</u> David W. Sanders Peter J. O'Brien</p>	<p>ICL #3 Tumour</p> <p>Metastatic Spine Disease – Past, Present and Future</p> <p><u>Michael J. Goytan</u> Jean Ouellet</p>
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**SATURDAY, JUNE 19<sup>TH</sup> – 0700 – 0830**

<p>ICL #7 Trauma</p> <p>Fracture Rounds for Upper Extremity</p> <p><u>Michael D. McKee</u> Donald Weber Allan S.-L. Liew</p>	<p>ICL #8 General Session</p> <p>The Use of PDAs in Orthopaedic Practice</p> <p><u>J. F. Myles Clough</u> Robert B. Bourne</p>	<p>ICL #9 Paediatric</p> <p>The Adolescent Athlete</p> <p><u>Laurie A. Hiemstra</u> <u>Devin C. Peterson</u> Preston Wiley J. Robert Griffin Rick A. Ogilvie</p>
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**SUNDAY, JUNE 20<sup>TH</sup> – 0700 - 0830**

<p>ICL #13 Trauma</p> <p>Fracture Rounds for Lower Extremity</p> <p><u>Gregory K. Berry</u> Robert N. Meek Ross K. Leighton</p>	<p>ICL #14 Foot &amp; Ankle</p> <p>Bunion Surgery in 2004</p> <p><u>Timothy R. Daniels</u> Michael Coughlin Alastair S.E. Younger</p>	<p>ICL #15 Spine</p> <p>Round Table on Scoliosis Treatment: Bracing to Surgery – Case Presentations</p> <p><u>Marc J. Moreau</u> James K. Mahood Douglas Hedden</p>
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**Underlined names indicate Moderators**

**FRIDAY, JUNE 18<sup>TH</sup> – 0700 – 0830**

<p>ICL #4 General Session</p> <p>Preventing Infection – What Makes Sense?</p> <p><u>Jason R. Werle</u> Carmen Brauer Tom Louie TBD TBD</p>	<p>ICL #5 Adult Reconstruction</p> <p>Controversies in Primary TKA</p> <p><u>Michael Tanzer</u> Nelson V. Greidanus David G. Chess Mitchell J. Winemaker Richard W. McCalden</p>	<p>ICL #6 Sports Medicine</p> <p>Imaging in Sports Medicine</p> <p><u>Robert Litchfield</u> Ian Lo Bevan Frizzell</p>
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**SATURDAY, JUNE 19<sup>TH</sup> – 0700 – 0830**

<p>ICL #10 Spine</p> <p>Spinal Radiology and Interventions</p> <p><u>Richard W.C. Hu</u> Bevan Frizzell Richard Walker</p>	<p>ICL #11 Hand</p> <p>Scaphoid Fracture Management</p> <p><u>Kevin A. Hildebrand</u> C. Vaughan A. Bowen Kenneth J. Faber Herbert P. von Schroeder</p>	<p>ICL #12 Adult Reconstruction</p> <p>Bearings in THA – What to Choose</p> <p><u>J. Roderick Davey</u> Brian C. Burkhart David R. Hedden Robert B. Bourne Justin de Beer Olga L. Huk</p>
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**SUNDAY, JUNE 20<sup>TH</sup> – 0700 – 0830**

<p>ICL #16 Spine</p> <p>The Management of Low Back Disorders in General Orthopaedic Practice</p> <p><u>Harry Jiang</u> Kenneth C. Thomas Jacques A. Bouchard</p>	<p>ICL #17 Adult Reconstruction</p> <p>Avoiding Pitfalls in THA</p> <p><u>Clive P. Duncan</u> Nizar N. Mahomed Emil H. Schemitsch Ross K. Leighton Réjean Dumais Eric Bohm</p>	<p>ICL #18 Sports Medicine</p> <p>Post Meniscectomy Knee</p> <p><u>Robert C. McCormack</u> John C. Cameron J. Robert Griffin Jeffrey D. Gollish</p>
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**WORKSHOPS, SYMPOSIA AND LIVE SURGERY At-A-Glance**

**WORKSHOPS**

**FRIDAY, JUNE 18<sup>TH</sup>**

1330 – 1700 WS#1  Distal Radius Fracture  <u>Herbert P. von Schroeder</u> Robert J. Medoff C. Vaughan A. Bowen	1530 – 1700 WS#2  Reduction and Internal Fixation of Posterior Wall Acetabular Fractures  David J.G. Stephen Pierre Guy
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**LEARNING OBJECTIVES – WORKSHOP SESSIONS**

By participating in these workshops, participants should be able to:

- Understand the ongoing controversies that exist in the care of orthopaedic patients in the specific areas of Distal Radius Fractures and Reduction and Internal Fixation of Posterior Wall Acetabular Fractures.
- Demonstrate the manual skills required in the surgical techniques presented.
- Demonstrate the manual skills in techniques presented.
- Recognize and more effectively deal with the specific treatment challenges described in the workshop.
- Exchange ideas with experts and peers in the workshop setting.

**SYMPOSIA**

FRIDAY, JUNE 18 <sup>TH</sup>	SATURDAY, JUNE 19 <sup>TH</sup>	SUNDAY, JUNE 20 <sup>TH</sup>
1530 – 1700 Symposium 1  Hip Resurfacing – An Implant Whose Time Has Come Again  <u>Allan E. Gross</u> Paul É. Beaulé Ronan Treacy James P. Waddell Steven J.M. MacDonald	1500 - 1700 Symposium 2  Hip Disease in the Young Adult  <u>Kevin A. Hildebrand</u> <u>Steven J.M. MacDonald</u> Reinhold Ganz (Ian Macnab) Donald Garbuz David R. Wilson	0830 – 1030 Symposium 3  The Introduction of New Technologies  <u>James P. Waddell</u> Robert B. Bourne Nizar N. Mahomed Robert C. Bray Robert Abernethy
		1303 – 1500 Symposium 4  Distal Radius Fractures  <u>C. Vaughan J. Bowen</u> Kenneth J. Faber David R. Pichora Herbert P. von Schroeder Kevin A. Hildebrand Robert Medoff

**LIVE SURGERY**

FRIDAY, JUNE 18 <sup>TH</sup>	SATURDAY, JUNE 19 <sup>TH</sup>	SUNDAY, JUNE 20 <sup>TH</sup>
<p>1330 – 1500 LS 1</p> <p>Hip Resurfacing</p> <p><u>James N. Powell</u> <u>Steven J.M. MacDonald</u> Ronan Tracey James MacKenzie</p>	<p>0830 – 1000 LS 2</p> <p>Shoulder Arthroscopic Rotator Cuff Repair</p> <p><u>Robert M. Hollinshead</u> Ian Lo Alex Lai</p>	<p>0830 – 1030 LS 4</p> <p>Unicompartmental Arthroplasty – Knee</p> <p><u>Nizar N. Mahommed</u> Richard W. McCalden Michael J. Dunbar Jason Werle</p>
	<p>1300 – 1430 LS 3</p> <p>Ulnar Shortening</p> <p><u>Herbert P. von Schroeder</u> <u>Kenneth J. Faber</u> C. Vaughan A. Bowen Kevin A. Hildebrand</p>	

**A Vision for the COA**

**“To Achieve excellence in orthopaedic care for Canadians”**

We will realize this Vision by fulfilling our strategic objectives:

- Advance professional fulfillment of orthopaedic surgeons;
- Promote and provide education of our membership;
- Communicate and inform our members with timely and relevant information;
- Advocate for national standards of orthopaedic care in Canada.

**THE BONE AND JOINT DECADE** is an independent global nonprofit organization whose mission is to improve the health-related quality of life for people affected by musculoskeletal disorders worldwide in the Decade of 2000-2010. It is the umbrella organization by which over 46 National Action Networks and over 750 professional medical societies, patient advocacy groups, governments, industry, research institutions and publications partner to effect change by: (1) Raising awareness of the growing burden of musculoskeletal disorders on society; (2) Empowering patients to participate in their own care; (3) Promoting cost-effective prevention and treatment; and (4) Advancing understanding of musculoskeletal disorders through research to improve prevention and treatment. For more information, visit the web site [www.bjdcanda.org](http://www.bjdcanda.org) or [www.boneandjointdecade.org](http://www.boneandjointdecade.org).

## FRIDAY, JUNE 18<sup>TH</sup>

0700 – 0830

### INSTRUCTIONAL COURSE LECTURES (concurrent sessions)

#### ICL-01: GENERAL SESSION

IMPERIAL 3 (HYATT)

Informed Discharge: Obligation to Patients and Surgical Follow-Up

Moderator: Claude F. Martin

Faculty: James Peacock

Objectives: To Recognize the medico-legal importance of discharge instructions. To avoid the legal risks brought about by insufficient medical follow-up.

#### DISCUSSION

#### ICL-02: TRAUMA

IMPERIAL 8 (HYATT)

Fracture Rounds for Polytrauma

Moderator: Hans J. Kreder

Faculty: David W. Sanders, Peter J. O'Brien

Objectives: Review the principles of assessment and the current concepts of treatment of patients with multiple injuries with a major focus on the musculoskeletal component. The session will be an interactive "fracture rounds" format.

#### DISCUSSION

#### ICL-03: TUMOUR

DOLL/HERALD (HYATT)

Metastatic Spine Disease – Past, Present and Future

Moderator: Michael J. Goytan

Faculty: Jean Ouellet

Objectives: To familiarize the participant with the current concept of management of vertebral metastases. Topics covered will be diagnosis, imaging modalities, non-operative treatment, indication for OR, operative treatment, and future directions.

#### DISCUSSION

#### ICL-04: GENERAL SESSION

KENSINGTON ( MARRIOTT)

Preventing Infection: What Makes Sense

Moderator: Jason Werle

Faculty: Carmen Brauer, Tom Louise

- The Cost of Orthopaedic Infections
- Etiology, Prophylaxis and Antibiotic Treatment of Orthopaedic Infections
- Operating Room Environment
- Role of Surgical Technique in Orthopaedic Infections

Carmen Bauer  
Tom Louise  
TBA  
TBA

*DISCUSSION*

**ICL-05: ADULT RECONSTRUCTION**

**IMPERIAL 4 (HYATT)**

Controversies in Primary Total Knee Arthroplasty

Moderator: Michael Tanzer

Faculty: Nelson V. Greidanus, David G. Chess, Mitchell J. Winemaker, Richard W. McCalden

- The Role of MIS TKA
- The Role of Navigation
- Balancing the Knee
- The Use of Alternate Bearing

Nelson V. Greidanus  
David G. Chess  
Mitchell J. Winemaker  
Richard W. McCalden

*DISCUSSION*

**ICL06: SPORTS MEDICINE**

**IMPERIAL 6 (HYATT)**

MSK Advanced Imaging: What You Need to Know!

Moderator: Robert Litchfield

Faculty: Ian Lo, Bevan Frizzell

Objectives: This ICL will bring the surgeon up-to-date on the latest indications and benefits of MRI and CT scanning for common conditions in the knee and shoulder. The surgeon will have an improved understanding of common findings, benefits and limitations of these modalities through interactive didactic talks and case presentations.

- Shoulder Imaging, the Surgeon's Perspective
- Knee Imaging: When Do I need CTO or MRI?
- The Radiologist's Perspective
- Case Presentations

Ian Lo  
Robert Litchfield  
Bevan Frizzell

*DISCUSSION*

**0845 – 0900**

**CORS WELCOME AND OPENING REMARK:**

**GLEN 201/202 (TELUS)**

- Thomas R. Oxland

**0900 – 1030**

**COA/CORS Combined Sessions**

**SESSION 1A: ARTHROPLASTY & TRAUMA**

**GLEN 201/202 (TELUS)**

**Moderators:**  
Erin L. Boynton, Toronto, ON  
Steven J. M. MacDonald, London, ON  
Dan M. Spengler, Rosemont, IL

Paper #1  
0900-0907

Effect of Positioning on Systemic Neutrophil and Platelet Activation Following Sequential Pulmonary Contusion and Fat Embolism in a Canine Model of Polytrauma

**Michael Blankstein, Toronto, ON**

*Khalid Syed, Toronto, ON*

*Masaki Nakane, Toronto, ON*

*Annie Bang, Toronto, ON*

*John Freedman, Toronto, ON*

*Robin R. Richards, Toronto, ON*

*Emil H. Schemitsch, Toronto, ON*

The purpose of this study was to determine the effect of positioning (lateral vs. supine) on pulmonary pathophysiology following pulmonary contusion and fat embolism in a canine model of polytrauma. Platelet and neutrophil activation were assessed using flow-cytometry. There were no significant differences between groups in CD62P and CD11/18 MCF (markers of platelet and neutrophil activation, respectively) following fat embolism. However, only animals in the lateral position displayed significant increases in both measures as compared to baseline values. Lateral positioning may exert an early effect on proinflammatory and coagulation activation, and may play a role in the development of acute lung injury.

Paper #2\*  
0907-0914

Evaluation of the Use of Calcium Sulfate HA/TCP Composites in a Canine Metaphyseal Defect Model

**Emil H. Schemitsch, Toronto, ON**

*Daisuke Togawa, Cleveland, OH*

*Jeffrey T. Reid, Toronto, ON*

*Thomas W. Bauer, Cleveland, OH*

*Hiroshige Sakai, Cleveland, OH*

*Monica Hawkins, Mahwah, NJ*

*Fred Dimaano, Mahwah, NJ*

The purpose of this study was to evaluate trabecular bone response to four different synthetic graft materials (CaSO<sub>4</sub> and CaSO<sub>4</sub> – HA/TCP composites) as compared to autograft in a canine defect model. The group with the highest HA/TCP proportion (and the lowest CaSO<sub>4</sub> proportion) had the greatest amount of residual graft material and total mineralized material (p<0.05). Increasing the proportion of HA/TCP reduces the rate of dissolution, and appears to have little effect on bone formation. This study suggests that a range of composites could be created to match the spectrum of resorption rates demanded by clinical applications.

0914-0920

*DISCUSSION*

Paper #3  
0920-0927

Functional Outcome and Strength Following Plate Fixation of Fractures of Both Bones of the Forearm in Adults

**Kurt P. Droll, Toronto, ON**

*Philip Perna, Toronto, ON*

*Alison McConnell, Toronto, ON*

*Dorcas Beaton, Toronto, ON*

*Michael D. McKee, Toronto, ON*

*Emil H. Schemitsch, Toronto, ON*

The purpose of this study was to investigate patient-based functional outcome and objectively measure strength following plate fixation of fractures of both bones of the forearm. Twenty-five subjects were clinically and radiographically reviewed. Strength of elbow flexion, extension, supination, pronation, wrist flexion, extension and grip were significantly reduced in the injured arm. (p<0.01, range 62%-

84% of normal). Mean (+/- SE) DASH score was 19.5 +/- 4.0 and eighty-eight percent (22/25) scored good to excellent on the Gartland-Werley scale (mean 4.04 +/- 0.91). No statistical difference in mean maximal radial bow (MRB) or location of MRB between injured and non-injured arm was found.

Paper #4  
0927-0934

The Effect of a Venous Filter on Embolic Load, During Medullary Canal Pressurization: A Canine Study

*K. Mohanty, Cardiff, WALES*  
*James N Powell, Calgary, AB*

**D Musso, Calgary, AB**

*M Traboulsi, Calgary, AB*

*I Belankie, Calgary, AB*

*B Mullen, Calgary, AB*

*J.V. Tyberg, Calgary AB*

Using an established canine model of fat embolization, the effect of temporary mechanical blockade of embolic load during medullary canal pressurization was studied. Haemodynamic measurements, echocardiography and postmortem histomorphometry were used as outcome measures. There was statistically significant difference between the filter and the control groups, when the pulmonary vascular resistance, the percentage area of lungs occupied by fat and the percentage of pulmonary vasculature occupied by fat were compared. We have shown that mechanical blockade by a filter does stop the adverse effect on the lungs during canal pressurization.

0934-0940

*DISCUSSION*

Paper #5  
0940-0947

The Influence of Hemorrhage and Resuscitation on Pulmonary Cytokine Release Following Fat Embolism

**Michael Blankstein, Toronto, ON**

*Masaki Nakane, Toronto, ON*

*Robert Byrick, Toronto, ON*

*Robin R. Richards, Toronto, ON*

*Osamu Kajikawa, Seattle, WA*

*Emil H. Schemitsch, Toronto, ON*

This study was undertaken to assess the contribution of fat embolism (FE) to the development of acute lung injury in the presence of resuscitated hemorrhagic shock. 27 NZW rabbits were randomly assigned into four groups: resuscitated hemorrhagic shock and FE (HR/FE), resuscitated hemorrhagic shock, FE, and control. FE was induced via intramedullary femoral canal pressurization using a 1-1.5 ml bone cement injection. Only HR/FE animals displayed significant pro inflammatory cytokine release as compared to controls. These findings suggest that the combination of resuscitated shock with FE initiates an inflammatory response, which may lead to the development of fat embolism syndrome.

Paper #6  
0947-0954

Biological and Mechanical Changes of the Bone-Graft-Cement Interface After Impaction Allografting

**Hanspeter Frei, Vancouver, BC**

*John O'Connell, Vancouver, BC*

*Bassam A. Masri, Vancouver, BC*

*Clive P. Duncan, Vancouver, BC*

*Thomas R. Oxland, Vancouver, BC*

In impaction allografting, the host bone interface consists of morsellized allograft alone or as a composite with bone cement. The objective of this study was to investigate the host bone temporal changes in the interface for these two materials in a rat bone chamber model. The composite-host bone interface strength was significantly higher at 3 weeks and was higher than the allograft construct. Limited allograft, but extensive periosteal remodelling, was observed at 3 weeks. At 6 weeks a new medullary canal was formed and the endosteal cortex was partially absorbed. Endosteal absorption resulting in medullary canal widening may be responsible for clinically unstable stems after impaction allografting.

0954-1000

*DISCUSSION*

Paper #7  
1000-1007

Effect of Cobalt and Chromium Ions on the Expression of Matrix Metalloproteinase-1 (MMP-1) and Tissue Inhibitor of Metalloproteinase-1 (TIMP-1) in Human U937 Macrophages *In-Vitro*

*Li Luo, Montréal, QC*

*Alain Pétit, Montréal, QC*

*David J. Zukor, Montréal, QC*

*Olga L. Huk, Montréal, QC*

*John Antoniou, Montréal, QC*

***Fackson Mwale, Montréal, QC***

The *in situ* increased production of matrix metalloproteinases (MMPs) has been associated with the development of periprosthetic osteolysis. The aim of the study was to compare the effect of  $\text{Co}^{2+}$  and  $\text{Cr}^{3+}$  ions on macrophages matrix metalloproteinase-1 (MMP-1) and tissue inhibitor of MMP (TIMP-1) expression. Using reverse transcription-polymerase chain reaction (RT-PCR), we showed that both  $\text{Co}^{2+}$  and  $\text{Cr}^{3+}$  ions induce the expression of MMP-1 and TIMP-1 in a dose-dependent manner. Since MMP-1 and TIMP-1 participate in the extracellular matrix degradation and tissue remodeling, our results suggest that the modulation of MMP-1 and TIMP-1 may contribute to the development of periprosthetic osteolysis.

Paper #8  
1007-1014

Modeling Recovery Following Total Hip and Knee Arthroplasty: The Case for Physical Performance Measures

***Deborah M. Kennedy, Toronto, ON***

*Jeffrey D. Gollish, Toronto, ON*

*Paul W. Stratford, Hamilton, ON*

*Jean Wessel, Hamilton, ON*

*Steven E. Hanna, Hamilton, ON*

This study explored differences in the early pattern of recovery for self-report (pain and physical function subscales of the Western Ontario and McMaster Universities Osteoarthritis Index) and physical performance measures (six minute walk and timed up and go test) in patients following arthroplasty. Using hierarchical linear modeling, different patterns of recovery and predictors of change were observed. The physical function subscale did not detect the early deterioration in physical function that was detected by the performance measures. Different important clinical information can be learned from performance measures, supporting the use of both types of measures when monitoring decline and recovery.

1014-1020

*DISCUSSION*

Paper #9  
1020-1027

Prevention of Avascular Necrosis of the Femoral Head: Does Early Reduction and Internal Fixation of Displaced Femoral Neck Fractures Reduce the Incidence?

**Robert N. Meek, Vancouver, BC**  
*Tamin Umran, Vancouver, BC*

56 patients under the age of 65 with displaced femoral neck fractures (DFNF), were evaluated for the development of avascular necrosis (AVN) requiring revision surgery. This retrospective study utilized chart review and telephone conversation. All patients received ORIF as primary management of their DFNF. 15 patients had initiation of ORIF within 8 hours (group A), while 41 patients waited 8 hours or longer for repair (group B). 2 patients in group A, and 7 in group B developed AVN requiring revision surgery. Using Fishers' exact test and chi-square analysis, we found no significant statistical difference in the rate of femoral head collapse due to AVN between the two groups.

1027-1034

*DISCUSSION*

**SESSION 2A: SPINE**

**GLEN 203/204 (TELUS)**

**Moderators:** **Thomas R. Oxland, Vancouver, BC**  
**Kevin R. Gurr, Halifax, NS**

Paper #10  
0900-0907

Decompression and Lumbopelvic Fixation for Sacral Fracture-Dislocations with Neurologic Deficits

**Carlo Bellabarba, Seattle, WA**  
*Thomas A Schildhauer, Bochum Germany*  
*Sohail K Mirza, Seattle, WA*  
*Sean E Nork, Seattle, WA*  
*M. L. Chip Routt, Jr., Seattle, WA*  
*Jens R. Chapman, Seattle, WA*

Retrospective review of 18 patients with sacral fracture dislocations and cauda equina deficits treated with posterior sacral decompression and lumbopelvic fixation. At mean 19-month follow-up, all fractures healed without loss of alignment despite immediate full weight-bearing. Fifteen patients (83%) improved neurologically, and 10 patients (56%) had full bowel/bladder recovery. Complications consisted mainly of infection (17%) and asymptomatic rod breakage (33%). This series demonstrates the clinical effectiveness of lumbopelvic fixation, allowing the application to sacral injuries of decompression and fixation principles commonly used in fractures with neurologic deficits that occur in more rostral areas of the spine.

Paper #11  
0907-0914

Proximal Kyphosis, "Topping off Syndrome", and Retrolisthesis Secondary to Multilevel Lumbar Fusion in the Elderly Patients

**Edward D. Simmons, Buffalo, NY**  
*Cameron B. Huckell, Buffalo, NY*  
*Yinggang Zheng, Buffalo, NY*

Fifty-two patients older than 60 years had undergone multilevel lumbar decompression and fusion with instrumentation and reached a minimum 2-year follow up. The relationship between abnormal sagittal plane configuration of the proximal segments and the number of lumbar fusion segments was radiographically analyzed. Group A (L1-L5 or S1) patients had 2 (20%) proximal vertebral compression fractures and 4 (40%) focal kyphosis. Group B (L2-L5 or S1) patients had 1 (6%) proximal vertebral compression fractures, 5 (33%) retrolisthesis and 2 (13%) focal kyphosis. Group C (L3-S1) had 7 (39%) retrolisthesis. Group D had only 1 retrolisthesis and 2 disc height loss.

0914-0920

*DISCUSSION*

Paper #12  
0920-0926

So You Want to Get Published? A Systematic Analysis of Factors Associated with Peer-Reviewed Publication in the Spine Literature  
*Eugene K. Wai, Ottawa, ON*  
***Liisa Vexler, Ottawa, ON***  
*Robert D. Fraser, Adelaide, AUSTRALIA*

Independent reviewers performed systematic reviews of the abstracts presented at the annual meeting of the ISSLS and the CSS. Papers employing blinded or independent review of outcome were the strongest predictor of publication and papers employing this had an adjusted odds ratio of 4.7 for being published compared to those papers that did not. Other significant factors include use of an experimental design, statistically positive result, and basic science research.

Paper #13  
0926-0933

Does Spacer Length of Flexible Posterior Stabilization System Have an Effect on Range of Motion?  
***Christina Niosi, Vancouver, BC***  
*Qingan Zhu, Vancouver, BC*  
*Derek Wilson, Vancouver, BC*  
*Ory Keynan, Vancouver, BC*  
*David R. Wilson, Vancouver, BC*  
*Thomas R. Oxland, Vancouver, BC*

The Dynesys is a flexible posterior stabilization system that is designed to preserve intersegmental kinematics and reduce loading at the facet joints. The purpose of this study was to determine if the length of the Dynesys spacer has an effect on range of motion (ROM) at the implanted level. Spacer length was found to significantly affect ROM in all three loading directions with and without a follower preload. The longer spacer increased ROM and the shorter spacer decreased ROM, largely due to differences in segmental compression between the two.

Paper #14  
0933-0940

Helical Axes of Motion of the Sub-Axial Cervical Spine  
***Peter A. Crompton, Vancouver, BC***  
*Genevieve A. Dumas, Kingston, ON*  
*Lutz-P. Nolte, Bern, SWITZERLAND*

Information regarding the axes of motion or centers of rotation of the normal cervical spine are necessary to evaluate the similarity of the motion allowed by cervical total disc replacement designs to the natural cervical spine. However, little data has been presented previously regarding the three-dimensional axes of motion of the cervical spine for the three primary motions of flexion/extension, lateral bending and axial rotation. The objective of this study was to measure the three-dimensional axes of motion (Helical axis of Motion) in the natural sub-axial cervical spine using ex-vivo human cadaveric cervical spines.

0940-0946

*DISCUSSION*

Paper #15  
0946-0953

A Novel Clover-Leaf Shaped Interbody Device *In Vitro* Exhibited Higher Failure Load, Strength and Stiffness than an Elliptical Device  
***Juay-Seng Tan, Vancouver, BC***  
*Christopher S. Bailey, Vancouver, BC*  
*Marcel F. Dvorak, Vancouver, BC*

Charles G. Fisher, Vancouver, BC  
Thomas R. Oxland, Vancouver, BC

A biomechanical study assessing compressive failure load, strength and stiffness with three different interbody device shapes was performed in human cadaveric vertebrae. The custom-made interbody devices had similar cross-sectional areas and specimens were tested with 20% or 40% coverage of indenter to endplate area. Axial compressive load was applied at 0.2mm/s to a depth equivalent to 20% of the vertebral height. The clover-leaf shaped device resulted in significantly higher failure load, strength and stiffness over the elliptical and the kidney shaped devices for both areas of coverage. The clover-leaf shaped devices extended over stronger periphery regions of the endplates and resulted in stronger interface properties.

Paper #16  
0953-1000

Percutaneous Pedicle Cannulation: A Cadaveric Study Assessing the Accuracy of Conventional C-Arm Fluoroscopy and Two Dimensional Spinal Navigation Utilized by Two Levels of Expertise

**Henry Ahn, Toronto, ON**  
Raja Y. Rampersaud, Toronto, ON

Spinal procedures relying on percutaneous pedicle cannulation (PPC) are becoming increasingly common. The accuracy of PPC using currently available two-dimensional intraoperative imaging such as conventional C-arm fluoroscopy (CF) or computer-assisted fluoroscopy (2D\_Nav) has not been evaluated. Following PPC of cadaveric spines (T4-S1) using CF and 2D\_Nav, by a novice and clinical expert, the number and degree of pedicle breaches was assessed by CT. Accuracy using CF or 2D\_Nav was equivalent and comparable to published reports for open pedicle cannulation. However, clinical expertise was the significant determinant of improved accuracy rather than technological factors.

1000-1006

DISCUSSION

1030 – 1100

HEALTH BREAK – POSTER SESSION

EXHIBIT HALL

1100 - 1215

COA/CORS COMBINED SESSION 1 & 2 (cont'd)

SESSION 1B – ARTHROPLASTY & TRAUMA

GLEN 201/202 (TELUS)

Moderators

John Antoniou, Montréal, QC  
Emil H. Schemitsch, Toronto, ON

Paper #17\*  
1100-1107

Development of an Instrumented Ulnar Head Prosthesis to Quantify Load Transfer *In Vitro*

**Karen Gordon, London, ON**  
Angela Kedgley, London, ON  
Louis Ferreira, London, ON  
Graham J.W. King, London, ON  
James A. Johnson, London, ON

Quantitative measurements of load transfer through the distal radioulnar joint (DRUJ) are limited. An instrumented ulnar head prosthesis was developed to measure bending and torsion moments about the three anatomic axes of the ulna. This device has shown repeatable loading data following insertion in a cadaveric specimen during active forearm rotation trials conducted in an *in-vitro* upper extremity joint simulator. The data acquired from this device will have important implications for upper extremity modeling, implant fixation and design, and optimizing surgical procedures related to DRUJ arthroplasty.

Paper #18  
1107-1114

Increased Knee Revision Rate with Polyethylene Gamma Irradiated in Air and Implanted After a Prolonged Shelf Life

**Paul R. Kim, Ottawa, ON**

*Tajedin Y. Getahun, Ottawa, ON*

*Anna Conway, Ottawa, ON*

*Heather Hrushowy, Ottawa, ON*

The purpose of the present study is to report the failure rate after total knee replacements performed with polyethylene inserts that had been sterilized with gamma irradiation in air and implanted after a prolonged shelf life. 395 PFC total knees were performed using polyethylene that had been sterilized by gamma irradiation in air. Shelf life of all polyethylene inserts was determined from manufacturer data. A Chi-square test revealed that the proportion of implants that required a revision for polyethylene failure was related to the number of years that the implant had been stored on the shelf.

1114-1120

*DISCUSSION*

Paper #19  
1120-1127

Meniscal Allograft Transplantation for Unicompartamental Arthritis of the Knee

**John C. Cameron, Toronto, ON**

One hundred and forty eight meniscus allografts transplanted in 140 patients between 1988 and 2000 were reviewed. The indication for surgery included disabling knee pain, refractory to conservative treatment, objective symptoms of compartmental crepitus, pain on valgus/varus stress and osteoarthritis documented on arthroscopy following prior total meniscectomy. Knee mal-alignment and instability were also documented. Patients with varus alignment and medial OA, as well as valgus alignment with lateral OA, underwent re-alignment to unload the compartment for allograft transplantation. Patients with anterior cruciate deficiency, underwent ACL reconstruction at the time of allograft transplantation

Paper #20  
1127-1134

Randomized Controlled Trial of Home Based vs. Inpatient Rehab Following Total Joint Arthroplasty: Functional Outcomes and Patient Satisfaction

**Nizar N. Mahomed, Toronto, ON**

*James G. Wright, Toronto, ON*

*Gillian Hawker, Toronto, ON*

*Aileen M. Davis, Toronto, ON*

*Elizabeth Badley, Toronto, ON*

Home-based rehab is increasingly utilized to save costs but concerns have been raised about early hospital discharge and adverse clinical outcomes. This study compares the efficacy and patient satisfaction of home based verses inpatient rehabilitation following total joint arthroplasty (TJA). Despite concerns about early hospital discharge there was no difference in functional outcomes and in patient satisfaction with procedure at the primary endpoints, between the groups receiving home based verses inpatient rehabilitation.

1134-1140

*DISCUSSION*

Paper #21\*  
1140-1147

Total Hip Arthroplasty: Why do Primaries Fail?

**Aileen M. Davis, Toronto, ON**

*Hans J. Kreder, Toronto, ON*

*Janet Parsons, Toronto, ON*

*Nizar N. Mahomed, Toronto, ON*  
*Jeffrey D. Gollish, Toronto, ON*  
*Emil H. Schemitsch, Toronto, ON*

1069 primary hip arthroplasty (THA) (416 males) and 1846 revision (798 males) patients were matched for sex, age and date of primary THA. Data were collected via retrospective chart review. Time to revision averaged 9.5 years. Revision THA patients were younger at primary THA (55 vs. 64 years), had a higher body mass index (27 vs. 30) and more frequently had a cemented acetabulum ( $p < 0.0001$ ). After controlling for institution, earlier time to revision was predicted by younger age at primary THA, secondary OA or dysplasia, increased BMI, posterior surgical approach, cemented acetabulum, and small femoral head size (28 mm) ( $p < 0.05$ ).

Paper #22  
1147-1154

Murine Homologs to Human Tumor-Associated Antigens Identified in the C3H Nonimmunogenic Fibrosarcoma Tumor Model

**Rita Trammell, Springfield, IL**  
*D. Gordon Allan, Springfield, IL*  
*Edward J. Moticka, Springfield, IL*

SEREX was used to identify candidate tumor antigens in the nonimmunogenic fibrosarcoma (NFSA) tumor model. One of the six clones identified was of particular interest. NFSA-5 was identified as the receptor for hyaluronan-acid-mediated motility (RHAMM), which is involved in cell growth and metastasis. RHAMM is expressed in a variety of human tumors. RHAMM is differentially expressed, with significant levels not found in normal tissues other than testis, placenta, and thymus. Therefore, RHAMM may be an appealing target for human tumor vaccines. The identification of murine homologs to human tumor antigens may aid in the preclinical development of human tumor vaccines.

1154-1200

*DISCUSSION*

Paper #23  
1200-1207

Descriptive Study of Osteoporotic Fractures and Hip Fracture Risk Evaluation of Subjects with Past Minor Fractures

**Pascal A. Vendittoli, Montréal, QC**  
*Sonia Jean, Ste-Foy, QC*  
*Diane Major, Ste-Foy, QC*  
*André Simpson, Ste-Foy, QC*  
*K. Shawn Davison, Ste-Foy, QC*  
*Jacques P. Brown, Ste-Foy, QC*

A descriptive study of osteoporotic fractures and the evaluation of the relative risk of hip fracture following a minor fracture were done on 2.5 million individuals from 1980 to 1997. People aged 45 years old and older have a risk for hip fracture after a minor fracture of 2.3-17.3 times the risk of people without previous fracture. Given the availability of pharmaceuticals that decrease the fracture risk dramatically within the first 18 months of therapy, the average 4-6 years time between minor and hip fracture represents a perfect window of opportunity for preventive treatment.

Paper #24  
1207-  
1214

The Load Sharing Characteristics and Stress Concentrations of a Locked, Retrograde, Intramedullary Femoral Nail

**Paul Zalzal, Toronto, ON**  
*G. Cheung, Toronto, ON*  
*Mohit Bhandari, Toronto, ON*  
*J.K. Spelt, Toronto, ON*  
*Marcello Papini, Toronto, ON*

Femoral nails are thought to be load sharing devices. However, the specific load sharing characteristics and associated stress concentrations have not yet been reported in the literature. The purpose of this study was to use a validated, three dimensional finite element model of a nailed femur subjected to gait loads in order to determine the resulting stresses in the femur and the nail. The results showed that load was shared between the nail and the bone throughout the gait cycle. In addition, high stress concentrations were noted in the bone around the screw holes, and dynamization was of minimal benefit.

1214-1220      *DISCUSSION*

**SESSION 2B – SPINE**

**GLEN 203/204 (TELUS)**

**Moderators:**      **Richard W.C. Hu, Calgary, AB**  
**Jacques A. Bouchard, Calgary, AB**

Paper #25      Diagnosis and Treatment of Craniocervical Dissociation. One Institution's Experience with 17 Consecutive Survivors over 8 Years  
1100-1107      **Carlo Bellabarba, Seattle, WA**

*Sohail K. Mirza, Seattle, WA*  
*G. Alex West, Seattle, WA*  
*Fred A. Mann, Seattle, WA*  
*David W. Newell, Seattle, WA*  
*Jens R. Chapman, Seattle, WA*

Retrospective review of 17 consecutive survivors of craniocervical dissociation (CCD). Thirteen patients had delay in diagnosis, with associated neurologic deterioration in five. Diagnosis of CCD was entertained after lateral C-spine x- ray in only two patients, and after screening C-spine CT in two others. At 15-month average follow-up, mean ASIA motor score improved from 50 preoperatively to 79 postoperatively. One patient had temporary postoperative neurologic decline. There were no pseudarthroses. The diagnosis of CCD is often missed, with potentially severe neurologic consequences. Early diagnosis and stabilization are neuroprotective. A classification that identifies minimally displaced yet unstable injuries may improve diagnostic accuracy.

Paper #26\*      Patient Expectations and Functional Outcome Following Posterior Lumbar Spinal Surgery  
1107-1114      **Albert J.M. Yee, Toronto, ON**

*Nana Adjei, Toronto, ON*  
*Marjan Vidmar, Toronto, ON*  
*Michael H.G. Ford, Toronto, ON*  
*Mubarak Al-gahtany, Toronto, ON*  
*Joel A. Finkelstein, Toronto, ON*

There is increasing knowledge regarding the functional outcome of patients following posterior lumbar spinal surgery for degenerative conditions of the spine. There is less known regarding the expectations patients have for spinal surgery and how that may relate to commonly reported surgical outcome measures. It was the purpose of this study to evaluate the results of elective lumbar spinal surgery as it relates to patient expectations for outcome. and outcome as quantified by both physician reported outcome and patient derived generic and disease-specific measures.

1114-1120      *DISCUSSION*

Paper #27  
1120-1127

Photodynamic Therapy for the Treatment of Spinal Metastases: A Preclinical Study

**Shane Burch, Toronto, ON**

*Stuart Bisland, Toronto, ON*

*Brian Wilson, Toronto, ON*

*A Boogards, Toronto, ON*

*Joel A. Finkelstein, Toronto, ON*

*Cari Whyne, Toronto, ON*

*Albert J.M. Yee, Toronto, ON*

Photodynamic therapy is a promising cancer treatment that employs wavelength-specific light in combination with a photosensitizing agent to induce local tumor destruction by photochemical generation of cytotoxic singlet oxygen. Clinical PDT has been evaluated for a variety of primary tumors, however, its use in spinal metastases to our knowledge has not been previously evaluated. A practical consideration is the ability to deliver light to bone. The investigators are evaluating a novel method of applying light to targeted spinal lesions using a minimally invasive technique similar to percutaneous vertebroplasty. This preliminary preclinical study evaluates the feasibility and efficacy of spinal PDT.

Paper #28  
1127-1134

Delta versus PLIF Fixation in the Treatment of Grade II Isthmic Spondylolisthesis: A Biomechanical Study

**Paul Morin, Montréal, QC**

*Rudolph Reindl, Montréal, QC*

*Thomas Steffen, Montréal, QC*

*Jean Ouellet, Montréal, QC*

*Vincent Arlet, Montréal, QC*

*Max Aebi, Montréal, QC*

“Delta fixation” was developed to treat low-grade L5 isthmic spondylolisthesis. It involves placement of pedicle screws into L5 and from S1 through the L5/S1 disc into L5 (Fig.1). A biomechanical comparison to standard Posterior Lumbar Interbody Fusion (PLIF) with two anterior cages and pedicle screws in L5 and S1 was made. Eight fresh frozen human specimens were instrumented with both fixations and tested. Delta fixation was significantly more stable in resisting rotation. It requires less manipulation of the nerve roots and spares the cost of the fusion cages.

Paper #29\*  
1134-1141

Link N Cannot Stimulate Matrix Production but Increases Cell Division of Young Bovine Disc Cells

**Caroline N. Demers, Montréal, QC**

*John Antoniou, Montréal, QC*

*Alain Pétit, Montréal, QC*

*Olga L. Huk, Montréal, QC*

*David J. Zukor, Montréal, QC*

*Fackson Mwale, Montréal, QC*

Recent evidence indicates that link N can stimulate synthesis of proteoglycans and collagen by adult (2-4 years old) bovine disc tails. Here we sought to determine the effect of link N on the accumulation of disc matrix proteins from young (8-20 month old) bovine tails. We show that degradation products of link protein generated by matrix metalloproteinases cannot “feed-back” and stimulate matrix assembly of the disc matrix from young bovine tails but may have a regulatory role in cell proliferation. Link N may have value only in stimulating the growth and regeneration of the old damaged intervertebral disc.

1141-1148 *DISCUSSION*

Paper #30\* New Injury Model of Progressively Increasing Disc Derangement

1148-1155

**Drew Oliphant, Calgary, AB**

*Greg Kawchuk, Calgary, AB*

*Richard Frayne, Calgary, AB*

*Louis Lauzon, Calgary, AB*

*Rod Fauvel, Calgary, AB*

Because internal disc derangement is a significant factor in low back pain, it is important to devise a method of inducing internal disc injuries so that these conditions can be investigated experimentally. We have devised a method of creating internal disc disruption that can create minor or severe internal disc damage as required.

Paper #31

1155-1202

Tumor Ablation Using Laser Induced Thermo-Therapy Pre-Vertebroplasty Affects Biomechanical Stability and Cement Fill For Vertebrae With Simulated Lytic Metastases

**Henry Ahn, Toronto, ON**

*Payam Mousavi, Toronto, ON*

*Lee Chin, Toronto, ON*

*Sandra Roth, Toronto, ON*

*Joel A. Finkelstein, Toronto, ON*

*Alex Vitkin, Toronto, ON*

*Cari Whyne, Toronto, ON*

Vertebroplasty (VP) is currently used to improve spinal stability in patients with vertebral metastases. This study assessed the effects of Laser Induced Thermo Therapy (LITT), a minimally invasive technique used to ablate tumor tissue prior to vertebroplasty. Load-induced canal narrowing (LICN) was measured pre and post-vertebroplasty in twelve paired spinal motion segments with simulated lytic metastases. LICN improved post-vertebroplasty for all specimens treated with LITT. In all specimens, cement location was an important factor in post-vertebroplasty stability. Reduction of the tumor volume pre-vertebroplasty resulted in more reliable defect filling

1202-1208 *DISCUSSION*

1200 - 1700 **COTS SESSION**

**DOLL/HERALD - HYATT**

1220 – 1230 **CORA J. A. NUTTER PRESENTATION**

The Role of Regulatory T-Cells in Periprosthetic Osteolysis Following Total Hip Arthroplasty

**GLEN 201/202 (TELUS)**

Sean C.L. Frost

1230 – 1245 **J. É. SAMSON AWARD PRESENTATION**

Surgeon's Preferences and Practice Patterns in the Operative Treatment of Femoral Neck Fractures

**GLEN 201/202 (TELUS)**

Mohit Bhandari

1245 – 1330 **LUNCH**

**EXHIBIT HALL**

1245 - 1330 **CORS BUSINESS MEETING**

**GLEN 201/202 (TELUS)**

**1330 – 1500**      **LIVE SURGERY 1**      **MACLEOD, AB (TELUS)**  
Hip Resurfacing  
Moderators:      James N. Powell, Michael Gross  
Surgeons:      Ronan Treacy, James MacKenzie  
  
Objectives:      To demonstrate the technique of hip resurfacing using the Birmingham Hip Resurfacing system through a posterior approach to the hip joint

*DISCUSSION*

**1330 – 1700**      **WORKSHOP 1**      **GLEN 206 (TELUS)**  
Distal Radius Fracture  
Moderator:      Herbert P. von Schroeder  
Faculty:      Robert J. Medoff, C. Vaughan A. Bowen  
  
Objectives:      Instructional hands-on training with fragment-specific fixation for reconstructing unstable distal radius fractures through mini-invasive approaches that allow circumferential TriMed Wrist Fixation Technique including preoperative assessment and practical application of principles to pin plates, peg plates, and wire-form implants.

*DISCUSSION*

**1330 – 1500**      **CORS SCIENTIFIC SESSIONS**  
**SESSION 3 – BONE/LIGAMENT/TENDON**      **GLEN 210/202 (TELUS)**  
**Moderator:**      **Kevin A. Hildebrand, Calgary, AB**  
                         **James A. Johnson, London, ON**

Paper #1\*      ACL Deficiency Impairs the Vasoconstrictive Efficacy of Neuropeptide Y in Articular Tissues  
1330-1337      ***Dennis Miller, Calgary, AB***  
                         *Kevin Forrester, Calgary, AB*  
                         *Catherine Leonard, Calgary, AB*  
                         *Paul T. Salo, Calgary, AB*  
                         *Robert C. Bray, Calgary, AB*

We examined the vasoconstrictive actions of neuropeptide Y (NPY) in the intact medial collateral ligament (MCL) of normal and anterior cruciate ligament (ACL) -deficient rabbit knees. Blood flow to the surgically exposed MCL was measured using high-resolution laser speckle imaging (LSI) before and after topical administration of NPY and the  $\alpha_1$ -adrenoreceptor agonist phenylephrine. In control rabbit knees, dose-dependent vasopressor responses were significantly greater than those in ACL-deficient knees, where there was little or no vasoconstrictor response. We conclude that chronic ACL deficiency markedly changes the vascular physiology and pharmacology of the surrounding articular tissues.

Paper #2\*      Delayed Repair of Torn Supraspinatus Tendon Does not Weaken Its Tensile Strength - An Experimental Study in Rabbits  
1337-1344      ***Ko Himori, Sendai, JAPAN***

Hans K. Uthoff, Ottawa, ON  
Guy Trudel, Ottawa, ON  
Philippe Poitras, Ottawa, ON  
Fujio Mastumoto, Sendai, JAPAN  
Hirotaka Sano, Sendai, JAPAN

The purpose of this study was to clarify the effect of delay of the reattachment of the supraspinatus tendon into a bony trough to the strength of the repaired tendon-bone complex. The supraspinatus tendon of rabbits were transected and reattached into bony troughs at the greater tuberosity immediately and 6 weeks after transection. The tensile strength of the tendon-bone complex, harvested 12 weeks after reattachment, were measured.

The tensile strength showed no difference between immediate and delayed reattached shoulders. 6 weeks delay of supraspinatus tendon repair seems not to weaken the tensile strength of repaired tendon-bone complex

Paper #3  
1344-1351

Expression of Matrix Molecules in Joint Capsules from Human Elbow Contractures  
**Kevin A. Hildebrand, Calgary, AB**  
M. Zhang, Calgary, AB

Elbow joint capsules were obtained from 11 patients and 9 elbows of organ donors. Semi quantitative RT-PCR expression detected mRNA for all molecules except biglycan. Statistically significant increases in normalized mRNA expression of collagen type V, decorin, and MMP-2, and decreases of normalized collagen type III mRNA expression were found in the capsules of the patients with contractures. There was no statistical difference in the GAPDH levels (marker gene) between the two groups. Future work is required to measure protein levels of these molecules and to evaluate downstream effects such as collagen fibril diameters which are modulated by collagen type V and decorin.

1351-1357

*DISCUSSION*

Paper #4  
1357-1404

Joint Instability Induces Angiogenesis-related Gene Expression in the Rabbit MCL  
**Robert C. Bray, Calgary, AB**  
Cathleen Huculak, Calgary, AB  
Catherine Leonard, Calgary, AB  
Paul T. Salo, Calgary, AB

Joint instability was induced by posterior cruciate ligament (PCL) transection. This resulted in significant changes in medial collateral ligament (MCL) gene expression as early as three days after injury that persisted as long as 6 weeks. We noted substantial changes in expression of matrix-metalloproteinases (MMPs) -1, -3 and -13, with reciprocal effects on their specific inhibitors TIMP-1 and -3. Sustained changes in expression of these angiogenesis-associated matrix-degrading enzymes likely account for the observed degradation of the mechanical properties of secondary stabilizers in chronically unstable joints.

Paper #5  
1404-1411

Ligament Water Content Contributes to Cyclic Damage Accumulation *In Vitro* Via a Tissue Strain Mediated Mechanism  
**Michelle L Zec, Calgary, AB**  
Cyril B. Frank, Calgary, AB  
Nigel G Shrive, Calgary, AB

The aim of this study was to characterize the effect of ligament water content on the accumulation of damage *in vitro*. MCLs of the rabbit knee were subjected to a constant cyclic stress for 24 hours (isotonic or hypotonic solution) and then failed. Ligaments cycled in hypotonic solution at 0.1 Hz demonstrated significantly more cyclic strain during loading and had significant reductions in both failure stress and failure strain. This study has demonstrated that elevated tissue water content influences the accumulation of damage in ligaments subjected to repetitive loading *in vitro*, leading to reductions in both strength and failure strain

Paper #6\*  
1411-1418

Reconstruction of the Anterior Cruciate Ligament in Rabbits Using an Artificial Graft Approach

**Sean G. Haslam, Calgary, AB**

Stephen D. Miller, Calgary, AB

Michael R. Doschak, Calgary, AB

Ronald F. Zernicke, Calgary, AB

Robert C. Bray, Calgary, AB

Ten New Zealand White rabbits underwent anterior cruciate ligament transection (ACLX), then reconstruction using a mersiline tape graft and mitek mini anchors. Animals were divided into two groups and sacrificed at 6 and 14 wk after surgery. Medial collateral ligament (MCL)-complexes were evaluated for joint laxity, and periarticular tissues evaluated for changes in vascular volume. Both reconstructed groups showed significantly reduced MCL-complex laxity and inflammatory angiogenesis compared to ACLX controls. This reconstructive method (using an artificial graft) provided transient restabilization out to 6 and 14 wk after ACLX in the rabbit, with a high 80% success rate of intact grafts.

1418-1424

*DISCUSSION*

Paper #7  
1424-1431

The Mechanism of Action of Bone Morphogenetic Proteins in Distraction Osteogenesis

**Reggie C. Hamdy, Montréal, QC**

Manuela Mandu, Montréal, QC

Masahisa Kawaguchi, Montréal, QC

Dominique Lauzier, Montréal, QC

Frank Rauch, Montréal, QC

The different pathways by which bone morphogenetic protein 7 (BMP-7) could exert its osteogenic function in distraction osteogenesis (DO) were investigated. Using immunohistochemistry, the temporal and spatial expression of markers for angiogenesis, cell proliferation, Indian hedgehog pathway, osteogenic growth factors and their receptors were investigated in a rabbit model of DO. Our results showed that local injection of BMP-7 at the lengthened site caused up-regulation of expression of growth factors and their receptors, cell proliferation and vascular markers and Indian hedgehog gene in a temporal fashion. By knowing these pathways, manipulation of DO by pharmaceutical agents may be possible.

Paper #8\*  
1431-1438

The Relation Between Loading Rate, Strain Gradients, and Bone Adaptation

**Jeremy M. LaMothe, Calgary, AB**

Ronald F. Zernicke, Calgary, AB

Bones can adapt in response to mechanical stimuli; higher rates of loading have been associated with greater bone formation rates. This study determined where bone accretion was localized in response to high loading rates. Non-invasive loads were applied to mice tibiae at one of three rates for 4 wk. It was found, via calcein labels, that adaptation on the periosteal, but not endosteal, surface exhibited a dose-

response relation with loading rate; periosteal and endosteal adaptation was localized to regions of high strain gradients. Understanding the stimuli bone responds to may underpin the development of non-pharmacological treatments to enhance bone mass.

Paper #9  
1438-1445

Achilles Tendinosis: Establishment of a Rat Overuse Exercise Model and Characterization of the Structural/Mechanical Features of the Normal Rat Achilles Tendon

**Mark Glazebrook, Halifax, NS**

*Maxine Langman, Halifax, NS*

*William D. Stanish, Halifax, NS*

*J. Michael Lee, Halifax, NS*

Tendon disease causes widespread morbidity ranging from mild pain to catastrophic end-stage rupture. The pathophysiology of tendon disease is not certain. An overuse exercise model was developed using rats with the aim of developing tissue with histological, biochemical and biomechanical features similar to those in human tendinosis. Results indicate that the biological response to over-exercise of the rat Achilles tendon is similar to the literature description of pathological specimens of human with disease. Biochemical and histological analysis of the rat Achilles tendons suggest that the pathophysiology is more consistent with a repair response than with a classical inflammatory response.

1445-1451

*DISCUSSION*

**1500 – 1530**

**HEALTH BREAK – POSTER SESSION**

**EXHIBIT HALL**

**1530 - 1700**

**CORS Sessions – (cont'd)**

**SESSION 4 – JOINTS & ARTHRITIS**

**GLEN 201/202 (TELUS)**

**Moderators:**

**Kevin S. Deluzio, Halifax, NS**

**Paul T. Salo, Calgary, AB**

Paper #10  
1530-1537

Evaluation of Measurement Resolution and Marker Error in Gait Analysis Laboratories

**Thomas R. Jenkyn, London, ON**

*Trevor Birmingham, London, ON*

*Ian C. Jones, London, ON*

*J. J. Robert Griffin, London, ON*

Motion analysis has become a common tool in diagnosis of musculoskeletal disorders. However its accuracy has not been quantified during dynamic activities. A novel device is introduced for quantifying dynamic accuracy and two different motion analysis systems were tested. The accuracy of large markers ( $\pm 0.6\text{mm}$ ) was inferior to small markers ( $\pm 0.4\text{mm}$ ). Accuracy was dependent on marker separation (Figure 1). The two systems performed similarly, but were unable to distinguish 25mm markers at smaller than 40mm separation. Since accuracy is dependent on marker separation, care must be taken when studying small segments (particularly feet or hands) to avoid unacceptable error.

Paper #11  
1537-1544

Gender Differences Exist in Patients with Knee Osteoarthritis

**Kelly McKean, Halifax, NS**

*Scott Landry, Halifax, NS*

*Cheryl Hubley-Kozey, Halifax, NS*  
*Michael J. Dunbar, Halifax, NS*  
*William H. Stanish, Halifax, NS*  
*Kevin J. Deluzio, Halifax, NS*

Knee osteoarthritis (OA) is a dynamic, progressive disease occurring 2-3 times more often in females than males. Twenty-three moderate OA (M=15, F=8) and 39 asymptomatic subjects (M=19, F=20) underwent 3D gait analysis and completed WOMAC questionnaires. Two-way anovas were used to detect differences between disease and gender for adduction moment and WOMAC scores. A higher adduction moment was found only in male OA subjects ( $p=0.02$ ), however pain levels were higher in female OA subjects ( $p=0.02$ ). Therefore when stratified by gender, higher adduction moment is not associated with increased pain. Males and females adopt different biomechanical strategies in response to knee OA.

Paper #12  
1544-1551

Neuromuscular Adaptations of the Ankle with Stability Training: Reflex Changes

**Colin D. Meakin, Vancouver, BC**  
*Richard Lockwood, Perth, AUSTRALIA*  
*David G. Lloyd, Perth, AUSTRALIA*  
*Rachel Skoss, Perth, AUSTRALIA*  
*Alastair S. E. Younger, Vancouver, BC*

Stability training on a wobble board is a widely used method of rehabilitation from lower limb injuries. Injury prevention represents a new application of this exercise but the neural mechanisms underlying its success remain unclear. In this study, 14 students were randomly assigned to a control and training group. EMG pre and post training was collected on a specially constructed ankle perturbation rig. A reduction in the stretch reflex amplitude in the ankle joint muscles was observed in the wobble board trained group. This neuromuscular adaptation may offer dynamic protection prior to and during heel contact, helping to prevent inversion sprains

1551-1557

*DISCUSSION*

Paper #13\*  
1557-1604

Prediction of Joint Reaction Forces and Moments for the Ovine Lower Limb During Locomotion Using Optimization and Inverse Dynamics Techniques

**Jeffrey Martin, Calgary, AB**  
*Janet Ronsky, Calgary, AB*  
*Craig Good, Calgary, AB*  
*Janet Trapper, Calgary, AB*  
*Jeremy Cohen, Calgary, AB*  
*Nigel Shrive, Calgary, AB*  
*Cyril B. Frank, Calgary, AB*

To understand relations between altered joint dynamics and cartilage degeneration, inverse dynamics and optimizations were developed for prediction of joint loads in the sheep hindlimb during locomotion. Kinematic (tibia and femur) and ground reaction force data were collected experimentally. Limb segmental inertial properties were determined from MRI. Optimization algorithms were developed to predict kinematics of the foot and hock joint. Peak vertical forces ranged from 250N – 380N for the hock and stifle joints, respectively. The techniques developed successfully enable prediction of hindlimb joint reaction loads, based on segmental inertial properties and limb kinematics using optimization techniques with partial kinematic data.

Paper #14\*  
1604-1611

Radiographic Measures of Knee Alignment in Patients with Varus Gonarthrosis: Effect of Different Patient Positions and Associations with Dynamic Joint Load

**Adrian Specogna, London, ON**  
*Trevor B. Birmingham, London, ON*  
*Thomas R. Jenkyn, London, ON*  
*Michael A. Hunt, London, ON*  
*Ian C. Jones, London, ON*  
*Peter J. Fowler, London, ON*  
*J. J. Robert Griffin, London, ON*

This study compared measures of knee mechanical axis obtained from hip-to-ankle radiographs with patients in three different positions (single limb standing, double limb standing, and supine), and examined the association between these measures and the peak knee adduction moment during walking. Although mechanical axis measures obtained from the aforementioned three positions were significantly different from one another, mechanical axis was only moderately correlated to adduction moment, highlighting the difference between static knee alignment and dynamic knee joint load. Future investigations should explore methods of using gait data to plan interventions intended to decrease knee joint loads in patients with malalignment.

Paper #15  
1611-1618

Static Stability and Response to Perturbation With and Without AFOs in Healthy Adults

**Barbara Ramage, Calgary, AB**  
*Jane Desrochers, Calgary, AB*  
*James Wakeling, Calgary, AB*

Little is known of the effects of braces on static stability and response to perturbation in healthy individuals. Standing balance was quantified with force plates in four subjects on three separate days while barefoot and wearing AFOs of increasing stiffness. In separate trials, balance was perturbed with an anteriorly directed force that made the subjects step. Static stability improved in all subjects when wearing the AFOs. However, AFO use decreased the total COP A-P excursion before the subject had to take a step. Therefore, AFO use appears to improve static stability but may negatively impact subject's response to perturbation.

1618-1624

*DISCUSSION*

Paper #16\*  
1624-1631

The Effect of High Tibial Osteotomy on Patellar Tracking

**David R. Wilson, Vancouver, BC**  
*Nicholas A. Hill, Kingston, ON*  
*Robert A. Fellows, Kingston, ON*  
*Norma J. MacIntyre, Kingston, ON*  
*Thomas S.Y. Tang, Kingston, ON*  
*Mark M. Harrison, Kingston, ON*  
*Randy E. Ellis, Kingston, ON*

The purpose of this study was to determine whether high tibial osteotomy changes patellar tracking and tibiofemoral kinematics. We assessed three-dimensional tibiofemoral and patellofemoral kinematics in four subjects before and after high tibial osteotomy using a new, validated MRI-based technique. Closing-wedge high tibial osteotomy increased medial patellar tilt, proximal patellar translation and decreased internal patellar spin and patellar flexion. Closing-wedge high tibial osteotomy decreased tibial adduction lateral tibial

translation. The kinematic changes at the patellofemoral joint may explain some of the poor clinical results reported after high tibial osteotomy.

Paper #17  
1631-1638

The Functional Effects of Peri-Articular Muscle Weakness in the Presence of Acute Joint Instability: A New Animal Model

**David Longino, Calgary, AB**

*Walter Herzog, Calgary, AB*

*Cyril B. Frank, Calgary, AB*

An animal model was developed to test the hypothesis that botulinum toxin (BTX-A) induced muscle weakness produces additional muscle dysfunction in an anterior cruciate ligament (ACL) transection model of joint instability. A multidisciplinary assessment documented objective, functional measures of quadriceps strength in twenty New Zealand White rabbits. Results showed a significant deterioration in quadriceps strength caused by BTX-A in the ACL deficient knee 4 weeks post injection. The significance of these results lies in their establishment of a model to facilitate future investigations into the role of peri-articular muscle weakness in the ongoing degeneration of unstable joints.

Paper #18\*  
1638-1645

Unexpected Meniscal Changes After Combined ACL/MCL Transection in Ovine Stifle Joints

**Yusei Funakoshi, Calgary, AB**

*Mitsuhiro Hariu, Calgary, AB*

*Janet E. Tapper, Calgary, AB*

*Linda L. Marchuk, Calgary, AB*

*Nigel G. Shrive, Calgary, AB*

*Cyril B. Frank, Calgary, AB*

ACL and MCL injuries often induce degenerative joint disease. The purpose of our study was to evaluate site-specific changes occurring in both medial and lateral menisci from ACL and MCL transected stifle joints during OA development, and to compare meniscal changes to cartilage changes. The results presented demonstrate that morphological changes that were site specific not only in cartilage but also meniscus. In menisci, water content and histology were altered even though gross morphology was not. ACL & MCL transection in the ovine stifle joint is a valid model of early meniscal degeneration not detected by gross morphological examination

**1645-1651**

*DISCUSSION*

**1530 - 1700**

**WORKSHOP 2**

**GLEN 205 (TELUS)**

Reduction and Internal Fixation of Posterior Wall Acetabular Fractures

Moderator: David J.G. Stephen

Faculty: Pierre Guy, James N. Powell

Objectives:

1. To Review the Pathoanatomy of Posterior Wall Acetabular Fractures.
2. To Review the Emergency Management of posterior Fracture-Dislocations of the Hip
3. To Review the Indications and Techniques of Open Reduction and Internal Fixation of Posterior Wall Acetabular Fractures
4. To Review the Results of Posterior Wall Fracture Surgery

*DISCUSSION*



- b. Make informed choices about what device to purchase.
- c. Understand the range of orthopaedic programmes available for PDA's and select a core set of tools.
- d. Comprehend the wider potential of PDA database programmes for standardization and simplification of documentation in assessment, scoring, operative reporting and outcomes analysis

Information for the Ontario Joint Registry is collected on PDA's. This example will be examined to illustrate the use of PDA's in Orthopaedic Practice.

A disk with links to useful information on the Internet and some orthopaedic database examples will be distributed to attendees.

*DISCUSSION*

**ICL-09: PAEDIATRIC**

**GLEN 205 ( TELUS)**

The Adolescent Athlete

Moderator: Laurie A. Hiemstra

Faculty: Preston Wiley, J. Robert Griffin, Rick A. Ogilvie

Objectives:

- 1. To gain an understanding of the management of common paediatric sport injuries about the knee
- 2. To understand the presentation, non-operative management, and outcome of young athletes with Osgood-Schlatter's Disease and related problems
- 3. To understand the natural history of ACL injuries in the skeletally immature and to be aware of their management
- 4. To understand the natural history and treatment algorithm for osteochondritis dissecans

- Osgood-Schlatter's and Related Problems in the Young Athlete
- ACL Injuries in the Skeletally Immature
- Meniscal Management in the Adolescent Knee

Preston Wiley  
J. Robert Griffin  
Rick A. Ogilvie

*DISCUSSION*

**ICL-10: SPINE**

**GLEN 203/204 (TELUS)**

Spinal Radiology and Interventions

Moderator: Richard W.C. Hu

Faculty: Bevan Frizzell, Rick Walker

Objectives: Bring the participant up-to-date on the scope and indications of Interventional Radiology techniques available to assist in the diagnosis and treatment of various spinal disorders. Review the current state of the art in spine imaging, including CT and MRI.

- Current Trends in Interventional Spine Radiology
- Primer of Spine Imaging

Bevan Frizzell  
Rick Walker

*DISCUSSION*

**ICL-11: HAND**

Scaphoid Fracture Management

Moderator: Kevin A. Hildebrand

Faculty: C. Vaughan A. Bowen, Kenneth J. Faber, Herbert P. von Schroeder

- Classification and Natural History of Scaphoid Fractures
- Treatment of Acute Scaphoid Fractures
- Surgical Treatment of Scaphoid Nonunions

*DISCUSSION*

**IMPERIAL 2 (HYATT)**

C. Vaughan A. Bowen  
Kenneth J. Faber  
Herbert P. von Schroeder

**ICL-12: ADULT RECONSTRUCTION**

Bearings in Total Hip Arthroplasty – What to Choose

Moderator: J. Roderick Davey

Faculty: Brian C. Burkart, David R. Hedden, Robert B. Bourne,  
Justin de Beer, Olga L. Huk

- The Case for Conventional Polyethylene
- The Case for Cross-Linked Polyethylene
- The Case for Oxinium
- The Case for Ceramic-on-Ceramic
- The Case for Metal-on-Metal

*DISCUSSION*

**GLEN 206 (TELUS)**

Brian C. Burkart  
David R. Hedden  
Robert B. Bourne  
Justin de Beer  
Olga L. Huk

**0830 – 1000**

**COA Scientific Sessions**

**SESSION 3: TRAUMA, LOWER EXTREMITY**

**TELUS 201/202**

**Moderators:**

**Robert N. Meek, Vancouver, BC**  
**Donald Weber, Edmonton, AB**  
**Robert Bucholz, Rosemont, IL**

Paper #1  
0830-0837

A Biomechanical Evaluation of the Effect of Mixing Time on Cement Augmentation of Plated Fractures in Canine Femoral

**Christopher Gallimore, Toronto, ON**

*Henry Koo, Toronto, ON*

*Alison McConnell, Toronto, ON*

*Emil H. Schemitsch, Toronto, ON*

The purpose of this study was to determine the effect of cement mixing time on fixation augmentation in both healthy and simulated osteoporotic canine bone. In a canine diaphyseal model, screw insertion into liquid cement achieves greater bending stiffness and resists a greater load to failure than cement inserted as a paste. Bone cement in its liquid state may provide increased structural

support in the setting of an osteoporotic fracture, possibly due to increased interdigitation of the cement with the screw threads and bone.

Paper #2  
0837-0814

Comparative Biomechanical Analysis of a Locking Condylar Plate and a Retrograde Intramedullary Nail for Supracondylar Femur Fracture Fixation

*Daniel Garneau, St-Émile, QC*  
**Jean Lamontagne, Québec, QC**  
*Denis Rancourt, Québec, QC*

Four matched pairs of fresh frozen human femora were used to compare the biomechanical properties in axial and torsional loading of a Locking Condylar Plate and a retrograde intramedullary nail. One-centimeter gap osteotomy was created in the supracondylar region to simulate an AO/OTA 33-A3 fracture. The instrumented specimens were then mechanically tested under physiologic conditions in axial and torsional loading to determine the stability of the constructs. This laboratory study enhances the biomechanical advantages of the Locking Condylar Plate when fixation stiffness is essential. Devices with head locking screws provide angular rigidity and maximize fixation stability in osteopenic bone.

Paper #3  
0814-0821

Effect of Positioning on Systemic Neutrophil and Platelet Activation Following Sequential Pulmonary Contusion and Fat Embolism in a Canine Model of Polytrauma

**Michael Blankstein, Toronto, ON**  
*Khalid Syed, Toronto, ON*  
*Masaki Nakane, Toronto, ON*  
*Annie Bang, Toronto, ON*  
*John Freedman, Toronto, ON*  
*Robin R. Richards, Toronto, ON*  
*Emil H. Schemitsch, Toronto, ON*

The purpose of this study was to determine the effect of positioning (lateral vs. supine) on pulmonary pathophysiology following pulmonary contusion and fat embolism in a canine model of polytrauma. Platelet and neutrophil activation were assessed using flow-cytometry. There were no significant differences between groups in CD62P and CD11/18 MCF (markers of platelet and neutrophil activation, respectively) following fat embolism. However, only animals in the lateral position displayed significant increases in both measures as compared to baseline values. Lateral positioning may exert an early effect on proinflammatory and coagulation activation, and may play a role in the development of acute lung injury.

0821-0827

*DISCUSSION*

Paper #4\*  
0827-0830

Functional Outcome in Combined Pelvic and Acetabular Fractures

**Yves G. Laflamme, Montréal, QC**  
*Cornelia M. Borkhoff, Toronto, ON*  
*Venkata K.R. Bodavula, Toronto, ON*  
*David Cogley, Toronto, ON*  
*David J.G. Stephen, Toronto, ON*  
*Michael D. McKee, Toronto, ON*

*Emil H. Schemitsch, Toronto, ON*  
*Hans J. Kreder, Toronto, ON*

The purpose of this study was to evaluate functional outcome in patients with combined pelvic and acetabular fractures and to identify factors associated with outcome. 115 patients were identified. 63% were male; mean age was 37 years; mean ISS was 30. Three patients died from their injuries. At a mean follow-up of 3.5 years, patients exhibited profound functional deficits compared to the normal population. Those with an acetabular fracture involving the posterior wall or an associated lower extremity injury have a particularly poor prognosis. Combined pelvic and acetabular injuries are associated with high mortality and functional morbidity irrespective of treatment.

Paper #5  
0830-0837

Is Autogenous Iliac Grafting Still The Gold Standard For Treatment Of Defect Voids In Tibial Plateau Fractures? : A Comparative Prospective Multicenter Study Of Autogenous Iliac Grafting Vs. A Bioresorbable Calcium Phosphate Paste

**Ross K. Leighton, Halifax, NS**

*Thomas A. Russell, Collierville, TN*

*Charles N. Cornell, New York, NY*

*Robert Bucholz, Dallas, TX*

*James Goulet, Ann Arbor, MI*

*Paul Tornetta, Boston, MA*

*Mark Vrahas, Boston, MA*

*Peter J. O'Brien, Vancouver, BC*

*William W. C. Jackson, Jacksonville, FL*

*Thomas Varecka, Mnneapolis, MN*

*Alan Jones, Baltimore, MD*

*Robert Ostrum, Columbus, OH*

This prospective randomized multicenter study compares two methods of bone defect treatment in tibial plateau fractures: a bioresorbable calcium phosphate paste (Alpha-BSM) that hardens at body temperature to give structural support versus Autogenous iliac bone graft (AIBG).

118 patients were enrolled with a 2:1 randomization, Alpha-BSM to AIBG. There was a significant increased rate of non-graft related adverse affects and a higher rate of late articular subsidence (3 – 9 month period) in the AIBG group.

A bioresorbable calcium phosphate material is recommended in preference to the gold standard of AIBG for bone defects in tibial plateau fractures.

Paper #6  
0837-0844

Mortality Following Delay to Surgery in Hip Fractures in the Province of Ontario

**Hans J. Kreder, Toronto, ON**

*Iris Weller, Toronto, ON*

*Eugene Wai, Adelaide, AUSTRALIA*

The purpose of this study was to evaluate mortality following delay to surgery in hip fractures in the province of Ontario. All patients undergoing a surgical procedure for a hip fracture between 1993 and 1999 were identified using administrative databases. For every day that surgery was delayed, the adjusted odds of in-hospital mortality increased by a factor of 1.12 times (95%CI), with similar results

at 3 months and one year. A significant relationship exists between delay to surgery and mortality in elderly hip fracture patients. Every effort should be made to avoid non-medical delays in providing operative treatment for hip fractures.

0844-0850

*DISCUSSION*

Paper #7  
0850-0857

Muscle Function and Functional Outcome Following Standard Antegrade Reamed Intramedullary Nailing of Isolated Femoral Shaft Fractures

*Peter J. O'Brien, Vancouver, BC*

**Victor T. Jando, Vancouver, BC**

*Thomas Lu, Vancouver, BC*

*Holman Chan, Vancouver, BC*

*Fiona Timms, Vancouver, BC*

Antegrade intramedullary nailing via a piriformis fossa start point is the treatment of choice for most femoral shaft fractures in adults. Recently alternate approaches for intramedullary nailing of the femur have been advocated, including retrograde nailing and trochanteric start point antegrade nailing. Reasons cited for considering alternative starting points to the piriformis fossa include a concern about the damage to the hip abductor muscles that may occur during access to the piriformis fossa. There is very little literature about long term muscle function after standard antegrade intramedullary nailing and the conclusions of the available studies are conflicting.

Paper #8  
0857-0904

Outcomes Following Hip Fractures Treated In Teaching Versus Community Hospitals

**Iris Weller, Toronto, ON**

*Hans J. Kreder, Toronto, ON*

*Eugene Wai, Adelaide, AUSTRALIA*

*Joseph Schatzker, Toronto, ON*

We compared the mortality of hip fracture patients treated in teaching versus community hospitals in Ontario. Hip fracture patients  $\geq 50$  yrs were identified from the Canadian Institute for Health Information Hospital Discharge Abstracts Database and linked to the Registered Persons Database for death information. Logistic regression analyses were done to assess the relation between hospital type and both mortality and complications after surgery. Covariates examined include sex, age, Charlson-Deyo index, time to surgery and their interactions. Although patients treated in teaching hospitals have more comorbidities and complications they have lower mortality than those treated in community hospitals.

Paper #9\*  
0904-0911

Functional Outcome after Femur Fracture: Does Knee Pain Matter?

**David W. Sanders, London, ON**

*Mark MacLeod, London, ON*

*Tanya Charyk-Stewart, London, ON*

*Jeannette Lydestad, London, ON*

*Andrea Domonkos, London, ON*

*Janice Poon, London, ON*

Recovery after femur fractures is slow, despite rapid bone union. Causes of disability require investigation. Forty patients with isolated, diaphyseal femur fractures treated with antegrade locked intramedullary nailing were prospectively studied. Functional outcome was

measured using the Western Ontario – McMaster University Osteoarthritis Index (WOMAC) and Short Musculoskeletal Functional Assessment (SMFA). Pain scores from the groin, buttock, thigh, and knee six months following the injury were correlated with functional outcome. Severity of pain was highest at the knee. Both knee and thigh pain had strong correlations with functional outcome measures following diaphyseal femur fractures. Further investigation into post-traumatic pain is warranted.

0911-0917

*DISCUSSION*

#### **SESSION 4: ADULT RECONSTRUCTION - KNEE**

**TELUS 203/204**

**Moderators:** **Michael J. Dunbar, Halifax, NS**  
**John F. Rudan, Kingston, ON**  
**Barry Tietjens, Auckland, NEW ZEALAND**

Paper #10  
0830-0837

A Kinetic and Kinematic Analysis of a New Trabecular Metal Augmentation Patella  
**J. Mounthey, Southampton, UK**  
*M. Paice, Vancouver, BC*  
*Nelson V. Greidanus, Vancouver, BC*  
*David A. Wilson, Vancouver, BC*  
*Bassam A. Masri, Vancouver, BC*

We have evaluated the function of a trabecular metal augmentation patella to restore knee kinetics and kinematics after revision total knee arthroplasty. An “Oxford type” rig was used with fresh frozen cadaveric knees, for an active model that maximally retained the soft tissue envelope.

Investigating the force through the extensor mechanism, we found a statistically significant difference between the TKA before and after patelloplasty, which was abolished by the insertion of the augmentation patella. Investigation patella tracking, we found a statistically significant difference between the TKA before and after patelloplasty, that was rectified by the insertion of the augmentation patella.

Paper #11\*  
0837-0844

A Randomized Comparison of the A.M.K<sup>®</sup>, Genesis II<sup>®</sup>, and the S.A.L<sup>®</sup>. Total Knee Arthroplasties  
**Steven J. M. MacDonald, London, ON**  
*Juliana T. Marr, London, ON*  
*Robert B. Bourne, London, ON*  
*Richard W. McCalden, London, ON*  
*Cecil H. Rorabeck, London, ON*

Fixed bearing and mobile bearing knee designs are both currently used in clinical practice with little evidence based research available to determine superiority of one system. We performed a prospective, randomized, blinded clinical trial to compare a mobile bearing to two standard fixed bearing implants. A single observer was used to measure all range of motion scores. We evaluated the short and long- term outcomes of the SAL<sup>®</sup> (mobile bearing) versus the AMK<sup>®</sup> and Genesis II<sup>®</sup> (fixed bearings) total knee joint replacements. Minimum two year follow-up revealed no differences in the outcome measures (WOMAC, SF-12, Knee Society Clinical Rating System).

Paper #12  
0844-0851

Anterior Femoral Notching During Total Knee Arthroplasty: A Finite Element Analysis  
**Paul Zalzal, Toronto, ON**

*Marcello Papini, Toronto, ON*  
*David Backstein, Toronto, ON*  
*Allan E. Gross, Toronto, ON*

Notching of the anterior femoral cortex during total knee arthroplasty is thought to be a possible risk factor for subsequent periprosthetic femoral fracture. Understanding the stress pattern caused by notching may help the orthopedic surgeon reduce the risk of fracture. A validated, three dimensional, finite element model of the femur using gait loads has been used to analyze the stress concentrations caused by anterior femoral cortex notching. Three factors that increase these stresses were identified. The notch depth, radius of curvature, and its proximity to the end of the femoral prosthesis influence the state of stress in the surrounding bone.

0851-0857

#### *DISCUSSION*

Paper #13\*  
0857-0904

Articulating Spacers Facilitate Prosthetic Reimplantation in two-stage Revision Knee Arthroplasty for Sepsis.

**Andrew S. Comley, London, ON**  
*Steven J. M. MacDonald, London, ON*  
*Richard W. McCalden, London, ON*  
*Cecil H. Rorabeck, London, ON*  
*Robert B. Bourne, London, ON*

In recent years articulating cement spacers have been used to treat infected knee arthroplasty. The aim has been to better maintain tissue planes and joint mobility thereby improving second stage re-implantation surgery. Two groups of patients treated for infected knee arthroplasty were reviewed. 26 patients with I articulating and 40 patients with static antibiotic-impregnated methyl-methacrylate spacers were compared. The articulating spacers demonstrated easier surgical exposure at second stage and improved range of knee motion after re-implantation. There was no compromise in the rate of infection eradication with articulating spacers. Bone loss at revision was independent of spacer type.

Paper #14  
0904-0911

Computer Assisted Alignment of the Oxford Unicompartmental Knee Arthroplasty- The Kingston Experience with Two Techniques

**John F. Rudan, Kingston, ON**  
*David Mayman, Kingston, ON*  
*David R. Pichora, Kingston, ON*  
*William Long, Kingston, ON*  
*Ted Vasarhelyi, Kingston, ON*  
*Randy Ellis, Kingston, ON*

Two computer assisted techniques (CT and a fluoroguide based system) were used to insert the femoral component of the Oxford Unicompartmental Knee arthroplasty. The accuracy and variability of component positioning were compared. Clinical data was collected pre-operatively and is being collected post-operatively. Standing AP and lateral knee X-rays as well as skyline X-rays were collected pre-operatively and post-operative full length AP and lateral femur X-rays were completed in order to measure alignment of the femoral component. Results are showing accurate insertions of the Oxford knee femoral component using both systems.

Paper #15  
0911-0918

Outcomes of Opening Wedge Proximal Tibial Osteotomy

**Matthew Fouse, Montréal, QC**  
*Fawsi Al-Jassir, Montréal, QC*  
*Mark L. Burman, Montréal, QC*

*Eric M. Lenzcner, Montréal, QC*

Closing wedge tibial osteotomy has been the gold standard in proximal osteotomy procedures to correct uni-compartmental osteoarthritis. Opening wedge tibial osteotomies are achieving similar long-term results while avoiding some of the pitfalls of the closing wedge procedure. Opening wedge osteotomies maintain patellar length, tibial inclination, and proximal tibia bone stock. This allows for a technically easier conversion to a total knee arthroplasty in the future.

0918-0924

*DISCUSSION*

Paper #16  
0924-0931

Prevalence of Medical Co-Morbidities Amongst Patients with Prosthesis Infection After Primary Total Hip and Knee Replacements

**Kafai Lai, Winnipeg, MB**

*Eric Bohm, Winnipeg, MB*

*Colin Burnell, Winnipeg, MB*

*David R. Hedden, Winnipeg, MB*

A retrospective case-control study was performed to examine modifiable medical co-morbidities in patients who develop deep infection after primary total hip or knee replacement. To reduce bias, matching was undertaken using age, gender, and procedure. Co-morbidities were classified by system: cardiovascular, respiratory, gastrointestinal, genitourinary, metabolic, haematological and neurological. Initial analyses demonstrate that patients with infected primary hip or knee replacements are more likely to suffer from medical conditions than patients who did not develop infections. Since many of these co-morbidities are preventable or treatable, early screening and intervention may play a role in reducing prosthetic joint infection.

Paper #17  
0931-0938

The Results of Blood Management Methods in Total Hip and Knee Arthroplasty

**Thomas R. Turgeon, San Diego, CA**

*Richard D. Coutts, San Diego, CA*

*Robert M. Healey, San Diego, CA*

*Mary Elington, San Diego, CA*

Allogenic blood transfusions are frequent sequelae of hip and knee arthroplasty with potentially deleterious consequences. A prospective collection of a comprehensive data set of 1,185 knee and 1,064 hip arthroplasty patients including primary and revision surgeries was completed with analysis of allogenic and predonated blood usage, blood salvage systems and costs. The most effective strategy in reducing allogenic blood transfusion is the use of a blood salvage system. The most expensive strategy is the use of blood salvage systems with predonation. The least expensive and least effective strategy is no predonation of blood and no blood salvaging system.

Paper #18  
0938-0945

Patella Resurfacing / Non-resurfacing In Total Knee Arthroplasty – Results of a Randomized Controlled Clinical Trial at a Minimum of 10-years

**R. Stephen J. Burnett, London, ON**

*Christopher M. Haydon, London, ON*

*Cecil H. Rorabeck, London, ON*

*Robert B. Bourne, London, ON*

The results of a randomized controlled clinical trial of 90 patients comparing resurfacing to non-resurfacing of the patella in total knee arthroplasty (TKA) are reported with a minimum of 10-years of follow-up. Using a cruciate retaining hybrid TKA, the outcome measures

included Knee Society Clinical Rating scores, functional testing (stair climb and flexion extension torques), patient satisfaction, anterior knee pain, and a patellofemoral specific questionnaire. The results indicated no difference between the groups in all categories. Results at two and ten years postoperatively are compared. This study represents the longest follow-up to date comparing resurfacing to nonresurfacing of the patella.

0945-0951

*DISCUSSION*

## **SESSION 5: PAEDIATRICS**

**TELUS 206**

**Moderators:** **Gerhard N. Kiefer, Calgary, AB**  
**Douglas Hedden, Toronto, ON**  
**David Jones, London, UK**

Paper #19\*  
0830-0837

A Randomized, Controlled Trial of Above Elbow vs Below Elbow Casts in Pediatric Distal Third Forearm Fractures

**Eric Bohm, Winnipeg, MB**  
*Vikrant Bubbar, Saskatoon, SK*  
*Ken Yong-Hing, Saskatoon, SK*  
*Anne K. Dzus, Saskatoon, SK*

We undertook a prospective, single blinded, randomized, controlled trial of 100 children treated with either an above or below elbow cast for treatment of closed, distal third forearm fractures requiring reduction. The re-manipulation rate in the below elbow group was 2% (95%CI: 0-11%) compared to 6% (95%CI: 2-15%) in the above elbow group,  $p=0.62$ . Above elbow casts do not appear to improve fracture immobilization nor reduce the requirement for re-manipulation in pediatric distal third forearm fractures.

Paper 20\*  
0837-0844

Concerns, Desires & Expectations of Surgery for Adolescent Idiopathic Scoliosis: A Comparison of Patients', Parents' and Surgeons' Perspectives

**Unni G. Narayanan, Toronto, ON**  
*James G. Wright, Toronto, ON*  
*Douglas A. Hedden, Toronto, ON*  
*Benjamin A. Alman, Toronto, ON*  
*Andrew W. Howard, Toronto, ON*  
*Morgan Slater, Waterloo, ON*  
*Sandra Donaldson, Toronto, ON*

Little is known about the priorities of patients undergoing surgery for idiopathic scoliosis. This study explores the priorities of adolescents and contrasts them from their parents and their surgeons. 55 pairs of children and parents underwent structured interviews separately, to explore their concerns, desires and expectations both about scoliosis and surgery. Surgeons of these patients and from across Canada completed a similar questionnaire. We found a significant mismatch between child, parent and surgeon priorities. This mismatch has implications on matters relating to decision making, informed consent, understanding of patient satisfaction, and measuring outcomes that are meaningful to patients.

Paper #21  
0844-0851

Coxa Vara in Osteogenesis Imperfecta  
**Mehdi Aarabi, Montréal, QC**

*Franck Rauch, Montréal, QC*  
*Reggie C. Hamdy, Montréal, QC*  
*François Fassier, Montréal, QC*

In osteogenesis imperfecta (OI) because of bone fragility, deformities in load bearing regions of the body such as femoral neck and proximal femur are expected. The purpose of this study was to determine the prevalence and clinical presentation of coxa vara in 292 patients with different types of OI. More than half of the patients were OI type III (55%) and the highest prevalence of coxa vara was seen in OI type VI (44,5%). The children suffering from coxa vara had also a significant limitation of range of motion in their hips.

0851-0857

*DISCUSSION*

Paper #22  
0857-0904

Early Results of Triple Pelvic Osteotomy for Treatment of Perthes Disease  
**François D. Lalonde, San Diego, CA**  
*Dennis R. Wenger, San Diego, CA*  
*Afshin Aminian, Cedar Knolls, NJ*

Over the last several years, triple pelvic osteotomy has become our preferred method for surgical containment in Perthes disease. Since 1995, seventeen patients with Perthes disease have been treated with triple pelvic osteotomy at our institution. Fourteen of seventeen patients (82%) had a good or excellent clinical result at latest follow-up. According to Sundt's criteria, radiographic outcome was rated as good in fourteen patients (82%), fair in one patient and poor in two patients. Experience with the technical aspects of the procedure is necessary to avoid pseudarthrosis and iatrogenic external rotation of the acetabular fragment.

Paper #23  
0904-0911

Flexion-Distracton Injuries of the Thoraco-Lumbar Spine in Children: a Comparison of Operative and Non-Operative Management  
**Paul J. Moroz, Ottawa, ON**  
*Paul B. Benôit Jr., Boston, MA*  
*John B. Emans, Boston, MA*  
*Timothy Kresko, Boston, MA*  
*James R. Kasser, Boston, MA*

Operative treatment of flexion-distracton fractures of the thoraco- lumbar spine in children and adolescents may be the preferred approach to the management of this fracture.

Paper #24  
0911-0918

Is There a Need for Anterior Release for 70-90° Thoracic Curves in Adolescent Scoliosis?  
**Jean Ouellet, Montréal, QC**  
*Vincent Arlet, Montréal, QC*  
*Liam Chung, Montréal, QC*

Classic management of large and stiff thoracic scoliotic curves in the adolescent comprise of anterior release followed by posterior instrumentation. However third generation segmental spinal instrumentations have shown increased correction of thoracic curves. Therefore, the indication for an anterior release may no longer be required. We reviewed our database for cases with thoracic curves with Cobb angle between 70 and 90° that we had only done posterior surgery. We found that with adequate posterior release, and the use of third generation segmental instrumentation there is no need for anterior release even for curves in the 70 -90° range.

0918-0924

*DISCUSSION*

Paper #25  
0924-0931

Outcomes of Intramedullary Nail Fixation Through the Olecranon Apophysis in Skeletally Immature Forearm Fractures

**Alexander Rabinovich, Hamilton, ON**

*Jung Y. Mah, Hamilton, ON*

*Anthony Adili, Hamilton, ON*

*Rajiv Gandhi, Hamilton, ON*

Recent concerns regarding the prospective growth disruption of the olecranon apophysis in skeletally immature patients with intramedullary nail fixation for ulnar fractures has been documented. This retrospective review investigated the long-term functional and radiological outcomes of intramedullary nail fixation through the olecranon apophysis in skeletally immature patients.

Intramedullary nail fixation through the olecranon apophysis in skeletally immature patients is an effective, efficient procedure with excellent functional outcomes and without radiographic evidence of growth disruption at maturity.

Paper #26\*  
0931-0938

Patient Characteristics Associated with Surgeons' Ratings of Physical Deformity in Adolescent Idiopathic Scoliosis (AIS)

*Sandra Donaldson, Toronto, ON*

**Douglas Hedden, Toronto, ON**

*Derek Stephens, Toronto, ON*

*Benjamin A. Alman, Toronto, ON*

*Andrew W. Howard, Toronto, ON*

*James G. Wright, Toronto, ON*

Five surgeons independently rated clinical photographs of 40 patients with AIS. Ratings of shoulder blades, shoulder symmetry, and waist symmetry were related to "overall appearance", and were also correlated with rib prominence and Cobb angle. Because the components of surgeons' ratings of appearance differed, this may lead to inconsistent recommendations regarding surgery.

Paper #27  
0938-0945

The Usefulness of Clinical Examination in the Diagnosis of Occult Pediatric Scaphoid Fractures

*Timothy P. Carey, London, ON*

*Gladys K. Chan, London, ON*

*Craig A. Black, London, ON*

*Ronald El-Hawary, London, ON*

**K. Kellie Leitch, London, ON**

Scaphoid fractures are rare injuries in the pediatric population. A clinical and radiographic review over a six-year period at our institution revealed 99 suspected scaphoid fractures. All of these patients presented with post-traumatic tenderness in the anatomic snuffbox and were treated with thumb spica cast immobilization. Only 9% of these patients demonstrated radiographic evidence of scaphoid fracture on initial presentation. At subsequent follow-up, 6 additional patients revealed radiographic evidence of scaphoid fracture. Positive predictive value of snuffbox tenderness for scaphoid fracture was 6% for patients with initially normal radiographs.

0945-0951

*DISCUSSION*

<b>0830 - 1000</b>	<b>LIVE SURGERY 2</b> Shoulder Arthroscopic Rotator Cuff Repair Moderators: Robert M. Hollinshead, Kenneth J. Faber Surgeons: Ian Lo, Alex Lai  Objectives: This surgical demonstration will demonstrate the principles and practical applications of arthroscopic techniques for rotator cuff repair. Following the surgical demonstration the participant will have an improved understanding of the indications, techniques and limitations of arthroscopic rotator cuff repair.  <i>DISCUSSION</i>	<b>MACLEOD, AB - TELUS</b>
<b>0830 – 1200</b>	<b>COFAS SESSION</b>	<b>TELUS 103</b>
<b>1000 – 1030</b>	<b>HEALTH BREAK</b>	<b>EXHIBIT HALL</b>
<b>1030 – 1100</b>	<b>R.I. HARRIS LECTURE</b> One Small Step  The highest value of a physician is to provide the absolute best care to every patient that they see. Unfortunately, that definition of “best” is a moving target – moving based on the knowledge, expertise and innovations of the time that they live in. We are blessed to live in an exciting time of exponential innovations in technology and expertise in Orthopaedics – surrounded by opportunities to continue to improve the care of every patient we see. Realizing that opportunity, though, requires a team effort, much like putting a man on the moon. The goal is clear – now we just have to assemble the Orthopaedic equivalent of the space programme and have its contributors create the rocket ships that will get us there. The Canadian Orthopaedic Association and each of its provincial elements has the background, the leadership, the people, and the health system to get us there. Onward and upward!	<b>MACLEOD AB (TELUS)</b> Cyril B. Frank
<b>1100 – 1200</b>	<b>COA BUSINESS MEETING</b> President-Elect Address & Transfer of Office	<b>MACLEOD AB (TELUS)</b>
<b>1200 – 1300</b>	<b>LUNCH</b>	<b>EXHIBIT HALL</b>
<b>1300 – 1430</b>	<b>COA Scientific Sessions</b>	
<b>SESSION 6: ADULT RECONSTRUCTION – HIP 1</b>		<b>GLEN 203/204 (TELUS)</b>
<b>Moderators:</b>	<b>Donald Garbuz, Vancouver, BC</b> <b>David R. Hedden, Winnipeg, MB</b> <b>Lou van Wyk, Arcadia, SOUTH AFRICA</b>	
Paper #28 1300-1307	Post-operative Bone Scintigraphy to Predict Surgical Outcome Following Vascularized Fibular Grafting for Osteonecrosis of the Hip <b>Kurt P. Droll, Toronto, ON</b> Vikash Prasad, Toronto, ON Ana Ciorau, Toronto, ON	

Bruce Gray, Toronto, ON  
Michael D. McKee, Toronto, ON

The purpose of this study was to investigate the use of early post-operative bone scintigraphy to predict surgical outcome following vascularized fibular grafting (VFG) for osteonecrosis of the hip. Bone scans from one hundred and four hips (Steinberg stage I-IV) treated with VFG between 1994 and 2000 were retrospectively reviewed. Bone scan scores were significantly lower in the failed group (n=31) compared to the successful group (n=73), p=0.03. Logistic regression demonstrated that a higher bone scan score was associated with success, p=0.028, with an odds ratio of 3.08 (1.13-8.40).

Paper #29\*  
1307-1314

Constrained Acetabular Components used for the Treatment and Prevention of Dislocation in Total Hip Arthroplasty

**Andrew S. Comley, London, ON**  
Richard W. McCalden, London, ON  
Cecil H. Rorabeck, London, ON  
Steven J. M. MacDonald, London, ON  
Robert B. Bourne, London, ON

Constrained acetabular components are a useful adjunct for the potentially unstable hip arthroplasty. There have been concerns over implant failure and early acetabular component loosening secondary to the increased implant constraint. We report the results of a constrained acetabular component used as treatment for dislocating hips and as prophylaxis against dislocation in high risk primary and revision hip arthroplasty. At average 3.1 years follow-up only one insert of 89 inserted had failed. No cups have demonstrated radiographic or clinical evidence of loosening. We conclude this implant is safe and effective for both the prevention and treatment of hip instability.

Paper #30  
1314-1321

Early Wear Performance of Highly Cross-linked Polyethylene in Total Hip Arthroplasty: A Prospective Randomized Controlled Study

**Richard W. McCalden, London, ON**  
Steven J. M. MacDonald, London, ON  
Cecil H. Rorabeck, London, ON  
Robert B. Bourne, London, ON  
David G. Chess, London, ON  
A. Saleh, London, ON

While highly cross-linked polyethylene has achieved widespread clinical use based on laboratory testing showing significant wear reduction, there is little clinical information demonstrating its benefits *in-vivo*. This study reports the early clinical and wear performance of a prospective randomized controlled trial comparing highly cross-linked to standard polyethylene. At minimum two year follow-up, there were no clinical differences. Similarly, there was no detectable improvement in the two and three dimensional wear performance with highly cross-linked polyethylene. Longer follow-up, after the bedding-in process is completed, may be required to demonstrate the wear reduction afforded by highly cross-linked polyethylene.

1321-1327

*DISCUSSION*

Paper #31

Hemi- versus Full Surface Arthroplasty for Osteonecrosis of the Hip

1327-1334

**Paul É. Beaulé, Los Angeles, CA**  
Michel LeDuff, Los Angeles, CA

*Frederic Dorey, Los Angeles, CA*  
*Harlan C. Amstutz, Los Angeles, CA*

56 hips, mean age 40.4 underwent surface arthroplasty (SA) and 28 hips, mean age 37.2 underwent hemiresurfacing (HSR). Diagnosis was osteonecrosis in all. UCLA hip function and activity score, SF-12 physical, and Harris Hip score were significantly ( $p < 0.05$ ) better for SA versus HSR. However, 2 SA were revised to THR, and 5 had evidence of femoral loosening. There was no evidence of femoral loosening in the hemiresurfacing group. The median femoral component size was significantly larger in HSR than SA. Although the functional results are inferior with HSR, patients are at greater risk of femoral loosening with the full surface arthroplasty.

Paper #32  
1334-1341

Prospective Randomised Trial Comparing Alumina-Alumina to Metal-Polyethylene Bearing Surfaces in Hybrid Total Hip Arthroplasty  
**Pascal A. Vendittoli, Montréal, QC**  
*Nicolas Duval, Laval, QC*  
*Pauline Lavoie, Laval, QC*

One hundred and forty eight hybrid total hip arthroplasties in patients less than 70 years old were randomised to metal on polyethylene or alumina on alumina bearing surfaces. At 2 to 7 years of follow-up, no significant difference was found on hip scores or survivorship of the implants. No specific complication associated to alumina components like fracture or malpositioning of the acetabular insert were observed. Alumina on alumina bearing surfaces give early clinical and radiological results similar to metal on polyethylene, suggesting that they have a potential to become good bearing surfaces in hip arthroplasty for young patients.

Paper #33  
1341-1348

Proximal Femoral Allograft for Revision Arthroplasty of the Hip  
**Oleg Safir, Toronto, ON**  
*Michael Flint, Toronto, ON*  
*Paul Zalzal, Toronto, ON*  
*Guy Morag, Toronto, ON*  
*Allan E. Gross, Toronto, ON*

We reviewed and discussed the results of 155 proximal femoral allografts for revision total hip replacement at an average of 11 years (range , five to twenty years). We looked at graft survivorship, functional results, radiographic assessment and complications. We concluded that this is an excellent technique for restoration of bone stock in the multiplied revised hip.

1348-1354

*DISCUSSION*

Paper #34  
1354-1401

Short-Term Outcomes of Total Hip Arthroplasty After Complications of Open Reduction Internal Fixation of the Proximal Femur  
*Patrick Gamble, Hamilton, ON*  
*Justin de Beer, Hamilton, ON*  
*Mitchell J. Winemaker, Hamilton, ON*  
*Forough Farrokhyar, Hamilton, ON*  
*Danielle Petruccelli, Hamilton, ON*  
*Sarkis Kaspar, Hamilton, ON*

Failed open reduction internal fixation (ORIF) of the proximal femur can render patients severely disabled. This study analyzed the short-term functional results and complications of total hip arthroplasty (THA) for complications of ORIF of the proximal femur. Using the

Hamilton Arthroplasty Database, 36 patients treated with a THA for complications of ORIF of the proximal femur were compared to a matched cohort. Analysis showed that THA for complications of ORIF of the proximal femur is a successful procedure despite increased intraoperative difficulty that results in comparatively lower short-term Harris Hip Scores. No statistically significant differences in intraoperative or postoperative complications were noted.

Paper #35  
1401-1408

Survivorship and Functional Outcome of Revision Hip Arthroplasty in Patients with a Previous Total Hip Replacement for Developmental Dysplasia of the Hip

**Guy Morag, Toronto, ON**

*Boaz Liberman, Toronto, ON*

*Paul Zalzal, Toronto, ON*

*Oleg Safir, Toronto, ON*

*Michael Flint, Toronto, ON*

*Allen E. Gross, Toronto, ON*

This is a retrospective study of fifty nine hips in forty nine patients with a previous total hip replacement for developmental dysplasia of the hip who underwent a revision arthroplasty of the hip. Fifty three patients were available for follow up. Radiographs and charts were reviewed and functional outcome scores were obtained in order to determine if a correlation existed between cup position and functional outcome and survivorship. Cup height was found to be a statistically significant predictor for functional outcome and cup survivorship.

Paper #36  
1408-1415

The Anatomical Relations of The Superior Gluteal Nerve and Damage to It During the Direct Lateral Approach to The Hip – a Cadaveric Study

**David Knowles, Toronto, ON**

*Thair Khan, Manchester, UK*

We examined the position of the superior gluteal nerve in 44 cadaveric hips in relation to the greater trochanter and the acetabulum . We found that the nerve lay a mean of 4.8 centimetres from the greater trochanter with a range of 2 to 9 centimetres and a mean of 3.2 centimetres from the acetabulum . The nerve was visibly damaged in 3 out of 44 hips following direct lateral approach. Our study does not support the “safe zone” proximal to the greater trochanter and suggests the proximity of the nerve to the acetabulum as a potential cause of nerve injury.

1415-1421

*DISCUSSION*

## SESSION 7: SPORTS MEDICINE

GLEN 206 (TELUS)

Moderators:

**Robert Litchfield, London, ON**

**Nicholas G.H. Mohtadi, Calgary, AB**

**Kalev Wilding, Sydney, AUSTRALIA**

Paper #37  
1300-1307

Anterior Hip Impingement Causes Labral Tears

**Nicholas Noiseux, Montréal, QC**

*Michael Tanzer, Montréal, QC*

Labral tears are increasingly recognized as a source of hip pain. These rarely occur in normal hips, but in individuals with subtle femoral deformities. Anterior impingement of the femoral neck on the acetabulum due to loss of anterior offset results in a labral tear in active individuals. Future surgeries should be directed at this anterior offset deficiency in order to completely alleviate pain and prevent further recurrences.

Paper #38  
1307-1314

Arthroscopic Release is Safe and Effective in the Management of Elbow Contracture

**Duong Nguyen, London, ON**

*Joy MacDermid, London, ON*

*Graham J.W. King, London, ON*

*Kenneth J. Faber, London, ON*

The purpose of this study was to determine if arthroscopic release is safe and effective in the management of elbow contracture. Twenty patients (mean age of 42), undergoing arthroscopic contracture release were retrospectively reviewed at a minimum follow-up of 1 year (mean 25 months). Most patients had combined extrinsic & intrinsic causes for contractures. Mean flexion improved from 122 to 137°. Mean extension improved from 38° to 18°. The mean arc improvement was 35° ( $p < 0.001$ ). None of the patients had instability and there were no major neurovascular complications. All patients had decreased pain and improved elbow function.

Paper #39  
1314-1321

Articular cartilage changes associated with bone contusions in anterior cruciate ligament injury

*Monika Volesky, Ottawa, ON*

*Mark L. Burman, Montréal, QC*

*Eric M. Lenczner, Montréal, QC*

**Fawsi Al-Jassir, Montréal, QC**

The purpose of the present study is to determine a correlation between articular cartilage changes and underlying bone contusions in ACL-deficient knees. Analysis of surgical and MRI findings in 37 knees shows that medial femoral condyle and medial tibial plateau bone contusions, present in 30% of ACL injuries, correlate strongly with articular cartilage damage, irrespective of meniscal status. Although lateral compartment bone contusions are more commonly seen following injury, we have not found this to be associated with the status of the overlying cartilage. Degenerative changes in the ACL-deficient knee are multifactorial, but medial compartment bone contusions may be an important contributor that warrants further investigation.

1321-1327

*DISCUSSION*

Paper #40  
1327-1334

Does Post Operative Swelling Predict the Development of Stiffness Following ACL Reconstruction?

**Robert G. McCormack, New Westminster, BC**

*Floyd Sekeramayi, New Westminster, BC*

Range of motion, degree of hemarthrosis and leg circumference was prospectively recorded in 118 consecutive isolated ACL reconstructions. A higher grade of hemarthrosis at one week was associated with a flexion deficit at eight weeks ( $P=0.002$ , relative risk 1.93). Increased leg circumference at one week was also associated with a flexion deficit at eight weeks ( $P=0.007$ , relative risk 1.37). An extension deficit was not associated with a hemarthrosis ( $P=0.47$ ) or increased circumference ( $P=0.07$ ). This prospective review identifies a risk factor for clinicians to be aware of after ACL Reconstruction. These patients merit closer observation and possibly a modified rehabilitation protocol

Paper #41  
1334-1341  
Magnetic Resonance Imaging (MRI) versus Diagnostic Arthroplasty: Does MRI Change the Intra-Operative Diagnosis? A Prospective Blinded Evaluation in Patients with Shoulder Impingement Syndrome  
**Nicholas G.H. Mohtadi, Calgary, AB**  
*Robert M. Hollinshead, Calgary, AB*  
*Treny M. Sasyniuk, Calgary, AB*

This investigation was performed to determine whether MRI would provide any additional diagnostic information to the clinical evaluation and diagnostic arthroscopy of the shoulder. The study was performed in patients with shoulder impingement syndrome booked for an arthroscopic subacromial decompression. Although there was significant discordance between the MRI and arthroscopic findings, the MRI did not change the diagnosis or treatment plan in a clinically important way

Paper #42  
1341-1348  
Rotational High Tibial Osteotomy for Patella Instability  
**John C. Cameron, Toronto, ON**

55 patients were assessed with a minimum of 5 year follow up. Patients in this study underwent initial conservative treatment consisting of 12 months of physio. Those patients who continued to have recurrent instability underwent surgery. Only patients without rotational abnormalities of the femur were included. Tibial rotational was assessed geometrically, with the degree of external rotation corrected to 20 - 23°. Those patients with associated patella alta underwent a distal transfer of the patella tendon also. Assessment included range of motion, thigh girth, quads strength, effusion and a modified Lystrum knee score assessed function and pre and post-op radiographic assessment

1348-1354  
*DISCUSSION*

Paper #43  
1354-1401  
Rotator Cuff Repair: A Retrospective Study Comparing Arthroscopic versus Mini- Open Technique, 2 to 4 Years Post-Operatively  
**Douglas A. LeGay, Dartmouth, NS**  
*Emma Burns, Dartmouth, NS*  
*Maria Forbes, Dartmouth, NS*

18 Arthroscopic and 9 mini-open Rotator Cuff repairs were evaluated at an average of 31.5 months post-operatively. The tears were classified as small, moderate and massive with all the massive tears in the mini-open group. The arthroscopic group showed 94% patient satisfaction with the Western Ontario Rotator Cuff Index scale (WORC) of 89.6% and the University of California at Los Angeles (UCLA) score of 32.4/ 35. The mini-open technique showed 100% patient satisfaction, 83.7% with the WORC and 27.7/ 35 with the UCLA. This study showed both procedures were effective. It is one of the first to report on the use of the WORC index for evaluation.

Paper #44  
1401-1408  
Segmental Humeral Head Allografts for Recurrent Anterior Instability of the Shoulder with Large Hill-Sachs Defects: A two to 8 year Follow up  
**Anthony Miniaci, Cleveland, OH**  
*Gregory C. Berlet, Cleveland, OH*  
*Chris Hand, Toronto, ON*  
*Alvin Lin, Toronto, ON*

Introduction: Although soft tissue capsulolabral repairs are the mainstay of treatment for recurrent anterior shoulder instability, bone

defects are becoming more commonly recognized as additional problems for these patients. Humeral Head defects have been commonly ignored, however, there are a group of patients with failed procedures who have this as their main pathology.

Paper #45  
1408-1415

Ultrasound Evaluation of the Subscapularis Tendon after Total Shoulder Arthroplasty

**April D. Armstrong, Hershey, PA**

*Cyrus Lashgari, St. Louis, MO*

*Jamie Menendez, St. Louis, MO*

*Sharlene Teefey, St. Louis, MO*

*Leesa Galatz, St. Louis, MO*

*Ken Yamaguchi, St. Louis, MO*

Healing of the subscapularis, documented by ultrasound, following total shoulder arthroplasty was examined in 30 shoulders. All had marked improvement in pain, SST, and ASES scores. Four subscapularis tears were identified but only one patient had a positive abdominal compression test, 7/26 patients had a positive compression test despite an intact cuff, and 4/7 patients had a significant internal rotation contracture. The abdominal compression test was not accurate in detecting subscapularis tears. There was a significant false positive rate, which may be related to a lack of internal rotation. Overall, the outcome was excellent and not related to the status of the subscapularis.

1415-1421

*DISCUSSION*

## **SESSION 8: FOOT& ANKLE & TUMOUR**

**GLEN 201/202 (TELUS)**

**Moderators:**

**Norman S. Schachar, Calgary, AB**

**N. Craig Stone, St. John's, NL**

Paper #46  
1300-1307

An Economic Evaluation of Operative versus Non-Operative Management of Displaced Intra-articular Calcaneal Fractures

**Carmen Brauer, Brookline, MA**

*Braden Mann, Calgary, AB*

*Michael Ko, Kingston, ON*

*Richard E. Buckley, Calgary, AB*

To evaluate the cost-effectiveness of operative versus non-operative management of displaced intra-articular calcaneal fractures (DIACFS), a model was constructed based on a randomized clinical trial. Model outputs were costs and quality-adjusted life years (QALYs). When a societal perspective was taken (i.e. productivity losses were included), operative management was less costly and more effective than non-operative care. Sensitivity analysis revealed that cost-effectiveness was highly dependent on the estimates of productivity losses. When productivity losses were excluded, the increase in cost of operative treatment was \$2,700 for an incremental gain of .06 QALYs, giving an incremental cost-utility (CU) ratio of \$44,000 per QALY gained.

Paper #47  
1307-1314

Functional and Oncologic Outcome After Combined Allograft and Total Hip Arthroplasty Reconstruction of Large Bony Pelvic Defects Following Tumour Resection

**Gordon Beadel, Toronto, ON**

*Anthony Griffin, Toronto, ON*

*Christian Ogilvie, Merion Station, PA*  
*Jay S. Wunder, Toronto, ON*  
*Robert S. Bell, Toronto, ON*

A retrospective review of our prospectively collected database was undertaken to determine the functional and oncologic outcome following combined pelvic allograft and total hip arthroplasty (THA) reconstruction of large pelvic bone defects following tumour resection. There were 24 patients with a minimum followup of 15 months. The complication rate following hemipelvic allograft and THA reconstruction of resection Types I+II and I+II+III was high, but when successful this reconstruction resulted in reasonable functional outcome. In comparison, the functional outcome after allograft and THA reconstruction of isolated Type II acetabular resections was better and more predictable

1314-1320

*DISCUSSION*

Paper #48  
1320-1327

Functional and Oncologic Outcome Following Type I Pelvic Resection for Bone Tumours With and Without Reconstruction

***Gordon Beadel, Toronto, ON***

*Anthony Griffin, Toronto, ON*

*Fawzi Aljassir, Montréal, QC*

*David Iannuzzi, Montréal, QC*

*Robert É. Turcotte, Montréal, QC*

*Marc Isler, Montréal, QC*

*Robert S. Bell, Toronto, ON*

*Jay S. Wunder, Toronto, ON*

A retrospective review of our prospectively collected database was undertaken and the functional and oncologic outcomes after Type 1 pelvic resections for bone tumours of the ilium and sacrum were analyzed. 17 patients were identified with a minimum followup after resection of 12 months. In seven patients the bone defect was reconstructed, with no reconstruction in the remaining 10 patients. The functional/oncologic outcomes of the two groups are similar, however patients without reconstruction had fewer complications and less dependence on walking aids suggesting that reconstruction may not be justified.

Paper #49  
1327-1334

Is The Absence of An Ipsilateral Fibular Fracture Predictive of Tibial Pilon Fracture Severity?

***David P. Barei, Seattle, WA***

*Carlo Bellabarba, Seattle, WA*

*Sean E. Nork, Seattle, WA*

*Bruce J. Sangeorzan, Seattle, WA*

Pilon injuries without fibula fractures may be associated with increased tibial plafond fracture severity. To evaluate this, we used the rank order technique, with traumatologists blinded to the fibular injury, who ranked the radiographic severity of 40 pilon injuries with and without fibula fractures.

Pilon injuries with fibular fractures were ranked as more severe than those without. C-type injuries were ranked as more severe than B-type. Fibular fracture was more frequently associated with C-type injury than B-type. The presence of an intact fibula is *not* predictive of a more severe injury to the tibial pilon.

1334-1340

*DISCUSSION*

Paper #50  
1340-1347

Lymph Node Metastasis in Soft Tissue Sarcoma of the Extremities

**Boaz Liberman, Toronto, ON**

*Soha Riad, Toronto, ON*

*Anthony M. Griffin, Toronto, ON*

*Jay S. Wunder, Toronto, ON*

*Brian O'Sullivan, Toronto, ON*

*Charles N. Catton, Toronto, ON*

*Martin E. Blackstein, Toronto, ON*

*Peter C. Ferguson, Toronto, ON*

*Robert S. Bell, Toronto, ON*

Lymph node metastasis in soft tissue sarcoma is considered to be a rare event (1.6-8.2%), From 1986 to 2001 1066 patients with extremity soft tissue sarcoma were treated surgically (+/- adjuvant therapy) at our institution.

39 patients (3.6%) were identified with lymph node metastasis, most common histological subtypes were: Epithelioid sarcoma (3/15), rhabdomyosarcoma (4/21), clear cell sarcoma (2/18), and angiosarcoma (2/18).

Comparing expected 5 year survivorship, we found that Surprisingly in this study, extremity soft tissue sarcoma patients initially presenting with lymph node metastases had survival comparable to patients with high grade soft tissue sarcoma and no metastases.

Paper #51  
1347-1354

Outcome Following Presentation with a Pathologic Fracture in Osteosarcoma

**Anthony M. Griffin, Toronto, ON**

*Catherine McLaughlin, Toronto, ON*

*Peter C. Ferguson, Toronto, ON*

*Robert S. Bell, Toronto, ON*

*Jay S. Wunder, Toronto, ON*

241 patients with extremity osteosarcoma presented to our institution between 1989 and August 2002, 36 of whom had a pathologic fracture. There were 25 limb salvage surgeries and 10 primary amputations, with 3 limb salvage surgeries requiring secondary amputations. One patient had an unresectable tumor and was treated palliatively. At mean follow-up of 96.9 months there was 1 local recurrence and 18 patients were alive without disease in the pathologic fracture group. There was no survival difference between the pathologic fracture group with no metastases at presentation and the non-pathologic fracture group with no metastases (119.4 months vs 134.3 months, log rank 0.83, p=0.36).

1354-1400

*DISCUSSION*

Paper #52  
1400-1407

Sarcomas of the Foot and Ankle

**Derek Younge, Al Ain, UAE**

*Rabbani Samar, Riyadh, SAUDI ARABIA*

Twenty cases of malignant sarcomas of the foot and ankle included: 4 osteosarcomas, 3 Ewing's sarcomas, 3 chondrosarcomas, 3 fibrosarcomas, 5 synovial cell sarcomas, 1 clear cell sarcoma and 1 malignant schwannoma.

Five-year survival was: 3 of the 9 who had B-K amputation, 5 of the 9 who had more distal amputation or local resection, for a total of 8 of 18.

More distal amputation than B-K or local resection was offered if plantar sensation and stability of the foot could be retained, and was accepted by half of the patients. There were no local recurrences of 18 operated.

Paper #53  
1407-1414

The Course of the Metatarsal Break Angle (MBA) in Forefoot Arthroplasty: A Prospective Study

**Daniel. T. Rajan, London, UK**

*Ghias Bhattee, London, UK*

*Saj Hussain, London, UK*

Some patients following operation for Hallux Valgus deformity develop Transfer Metatarsalgia. Many believe that a long oblique osteotomy of the second metatarsal as part of surgical correction of Hallux Valgus deformity reduces the risk of developing transfer metatarsalgia. Metatarsal Break Angle (MBA) is the angle subtended by one line from the centre of the head of 1st Metatarsal to the centre of the head of the 2nd Metatarsal and another from the centre of the head of the 2nd Metatarsal to the centre of the head of 5th Metatarsal. The MBA changes following osteotomy of the 2nd metatarsal.

1414-1420

*DISCUSSION*

Paper #54  
1420-1427

Weight-bearing Computer Tomography (CT) Scan of the Feet in Pes Planus

**Angela Scharfenberger, Indianapolis, IN**

*Dawn Pearce, Toronto, ON*

*Timothy R. Daniels, Toronto, ON*

CT scans of 30 pes planus and 18 normal feet were obtained in a simulated weight-bearing mode at 50% of body weight. The navicular skin distance was 22% less (1.9vs2.5cm) in the pes planus feet and forefoot supination was only 50% of normal (8.9vs18.6 degrees). Subtalar subluxation was observed in only the most severe pes planus feet. Navicular skin distance relates to medial arch collapse; loss of forefoot supination reflects the rigidity of the forefoot compensation to hindfoot valgus. Severe pes planus results in subtalar subluxation. The radiological indices described have not previously been reported in the literature.

Paper #55  
1427-1434

Risk Factors for Failure of Transmetatarsal Amputation in Diabetic Patients: A Cohort Study

**Alastair S.E. Younger, Vancouver, BC**

*T.P. Kalla, Vancouver, BC*

*Gweneth de Vries, Vancouver, BC*

*M.A. Awwad, Vancouver, BC*

*Colin D. Meakin, Vancouver, BC*

The cost effective management of diabetic foot infections is a challenge to the Canadian health system. The objective of this study was to predict preoperatively diabetic foot patients who will fail a transmetatarsal amputation (TMA) and end in a costly and disabling below knee amputation (BKA) and hence perform a primary BKA in select patients.

1434-1440

*DISCUSSION*

1300 - 1430

**LIVE SURGERY 3**

Ulnar Shortening

Moderators: Herbert P. von Schroeder, Kenneth J. Faber

Surgeons: C. Vaughan A. Bowen, Kevin A. Hildebrand

**MACLEOD, AB - TELUS**

Objectives: The technique being used is a recessional ulna osteotomy. Shortening will be achieved by making two parallel transverse diaphyseal osteotomies and removing the intervening bony disc. Internal fixation will be with a 6-hole synthes small fragment DC plate. An AO tension device will be used to close the osteotomy and maximize compression of the proximal and distal ulna fragments.

The surgical technique will be demonstrated from skin incision to skin closure. Discussion during the procedure will include:

1. History, physical examination and investigation of the patient
2. Pathology and pathoanatomy
3. Surgical indications
4. Operative planning
5. Technical aspects of the procedure
6. Pros and cons of this technique compared with alternative operations
7. Risks and complications
8. Post operative management
9. Expected outcome

*DISCUSSION*

1430 – 1500

**HEALTH BREAK**

**EXHIBIT HALL**

1500 – 1700

**COA/CORS SYMPOSIUM II**

Hip Disease in the Young Adult

Moderators: Kevin A. Hildebrand, Steven J. M. MacDonald

Faculty: Reinhold Ganz (Ian Macnab Lecture), Donald Garbuz, David R. Wilson

**MACLEOD AB (TELUS)**

- The Bernese Periacetabular Osteotomy (Ian Macnab)
- The Canadian PAO Experience
- The Blood Supply to the Femora Head
- Biomechanics of Osteotomy
- Femoroacetabular Impingement

Reinhold Ganz  
Donald Garbuz  
Reinhold Ganz  
David R. Wilson  
Reinhold Ganz

*DISCUSSION*

1600 – 2400

**FUN NIGHT – GIRLETZ RODEO RANCH**

**SUNDAY, JUNE 20<sup>TH</sup>**

**0700 – 0830**

**INSTRUCTIONAL COURSE LECTURES (concurrent sessions)**

**ICL-13: TRAUMA**

Fracture Rounds for Lower Extremity

Moderator: Gregory K. Berry

Faculty: Robert N. Meek, Ross K. Leighton

**DOLL/HERALD - HYATT**

Objectives: Review the principles of assessment and current concepts of treatment for common and complex musculoskeletal injuries of the lower extremity. The session will be an interactive “fracture rounds” format.

*DISCUSSION*

**ICL-14: FOOT & ANKLE**

Bunion Surgery in 2004

Moderator: Timothy R. Daniels

Faculty: Michael J. Coughlin, Alastair S.E. Younger

**GLEN 205 (TELUS)**

Objectives: To provide the treating clinician with a surgical algorithm for the treatment of hallux valgus deformities. This symposium will cover various surgical techniques of correcting hallus valgus deformities and clarify indications for these techniques. Controversies surrounding medial column instability will be reviewed.  
– Dr. Michael Coughlin is considered an international expert on this topic.

- The Congruent Hallux Valgus Deformity
- Salvage of the Failed Bunion Surgery
- First Ray Hypermobility and Hallus Valgus: My Perspective
- Arthrodesis of the Metatarsophalangeal Joint of the Great Toe for Hallus Valgus
- Surgical Techniques – Proximal Osteotomy and Lapidus Procedure

Michael J. Coughlin  
Alastair S.E. Younger  
Michael J. Coughlin  
Michael J. Coughlin  
Timothy R. Daniels

*DISCUSSION*

**ICL-15: SPINE**

Round Table on Scoliosis Treatment: Bracing to Surgery – Case Presentations

Moderator: Marc J. Moreau

Faculty: James K. Mahood, Douglas Hedden

**IMPERIAL 1 – HYATT**

- Bracing in Idiopathic Scoliosis: Indications, Types of Brace and Bracing Protocol
- Posterior Surgery: Indications, Types of Instrumentation, Timing and Techniques
- Anterior Surgery: Indications, Risks, Approaches and Instrumentation

Marc J. Moreau  
James K. Mahood  
Douglas Hedden

*DISCUSSION*

**ICL-16: SPINE****IMPERIAL 9 – HYATT**

The Management of Low Back Disorders in General Orthopaedic Practice

Moderator: Harry Jiang

Faculty: Kenneth C. Thomas, Jacques A. Bouchard

Objectives: The participant will gain an understanding of the epidemiology of low back disorders. The rationale (or lack of) for surgical treatment will be touched upon. New surgical procedures such as lumbar discectomy will be discussed in context of indications and results for low back pain treatment.

- Epidemiology in Low Back Pain
- Surgical Management of Low Back Pain

Kenneth C. Thomas  
Jacques A. Bouchard

*DISCUSSION***ICL-17: ADULT RECONSTRUCTION****GLEN 206 (TELUS)**

Avoiding Pitfalls in Total Hip Arthroplasty

Moderator: Clive P. Duncan

Faculty: Nizar N. Mahomed, Emil H. Schemitsch, Ross K. Leighton, Réjean Dumais, Eric Bohm

- Infection – Etiology/Diagnosis/Prevention
- Infection – Treatment & Results
- Periprosthetic Fractures
- Dislocation
- Leg Length Discrepancy

Nizar N. Mahomed  
Emil H. Schemitsch  
Ross K. Leighton  
Réjean Dumais  
Eric Bohm

*DISCUSSION***ICL-18: SPORTS MEDICINE****GLEN 204 (TELUS)**

Post Meniscectomy Knee

Moderator: Robert G. McCormack

Faculty: John C. Cameron, J. Robert Griffin, Jeffrey D. Gollish

Objectives:

1. To understand the results and limitation of current meniscal preservation surgery.
  2. To establish the role of meniscal transplantation.
  3. To determine the most appropriate treatment for the symptomatic 45 year old with medial compartment DJD, post meniscectomy.
- A. Introduction and Outline
  - B. - Current Meniscal Surgery Practice
  - C. - Meniscal Transplantation
  - D. - HTO vs. Unicompartamental Arthroplasty in 45 year old with Medial DJD (post meniscectomy, intact ACL - Debate
    - HTO Treatment of Choice
    - Unicompartamental Arthroplasty is Treatment of Choice

Robert G. McCormack  
Robert G. McCormack  
John C. Cameron  
J. Robert Griffin  
Jeffrey D. Gollish

- Rebuttal
- Rebuttal

J. Robert Griffin  
Jeffrey D. Gollish

Discussion  
- Case Presentation & Questions

Faculty

**0830 – 1030**

**LIVE SURGERY 4**

**MACLEOD AB (TELUS)**

Unicompartmental Arthroplasty - Knee  
Moderators: Jeffrey D. Gollish, Steven J.M. MacDonald  
Surgeons: Jason R. Werle,

Unicompartmental Knee Replacement  
Moderator: Nizar N. Mahomed  
Faculty: Richard MacCalden, Michael J. Dunbar

- Pitfalls to Avoid in Uni's
- The Results of Uni's

Richard W. McCalden  
Michael J. Dunbar

*DISCUSSION*

**0830 – 1000**

**SYMPOSIUM III**

**TELUS 201/203**

The Introduction of New Technologies  
Moderator: James P. Waddell  
Faculty: Robert B. Bourne, Nizar N. Mahomed, Robert C. Bray, Robert Abernethy

- Clinician's Perspective
- Basic Research Perspective
- Clinical Trial Perspective
- Registry Perspective
- The Hospital Perspective

James P. Waddell  
Robert C. Bray  
Nizar N. Mahomed  
Robert B. Bourne  
Robert Abernethy

*DISCUSSION*

**1030 – 1110**

**HEALTH BREAK**

**EXHIBIT HALL**

**1100 - 1230**

**COA Scientific Sessions**

**SESSION 9: ADULT RECONSTRUCTION – HIP 2**

**MACLEOD AB (TELUS)**

**Moderators: Paul R. Kim, Ottawa, ON  
Nelson V. Greidanus, Vancouver, BC**

Paper #56\*  
1100-1107

An Analysis of Fractured Distal Fixation Revision Femoral Stems – The Role of Lack of Proximal Support, Stem Size and Extended Trochanteric Osteotomy

**Robert B. Bourne, London, ON**  
*Cecil H. Rorabeck, London, ON*  
*Steven J. M. MacDonald, London, ON*  
*Richard W. McCalden, London, ON*  
*David Kelman, Memphis, TN*

Femoral stem fracture occurred in 5 (2%) of 283 revision hip arthroplasties when extensively coated, distal fixation femoral implants were used. Common features were complex revisions, high body mass index, poor proximal support, smaller stems (<13.5 mm) and use of an extended trochanteric osteotomy. Use of strut allografts can reduce femoral stem stresses.

Paper #57  
1107-1114

Comparison of Primary and Revision Total Hip Replacement  
**James P. Waddell, Toronto, ON**  
*Jane Morton, Toronto, ON*  
*Kerry Anne Griffith, Toronto, ON*  
*Emil H. Schemitsch, Toronto, ON*  
*Kami White, Worcester, MA*

Revision hip arthroplasty does not bring to the patient the same degree of benefit as the primary operation. We compared 213 patients undergoing revision arthroplasty with 547 patients undergoing primary total hip replacement. The complication rate in the revision arthroplasty group was approximately twice as high in the primary group ( $p < .05$ ) primarily as a result of postoperative dislocation. Both groups of patients had a statistically significant improvement between their pre- and postoperative WOMAC and SF-36 physical scores; however, there was also a statistically significant difference in outcome when the two groups were compared, with primary patients having significantly improved WOMAC and SF-36 physical scores.

Paper #58  
1114-1121

Impaction Allograft Revision Hip Arthroplasty – Long-term Follow-up and Instrument Effects  
**Michael Gross, Halifax, NS**  
*Stephen Rimmer, Halifax, NS*  
*Steve Laurie, Halifax, NS*  
*Allan Hennigar, Halifax, NS*  
*Michael J. Dunbar, Halifax, NS*

Impaction allograft techniques offer the possibility of restoring both a biological and mechanical construct to the hip joint by reconstituting bone stock to a condition similar to that of a primary arthroplasty. However, the design of surgical instruments is critical to the long-term success of this technique. Patients operated on with cement delivery system with a modified nozzle (thinner) have a cumulative revision rate (CRR) 50% less than those who were operated on before the modification (7 vs. 14%). Results of this study indicate impaction allograft techniques can be a successful treatment option for revision hip arthroplasty

1121-1127

*DISCUSSION*

Paper #59  
1127-1234

Influence of Non-Cemented Femoral Stems Inserted in Varus on Functional Outcome In Primary Total Hip Arthroplasty  
*Mathias Hubmann, Judendorf-Strassengel, AUSTRIA*  
*Danielle Petruccelli, Hamilton, ON*  
*Mitchell J. Winemaker, Hamilton, ON*

Historically, cemented THA femoral stems inserted in varus have yielded poor clinical results. Very few studies to date have addressed the question of the effects of varus alignment on uncemented stems. We have conducted a retrospective review of 125 uncemented THA femoral stems implanted by a single surgeon from 1994 to 1999. Within this single surgeon group we were able to identify 16 stems implanted in varus and thus proceeded to analyze the effect of varus alignment on functional outcome.

Paper #60  
1134-1141

Predictors of Functional Outcome Two Years Following Revision Total Hip Arthroplasty

**Aileen M. Davis, Toronto, ON**

*Jeffrey D. Gollish, Toronto, ON*

*Emil H. Schemitsch, Toronto, ON*

*J. Roderick Davey, Toronto, ON*

*James P. Waddell, Toronto, ON*

*John Paul Szalai, Toronto, ON*

*Hans J. Kreder, Toronto, ON*

*Amiram Gafni, Hamilton, ON*

*Elizabeth Badley, Toronto, ON*

*Nizar N. Mahomed, Toronto, ON*

*Khaled J. Saleh, Minneapolis, MN*

*Zoe Agnidis, Mount Forest, ON*

*Allan E. Gross, Toronto, ON*

This study (n=126, mean age=68.8 years, males=62) evaluated pre-operative WOMAC pain and physical function, age, gender, general health status, revision severity classification, number of revisions, comorbidity and unilateral vs. bilateral surgery as predictors of WOMAC pain and physical function at 24 months post revision hip arthroplasty. Pain improved from 9.3 to 3.6 and physical function improved from 35.4 to 17.1. No factors were predictive of patient function. Decreased pain was predicted by less pain pre surgery (p=0.01) and being male (p=0.04).

Paper #61  
1141-1148

Recurrent Dislocation After Total Hip Arthroplasty: Treatment with an Achilles Tendon Allograft

**Thomas R. Turgeon, San Diego, CA**

*Martin J. Lavigne, Montréal, QC*

*A.A. Sanches, Spartanburg, SC*

*Richard D. Coutts, San Diego, CA*

Surgical treatment of recurrent dislocation after total hip arthroplasty (THA) is challenging with often disappointing results. The influence of the posterior hip capsule is important, and restoration of its function is a major goal of treatment. We describe our experience using an Achilles tendon allograft as a checkrein to limit hip internal rotation and to prevent posterior instability. Twenty unstable THAs were treated using this technique, eliminating instability in 15. At an average follow-up of 3.6 years, Achilles tendon allograft augmentation has proven a useful adjunct for the treatment of recurrent posterior dislocation after THA in selected patients.

1148-1204

*DISCUSSION*

Paper #62  
1204-1211

Retroacetabular Osteolysis: When to Operate?

**Ramin Mehin, Vancouver, BC**

*Xunhua Yuan, London, ON*

*Christopher Haydon, London, ON*  
*Cecil H. Rorabeck, London, ON*  
*Robert B. Bourne, London, ON*  
*Richard W. McCalden, London, ON*  
*Steven J.M. MacDonald, London, ON*

The timing of liner exchange for retroacetabular osteolysis in THA remains uncertain. Liner exchange should be done before the shell becomes loose. The purpose of this study was to determine the radiographic quantity of osteolysis that will predict impending loosening of the cementless shell. Osteolytic lesions were quantified radiographically using three different measures. Implant stability was confirmed intraoperatively. Percent of shell circumference with surrounding osteolysis appears to be more predictive of cementless shell loosening than the area of osteolysis. When greater than fifty percent of the shell circumference has osteolysis on AP or lateral films, liner exchange is necessary.

Paper #63  
1211-1218

Successful Treatment of Retroacetabular Osteolysis with Calcium Sulfate and Retention of Original Components  
**Paul R. Kim, Ottawa, ON**  
*Benjamin M. Deheshi, Ottawa, ON*

The purpose of the study was to evaluate the outcome of curettage and grafting with calcium sulfate pellets for progressive retroacetabular osteolysis with retention of the acetabular component. Seven patients who underwent the procedure were evaluated clinically and radiographically at an average follow-up time of 15 months. There was no progression of osteolysis following curettage and grafting with good to excellent osseo-integration. All patients had a good functional outcome with no pain during follow-up. Curettage and synthetic grafting of retroacetabular cysts with calcium sulfate pellets is a viable option in halting the progression of retroacetabular lysis and promoting osseous recovery.

Paper #64  
1218-1225

The Effect of Surgical Approach on Function and Quality of Life Following Primary Total Hip Arthroplasty  
**Michael Tanzer, Montréal, QC**  
*Andrew Pickle, Montréal, QC*  
*Justin Bobyn, Montréal, QC*  
*Karen Smith, Montréal, QC*  
*Stephen Burnett, Montréal, QC*

The two most common surgical approaches used in primary hip arthroplasty are the anterolateral and posterolateral approach. While both approaches have potential advantages and disadvantages in comparison to the other, there are no reports with sufficient power to compare their effect on post-operative function and quality of life. This prospective cohort study evaluates and compares the independent effect of surgical approach on function and quality of life among patients who have received their total hip arthroplasty through one of these techniques. Results suggest that there is no significant difference in function or quality of life among these respective cohorts.

1225-1231

*DISCUSSION*

## **SESSION 10: TRAUMA – UPPER EXTREMITY & PELVIC**

**GLEN 201/203 (TELUS)**

**Moderators:**

**Hans J. Kreder, Toronto, ON**  
**Michael D. McKee, Toronto, ON**

Paper #65  
1100-1107

Biomechanical Comparison of a Unique Plate versus a Standard Plate for Internal Fixation of Proximal Humerus Fractures in a Cadaveric Model

**Steven Walsh, Montréal, QC**  
*Rudolph Reindl, Montréal, QC*  
*Edward J. Harvey, Montréal, QC*  
*Gregory K. Berry, Montréal, QC*  
*Lorne Beckman, Montréal, QC*  
*Thomas Steffen, Montréal, QC*

Many two-part fractures of the proximal humerus are treated conservatively due to the frequent failure of internal fixation. The current investigation examines the biomechanical properties of a unique plate versus a standard plate for internal fixation of proximal humerus fractures. The unique plate employs screws that thread into the plate, creating a multi-planer, fixed angle device. A cadaveric model was developed that relied on the rotator cuff musculature as the primary deforming force. The locking plate displayed significantly greater holding power on the humeral head ( $p=0.007$ ). This may lead to more consistent results in two-part fractures treated with internal fixation.

Paper #66  
1107-1114

Early Experience with the Locking Proximal Humerus Plate as Fixation for Proximal Humerus in 3 and 4 Part Fractures

*Pierre Guy, Vancouver, BC*  
**James Stone, Vancouver, BC**  
*Robert G. McCormack, New Westminster, BC*  
*Peter J. O'Brien, Vancouver, BC*

We reviewed the results of 16 patients with 3 and 4 part proximal humerus fractures treated with the Locking Proximal Humerus Plate (LPHP) in two trauma centres. All fractures were radiographically healed by 6 weeks. We found a high rate of fixation failure 4/16 cases within 2 weeks of surgery and range of motion results similar to previously reported techniques. This device has not demonstrated its clear superiority when used in trauma centres which commonly treat proximal humerus fractures. A randomised control trial comparing it to classical techniques and using outcome-based measures would seem appropriate.

Paper #67  
1114-1121

Efficacy of Locked and Unlocked Distal Radius Plates: A Biomechanical Study

**Deenesh Sahajpal, Kingston, ON**  
*Jason Gambrel, Kingston, ON*  
*David R. Pichora, Kingston, ON*

This study assesses the biomechanical properties of the Locking Volar T-Plate. It compares the axial load to failure to more traditional plating methods including the T-Plate and Pi-Plate. All three plates were tested for axial load to failure in both a dorsally comminuted model and a highly comminuted model with disruption of both the volar and dorsal cortices. The data in this study indicates may support volar plating for dorsally comminuted distal radius fractures.

1121-1127

*DISCUSSION*

Paper #68  
1127-1134

"How Are You Now?": A Description of the Discordance Between Patients' and Clinicians' View of Outcome After a Fracture

**Dorcas Beaton, Toronto, ON**  
*Abraham Orner, Toronto, ON*

*Sarah Dyer, Toronto, ON*  
*Emil H. Schemitsch, Toronto, ON*  
*Claire Bombardier, Toronto, ON*  
*Aileen M. Davis, Toronto, ON*  
*Gerald Devins, Toronto, ON*  
*Renee-Louise Franche, Toronto, ON*  
*Monique Gignac, Toronto, ON*  
*Hans J. Kreder, Toronto, ON*  
*Rhoda Reardon, Toronto, ON*

Clinicians ask patients “How are you now?” to ascertain treatment outcomes and to set a plan for subsequent care. However, sometimes patient views do not agree with those of the clinicians. This study compared patient and clinician views of outcome 1-2years after an operatively managed extremity fracture and described any discordance. There were significant differences between groups, especially in areas such as pain and disruption of their personal and work lives. A discordance was observed between patient and physician views of recovery after fracture, likely associated with disruptions to personal life, unaccounted for in a clinician's view of outcome

Paper #69  
1134-1141

Prognostic Factors Affecting Patient-Oriented Functional Outcome Following Surgical Treatment of Humeral Shaft Nonunion

**Andrew Van Houwelingen, Toronto, ON**  
*Kostas Panagiotopoulos, New Westminster, BC*  
*Emil H. Schemitsch, Toronto, ON*  
*Robin R. Richards, Toronto, ON*  
*Michael D. McKee, Toronto, ON*

Thirty-eight patients with nonunion of the humeral shaft underwent a comprehensive assessment including completion of three patient-based functional outcome surveys as well as the determination of the Constant shoulder and Mayo elbow scores. Treatment consisted of compression plating with or without bone grafting. Smokers were found to have significantly longer time to union as compared to nonsmokers (25.1 weeks vs. 16.2 weeks,  $p < 0.001$ ). Our results also demonstrated that increased time to union had a significant negative effect on the patient-reported functional outcome scores.

Paper #70  
1141-1148

Semitendinosus Tendon Autograft for the Reconstruction of Chronic Distal Biceps Tendon Ruptures: An Objective and Subjective Clinical Outcome Evaluation

**Peter C. Zarkadas, Vancouver, BC**  
*Thomas J. Goetz, New Westminster, BC*

Chronic distal biceps tendon ruptures have traditionally been treated with a biceps to brachialis tenodesis. The use of a semitendinosus autograft to reconstruct the distal biceps tendon for chronic rupture has been described. This study evaluates the functional outcome of a group of patients treated with autograft reconstruction.

Paper #71  
1148-1155

Time Lost From Work Following a Distal Radius Fracture

**Joy C. MacDermind, London, ON**  
*James H. Roth, London, ON*  
*Robert S. Richards, London, ON*

This study investigated the time lost from work following a distal radius fracture and its predictors. A cohort of 168 workers who experienced a distal radius fracture were followed at 2, 3, 6, and 12 months to determine their work status. The average number of weeks lost from work was 9.5 weeks. Significant correlates with lost-time from work were: energy of injury, occupational demand, workers compensation, initial radial inclination on x-ray, baseline PRWE and DASH scores and Mental Component-SF-36). Without self-report, 45% of the variation in lost-time was explained by workers compensation status, radial inclination, occupational demand, energy of injury, sex and age.

1155-1201

*DISCUSSION*

Paper #72  
1201-1208

WristWatch: A Prospective Control Trial of Distal Radial Fractures as a Marker for Osteoporosis Investigation

**Maureen Ashe, Vancouver, BC**

*Karim Khan, Vancouver, BC*

*Pierre Guy, Vancouver, BC*

*Patti Janssen, Vancouver, BC*

*Heather McKay, Vancouver, BC*

Osteoporosis investigation following a low-trauma fracture is often missed. The aim of this study was to (i) measure the current rate of osteoporosis investigation and (ii) to test a simple intervention that seeks to increase patient awareness and physician alerting following these sentinel events. Our study showed that 92% of the intervention group was investigated compared to 18% of the control group. This study suggests that a simple inexpensive intervention can increase the rate of osteoporosis investigation in an at risk population.

Paper #73  
1208-1215

Proximal Row Carpectomy with Dorsal Capsular Interpositional Arthroplasty: Short-Term Outcome in Wrists with Stages II and III SLAC

**Martin I. Boyer, St. Louis, MO**

*Richard H. Gelberman, St. Louis, MO*

*Farhang Raaii, St. Louis, MO*

Surgical results following proximal row carpectomy modified with proximal capitate resection and dorsal capsule interposition are presented. A consecutive cohort of 13 patients was operated upon, and outcomes measured by radiograph, physical examination and DASH questionnaire. AROM values of 50° to 105° for the flexion/extension arc, restoration of grip strength to 72% of the contralateral extremity, and an improved functional outcome can be expected; and patients' perceptions of functional outcome, as measured by the DASH, are significantly improved as early as six weeks. The results of PRC with interposition for stages II and III SLAC wrist were uniformly favorable

1215-1221

*DISCUSSION*

**1230 – 1330**

**LUNCH**

**EXHIBIT HALL**

**1330 – 1500**

**COA SYMPOSIUM IV**

Distal Radius Fractures

Moderator: C. Vaughan A. Bowen

Faculty: Kenneth J. Faber, David R. Pichora, Hebert P. von Schroeder, Kevin A. Hildebrand, Robert Medoff

**MACLEOD AB (TELUS)**

Objectives: The purpose of this symposium is to take a fresh view at the multiple factors that influence decision-making when these common injuries are seen. The medical literature of this subject is now huge, complex and sometimes confusing. The

symposium is designed to demonstrate that a practical and broad approach, based on basic principles, is the key to best management for patient with these fractures. Specific aims are to show the importance of:

1. Recognizing and evaluating the importance of the different component parts of fractures.
2. Considering varying patient factors when making management decisions.
3. Understanding the advantages and disadvantages of each of the large variety of treatment techniques currently available.
4. Looking for, and understanding the implications of, soft tissue and other associated injuries.
5. Understanding and evaluating the consequences of residual features following various forms of treatment or non-treatment.

Case presentations will be used as a focus for discussion.

- The Variety of Distal Radius Fracture Patterns
- Patient Factors in the Management of Distal Radius Fractures
- A Perspective on Modern Management Techniques for Distal Radius Fractures
- Sequelae of Distal Radius Fractures
- Case Presentations and Discussions

Kenneth J. Faber  
David R. Pichora  
Herbert P. von Schroeder  
C. Vaughan A. Bowen  
Robert Medoff

*DISCUSSION*

**END OF MEETING**

## CORS and COA Scientific Posters

Posters can be viewed for the duration of the meeting in the Exhibit Hall

<i>Activity</i>	<i>Date</i>	<i>Time</i>
Poster Mounting begins:	Thursday, June 17 <sup>th</sup>	1630 - 1800
Must be completed by:	Friday, June 18 <sup>th</sup>	0900
Poster Exhibit:	Friday, June 17 <sup>th</sup> – June 20 <sup>th</sup>	0900 - 2000
Poster Dismantling begins:	Sunday, June 20 <sup>th</sup>	1330 - 1600
<b>Must be completed by:</b>		<b>1600</b>
Poster viewing with authors: Friday, June 18 <sup>th</sup>		1030 - 1100 1245 - 1330 1500 - 1530

### CORS Scientific Posters

#### Arthroplasty

- 1\*      A biaxial flexural testing protocol to determine the modulus of antibiotic impregnated orthopaedic bone cement  
**James Leone, Ancaster, ON**  
*Amy Johnson, Hamilton, ON*  
*Samir Ziada, Hamilton, ON*  
*Anthony Adili, Hamilton, ON*  
*Mitchell J. Winemaker, Hamilton, ON*  
*Justin de Beer, Hamilton, ON*
  
- 2      Anatomic axes of the distal humerus with relevance to elbow implant design  
**James R. Brownhill, London, ON**  
*Graham J.W. King, London, ON*  
*James A. Johnson, London, ON*
  
- 3\*      Lidocaine HCL in combination with Vancomycin and Cefazolin on bacterial strains seen in bone and joint infections – A time kill study  
**John F. Rudan, Kingston, ON**  
*Lewis Tgomalty, Kingston, ON*  
*Haripriva Ramotar*

- 4 Orientation of the Femoral Component in Surface Arthroplasty of the Hip: A Biomechanical and Clinical Analysis  
**Paul É. Beaulé, Los Angeles, CA**  
Jessica Lee, Los Angeles, CA  
Michel LeDuff, Los Angeles, CA  
Harlan C. Amstutz, Los Angeles, CA  
Edward Ebramzadeh, Los Angeles, CA
- 5\* The Impact of Preoperative Function and Gender on Postoperative Recovery Following Total Hip and Knee Arthroplasty  
**Deborah M. Kennedy, Toronto, ON**  
Jeffrey D. Gollish, Toronto, ON  
Paul W. Stratford, Hamilton, ON  
Steven E. Hanna, Hamilton, ON  
Jean Wessel, Hamilton, ON
- 6 Attachment of Non-Adherent Human U937 Macrophages to Cell Culture Dishes Coated with a Phosphorylcholine Polymer  
**Alain Pétit, Montréal, QC**  
Yong-Kuan Gong, Montréal, QC  
Françoise M. Winnik, Montréal, QC  
David J. Zukor, Montréal, QC  
John Antoniou, Montréal, QC  
Olga L. Huk, Montréal, QC  
Fackson Mwale, Montréal, QC
- 7 Cobalt and Chromium Ions Induce Nitration of Proteins in Human U937 Macrophages *In-Vitro*  
**Alain Pétit, Montréal, QC**  
Fackson Mwale, Montréal, QC  
David J. Zukor, Montréal, QC  
John Antoniou, Montréal, QC  
Olga L. Huk, Montréal, QC
- 8 IL-1 $\beta$  and TNF- $\alpha$  upregulate 11 $\beta$ -hydroxysteroid dehydrogenase type 1 (11 $\beta$ -HSD1) in cultured fibroblast cells: Implications for periprosthetic osteolysis  
**Robert Z. Tashjian, Providence, RI**  
Richard M. Terek, Providence, RI
- 9 Induction of Protein Oxidation by Cobalt and Chromium Ions in Human U937 Macrophages *In-Vitro*  
**Alain Pétit, Montréal, QC**  
Fackson Mwale, Montréal, QC  
David J. Zukor, Montréal, QC  
John Antoniou, Montréal, QC  
Olga L. Huk, Montréal, QC

- 10\* Cement flow during impaction allografting: A finite element analysis  
**Hanspeter Frei, Vancouver, BC**  
*Mohamed S. Gadala, Vancouver, BC*  
*Bassam A. Masri, Vancouver, BC*  
*Clive P. Duncan, Vancouver, BC*  
*Thomas R. Oxland, Vancouver, BC*

## Joint & Arthritis

- 11 Three Dimensional Computer Tomography of the Hip in the Assessment of Femoroacetabular Impingement  
**Paul É. Beaulé, Los Angeles, CA**  
*Edward Zaragoza, Los Angeles, CA*  
*Nathan Copelan, Los Angeles, CA*
- 12 Accuracy of a New Method of Measuring Scapular Motion  
**Doug Bourne, Vancouver, BC**  
*Anthony Choo, Vancouver, BC*  
*William Regan, Vancouver, BC*  
*Donna MacIntyre, Vancouver, BC*  
*Thomas R. Oxland, Vancouver, BC*
- 13\* Accuracy of kinematical analyses of human carpal bones using CT data  
**Maarten Beck, Kingston, ON**  
*Carolyn F. Small, Kingston, ON*  
*David R. Pichora, Kingston, ON*
- 14 Biomechanical Characteristics of Moderate Knee Osteoarthritis  
**Scott Landry, Halifax, NS**  
*Kelly McKean, Halifax, NS*  
*Cheryl Huble-Kozey, Halifax, NS*  
*William H. Stanish, Halifax, NS*  
*Kevin J. Deluzio, Halifax, NS*
- 15 Biomechanical Comparison of Intramedullary Nail and Blade Plate Fixation for Tibiotalocalcaneal Arthrodesis  
**Uosife Alfahd, Toronto, ON**  
*Sandra E. Roth, Toronto, ON*  
*David J.G. Stephen, Toronto, ON*  
*Cari M. Whyne, Toronto, ON*
- 16 Biomechanical stability of high tibial opening wedge osteotomy : A comparison of internal fixation versus external fixation  
**Zhim Fouad, Montréal, QC**  
*George Yves Laflamme, Montréal, QC*  
*Hugo Viens, St. Lambert, QC*  
*L'Hocine Yahia, Montréal, QC*

- 17 Cell Surface Marker Expression of Mesenchymal Stem Cells from Osteoarthritis Patients  
**John Antoniou, Montréal, QC**  
*Caroline N. Demers, Montréal, QC*  
*Robert L. Segal, Montréal, QC*  
*Dorothy Stachura, Montréal, QC*  
*Alain Pétit, Montréal, QC*  
*Olga L. Huk, Montréal, QC*  
*David J. Zukor, Montréal, QC*  
*Fackson Mwale, Montréal, QC*
- 18\* Effects of Functional Ankle Instability on Ankle Joint Complex Kinematics during a Lateral Hop Movement  
**Brad Monteleone, Calgary, AB**  
*Janet Ronsky, Calgary, AB*  
*Willem Meeuwisse, Calgary, AB*  
*Ronald F. Zernicke, Calgary, AB*
- 19\* Knee Adduction Impulse During Walking: A New Method of Reporting Joint Loading in Patients with Varus Gonarthrosis  
**Michael A. Hunt, London, ON**  
*Trevor B. Birmingham, London, ON*  
*Thomas R. Jenkyn, London, ON*  
*Ian C. Jones, London, ON*  
*Peter J. Fowler, London, ON*  
*J. J. Robert Griffin, London, ON*
- 20\* Rectus femoris activity patterns in moderate Osteoarthritis  
**Cheryl L. Hubley-Kozey, Halifax, NS**  
*Kevin J. Deluzio, Halifax, NS*  
*M. Agarbi, Halifax, NS*  
*J.S. McNutt, Halifax, NS*  
*Scott Landy, Halifax, NS*  
*William D. Stanish, Halifax, NS*
- 21 The Reliability of Radiographic Features of Knee Osteoarthritis and their Correlation to Validated Outcome Measures  
**Michael A.A. Bridge, Halifax, NS**  
*Ben Orlik, Halifax, NS*  
*Allan Hennigar, Halifax, NS*  
*David Amirault, Halifax, NS*  
*Michael J. Dunbar, Halifax, NS*
- 22\* The effects of the combination of Lidocaine HCL with Vancomycin and Cefazolin on various bacterial strains from nosocomial joint replacement infections.

**John F. Rudan, Kingston, ON**

*Lewis Tomalty, Kingston, ON*

*Haripriva Ramotar*

- 23\* The Implementation of a Non-Linear Reconstruction Algorithm in RSA  
**Bryan Donnelly, Calgary, AB**  
*Janet Ronsky, Calgary, AB*  
*Richie Gill, Oxford, UK*
- 24\* The scapho-lunate joint exhibits a larger degree of movability during radial-ulnar deviation than during flexion-extension  
**Maarten Beek, Kingston, ON**  
*Carolyn F. Small, Kingston, ON*  
*David R. Pichora, Kingston, ON*
- 25 Validity and reliability of accelerometric gait analysis in the assessment of osteoarthritis of the knee  
**Ben Orlick, Halifax, NS**  
*Michael J. Dunbar, Halifax, NS*  
*Allan Hennigar, Halifax, NS*  
*J. David Amirault, Halifax, NS*  
*J. Lorne Leahey, Halifax, NS*

#### **Bone/Ligament/Tendon**

- 26\* Modeling Fluid Flow and Tracer Transport in Loaded Haversian Bone  
**Nicholas Hamilton, Calgary, AB**  
*Dennis Coombe, Calgary, AB*  
*Frank Meyer, Calgary, AB*  
*David Tran, Calgary, AB*  
*Ronald F. Zernicke, Calgary, AB*
- 27\* Plasticity of Peptidergic Innervation in Healing Rabbit Medial Collateral Ligament  
**Paul T. Salo, Calgary, AB**  
*Ruth A. Seerattan, Calgary, AB*  
*Catherine Leonard, Calgary, AB*  
*Tyler J. Ivie, Calgary, AB*  
*Robert C. Bray, Calgary, AB*
- 28 Sex differences in ACL injuries. Does hip angle play a role?  
**Alexandra L. Brooks-Hill, Toronto, ON**  
*Kevin A. Ball, Seneca Falls, NY*  
*Douglas Richards, Toronto, ON*  
*Vick Kristman, Toronto, ON*  
*Paul H. Marks, Toronto, ON*

- 29      Ultrasound / CT Image Guidance for Pinning Scaphoid Fractures: Design and Feasibility Experiments  
**C. Peters, Kingston, ON**  
*T. Chen, Kingston, ON*  
*S.R. Papp, Kingston, ON*  
*D.T. Sahajpal, Kingston, ON*  
*P. Abolmaesumi, Kingston, ON*  
*David R. Pichora, Kingston, ON*  
*R.W. Sellen, Kingston, ON*
- 30\*     Using an Instrumented Spatial Linkage Device to Measure Dynamic Knee Motion with Clinical and Research Applications  
**Robert W. C. Jackson, Dallas, TX**  
*Fabian E. Pollo, Dallas, TX*  
*Biran S. Baum, Dallas, TX*  
*Prashant Komdeur, Dallas, TX*  
*Ericka Calton, Dallas, TX*

## Spine

- 31      Altered cell morphology and gene expression in a porcine endplate perforation model of lumbar intervertebral disc degeneration  
**Richard W. C. Hu, Calgary, AB**  
*Neil A. Duncan, Calgary, AB*  
*Christopher J. Hunter, Calgary, AB*  
*Sabina B. Bruehlmann, Calgary, AB*  
*Gregory N. Kawchuk, Calgary, AB*  
*Chung-Sze Seck, Calgary, AB*  
*John R. Matyas, Calgary, AB*
- 32      Assessing vertebral symmetry in normal and adolescent idiopathic scoliosis patients  
**T. Rajwani, Edmonton, AB**  
*R. Bhargava, Edmonton, AB*  
*R. Lambert, Edmonton, AB*  
*Marc J. Moreau, Edmonton, AB*  
*T. Videman, Edmonton, AB*  
*J. Kautz, Edmonton, AB*  
*Keith M. Bagnall, Edmonton, AB*
- 33      Creation of Realistic *In Vitro* Motion through Robotic Application of Kinematic Recordings  
**Shari Wynd, Calgary, AB**  
*Greg Kawchuck, Calgary, AB*
- 34      Effect of Dynamic Loading on Quantitative Magnetic Resonance Imaging and Disc Matrix Integrity  
**John Antoniou, Montréal, QC**  
*Mihaela Iordanova, Montréal, QC*  
*Gille Beaudoin, Montréal, QC*

*Tapas Goswami, Montréal, QC*  
*Fackson Mwale, Montréal, QC*  
*Mauro Alini, Montréal, QC*  
*Olga L. Huk, Montréal, QC*  
*David J. Zukor, Montréal, QC*

35\* Effects of cement distribution patterns on burst fracture risk in the metastatic spine following percutaneous vertebroplasty  
**Craig E. Tschirhart, Toronto, ON**  
*Sandra E. Roth, Toronto, ON*  
*Cari M. Whyne, Toronto, ON*

36\* Implant Subsidence and Underlying Trabecular Failure Densification with Interbody Devices  
**Juay-Seng Tan, Vancouver, BC**  
*Christopher S. Bailey, Vancouver, BC*  
*Charles G. Fisher, Vancouver, BC*  
*Marcel F. Dvorak, Vancouver, BC*  
*Thomas R. Oxland, Vancouver, BC*

37 Value and Limitations in Using the Bovin Coccygeal Disc for a Model as a the Human Lubmar Disc  
**Caroline N. Demers, Montréal, QC**  
*John Antoniou, Montréal, QC*  
*Alain Pétit, Montréal, QC*  
*Olga L. Huk, Montréal, QC*  
*David J. Zukor, Montréal, QC*  
*Fackson Mwale, Montréal, QC*

38\* Study of Chitosan Crosslinked to Genipin as a Cell Scaffold for Disc Tissue Engineering: Retention of Proteoglycan  
**Fackson Mwale, Montréal, QC**  
*Mihaela iordanova, Montréal, QC*  
*Peter Roughly, Montréal, QC*  
*John Antoniou, Montréal, QC*

## Trauma

39 A biomechanical study of the effect of varying pilot hole size on cancellous bone screw pullout strength in human cadaveric bone  
**Mark Steeves, Moncton, NB**  
*N. Craig Stone, St. John's, NL*  
*John Molgaard, St. John's, NL*  
*Stephanie Byrne, Surrey, ENGLAND*

## Tumour

40 Clonality Studies in Sacral Chordoma

**Lance Klingler, Springfield, IL**  
Rita Trammell, Springfield, IL  
D. Gordon Allan, Springfield, IL  
Merlin G. Butler, Kansas City, MO  
Hebert S. Schwartz, Nashville, TN

## COA Scientific Posters

### Adult Reconstruction

- 1\* Accuracy Evaluation of RSPA Using Digital Flat Panel X-ray  
**Xunhua Yuan, London, ON**  
D. W. Holdsworth, London, ON  
Richard W. McCalden, London, ON  
Steven J. M. MacDonald, London, ON  
Cecil H. Rorabeck, London, ON  
Robert B. Bourne, London, ON
- 2 Acetabular Defects in Primary and Revision Total Hip Replacement: A Finite Element Analysis  
**Paul Zalzal, Toronto, ON**  
Brad Kyte, Toronto, ON  
Marcello Papini, Toronto, ON  
Allan E. Gross, Toronto, ON
- 3 Arthroscopic Evaluation and Treatment of Problematic Total Knee Prosthesis: A Retrospective Study of 47 Cases  
**D. Gordon Allan, Springfield, IL**  
Rita Trammell, Springfield, IL
- 4\* Component Version in Modular Total Hip Revision  
**D. Gordon Allen, Springfield, IL**  
Rita A. Trammel, Springfield, IL  
Michael Kopec, Springfield, IL
- 5\* Computer Assisted Gap Equalization (CAGE) in Total Knee Arthroplasty  
**Darius Viskontas, London, ON**  
T. Shrinskas, London, ON  
David G. Chess, London, ON  
James A. Johnston, London, ON  
Graham J.W. King, London, ON  
Mitchell J. Winemaker, London, ON

- 6\* Cost-utility assessments in orthopedic surgery: What they reveal about how to direct resources efficiently in total joint arthroplasty  
**Carmen Brauer, Brookline, MA**  
*Natalia Olchanski, Boston, MA*  
*Peter J. Neumann, Boston, MA*
- 7 Do Bisphosphonates Affect Periprosthetic Bone Loss after Total Joint Arthroplasty: A Meta-Analysis  
**Sohail Bajammal, Hamilton, ON**  
*Mohit Bhandari, Hamilton, ON*  
*Lauren Griffith, Hamilton, ON*  
*Gordon Guyatt, Hamilton, ON*  
*Thomas Einhorn, Hamilton, ON*
- 8 Does Hip Replacement Biomechanics Have an Effect on Polyethylene Wear in Total Hip Arthroplasty?  
**William Allanach, Wellington, NEW ZEALAND**  
*Peter Devane, Wellington South, NEW ZEALAND*  
*Geoffrey Horne, Wellington South, NEW ZEALAND*
- 9\* Epidemiology of Primary and Revision Total Knee Replacement in the US Medicare Population  
**Nizar N. Mahomed, Toronto, ON**  
*Jeffery Katz, Boston, MA*  
*Jane Barrett, Lebanon, NH*  
*John Baron, Lebanon, NH*  
*John Wright, Boston, MA*  
*Elena Losina, Boston, MA*
- 10\* Impact of Hospital Volume on Cost of Total Hip Arthroplasty in Canada  
**Paul A. Martineau, Verdun, QC**  
*Kris Fillion, Montréal, QC*  
*Olga L. Huk, Montréal, QC*  
*David J. Zukor, Montréal, QC*  
*Louise Pilote, Montréal, QC*  
*John Antoniou, Montréal, QC*  
*Mark J. Eisenberg, Montréal, QC*
- 11 Impact of Patient Education on a Perioperative Blood Conservation Program in Arthroplasty Surgery  
**Ivan Wong, Hamilton, ON**  
*Nigel I. Colterjohn, Hamilton, ON*  
*Elizabeth Piccirillo, Hamilton, ON*  
*Danielle Petrucelli, Hamilton, ON*
- 12\* Intramedullary Guide Rod Alignment in Unicondylar Knee Arthroplasty  
**William Long, Kingston, ON**  
*Burton Ma, Kingston, ON*

*John F. Rudan, Kingston, ON*  
*Randy Ellis, Kingston, ON*

- 13 Late Radiotherapy to Arrest the Progression of Heterotopic Ossification Following Total Hip Arthroplasty  
**Stephen Kantor, Montréal, QC**  
*Michael Tanzer, Montréal, QC*  
*Louis Souhami, Montréal, QC*  
*Gyorgy Hegyi, Montréal, QC*
- 14 Local anaesthetics in total knee arthroplasty: randomised study evaluating their benefits and safety  
**Pascal A. Vendittoli, Montréal, QC**  
*Martin Lavigne, Montréal, QC*  
*Michel Fallaha, Montréal, QC*  
*Pierre Drolet, Montréal, QC*  
*Patrice Makinen, Montréal, QC*
- 15 Minimal invasive two incision hip arthroplasty, the first 15 cases  
**Boaz Liberman, Toronto, ON**  
*Paul Zalzal, Toronto, ON*  
*David Backstein, Toronto, ON*
- 16 Novel Method to Assess Surface Damage in Retrieved Tibial Components  
**Jan M. Brandt, London, ON**  
*J B. Medley, Waterloo, ON*  
*Richard W. McCalden, London, ON*  
*Steven J. M. MacDonald, London, ON*  
*Cecil H. Rorabeck, London, ON*  
*Robert B. Bourne, London, ON*
- 17 Osteotomy of the Knee for Collateral Ligament Laxity  
**John C. Cameron, Toronto, ON**
- 18\* Outcome Assessment for JRA Patients: Comparison of Results Using the WOMAC and PASI Questionnaires after Total Hip Arthroplasty  
**Brigitte M. Jolles, Lausanne, SWITZERLAND**  
*Earl R. Bogoch, Toronto, ON*  
*Dorcas E. Beaton, Toronto, ON*
- 19 Predictive Risk Factors for Stiff Knees in Total Knee Arthroplasty  
**Justin de Beer, Hamilton, ON**  
*Anthony Adili, Hamilton, ON*  
*Danielle Petruccelli, Hamilton, ON*  
*Rajiv Gandhi, Hamilton, ON*  
*James Leone, Hamilton, ON*  
*Mitchell J. Winemaker, Hamilton, ON*

- 20 Predictors of Success with 2-Stage Revision TKA's for Deep Sepsis  
**Robert B. Bourne, London, ON**  
*Akiko Yonekura, London, ON*  
*Cecil H. Rorabeck, London, ON*  
*Steven J. M. MacDonald, London, ON*  
*Richard W. McCalden, London, ON*
- 21 Randomized Controlled Trial of Posterior Stabilized vs. Cruciate Retaining TKA: An Interim Analysis of Short-Term Outcomes  
**Justin de Beer, Hamilton, ON**  
*Danielle Petruccelli, Hamilton, ON*  
*Matthias Hubmann, AUSTRIA*  
*Anthony Adili, Hamilton, ON*  
*Mitchell J. Winemaker, Hamilton, ON*
- 22\* Resurfacing Versus not Resurfacing of the Patella in Posterior Stabilized Total Knee Arthroplasty  
*D. Gordon Allan, Springfield, IL*  
**Rita Trammell, Springfield, IL**
- 23 Serial Measurement of Polyethylene Wear in Total Hip Arthroplasty Using a New Computer-Assisted Technique  
**William Allanach, Wellington, NEW ZEALAND**  
*Peter Devane, Wellington South, NEW ZEALAND*  
*Geoffrey Horne, Wellington South, NEW ZEALAND*
- 24\* Short-Term Clinical Outcome of Patients Treated with a Metal-on-Metal Resurfacing Hip Replacement  
**Brett Barnhart, Springfield, IL**  
*Rita Trammell, Springfield, IL*  
*D. Gordon Allen, Springfield, IL*
- 25 Shoulder Arthroplasty for Adult Juvenile Rheumatoid Arthritis Patients  
**Brigitte M. Jolles, Lausanne, SWITZERLAND**  
*Paul M. Grosso, Waterloo, ON*  
*Earl R. Bogoch, Toronto, ON*
- 26 So Hip it Hurts: Physical Activities and Pain After Total Hip Arthroplasty  
**Iris Weller, Toronto, ON**  
*Hans J. Kreder, Toronto, ON*  
*Monica Kunz, Toronto, ON*  
*Oana Scafesi, Toronto, ON*  
*Bev Bulmer, Toronto, ON*  
*Heather Brackley, Toronto, ON*  
*Joseph Schatzker, Toronto, ON*

- 27 The economics of minimally invasive joint arthroplasty: does it really make 'cents'?  
**Nelson V. Greidanus, Vancouver, BC**  
*John Woolcott, Vancouver, BC*  
*Aslam Anis, Vancouver, BC*  
*Clive P. Duncan, Vancouver, BC*
- 28 "The Economiser Rod", A Cause of Unmixed Powder in Bone Cement From The Vacu-Mix Plus System.  
**David Knowles, Toronto, ON**  
*J.P. Hodgkinson, Lancashire, UK*
- 29 The Effect of Fixed Versus Anatomic Femoral Component Rotation on the Patellofemoral Joint Following Cruciate Retaining Total Knee Arthroplasty  
**Michael Tanzer, Montréal, QC**  
*Andrew Pickle, Montréal, QC*  
*Karen Smith, Montréal, QC*
- 30\* The use of Fluoroguide for alignment of Oxford unicompartmental knee arthroplasties  
**John Rudan, Kingston, ON**  
*David Mayman, Kingston, ON*  
*David R. Pichora, Kingston, ON*  
*William Long, Kingston, ON*  
*Ted Vasarhelyi, Kingston, ON*  
*Randy Ellis, Kingston, ON*
- 31\* Total Knee Arthroplasty with Cemented NexGen Legacy Posterior Stabilized (LPS) Versus the Cementless NexGen Cruciate Retaining (CR) Implants: A Prospective Evaluation  
**D. Gordon Allen, Springfield, IL**  
*Rita Trammell, Springfield, IL*
- 32 Total knee replacement (TKR) after fresh osteochondral allograft transplantation  
**Guy Morag, Toronto, ON**  
*Anna Kulidjian, Toronto, ON*  
*David Backstein, Toronto, ON*  
*Allen E. Gross, Toronto, ON*
- 33 Validation of the UCLA Activity Scale in the Assessment of the Clinical Outcome of Total Hip Arthroplasty  
**Paul É. Beaulé, Los Angeles, CA**  
*Frédéric Dorey, Los Angeles, CA*  
*Michel LeDuff, Los Angeles, CA*  
*Harlan C. Amstutz, Los Angeles, CA*

- 34 Vertical acetabular positioning with the aid of an inclinometer in total hip arthroplasty  
**Pascal A. Vendittoli, Verdun, QC**  
*Martin Lavigne, Montréal, QC*  
*Alain Roy, Montréal, QC*  
*Nicolas Duval, Montréal, QC*
- 35\* Volume and Outcomes of Primary and Revision Total Knee Arthroplasty  
**Nizar N. Mahomed, Toronto, ON**  
*Jeffery Katz, Boston, MA*  
*Jane Barrett, Lebanon, NH*  
*John Baron, Lebanon, NH*  
*John Wright, Boston, MA*  
*Elena Losina, Boston, MA*
- 36 Opening Wedge vs. Closing Wedge High Tibial Osteotomy in Medial Compartment Osteoarthritis Patients: a Roentgenographic Comparison  
**Wadih Y. Matar, Ottawa, ON**  
*Geoffrey Dervin, Ottawa, ON*  
*Oliver Portner, Rockcliffe, ON*
- 37 Study of Femoral Component Migration in Surface Arthroplasty of the Hip Using EBRA-FCA.  
**Paul É. Beaulé, Los Angeles, CA**  
*Reiner Biederman, Innsbruck, AUSTRIA*  
*Peter Mayrhofer, Innsbruck, AUSTRIA*  
*Michel LeDuff, Los Angeles, CA*  
*Harlan C. Amstutz, Los Angeles, CA*
- 38 Computer-assisted Shoulder Hemiarthroplasty for Fractures of the Proximal Humerus  
**Ryan T. Bicknell, London, ON**  
*J.A. Delude, London, ON*  
*L.M. Ferreira, London, ON*  
*Cynthia E. Dunning, London, ON*  
*James A. Johnson, London, ON*  
*Graham J.W. King, London, ON*  
*Kenneth J. Faber, London, ON*  
*Darren S. Drosdowech, London, ON*
- 39 Nonoperative Treatment of Stable Thoracolumbar Burst Fractures – A Comparative Study of Bracing versus No Bracing  
**Eugene Wai, Ottawa, ON**  
*Darryl Young, Ottawa, ON*  
*Liisa Vexler, Ottawa, ON*  
*Eric Belanger, Ottawa, ON*  
*Robert D. Fraser, Ottawa, ON*

## Paediatrics

- 40 Outcome Analysis of Paediatric Chance Fractures  
**Stephen J. Tredwell, Vancouver, BC**  
*Christopher W. Reilly, Vancouver, BC*  
*Kishore Mulpuri, Vancouver, BC*  
*Neil Saran, Vancouver, BC*  
*Rachel L. Choit, Vancouver, BC*
- 41\* Sternal Split Approach to Cervical Thoracic Junction  
**Stephen J. Tredwell, Vancouver, BC**  
*Jacques LeBlanc, Vancouver, BC*  
*Kishore Mulpuri, Vancouver, BC*  
*Vic Sajhal, Vancouver, BC*
- 42 Trans-Physal Anterior Cruciate Ligament Reconstruction in Skeletally Immature Patients  
**Christopher W. Reilly, Vancouver, BC**  
*Kishore Mulpuri, Vancouver, BC*  
*Neil Saran, Vancouver, BC*  
*Rachel L. Choit, Vancouver, BC*
- 43 Trochanteric Antegrade Femoral Nail Fixation of Paediatric Femoral Osteotomies Allows Early Rehabilitation  
**Timothy P. Carey, London, ON**  
*Ronald El-Hawary, London, ON*  
*K. Kellie Leitch, London, ON*

## Spine

- 44\* Evaluation of spinal metastases in a preclinical rat model of human breast carcinoma  
**Shane Burch, Toronto, ON**  
*Stuart Brisland, Toronto, ON*  
*Brian Wilson, Toronto, ON*  
*Burton Yang, Toronto, ON*  
*Joel A. Finkelstein, Toronto, ON*  
*Cari Whyne, Toronto, ON*  
*Albert J.M. Yee, Toronto, ON*
- 45 Kyphectomy in Myelomeningocele with a Modified Dunn-McCarthy Technique Followed by an Anterior Inlayed Strut Graft  
**Jean Ouellet, Montréal, QC**  
*Theirry Odent, Montréal, QC*  
*Fabien Bitan, New York, NY*  
*Vincent Arlet, Montréal, QC*

- 46 Occipito-Cervico-Thoracic Fusions in Patients with Extensive Cervical Involvement from Rheumatoid Arthritis  
**Ganesh Swamy, Calgary, AB**  
*R.J. Hurlbert, Calgary, AB*
- 47 Outcome after Lumbar Decompression and Fusion Surgery: The effect of smoking  
**Hongxing Jiang, Edmonton, AB**  
*Richard W.C. Hu, Calgary, AB*  
*Paul T. Salo, Calgary, AB*  
*Jacques A. Bouchard, Calgary, AB*
- 48 A Preliminary 2-Year Radiographic Assessment of Anterior Cervical Interbody Fusion with Machined Allograft Bone Cage and Plate  
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*Yinggang Zheng, Buffalo, NY*
- 49\* A preliminary 2-year radiographic assessment of interbody lumbar fusion with machined allograft bone cage and instrumentation  
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- 50 Effect of the Boston Brace on the Sagittal Contour in Idiopathic Scoliosis  
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- 54\* Gender Differences in Functional Status and Extent of Pathology in Patients Undergoing Rotator Cuff Surgery  
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- 55 Spring Motion of the Medial Longitudinal Arch of the Foot During Running  
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- 56\* The anatomic vascular zones of the Quadriceps Tendon  
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- 59\* A Prospective Cost Analysis following Operative Treatment of Unstable Ankle Fractures  
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*Jaydeep K. Moro, Hamilton, ON*

- 60\* Biomechanical Analysis of Supracondylar Femur Fractures fixed with LISS Plating, Dynamic Condylar Screw and Condylar Buttress Plating  
**Paul Duffy, Halifax, NS**  
*Kelly Collier, Halifax, NS*  
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*Kevin J. Deluzio, Halifax, NS*  
*Ross K. Leighton, Halifax, NS*  
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- 61 Do Distal Radius Fractures Need Orthopedic Expertise?  
**Wendy L. Parker, Montréal, QC**  
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- 62 Failed pinning of un-displaced femoral neck fractures in the elderly.  
**Christopher W. Brown, Ottawa, ON**  
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- 63 How to treat proximal humerus fractures: a survey of Canadian surgeons' practices  
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*G. Yves Laflamme, Montréal, QC*  
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*Rudolph Reindl, Montréal, QC*  
*Edward J. Harvey, Montréal, QC*  
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- 66 The Impact of ORIF on Acute Pain Management In Unstable Pelvic Ring Injuries  
**David P. Barei, Seattle, WA**  
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*Sean E. Nork, Seattle, WA*  
*M.L. Chip Routt, Seattle, WA*  
*Carlo Bellabarba, Seattle, WA*

## **GIRLETZ RODEO RANCH**

Enjoy a fun-filled evening at this family ranch. Cheer on the cowboys at an outdoor Wild West Bull Bustin' show, enjoy a barn dance with live music.

The evening includes a western BBQ dinner.

Remember to put on your western wear and comfortable shoes for an evening you won't forget!

**Sign up at the registration desk!**

**Seating is limited so sign up early**

**\$80.00 – Members**

**\$110.00 – Non-Members**

**Saturday, June 19<sup>th</sup>, 2004  
1800 – Midnight**

*Transportation provided*

**SOCIAL PROGRAMME**

**FRIDAY EVENING – June 18**

**Opening Ceremonies & Reception** 1730 –1830  
Jack Singer Concert Hall

**SATURDAY EVENING – June 19**

**FUN NIGHT – GERLITZ RODEO RANCH** 1800 – Midnight

Please see event ad in programme. \$80.00 – Registrants  
\$110.00 – Others  
(Includes transportation)

**PARTNERS' PROGRAMME**

**HOSPITALITY SUITE**

Located in the Neilson 1 & 2 at the Hyatt Regency Hotel 0800 – 1600  
June 18 & 19

Partners please come and join us in our hospitality suite and enjoy a quick snack while meeting other partners. We will be featuring some local artists and will have information about exciting things to do around Calgary. 0800 – 1200  
June 20

**FRIDAY, JUNE 18**

**CALGARY ORIENTATION** 0830 – 0900

Learn about Calgary as you enjoy your morning coffee in the Hospitality Suite. A presentation will be given by one of Calgary's Ambassadors. Free

\*For those not going on the Kananaskis Tour, a short, guided walk through the downtown core will be offered following the presentation.

**KANANASKIS OUTING** 0915 – 1530

Kananaskis Country, located 90 km southwest of Calgary, offers many kilometers of hiking and biking trails, as well as facilities for swimming, spas, shopping, and leisurely meals in the midst of unbelievable scenery. Hop aboard our bus and treat yourself to a day you won't forget! \$80.00 – Guided Hiking  
\$95.00 – Biking  
(bikes provided)

~~Children's Programme: They will be entertained with activities such as mini Olympics, arts and crafts, campfire and swimming. For 5 years and older: a minimum of 5 children required~~ **CANCELLED** -\$90.00

Spa: Your spa treatments can be booked by calling **403-271-0459 ext. 6226** and viewed at [www.summitspaandfitness.com](http://www.summitspaandfitness.com). \$80.00 + plus

## STILLWATER SPA PACKAGE AT HYATT REGENCY CALGARY

Various times available

Take some time out to pamper yourself at the Hyatt Hotel's Stillwater Spa. This deluxe European-styled haven offers up a full menu of fabulous treatments. Choose from one of two packages:

\$100.00  
(Including taxes but not gratuity)

Package #1 The Avenue Manicure and Pedicure: - An express manicure and pedicure, including polish

Package #2 A 30-minute facial, massage or body treatment

Both packages include a delicious spa-inspired lunch and use of the whirlpool and/or steam room. Post treatment, stretch out in one of the luxurious chaise lounges in the Serenity Room.

Please call **403-537-4474** to book your preferred package. [www.stillwaterspa.com](http://www.stillwaterspa.com) - We cannot guaranteed space for either package.

## SATURDAY, JUNE 19

### FASHION SHOW

\$15.00

Looking for contemporary cowboy chic? Calgary's FOCUS store has a selection of knockout denims, gingham dresses, romantic blouses and sweeping prairie skirts. Get some ideas for the dance that night while enjoying a coffee and a fashion show. Minimum 15 persons.

1000 - 1045

(Includes transportation)

### THE COOKBOOK COMPANY COOKS PRESENTS: CHEF, HELP ME COOK MY LUNCH

1100 - 1400

Join our celebrity chef in preparing a custom designed afternoon of specialty cooking and cooking instruction. Recipes with interesting and appetizing flavour combinations will be paired with complementary wine selections. Space is limited to 30 participants. Minimum 15.

\$70.00

(Includes menu sampling, wine and transportation)

Transportation between the fashion show and the Cookbook Company presentation will be arranged, and is included in the costs, for those wishing to take part in both activities.

## SUNDAY, JUNE 20

### CALGARY ZOO, BOTANICAL GARDENS AND PREHISTORIC PARK TOUR & BRUNCH

0900 - 1200

Have a fantastic Sunday morning hanging out with the animals in their habitats. Enjoy a sumptuous Sunday brunch in the Safari Room of the Zoo's new African Pavilion. Stroll through the botanical gardens, the butterfly conservatory and the unique dinosaur park. Only ten minutes from downtown.

\$35.00 – Adults

\$17.50 – Children

(4-12 yrs)

Free – Children

(under 3 yrs)

**Pre-registration A Must – June 20<sup>th</sup> is Father's Day and the brunch will sell out.**

(Transportation included)

## EXHIBITORS

**Location: Exhibit Hall - TELUS CDE**

**Thursday, June 17**

12:00 pm – 6:00 pm

Registration Open

**Friday, June 18**

9:00 am – 3:30 pm

10:30 am – 11:00 am

12:45 pm – 1:30 pm

3:00 pm – 3:30 pm

6:30 pm - 9:00 pm

Exhibit Hall Open

Refreshment Break

Lunch

Refreshment Break

Opening Reception

**Saturday, June 19**

8:00 am – 3:30 pm

10:00 am – 10:30 am

12:00 pm – 1:00 pm

2:30 pm – 3:00 pm

Exhibit Hall Open

Refreshment Break

Lunch

Refreshment Break

**Sunday, June 20**

8:00 am – 1:30 pm

10:30 am – 11:00 am

12:30 pm – 1:30 pm

Exhibit Hall Open

Refreshment Break

Lunch

### EXHIBITOR INFORMATION

*\*Denotes CONA booths*

3M Canada  
300 Tartan Drive  
London, ON N5V 4M9

Booth No. 72

Those entering hospitals have a 5% to 10% chance of getting an infection. \$1 billion is spent annually to treat infected patients in Canada. Up to half of hospital acquired infections are preventable. You can't control everything. Take control with 3M Infection Prevention.

AGFA  
77 Belfield Road  
Toronto, ON M9W 1G6

Booth No. 69

AGFA HealthCare displays an Impax workstation for softcopy orthopaedic planning. View softcopy x-ray images and perform: hip and knww planning protocols, shoulder, elbow and hand templating, screw, nail and plate templates for trauma and coxometry module, osteotomy planning and pediatric templating.

Ambulatory Surgical Centres Canada Company  
(ASCCC)

Booth No. 13

910 East 20<sup>th</sup> Street  
Sioux Falls, SD 57105 USA

Ambulatory Surgical Centres Canada Company provides leadership, management, consulting and equity investment for the development of ambulatory surgical centres and surgical specialty hospitals.

Aventis Pharma  
2150 St. Elzear West  
Laval, QC H7L 4A8

Booth No. 4

Biomet Canada Inc.  
790 Redwood Square, Unit #1  
Oakville, ON L6L 6N3

Booth Nos. 23, 24, 25

Biomet Canada distributes orthopaedic products used by orthopaedic surgeons in both reconstructive and fixation devices, operating room supplies and general surgical instruments.

BrainLab  
3 westbrook Corporate Center  
Suite 400  
Westchester, IL 60154 USA

*cancelled*

Canada Microsurgical Ltd.  
5024 South Service Road  
Burlington, ON L7L 5Y7

Booth No. 29

OSI Tables, Luxtec Lightsourcing, Jarit Instruments, Artrotec Disc Nucleoplasty as well as the Parallex Spine System and the Tompson Retractor System.

Canadian Institute for Health Information (CIHI)  
377 Dalhousie St., Suite 200  
Ottawa, ON K1N 9N8

Booth No. 32

The Canadian Institute for Health Information (CIHI) is an independent, pan-Canadian, not-for-profit organization working to improve the health of Canadians and the health care system by providing quality, reliable and timely health information.

Canadian Orthopaedic Foundation  
P.O. Box 7029  
Innisfil, ON L9S 1A8

Booth No. 70, 71

The Canadian Orthopaedic Foundation, through its signature fund-raising programme Hip Hip Hooray, funds basic research, professional and public education with its national volunteer efforts, improves the delivery of community orthopaedic care. Visit the Foundation's booth for a surgeon appreciation package.

Citagenix Inc. / Dynagraft  
1105 Autoroute Chomedey  
Laval, QC H7W 5J8

Booth No. 73

Citagenix Inc. is a leader in the rapidly growing orthoologics market, providing surgeons with biologically based products for bone repair and

regeneration.

2004 Combined Meeting  
Sydney, Australia  
October 24 – 29, 2004  
[www.tourhousts.com.au/ortho2004](http://www.tourhousts.com.au/ortho2004)

Booth No. 11

11<sup>th</sup> Meeting of the Combined Orthopaedic Associations brings together the Associations of Australia, Britain, Canada, New Zealand, South Africa and the United States of America.

DePuy – Johnson & Johnson Medical Products,  
A Division of Johnson & Johnson, Inc.  
200 Whitehall Drive  
Markham, ON L3R 0T5

Booth Nos. 30, 31, ,34, 35

A leading designer and manufacturer of joint reconstructive products for knees, hips and extremities – including DePuy Mitek offering full range of products from absorbable suture anchors to arthroscopic instrumentation.

\*Diagnostic Ultrasound  
21222 – 30<sup>th</sup> Drive SE, Suite 120  
Bothhill, WA 98012-7012 USA

Booth No. A

Diagnostic Ultrasound's BladderScan® instruments non-invasively measure bladder volume. Prevent unnecessary catheterization; Reduce urinary tract infections; Provide accurate and objective measurement of bladder volume; Non-invasively diagnose and treat urological disorders

dj Ortho, Canada Inc.  
745 Bonhill Rd., Unit /8  
Mississauga, ON L5T 1C1

Booth No. 76

dj Ortho is a global orthopaedic sports medicine company specializing in the design manufacture and marketing of non-surgical products that repair, regenerate and rehabilitate soft tissue and bone, protect against injury and treat osteoarthritis of the knee.

EBI  
100 Interpace Parkway  
Parsippany, NJ 07054 USA

Booth No. 27

EBI™ provides surgeons with innovative, technologically advanced products in the following categories: Spine, Fixation, Bone Growth Technologies, Bracing and Soft Goods, Image-Guided Surgery and Pain Management.

Farnorth Sales Associates  
1523 Valhalla Street  
Bellingham, WA 98226 USA

Booth No. 16

Canadian distributor for Acumed, Avanta, Trimed, K.M.I., Vanguard Medical Concepts, and Millennium Medical Technologies. Specializes in upper and lower extremity products.

Generation II Orthotics  
1211 Jacobson Way

Booth No. 74

Richmond, BC V6W 1L5

GII is a worldwide orthotics leader dedicated to the pursuit of excellence in human performance. Specializing in knee bracing for ligament injuries and osteoarthritis.

Genzyme Biosurgery Canada  
2700 Matheson Blvd. East  
East Tower, Suite 800  
Mississauga, ON L4W 4V9

Booth No. 75

Synvise® viscosupplement for the treatment of osteoarthritis of the knee.

\*Health Resource Centre  
1402 – 8<sup>th</sup> Avenue NW  
Calgary, AB T2N 1B9

Booth No. D

The Health Resource Centre offers Surgical Care Solutions to Canadians through expedited access to excellence in Surgical and Rehabilitation Services.

\*Hill-Rom Canada  
544 Timberlea Blvd.,  
Mississauga, ON L4W 2T7

Booth No. C

A leading provider of patient care environment systems designed to make a positive difference in the lives of patients and caregivers. Products and services address patient and caregiver safety, improving patient outcomes, reducing caregiver injuries and improving financial outcomes.

Innovation Sports, Inc.  
19762 Pauling  
Foothills Ranch, CA 92610 USA

Booth No. 5

Manufacturer of knee braces and sports medicine products including: C.Ti2, OAsys osteoarthritis, and Option post-operative knee braces. New for 2004: C.Ti 2 Vapor, Flex and Flex Sport, OAsys Carticare, UltraWrap, and Neuprope products.

KCI Medical Canada, Inc.  
95 Topflight Drive  
Mississauga, ON L5S 1Y1

Booth No. 48

KCI MEDICAL manufactures, rents and services therapeutic surfaces, and V.A.C. Therapy which treat/prevent complications associated with immobility, by reducing severe pain and enhance healing.

Kyphon Inc.  
1221 Crossman Avenue  
Sunnyvale, CA 94089 USA

Booth No. 26

Kyphon develops and markets medical devices designed to restore spinal anatomy using minimally invasive technology. The Company's initial marketing focus is on doctors who repair spine fractures caused by osteoporosis, traumatic injury, or cancer. Kyphon's KyphX® System provides doctors with instruments to reduce fractures during minimally invasive spine surgeries.

Lasswell Medical Co., Ltd.  
405 Industrial Drive, Unit #21

Booth No. 46

Milton, ON L9T 5B1

Exclusive Canadian Distributor for Arthrex, Breg, ArthroCare, Regeneration Technology. Dedicated to providing innovative Arthroscopic & Sports Medicine products to our valued Customers

Linvatec Canada  
2330 Millrace Court, Unit #5  
Mississauga, ON L5N 2M2

Booth Nos. 53, 54, 55, 56

Linvatec is at the forefront of technology for a growing range of minimally invasive and orthopaedic surgery products. Linvatec's product offering consists of power, video management, integrated operating room suites, arthroscopy, endoscopy and procedure specific products.

Medtronic Sofamor Danek  
6733 Kitimat Road  
Mississauga, ON L5N 1E3

Booth No. 33

Merck Frosst Canada Ltd.  
16711 Transcanada Hwy  
Pointe Claire, QC H9H 3L1

Booth Nos. 14, 15

Vioxx® - The Coxib with Proven Powerful Pain Relief Safely Delivered.

Ortho Biotech Canada  
19 Greenbelt Drive  
Toronto, ON M3C 1L9

Booth No.12

EPREX therapy is indicated to treat patients who are undergoing major elective surgeries and have pretreatment hemoglobin of >100 to ≤ 130 g/L. EPREX therapy is indicated to reduce allogeneic blood transfusion and hastens erythroid recover.

Pfizer Canada Inc.  
17300 TransCanada Hwy  
Kirkland, QC H9J 2M5

Booth No. 79

Pfizer Canada is committed to improving the health of Canadians is a leader in the treatment of arthritis. Celebrex and Bextra, Pfizer's revolutionary Coxib medications, have the proven strength to relieve pain and inflammation.

Pinnacle Rehabilitation Ltd.  
643 Twin Brooks Bend  
Edmonton, AB T6J 7E2

Booth No. 36

Pinnacle is a proud pioneer, using DVD education to enhance patient care. Our award winning **"If You Have.."** series prepares patients for joint replacement surgery, and addresses common orthopedic problems including chronic mechanical low back pain, and rotator cuff injuries.

\*Purdue Pharma  
575 Granite Court  
Pickering, ON L1N 3W8

Booth No. 80

Purdue Pharma is a research-based Canadian pharmaceutical manufacturer. Committed to enhancing quality of life for those who suffer from pain. Purdue Pharma offers the health care community a large, integrated family of oral opioid analgesic medications for the treatment of both cancer and non-cancer pain.

\*Sivagris Corp.  
5653 Chemin St-François  
St. Laurent, QC H4S 1W6

Booth No. B

Medical compression and support stockings.

Smith & Nephew  
6685 Millcreek Drive, Unit #5  
Mississauga, ON L5N 5M5

Booth Nos. 49,50 51,52

Smith & Nephew is a worldwide leading designer, manufacturer and distributor of Orthopaedic and Endoscopy instruments and implants.

Stryker Canada  
45 Innovation Dr.  
Hamilton, ON L9H 7L8

Booth Nos. 17,18,19,20,21,22  
93,94

Stryker Canada markets products that add value to the efforts of medical professionals and aid in the delivery of quality health care to Canadians. Stryker develops, manufactures, and markets specialty surgical and medical products such as orthopaedic implants, trauma and endoscopic systems, and patient care and handling equipment.

Synthes (Canada) Ltd.  
2566 Meadowpine Blvd.  
Mississauga, ON L5N 6P9

Booth Nos. 9,10

Synthes (Canada) is an orthopaedic company which markets instruments and implants for internal fixation.

TENET Medical Engineering  
5540 1A Street SW  
Calgary, AB T2H 0E7

Booth No. 28

Tenet's SPIDER Limb Positioner combines strength and flexibility to provide optimal intraoperative positioning for upper extremity procedures. The T-MAX provides ideal access, adjustability and stability for Beach Chair shoulder procedures.

TriMed  
869 Main Street, Suite 6  
Walpole, MA 02081 USA

Booth No. 45

Wrist Fixation System – the only complete system providing fragment-specific fixation of distal radius fractures. Includes pin plates, wire forms, valve peg plate and butless pins.

Wright Medical Technology Canada Ltd.  
6581 Kitimat Road, Unit #8  
Mississauga, ON L5N 3T5

Booth Nos. 77,78,83,84

Wright is a leading global orthopaedic medical device company specializing in the design, manufacture and marketing of reconstructive joint devices and biologics products. Headquarters are in Arlington, Tennessee.

Zimmer  
2333 Argentia Road

Booth Nos. 1,2,3,6,7,8

Mississauga, ON L5N 5N3

Zimmer is the worldwide #1 pure-play orthopaedic leader in the design, development, manufacture and marketing of reconstructive and spinal implants, trauma and related orthopaedic surgical products.

## TABLETOPS

Situated in the Registration area

Canadian Orthopaedic Association

Women in Orthopaedics

Bone and Joint Decade

Basic Science Course

Calgary Elbow and Shoulder Course

Montreal 2005

Know the World Tour Organizer Inc. – 11<sup>th</sup> Combined Meeting – Sydney, Australia

## New Members

### Active Members

Dr. Abubaker Ahmer (AB)  
Dr. Mohit Bhandari (ON)  
Dr. Gordon Douglas Bell (AB)  
Dr. Sharlene Bogusz (QC)  
Dr. Paul M. Brisson (USA)  
Dr. Emannelle M.-J. Dudon (QC)  
Dr. Amr Waguih Elmaraghy (ON)  
Dr. Peter Ferguson (ON)  
Dr. Kenneth Fern (ON)  
Dr. David Foerster (MB)

Dr. George Yves Laflamme (QC)  
Dr. Kim Latendresse (QC)  
Dr. Joel Lobo (ON)  
Dr. Stuart Manwell (ON)  
Dr. Claude Martin (ON)  
Dr. Justin Naude (BC)  
Dr. Cleo C. Rogakou (ON)  
Dr. Lisa Marie Ronback (USA)  
Dr. Dany Tomblor (ON)  
Dr. Pascal-André Vendittoli (QC)

### Affiliate Members

Dr. Susan Goyer (MB)  
Dr. Unni Narayanan (ON)

Dr. Martin Petrak (MB)

### Associate Members

Dr. Amer Abdallah (QC)  
Dr. Fawzi Al-Jassir (QC)  
Dr. Wazzan Al Juhani (QC)  
Dr. Shalinder Armeja (BC)  
Dr. Sohail Bajammal (ON)  
Dr. R. Cole Beavis (SK)  
Dr. Dane Bowe (NS)  
Dr. Christopher Brown (ON)  
Dr. Malcolm E. Chang (NL)  
Dr. Cpt. Sean Comstock (NS)  
Dr. Darin Davidson (BC)  
Dr. Kurt Droll (ON)  
Dr. Christopher Gallimore (ON)  
Dr. Danny Goel (AB)  
Dr. Hai Nguyen (QC)  
Dr. Michael Henry (BC)  
Dr. Paul Robert Kuzyk (ON)  
Dr. David Longino (AB)  
Dr. Kristopher Lundine (AB)  
Dr. Jean-Marc Mac-Thiong (QC)  
Dr. Marc-André Magalhaes Graves (QC)  
Dr. Dean Malish (AB)  
Dr. Wadih Matar (ON)

Dr. Sonja Mathes (BC)  
Dr. Michael McCaffrey (NL)  
Dr. Sophie Mottard (QC)  
Dr. Satyam Patel (SK)  
Dr. Elizabeth Pederson (AB)  
Dr. Daniel Penello (ON)  
Dr. Shannon Puloski (AB)  
Dr. Andrew Quinn (ON)  
Dr. Sourendra Sean Raut (QC)  
Dr. Louis –David Raymond (QC)  
Dr. Jeremy Reed (AB)  
Dr. Jeffrey Todd Reid (ON)  
Dr. Shane Seal (NL)  
Dr. Milan Sen (USA)  
Dr. Prem Sequeria (NL)  
Dr. Adam Sidky (AB)  
Dr. Benjamin Smith (NS)  
Dr. Venessa Stas (ON)  
Dr. James Stone (BC)  
Dr. Abeer Syal (MB)  
Dr. Amit Varma (MB)  
Dr. Veronica Wadey (USA)  
Dr. Zhi Wang (QC)

### Overseas Members

Dr. Zuhair Aldahhan

## **Next Annual Meetings**

11<sup>th</sup> Combined Meeting  
Orthopaedic Associations of the World  
October 24 – 29, 2004  
Sydney, Australia

60<sup>th</sup> COA Annual Meeting  
39<sup>th</sup> CORS Annual Meeting  
June 3 – 6, 2005  
Palais des Congrès  
Montréal, Québec

61<sup>st</sup> COA Annual Meeting  
40<sup>th</sup> CORS Annual Meeting  
June 2 – 4, 2006  
Sheraton Centre  
Toronto, Ontario

62<sup>nd</sup> COA Annual Meeting  
41<sup>st</sup> CORA Annual Meeting  
June 1 - 3, 2007  
Halifax, Nova Scotia

63<sup>rd</sup> COA Annual Meeting  
121<sup>st</sup> AOA Annual Meeting  
42<sup>nd</sup> CORS Annual Meeting  
June 2 – 6, 2008  
Québec City, Québec

64<sup>th</sup> COA Annual Meeting  
43<sup>rd</sup> CORS Annual Meeting  
July 3 – 6, 2009  
Whistler, British Columbia

Dear Colleague,

**Re: The Journal of Bone and Joint Surgery**

I am delighted to say that the British Volume of the Journal of Bone and Joint Surgery will continue to publish free the Abstract of your Society's Meetings.

At the Journal of Bone and Joint Surgery, we believe it is very important to encourage all those involved in the practice of orthopaedic surgery to subscribe to the premier orthopaedic Journal.

In an age of specialisation, I appreciate the importance of speciality journals. Nonetheless, across the field of orthopaedics around the world many surgeons believe they should reserve their best work for submission to the JBJS. Within its pages, therefore, is the cream of world orthopaedic research.

If you do not subscribe, can I encourage you to do so. Note that there is a 50% discount for all orthopaedic Trainees. At the bottom of this letter the methods of subscribing are outlined.

I do hope you will join us if you have not done so already.

Yours sincerely,

Michael K. D. Benson, **Chairman**

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**ORDER FORM**

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