

WELCOME MESSAGES

Dear Friends,

It is a great pleasure and honour to welcome you to Montréal for the 60th COA Annual Meeting.

Pierre Guy, Kevin Hildebrand and Kevin Deluzio, Chairs of the COA and CORS Programme Committees, have prepared a great scientific event which will permit all of us to acquire new knowledge in our fast developing specialty. The programme includes ICLs, workshops and four live surgeries.

Sylvain Gagnon, our LAC Chair, has taken great pride in preparing social activities which you will certainly appreciate. Don't miss the Opening Ceremonies on Friday evening and the Fun Night at the Châlet de la Montagne on Sunday night. You will remember them for years to come!

It is also your opportunity to enjoy one of the most diverse and visited cities in North America.

Have a great meeting!

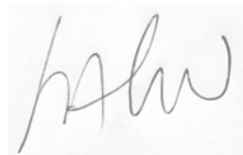


Alain Jodoin, MD
President

You came to the right place at the right time! For a few days you will forget the present political turmoil to concentrate on what you love most: (after your spouse, of course!) orthopaedic surgery!

This meeting promises to be exceptional and exceed your expectations. The Palais des congrès is an outstanding venue for scientific exchange where you will be in the heart of Montréal to enjoy our great city. Don't miss our spectacular Opening Ceremonies and come to the Châlet de la Montagne for a distinguished dinner along with your friends. Above all, the excellent scientific programme, along with the numerous exhibitors, is the main reason why you will remember this 60th anniversary!

Welcome all!



Sylvain Gagnon, MD
LAC Chair 2005

Table of Contents

	Page
Welcome	2
General Information	4
Sponsors / Contributors	6
Local Arrangements Committee	7
Invited Guests	8
Special Lectures	
CORA – J.A. Nutter Award	24
J. Édouard Samson Award & Royal College Medal of Surgery in Orthopaedics	24
RI Harris Lecture	46
Instructional Course Lectures At-a-Glance	9
Workshops & Symposia At-a-Glance	11
Live Surgery At-a-Glance	12
Combined Scientific Sessions	14
CORS Scientific Sessions	21, 30
COA Scientific Sessions	37
MANUS Scientific Session	68
COFAS Scientific Session	70
Poster Exhibit	71
Exhibit Information	87
Floor plans	94
New Members	97
Future Meetings	98

Meeting Information

REGISTRATION

On-Site Registration	Thursday, June 2 nd	1400 – 1800
	Friday, June 3 rd	0700 – 1800
	Saturday, June 4 th	0700 – 1800
	Sunday, June 5 th	0700 – 0900

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. Available at the Registration Desk.

BUSINESS MEETINGS

CORS	Friday, June 3 rd	1300 – 1400	524A
COA	Saturday, June 4 th	1315 – 1415	517D

CORS and COA POSTERS

Posters can be viewed for the duration of the meeting in the 516C, enter through the Exhibit Hall.

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

SPEAKER READY ROOM

522C

Hours:	Thursday, June 2 nd	1500 – 1700
	Friday, June 3 rd	0700 – 1700
	Saturday, June 4 th	0700 – 1700
	Sunday, June 5 th	0700 – 1200

MESSAGE BOARD

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

Sponsored by the Canadian Orthopaedic Foundation

PARTNERS' HOSPITALITY SUITE

516A

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

Hours:	Friday, June 3 rd	0800 – 1600
	Saturday, June 4 th	0800 – 1600
	Sunday, June 5 th	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 Programme 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 60th 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.

Special thanks to the surgeons who graciously gave their time to proofread the Preliminary and Final Programmes.

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.

PLANTINUM SPONSORS



GOLD SPONSORS



Novartis



Local Arrangements Committee

LAC Chair	Sylvain Gagnon
Programme Chairs	Pierre Guy, COA Kevin Deluzio, CORS Kevin A. Hildebrand, CORS
Industry	Ron McCarthy, Zimmer
COA	Doug Thomson Yuri Kojima
Sorelcomm Inc.	Denise Duhaime Lina Salvati Isabelle Desloges Jean-Sébastien Laurin

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 or www.boneandjointdecade.org.

Invited Guests

Sister Association Presidents:

American Orthopaedic Association (AOA)	Edward N. Hanley, Jr, MD
American Academy Orthopaedic Surgeons (AAOS)	Stuart L. Wienstein, MD
Australian Orthopaedic Association (AusOA)	John M. Harrison, MD
British Orthopaedic Association (BOA)	Michael K.D. Benson, MD
New Zealand Orthopaedic Association (NZOA)	Richard Nicol, MD
South African Orthopaedic Association (SAOA)	Lou van Wyk, MD

Provincial Presidents:

Newfoundland and Labrador	Robert Russell, MD
Prince Edward Island	Barry E. Ling, MD
Nova Scotia	David Amirault, MD
New Brunswick	Andrew Berkshire, MD
Québec	Raymond Hould, MD
Ontario	Peter Schuringa, MD
Manitoba	Dimitrios Balageorge, MD
Saskatchewan	Mario Taillon, MD
Alberta	Donald A. Dick, MD
British Columbia	Kirk Sundby, MD

Presidential Guest Speaker

Jean L. Rouleau, MD Dean Faculty of Medicine, Université de Montréal Mostafa Elhilali, MD Professor and Chair, Department of Surgery, McGill University
--

Special Guest

Peter Duncan

Canadian Orthopaedic Residents Association (CORA)

Co-Presidents	Dominique Rouleau, MD Stephen Walsh, MD
---------------	--

Guest Lecturers:

R.I. Harris Lecturer	Hubert Labelle, MD
J.É. Samson Award & Royal College Medal of Surgery	John Antoniou, MD

President's Awards:

President's Award of Merit	Earl R. Bogoch, MD Jacques E. Des Marchais, MD
----------------------------	---

Travelling Fellows:

Anica Bitenc Fellows	Borut Pompe, MD Goran Bičanić, MD Claude Serra, MD
CFBS Fellow	Cheng Sze Chung MD
Hong Kong Ambassador	Johnny T.C. Lau, MD
NAT Fellow (Canada)	Michael J. Dunbar, MD
ABC Fellows	Kenneth J. Faber, MD

INSTRUCTIONAL COURSE LECTURES At-A-Glance

FRIDAY, JUNE 3RD - 0700 – 0830

- ICL-01: Adult Reconstruction – Knee:
Current Techniques and Controversies in TKA– Case-Based Problem Solving
Moderator: Bassam A. Masri,
Panelists: Robert B. Bourne, Brian C. Burkart, Jeffrey D. Gollish, Ross K. Leighton, Justin de Beer, Nizar N. Mahomed
- ICL-02: Trauma:
Common Trauma Problems About the Foot and Ankle
Moderator: Gregory K. Berry
Panelists: David J.G. Stephen, Alastair S.E. Younger, Mark D. MacLeod
- ICL-03: Sports Medicine:
Surgical Management of Shoulder Arthritis and Bony Defects
Moderator: John Antoniou
Panelists: Robert M. Hollinshead, Frédéric Balg, Peter B. MacDonald
- ICL-04: General Session:
How to Identify Good Orthopaedic Literature, and What Makes a Good, Publishable Paper?
Moderator: Robin R. Richards
Panelists: Emil H. Schemitsch, James P. Waddell
- ICL-05: Spine:
Scoliosis: Current Trends in Surgical Management
Moderator : Jean Ouellet
Panelists : **Vincent Arlet (Virginia, USA)**, Hubert Labelle
- ICL-06: Tumour :
Recent Advances in Bone Sarcomas
Moderator: Robert É. Turcotte
Panelists: Norbert Dion, Joel M. Werier, Peter Ferguson

SATURDAY, JUNE 4TH – 0700 – 0830

- ICL-07: Adult Reconstruction – Hip:
Current Techniques and Controversies in THA – Case-Based Problem Solving
Moderator: Steven J.M. MacDonald
Panelists: Allan E., Gross, Cecil H. Rorabeck, James P. McAuley, Donald S. Garbuz, Michael J. Dunbar, Pascal-André Vendittoli
- ICL-08: Trauma:
Primary Care of Complex Trauma: How to Package and Refer?
Moderator: Rudolph Reindl
Panelists: **Robin Peter (Geneva, Switzerland)**, James N. Powell, Allan S.-L. Liew, **James P. Stannard (Birmingham, AL)**
- ICL-09: Foot & Ankle:
Options for the Painful Flat Foot Deformity
Moderator: Johnny T.C. Lau
Panelists: Alastair S.E. Younger, Ruth E. Chaytor, Timothy R. Daniels, **Mark Myerson (Baltimore, MD)**
- ICL-10: General Session :
Finding Orthopaedic Information Resources on the Internet
Moderator: J.F. Myles Clough

- ICL-11: Spine:
Myelopathy/Neurogenic Claudication: Diagnosis, Operative and Nonoperative Management
Moderator: Steven J. Lewis
Panel: Raja Y. Rampersaud
- ICL-12: General Session:
Surgeon Health, Ergonomics and How They Affect Your Outcomes
Moderator: Michael G. Johnson
Panel: Dean Kreillaars
- ICL-13 : Hand:
Distal Radius Fractures: Best Management to Avoid Complications
Moderator: Sylvain Gagnon
Panel: **Scott Wolfe (New York, NY)**

SUNDAY, JUNE 5TH – 0700 – 0830

- ICL-14: Foot & Ankle:
Spectrum of Post-Traumatic Foot and Ankle Disorders
Moderator: Murray J. Penner
Panelists: Mark Glazebrook, Gregory K. Berry, Richard E. Buckley, **Mark Myerson (Baltimore, MD)**
- ICL-15: Trauma:
Prevention of Hip Fractures: Practical Orthopaedic Interventions
Moderator: Earl R. Bogoch
Panelists: Pierre Guy, Karim Khan, **Thomas A. Einhorn (Boston, MA)**
- ICL-16: Sports Medicine:
What to do About Ankle Instability in 2005?
Moderator: Mark Glazebrook
Panelists: **Håkan Alfredson (Umea, Sweden)**, Timothy R. Daniels, **Jon Karlsson (Gothenburg, Sweden)**,
- ICL-17: General Session:
Young Surgeons' Forum: How to Start Off Well in Practice
Moderator: Alastair S.E. Younger
Panelist: Dr. Dubé, Practice Solutions, Canadian Medical Association - Practice Management Education Section
- ICL-18: Spine:
Spinal Column Fractures: Cervical, Thoracic and Lumbar – What to Keep? What to Refer?
Moderator: Michael G. Johnson
Panel: Garth E. Johnson
- ICL-19: Paediatrics:
Paediatric Orthopaedics for the Community Surgeon
Moderator: Thierry E. Benaroch
- ICL-20 : General Session:
"Investing" : Benefits of Strategic Asset Allocation
Panelists: France Grenier, Louise Belliard – Royal Bank of Canada

WORKSHOPS, SYMPOSIA AND LIVE SURGERY At-A-Glance

WORKSHOPS

FRIDAY, JUNE 3RD

SUNDAY, JUNE 5TH

<p>1400 – 1530 WS #1</p> <p>Locking Plate Workshop</p> <p><u>Edward J. Harvey</u> Robin Peter (Switzerland) Mark D. MacLeod Rudolph Reindl Ross K. Leighton Donald Weber</p>	<p>1045 – 1215 WS#2</p> <p>Navigation in Orthopaedics: Hands-On For Spine, Arthroplasty, Sports and Trauma Applications</p> <p><u>Raja Y. Rampersaud</u> David G. Chess David R. Pichora</p>
---	--

LEARNING OBJECTIVES – WORKSHOP SESSIONS

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

- 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 3RD

SATURDAY, JUNE 4TH

SUNDAY, JUNE 5TH

<p>1600 – 1730 Symposium #1</p> <p>Wait List Management: What's Been Done? What's Heading Your Way Soon?</p> <p><u>Kenneth F. Hughes</u> Donald A. Dick Michael J. Dunbar</p>	<p>1045 – 1230 Symposium #2</p> <p>Access To Care: What Can be Done in Canada? The National Standards Committee Wants Your Input into Federal/Provincial Policy Recommendations & What is the Physicians's Liability?</p> <p><u>Hans J. Kreder</u> Edward J. Rumble David Pitman Claude F. Martin (CMPA) Renwick Mann (CAS)</p>	<p>0845 – 1015 Symposium #3</p> <p>"No Bones About Them!" An Update on Pathophysiology and Evidence-Based Treatment of Acute and Chronic Achilles and Rotator Cuff Injuries</p> <p><u>Karim Khan</u> Håkan Alfredon (Sweden) Jon Karlsson (Sweden) Robert H. Hawkins</p>
---	---	--

LIVE SURGERY

FRIDAY, JUNE 3 RD	SATURDAY, JUNE 4 TH	SUNDAY, JUNE 5 TH
<p>1100 - 1230 Live Surgery #1 Hip Arthroscopy <u>Michael Tanzer</u> Marc J. Philippon</p>	<p>0845 – 1015 Live Surgery #2 MIS Total Knee Arthroplasty <u>Bassam A. Masri</u> Pierre Ranger Robert Kepley</p>	<p>0845 – 1015 Live Surgery #4 Hallux Valgus Correction Surgery <u>Alastair S.E. Younger</u> Gregory K. Berry</p>
	<p>1515 – 1715 Live Surgery #3 MIS Total Hip Arthroplasty <u>Michael Tanzer</u> <u>George-Henri Laflamme</u> G. Yves Laflamme</p>	

Canadian Orthopaedic Foundation

Our Mission is to achieve excellence in bone and joint health, mobility and function for all Canadians through the advancement of research, education and care.

In its 40-year history, the Foundation can claim its share of successes in converting this ideal into reality. The functional cornerstones of our strategy are:

Advancing Research

Supporting Education for professionals and patients

Promoting Excellence of Care through local equipment purchases

www.canorth.org



The Canadian Orthopaedic Foundation wishes to thank the following companies for their sponsorship of the golf tournament: **Biomet, DePuy, Smith & Nephew, Admar Promotions Group, KINeSYS, AlphaRx, and Q-MED Inc.**

Friday, June 3rd

THURSDAY, JUNE 2ND

0700 - 1700	Committee Day Annual Meetings, Communications, COPEF, CPD, Finance & Audit, National Standards, Nominating, Programme, COA Executive, CORS Executive, Royal College, CIHI	Palais de congrès
0700 – 1630	CORA Annual Meeting	519A
1300 – 1700	Canadian Orthopaedic Foundation Golf Tournament	Le Golf de l'Île de Montréal
1900 - 2300	Local Arrangements Dinner – <i>By Invitation Only</i>	Biosphère

FRIDAY, JUNE 3RD

0700 – 0830 INSTRUCTIONAL COURSE LECTURES (concurrent sessions)

ICL-01: ADULT RECONSTRUCTION - KNEE 524A
Current Techniques and Controversies in TKA– Case-Based Problem Solving

Moderator: Bassam A. Masri

Faculty: Robert B. Bourne, Brian C. Burkart, Jeffrey D. Gollish, Ross K. Leighton, Justin de Beer, Nizar N. Mahomed

Learning Objectives:

Through interactive case based discussions, current (preoperative, intraoperative and postoperative) issues surrounding Total Knee Arthroplasty will be examined. At the end of this session, the participant will understand current concepts in TKA including Minimally Invasive TKA, Navigation, New Bearings, Management of Complications

ICL-02: TRAUMA 524B
Common Trauma Problems About the Foot and Ankle

Moderator: Gregory K. Berry

Faculty: David J.G. Stephen, Alastair S.E. Younger, Mark D. MacLeod

Learning Objectives:

1. Understand the basic concepts of fracture care in the lower extremity.
2. Appreciate the optimal timing of treatment (Staging versus immediate therapy).
3. Understand the current trends in lower extremity fracture treatment.
4. Be able to apply these concepts to practice in any institution

Pilon fractures

David J.G. Stephen

Midfoot Injuries

Alastair S.E. Younger

Syndesmotic/Malleoli Injuries

Mark D. MacLeod

ICL-03: SPORTS MEDICINE 524C
Surgical Management of Shoulder Arthritis and Bony Defects

Moderator: John Antoniou

Faculty: Robert M. Hollinshead, Frédéric Balg, Peter B. MacDonald

Friday, June 3rd

Learning Objectives:

1. Appreciate the novel therapeutic options of arthroplasty or arthroscopic debridement and biceps tenotomy.
2. Appreciate the role of allograft in reconstructing bony defects about the shoulder.

Copeland and Resurfacing arthroplasty of the Shoulder Robert M. Hollinshead

Debridement and Arthroscopic Treatment of Shoulder Arthritis Frédéric Balg

Humeral Head and Glenoid Allografts Peter B. MacDonald

ICL-04: GENERAL SESSION: 525AB

How to Identify Good Orthopaedic Literature and What Makes a Good, Publishable Paper?

Moderator: Robin R. Richards

Faculty: Emil H. Schemitsch, James P. Waddell

Learning Objectives:

1. To understand the process by which manuscripts are selected for publication in the orthopaedic literature
2. To become aware of indicators of quality in the literature
3. To develop critical skill in assessing publications in the orthopaedic literature

Introduction to the Editorial Process Robin R. Richards

Techniques to Assess Quality in the Orthopaedic Literature Emil H. Schemitsch

Determinants of a Publishable Paper Summary James P. Waddell
Robin R. Richards

ICL-05: SPINE: 521A

Scoliosis: Current Trends in Surgical Management

Moderator: Jean Ouellet

Faculty : Vincent Arlet (Virginia, VA), Hubert Labelle

Learning Objectives:

Appreciate the recent innovations with respect to diagnosis, pre-operative planning, and surgical treatment of scoliosis, and what is expected in the near future.

ICL-06: TUMOUR : 521B

Recent Advances in Bone Sarcomas

Moderator: Robert É. Turcotte

Faculty: Norbert Dion, Joel M. Werier, Peter Ferguson

Learning Objectives:

1. Be able to recognize, characterize and stage the most common bone sarcoma.
2. Understand the principles of sarcoma surgery and the role of adjuvant therapies
3. Know the specific outcomes of common bone sarcomas
4. Appreciate the recent innovations in this field and what is expected in the near future.

Friday, June 3rd

	Diagnosis, staging and imaging Management Outcomes and future directions	Norbert Dion Joel M. Werier Peter Ferguson
0800 – 1200	COA Board of Directors Meeting	523A
0800 – 1000	Exchange Fellowship Committee Meeting	447
0845 – 0900	CORS WELCOME AND OPENING REMARKS: Kevin A. Hildebrand	517D
0900 – 1030	COA/CORS Combined Sessions	
Session 1A: Spine & Trauma		517D
Moderators:	Edward J. Harvey (Montréal, QC) Cari Whyne (Toronto, ON)	
Paper 001 0900 – 0907	Evaluation of the Use of Calcium Sulfate HA/TCP Composites in a Canine Metaphyseal Defect Model: Long-Term Follow-up ² E.H. Schemitsch, Toronto, ON <i>D. Togawa, Cleveland, OH</i> <i>J. Reid, Toronto, ON</i> <i>T.W. Bauer, Cleveland, OH</i> <i>H. Sakai, Cleveland, OH</i> <i>M. Hawkins, Mahwah, NJ</i> <i>F. Dimaano, Mahwah, NJ</i>	
	Preliminary results suggest that a new rhBMP-2 formulation may provide an alternative for autologous bone graft in two-level posterolateral fusions.	
Paper 002 0907 – 0914	A Biomechanical Study: Effectiveness of a Trabecular Metal Augmented Construct in Lateral Tibial Plateau Depressed Fractures (AO type B2.2) B. Benoit, Montréal, QC <i>G.Y. Laflamme, Montréal, QC</i> <i>F. Zhim, Montréal, QC</i>	
	We compared internal fixation augmented with a trabecular metal implant to internal fixation augmented with morcellized bone grafting for depressed lateral tibial plateau fractures. Six cadaveric tibia pairs were prepared and tested on a MTS machine for both cyclic loading and static load to failure. Results showed greater resistance in cyclic loading and load to failure in the trabecular metal group. We found half the loss of reduction of the tibial articular surface compared after cyclic loading over 10 000 cycles. These surprising results show the biomechanical superiority of our trabecular metal construct over the current standard of care.	
Paper 003 0914 – 0921	Safety of Primary Closure of Soft Tissue Wounds in Open Fractures F. Moola, Houston, TX <i>D. Jacks, Vancouver, BC</i> <i>R. Reindl, Montréal, QC</i> <i>G. Berry, Montréal, QC</i> <i>E.J. Harvey, Montréal, QC</i>	

Friday, June 3rd

To determine if immediate closure of open wounds is safe, we examined our results over a 5 year period. Of the 297 open fractures, 255 (86 %) were closed immediately. Grade III open fractures accounted for 24.2% of cases. The superficial infection rate was 10.9%. The combined deep infection and osteomyelitis rate was 4.7%. Neither region of injury, Gustilo grade, velocity of trauma, nor time to primary closure had a significant influence on the incidence of infection. Primary closure may be a safe practice and could be accepted as a viable treatment plan in the care of most open fractures.

0921 – 0930 Discussion (9 minutes)

Paper 004
0930 – 0937 Kinematics of the Shoulder Following Rotator Cuff Injury: An *In-Vitro* Biomechanical Study

A. E. Kedgley, London, ON
G.A. Mackenzie, London, ON
L.M. Ferreira, London, ON
D.S. Drosdowech, London, ON
G.J.W. King, London, ON
K.J. Faber, London, ON
J.A. Johnson, London, ON

This in-vitro study was conducted to determine the effect of rotator cuff tears on joint kinematics. A shoulder simulator produced unconstrained active abduction of the humerus. Three sequential 1cm lesions were created, the first two in the supraspinatus tendon and the third in the subscapularis tendon. The plane of abduction moved posteriorly and became more abnormal throughout abduction as the size of the tear increased. It is concluded that in order to generate the same motions achieved by the intact joint other muscle groups must be employed, inevitably resulting in altered joint loading.

Paper 005
0937 – 0944 Factors Predisposing to Dislocation of a Modular Unipolar Hemiarthroplasty after Femoral Neck Fracture

C. Ninh, Detroit, MI
M.H. Hatahet, Detroit, MI
R. Vaidya, Detroit, MI
S. Bartol, Detroit, MI
M. Morandi, Detroit, MI

Dislocation after hemiarthroplasty for femoral neck fracture is a rare event. Two hundred nineteen patients underwent hemiarthroplasty for femoral neck fracture all with a modern stem and modular unipolar prosthesis at our institution over a 3 year period. Eleven patients (4.1%) suffered a dislocation. Epidemiologic, technical and anatomic-radiographic factors were reviewed to assess risk factors for dislocation. Our findings indicate that mental disease was a significant risk factor. Femoral neck offset and center edge angle of the acetabulum were also contributing factors for dislocation.

Paper 006
0944 – 0951 Predicting the Failure Load of the Distal Tibia by Peripheral Quantitative Computed Tomography: What Properties and Where Should We Measure?

C. Tang, Vancouver, BC
D. Liu, Vancouver, BC
S. Kontulainen, Vancouver, BC
P. Guy, Vancouver, BC
T. Oxland, Vancouver, BC
H. McKay, Vancouver, BC

Friday, June 3rd

This study identified imaging parameter(s) which best predict the mechanical properties of distal tibia. 17 human cadaver tibiae were assessed by PQCT at 4, 8 and 10% site from distal and tested in compression at the 25% distal portion. Ultimate compressive loads were recorded with a mean of 8276 ± 2915 N. Spearson rank correlation and stepwise regression analysis revealed that CoA, total BMC, SSI and SSI4-TrA4-CoD4 combination had statistically significant correlations with the failure loads. Among all imaging parameters, SSI had the highest relevance due to its account for geometry, density and material distribution, important factors for structural properties.

0951 – 1000 Discussion (9 minutes)

Paper 007
1000 – 1007 A Comparison of the Outcome of Patients with Isolated Pulmonary Contusion Versus Those with Pulmonary Contusion and Femoral Shaft Fracture

M.T. Nousiainen, Toronto, ON

E.H. Schemitsch, Toronto, ON

J.P. Waddell, Toronto, ON

M.D. McKee, Toronto, ON

A. Roposch, Toronto, ON

This study investigated the effect presence, method, and timing of fixation of femoral shaft fractures have on the morbidity and mortality of patients with pulmonary contusion.

Paper 008
1007 – 1014 The Clinical and Structural Results of Open Repair of an Isolated One-Tendon Tear of the Rotator Cuff

M.K. Gilbart, Vancouver, BC

B. Fuchs, Zurich, SWITZERLAND

J. Hodler, Zurich, SWITZERLAND

C. Gerber, Zurich, SWITZERLAND

The practice of rotator cuff repair rapidly moves towards arthroscopic techniques especially for single tendon tears. Although the clinical results are relatively well established, the structural results of open rotator cuff repair and their correlation with the clinical outcome are poorly known. In order to provide a baseline for future studies using other repair techniques, this study was carried out to assess the structural changes in the repaired musculotendinous unit and to correlate these findings with the clinical outcome after rupture and repair of an isolated full thickness single tendon tear of the rotator cuff.

Paper 009
1014 – 1021 Reamer Irrigation Aspirator (RIA) for Bone Graft Harvest: Applications for Grafting Large Segmental Defects in the Tibia and Femur

T. Weber, Indianapolis, IN

A. Scharfenberger, Edmonton, AB

Reamed Irrigation Aspirator (RIA) allows access to large volumes of bone graft from the femur through percutaneous technique. The grafting technique was utilized to obtain graft for eight segmental defects in the tibia and femur. These healed at an average of 4 months.

1021 – 1030 Discussion (9 minutes)

Friday, June 3rd

Moderators: Erin L. Boynton (Toronto, ON),
Robin R. Richards (Toronto, ON)

Paper 010
0900 – 0907 A Prospective Randomized Clinical Trial Assessing Thigh Pain and Stress Shielding in Proximal Tapered Versus Fully Coated Cylindrical Femoral Components

S.J.M. MacDonald, London, ON

C.H. Rorabeck, London, ON

R.B. Bourne, London, ON

R.W. McCalden, London, ON

D.M. Cleland, London, ON

2005 Founders' Medal

Controversy continues to exist regarding the choice of a cementless femoral component in a primary total hip arthroplasty. Both proximally coated tapered stems and fully coated cylindrical stems have excellent clinical results. The incidence of both thigh pain and proximal femoral stress shielding and multiple validated outcome measures were evaluated in a prospective randomized clinical trial with a minimum of two year follow-up comparing a proximally coated tapered femoral stem to a fully coated cylindrical femoral stem.

Paper 011
0907 – 0914 Metal Ion Levels in Patients Undergoing Hip Resurfacing Arthroplasty ²

P.R. Kim, Ottawa, ON

M.J. Dunbar, Halifax, NS

G.Y. Laflamme, Montréal, QC

A. Conway, Ottawa, ON

H. Hrushowy, Ottawa, ON

This study evaluates metal ion levels in patients enrolled in a prospective evaluation of hip resurfacing arthroplasty utilizing the Conserve Plus implant (Wright Medical Technology). Serum, urine and erythrocyte metal ion levels were assessed preoperatively and postoperatively. Average levels at three months were 24 nmol/l for cobalt and 40 nmol/l for chromium. These increased to 40 nmol/l for cobalt and 80 nmol/l for chromium at the six-month mark. The clinical significance of increased metal ion levels is yet to be determined.

Paper 012
0914 – 0921 Anti-inflammatory Cytokines but Not Osteoprotegerin Blocks Tartrate Resistant Acid Phosphatase Synthesis by Human Monocyte-Macrophages *In Vitro* ²

S. Xing, Toronto, ON

E.L. Boynton, Toronto, ON

The blocking effects of anti-inflammatory cytokines and osteoprotegerin (OPG) on tartrate resistant acid phosphatase (TRAP) synthesis by monocyte-macrophages (MDMs) were investigated. Human Monocytes were cultured on PE/collagen coverslips supplemented with 50 mL of conditioned media from implant revision membranes, and anti-IL-6, anti-TNF- α or OPG was added. Cultured media were collected and the cells were lysed. Both the cell releasates and lysates were analyzed for TRAP activity. Statistical analysis showed significantly inhibition of TRAP with addition of anti-IL-6 or anti-TNF- α , but no inhibition was seen with addition of OPG. Blocking of TRAP with anti-inflammatory cytokines could provide a potential therapeutic method of preventing TRAP-associated peri-prosthesis osteolysis.

0921 – 0927 Discussion (6 minutes)

Friday, June 3rd

Paper 013
0927 – 0934 Effect of the Patient's Preoperative Status on Outcomes Following Total Hip Arthroplasty
F. Al-Jassir, Montréal, QC
T. Vail, Montréal, QC
D. Goetz, Montréal, QC
D. Fisher, Montréal, QC
G. Mohler, Montréal, QC
J. Callaghan, Montréal, QC
M. Tanzer, Montréal, QC

Patient postoperative outcome can be accurately predicted by the patient's preoperative HHS or WOMAC score. Prospective, cohort studies of 175 THAs. SF-36, WOMAC and Harris Hip Score(HHS)questionnaires were used to determine preoperative and 2 year final outcome. Student's t-test, 95% confidence intervals, receiver operator characteristic curves, simple regression analysis and probability were measured. Patients with a HHS = 65 preoperatively had a 100% probability of having an excellent result postoperatively. A preoperative HHS value of 34, and preoperative WOMAC (physical function) value of 50 were the best cutoff points to attain a significantly better postoperative functional outcome.

Paper 014
0934 – 0941 A Randomized Clinical Trial and Gait Analysis Study Comparing Fixed- and Mobile-Bearing Total Knee Arthroplasties²
J.K. Bow, London, ON
K. Pittors, Aartselaar, BELGIUM
M. Hunt, London, ON
I. Jones, London, ON
J.T. Marr, London, ON
R.B. Bourne, London, ON

This randomized clinical trial compares fixed- and mobile-bearing total knee prostheses in terms of the patients' clinical outcome parameters (Knee Society Clinical Rating, WOMAC, SF-12), range of motion and performance during gait analysis for level-ground walking. Our results show no significant differences in the clinical outcomes and gait performance of the fixed- and mobile-bearing total knee arthroplasties.

Paper 015
0941 – 0948 Comparing the Outcomes Between Zirconia and Cobalt-Chrome Femoral Heads Articulating Against Polyethylene
J.P. Waddell, Toronto, ON
F. Lui, Jiangsu, CHINA
J. Morton, Toronto, ON
E.H. Schemitsch, Toronto, ON

Thirty total hip replacements in 28 patients in which a Zirconia/Polyethylene articulation was utilized were compared to a control group undergoing total hip replacement utilizing Cobalt-Chrome/Polyethylene articulation. These patients were matched for gender, BMI and pre-operative diagnosis.

Paper 016
0948 - 0955 Bone Thermal Necrosis and Cement Penetration in Femoral Head Resurfacing
P.E. Beaulé, Los Angeles, CA
Z. Lu, Los Angeles, CA
P. Campbell, Los Angeles, CA

Friday, June 3rd

3-D finite element model of a resurfaced femoral head was composed. Five configurations of cement layer were analyzed and the transient heat transfer analysis during cement polymerization was performed. Peak temperature at the bone-cement interface temperature was lower than 40 °C when there was no or 1.5 mm cement penetration but reached 54 °C and 74 °C with 6mm penetration and 6 mm penetration plus a cement –filled cyst of 1 cm³, respectively. With deep cement penetration, and a large cement-filled cyst, the peak temperatures exceeded bone thermal osteonecrosis at 55 °C

0955 - 1003 Discussion (8 minutes)

Paper 017
1003 – 1010 A Fast Contact-Determination Algorithm for *In-Vivo* Knee Kinematics Analysis

E.C-S. Chen, Kingston, ON
J.L. Lanovaz, Kingston, ON
R.R. Ellis, Kingston, ON

A near real-time, image-free, contact-determination algorithm is developed for the use of analyzing *in vivo* kinematics of an artificial knee joint. Using a three-dimensional motion tracker and the knowledge of the precise geometries of the contacting surfaces, the contact regions between two articular surfaces can be determined within seconds. The results are validated with the use of Fuji films, which show high degree of accordance in the contact regions determined. Applications include knee kinematics validation, TKA wear-pattern analysis, and intro-operative surgical assessment.

Paper 018
1010 – 1017 Femoral Head Vascularity and Notching of the Femoral Neck During Surface Arthroplasty of the Hip ²

P.E. Beaulé, Los Angeles, CA
P. Campbell, Los Angeles, CA
R. Hoke, Los Angeles, CA

Fourteen hips with osteoarthritis had femoral head blood flow measured with laser Doppler flowmeter while undergoing during total hip replacement through a modified lateral approach. Mean age 65 years (48-77); 8 males & 6 females. Two measurements were taken within the femoral head one after anterior hip dislocation and one after simulated notching of the femoral neck. All hips had a significant decrease in blood flow with a median percentage decrease of 76% (range 4.4-90.4). During surface arthroplasty of the hip, notching of the femoral neck may not only mechanically weaken the bone but also put the femoral head at risk of osteonecrosis.

Paper 019
1017 – 1024 Implementation of a Centralized Wait List Management System for Elective Orthopaedic Surgeries

M.J. Dunbar, Halifax, NS
L. Molloy, Halifax, NS
A. Hennigar, Halifax, NS
M. Davies, Halifax, NS

A centralized wait list management system (WLMS) for TKR, THR and knee arthroscopy was developed to collect accurate data on parameters of patients' wait for surgery. A priority metric rating patient priority was implemented. Data from hospital enterprise systems related to aspects of patients' wait for surgery was collected and imported. Patients' functional status was significantly worse than population norms, they were adversely affected while waiting and are unsatisfied with their access to surgery. Traffic

Friday, June 3rd

ratios (ratio of booked to completed surgeries) exceed the maximum value for a stable wait list and the waits for surgery exceed national and international recommendations for maximum wait-times.

1024 – 1030 Discussion (6 minutes)
1030 - 1100 Coffee Break & Poster Session Exhibit Hall

1100 – 1230 **Live Surgery #1** **517D**
Hip Arthroscopy

Moderator: Michael Tanzer
Surgeon: Marc J. Philippon
Location: Steadman-Hawkins Clinic, Vail, Colorado

**This session is supported in part by an unrestricted educational grant from Smith & Nephew Endoscopy*

1100 - 1230 **CORS Session**
Session 3 – Bone / Ligament / Tendon **518ABC**

Moderators **Kevin H. Hildebrand (Calgary, AB)**
James A. Johnson (London, ON)

Paper 020 Mechanical Properties of Cancellous Bone of the Distal Humerus ²
1100 – 1107 **C.E. Dunham, London, ON**
S.E. Takaki, London, ON
J.A. Johnson, London, ON
C. Dunning, London, ON

Three 3mm transverse slices were sectioned from the distal cancellous region of seven fresh-frozen cadaveric humeri. Each slice was marked with a 3x3mm grid, and subjected to compressive testing using a flat cylindrical indenter (1.6mm diameter). Indentation modulus and strength were calculated for each site, and pooled into nine anatomically-defined regions. The most distal slice had higher moduli values ($p<0.05$), and the posterior capitellar region had lower moduli values ($p<0.05$). There were no slice or regional differences in strength. This suggests that surgical procedures requiring cancellous fixation utilize the most distal aspect of the humerus while avoiding the posterior capitellum.

Paper 021 Efficacy of the Interference Screw and Double Docking Methods Using
1107 - 1114 Palmaris Longus and Graft Jacket for Medial Collateral Elbow Ligament Reconstruction ²
J. Pichora, London, ON
K. Furukawa, Nagasaki, JAPAN
L. Ferreira, London, ON
S. Steinmann, Rochester, MN
K.J. Faber, London, ON
J.A. Johnson, London, ON
G.J.W. King, London, ON

Single-strand medial collateral elbow ligament (MCL) reconstruction strength was evaluated using double docking (DD) and interference screw (IS) methods with either palmaris longus (PL) or Graft Jacket® (GJ) as the reconstruction material. Thirteen upper-extremities were mounted in 90° valgus orientations, and subjected to increasing cyclic valgus loading until failure. DD reconstructions outperformed IS reconstructions ($P<0.05$), while PL and GJ performed comparably ($P>0.05$). The initial Graft Jacket strength

Friday, June 3rd

makes it a potential alternative to palmaris longus tendons; Laboratory evaluation of graft strength during healing is required. For its simplicity and strength, the DD technique should be considered, clinically.

Paper 022
1114 – 1121 Denervation Affects RNA Levels of Repair-Associated Genes in a Rabbit MCL Injury Model

J.A. Beye, Calgary, AB

R.C. Bray, Calgary, AB

R.A. Seeratan, Calgary, AB

C. Leonard, Calgary, AB

D.A. Hart, Calgary, AB

P.T. Salo, Calgary, AB

- Our aim was to determine the effect of denervation on repair-associated mRNA levels in the MCL after partial tear.
- Cohorts of rabbits underwent partial MCL tear with or without concomitant femoral nerve transection. Ligaments were harvested, RNA extracted and RT-PCR was performed using rabbit-specific primers for repair-associated molecules at 3 days, 2 wks, 6 wks and 16 wks post-injury.
- Angiogenesis genes MMP3, MMP13, matrix components Collagen I and III and growth factors TGF- β and NGF mRNA levels were increased in the denervated group at two-weeks post-injury ($p < 0.05$).
- Denervation significantly alters mRNA levels during the early stages of rabbit MCL healing.

1121 – 1130 Discussion (9 minutes)

Paper 023
1130 – 1137 Soft Tissue In-Growth and Attachment to Alumina Ceramic Foam: An *In-Vivo* Canine Study ²

I.D. Dickey, Bangor, ME

R.R. Hugate, Rochester, MN

J.S. Reach, Rochester, MN

M.E. Zobitz, Rochester, MN

R. Zhang, Mahwah, NJ

M.G. Rock, Rochester, MN

C.P. Beauchamp, Scottsdale, AZ

Trabecular materials show great promise for soft-tissue attachment to prosthetic implants. Results with Tantalum have been very encouraging, however, it remains unclear if this in-growth is secondary to the specific metal or its generic structure. If structure, is there a specific tolerance with respect to porosity and pore size? In a canine model, bulk blocks of porous alumina ceramic were shown to be completely ingrown by four weeks (**Fig. 1**). The type material was not a factor, and effect of pore size revealed that there is a wide tolerance in facilitating in-growth with the larger pores having the greatest attachment strength (**$p = 0.004$**).

Paper 024
1137 – 1144 The Role of BMP Antagonist Noggin in Bone Formation During Distraction Osteogenesis ²

T. Haque, Montréal, QC

R. Hamdy, Montréal, QC

M. Kostopriitis, Montréal, QC

D. Lauzier, Montréal, QC

S. Nakada, Montréal, QC

Friday, June 3rd

Bone Morphogenetic Protein 7 (BMP7) is a powerful osteoinductive substance that could stimulate bone formation in difficult conditions including distraction osteogenesis. However, to be effective, large unphysiological doses are required. Blocking the expression of BMP antagonists could amplify the effects of BMP7, allowing smaller doses of BMP7 to be used without altering its osteogenic potential. In this study, BMP7 antagonist Noggin was shown to be upregulated following BMP7 injection in a rabbit distraction osteogenesis model suggesting a role for Noggin in controlling BMP7 activity. Blocking Noggin expression may thus permit smaller doses of BMP7 to be used effectively.

Paper 025
1144 – 1151 Tendon Reattachment With a Foam Metal Prosthesis: An *In-Vivo* Canine Study²

I.D. Dickey, Bangor, ME
J.S. Reach, Rochester, MN
R. Talac, San Diego, CA
M.E. Zorbitz, Rochester, MN
J.E. Adams, Rochester, MN
S.P. Scully, Miami, FL
D.G. Lewallen, Rochester, MN

Reliable soft tissue attachment to prosthetic implants remains a great clinical challenge in adult reconstruction and oncology. Past efforts using tendon alone have been universally disappointing. With the introduction of trabecular metals, new possibilities present themselves in dealing with this problem. Using an established canine supraspinatus tendon model, reliable and physiologic soft tissue attachment to a trabecular metal prosthesis was achieved, with near normal strength and function. This suggests that this new genre of material can possibly provide better options in dealing with this difficult problem.

1151 – 1200 Discussion (9 minutes)

Paper 026
1200 – 1207 Distal Anatomical Relationship Between the Flexor Hallucis Longus and the Flexor Digitorum Longus

B. LaRue, Sherbrooke, QC
É. Anctil, Sherbrooke, QC

Anatomical variations in the attachment between the tendon of the flexor hallucis longus (FHL) and of the flexor digitorum longus (FDL) are not clearly detailed in the medical literature. Twenty-four cadaver specimens were dissected and the distal anatomical relationship between the FHL and the FDL were analyzed and measured. There are three configurations of the attachment between the tendon of the FHL and of the FDL. The absence of a tendon link seems to be more common than has been published to date in the medical literature. We have also shown that the same patient may have a different configuration on each foot

Paper 027
1207 – 1214 Joint Structure Molecular Expression Alteration In A Model of Post-Traumatic Contractures

K.A. Hildebrand, Calgary, AB
M. Zhang, Calgary, AB

Ligaments, menisci and joint capsules were obtained from experimental knees with post-traumatic joint contractures and their unoperated contralateral controls in 6 rabbits. Relative mRNA expression was altered for 6 of 7 matrix molecules, growth factors and α -SMA (myofibroblast marker) in the joint capsule, 4 of 7 molecules in the ACL, and 2 of 7 molecules in the MCL and medial meniscus. The joint capsule had the most

Friday, June 3rd

molecules with altered expression corresponding to its acknowledged key role in joint contracture development. Changes in molecular expression of several joint structures in post-traumatic contractures is similar to changes seen following ligament injury

Paper 028
1214 – 1221 Kinematic Comparison of Two Ankle Ligament Reconstructive Techniques ²
C. Larson, Vancouver, BC
A.S.E. Younger, Vancouver, BC
M.A. Awwad, Vancouver, BC
G. Devries, Vancouver, BC
J.P. Veri, Vancouver, BC
S.G. Sjøvold, Vancouver, BC
T. Oxland, Vancouver, BC

Testing of cadaver ankle specimens was conducted to investigate the changes in kinematics with lateral ligament reconstructions. Testing included an intact condition, after injury at the ATFL and CFL sites, and separately a Brostrom repair and an anatomical gracilis graft reconstruction. Calcaneal range of motion was determined about the axis of applied moment in plantarflexion-dorsiflexion and in inversion-eversion directions. The injury and reconstructions were most sensitive during IE applied moment. Both reconstructions appeared to behave similar to intact motion. Failure of some Brostrom repairs however, suggest that the gracilis-graft reconstruction is initially a stronger repair.

1221 – 1230 Discussion (9 minutes)

1230 – 1330 Lunch Exhibit Hall
CORS Business Meeting 524A

1330 – 1345 **Canadian Orthopaedic Residents' Association** 517D
J.A. Nutter Award Presentation
Cole Beavis, Saskatoon, SK

Diffraction Enhanced Imaging of the Spine – Application of a Novel Synchrotron Technology

1345 – 1400 **Canadian Orthopaedic Foundation J. Édouard Samson** 517D
Award Presentation and The Royal College Medal of Surgery in Orthopaedics
John Antoniou, Montréal, QC

A Synthetic Peptide of Link Protein Stimulates the Biosynthesis of Collagen II, IX, and Proteoglycan by Cells of the Intervertebral Disc

1300 – 1600 Women in Orthopaedics Luncheon 519A

1400 – 1530 COA/CORS Combined Session 1 & 2 (cont'd)

Session 1B – Spine & Trauma – cont'd 517D

Moderators: **Paul T. Salo (Calgary, AB)**
Emil H. Schemitsch (Toronto, ON)

Paper 029
1400 – 1407 Development of a Clinical Research Tool to Track Variation in Metastatic Tumour Density in the Spine ²
D.L. Burnes, Toronto, ON
M. Hardisty, Toronto, ON
S. Roth, Toronto, ON

Friday, June 3rd

P. Basran, Toronto, ON
M. Christakis, Toronto, ON
J. Rubenstein, Toronto, ON
E. Chow, Toronto, ON
C. Whyne, Toronto, ON

Using serial CT scans, this project aims to develop a clinical research tool that analyzes changes in vertebral density in spines involved with metastatic disease. Tracking of total vertebral body and tumor volume alone was investigated. A program was developed to semi-automate the segmentation of the region of interest followed by image registration to superimpose the segmentation onto spatially aligned serial scans. Based on analysis of a simulated metastatic vertebra, generating a voxel distribution histogram from the vertebral body best quantified density in serial scans. This quantification method may improve clinical decision-making and treatment options for patients with vertebral metastases.

Paper 030
1407 – 1414 Evaluation of a New rhBMP-2 Formulation in Two Level Posterolateral Lumbar Spine Fusions²

E.P. Abraham, Saint John, NB
D.I. Alexander, Halifax, NS
S. Bailey, London, ON

Preliminary results suggest that a new rhBMP-2 formulation may provide an alternative for autologous bone graft in two-level posterolateral fusions

Paper 031
1414 – 1421 The Effect of Photodynamic Therapy on Rat Vertebrae

M. Hardisty, Toronto, ON
S. Bisland, Toronto, ON
O. Ramadan, Toronto, ON
S. Burch, Toronto, ON
S. Roth, Toronto, ON
A.J.M. Yee, Toronto, ON
C. Whyne, Toronto, ON

Photodynamic therapy (PDT) is a promising new treatment for spinal metastases; however, the effects of PDT on bone are largely unknown. This study assessed the impact of PDT on spinal stability in rats at high (non-therapeutic) drug and LASER light doses. Spinal stability was assessed using stereological measures attained from *in vitro* μ CT scans. High doses of PDT were shown to cause a reduction in vertebral density. Postoperative paralysis was also noted in a subset of animals treated. Tumour-involved vertebrae are already mechanically weakened; as such it is essential to establish a safe and efficacious therapeutic window for vertebral PDT.

1421 – 1430 Discussion (9 minutes)

Paper 032
1430 – 1437 Prediction of Scoliosis Progression in Time Series Using Artificial Intelligence Techniques²

H. Wu, Calgary, AB
P. Poncet, Calgary, AB
J. Harder, Calgary, AB
F. Cheriet, Montréal, QC
H. Labelle, Montréal, QC
R.F. Zernicke, Calgary, AB
J.L. Ronsky, Calgary, AB

Friday, June 3rd

The pathogenesis of scoliosis progression remains poorly understood. Seventy-two subject data sets, consisting of 4 successive values of Cobb-angle and lateral deviations at apices for 6 and 12-months intervals in the coronal plane, were used to train and test an artificial neural network (ANN) to predict spinal deformity progression. The accuracies of the trained ANN(3-4-1) for training and testing data were within 3.64° ($\pm 2.58^\circ$) and 4.40° ($\pm 1.86^\circ$) of Cobb angles, and within 3.59 (± 3.96) mm and 3.98 (± 3.41) mm of lateral deviations, respectively. The adapted technique for predicting the scoliosis deformity progression has promising clinical applications.

Paper 033 Biomechanical Analysis of the Risk of Adjacent Fractures of Vertebroplasty
1437 – 1444 **G. Baroud, Sherbrooke, QC**

An experimental and computational study that shows that rigid cement augmentation of vertebroplasty may alter spinal load and provoke degenerative changes in adjacent vertebra, especially because cement-filled bone is much stiffer than cancellous bone.

Paper 034 Independence of the Relationship Between Coronal and Sagittal Plane Deformity Assessed from Spinal X-rays in Adolescent Idiopathic Scoliosis
1444 – 1451 **C. Bergeron, Montréal, QC**
F. Cheriet, Montréal, QC
J-M Mac-Thiong, Montréal, QC
H. Labelle, Montréal, QC

This research sought a mathematical model to relate the postero-anterior (PA) and lateral (LAT) views of the spinal curve in scoliosis in an attempt to justify the acquisition of only 1 X-ray, thereby reducing patient exposure to harmful X-radiation while preserving complete 3D characterization of the spine. Using powerful developments in functional statistics and machine learning, no such relation could be found. Thus, this research sustained the clinical decision to acquire 2 biplanar X-rays and supported current research in 3D spinal curvature analysis.

1451 – 1500 Discussion (9 minutes)

Paper 035 Comparing Mechanisms of Spinal Cord Injury – Contusion, Dislocation and Distraction
1500 – 1507 **A.M. Choo, Vancouver, BC**
J. Liu, Vancouver, BC
M. Dvorak, Vancouver, BC
W. Tetzlaff, Vancouver, BC
T. Oxland, Vancouver, BC

Spinal cord damage was compared after an injury was inflicted by three clinically relevant mechanisms (contusion, dislocation, and distraction). A novel SCI multi-mechanism system has been developed. Central hemorrhage was common to all mechanisms. Increased membrane permeability was localized to the injury epicenter in contusion but spread further in distraction. Dislocation showed intermediate characteristics exhibiting both local neuronal losses at the epicenter and extended regions of membrane permeability. These preliminary observations suggest that distinct injury mechanisms result in differences in the primary damage of the spinal cord.

Paper 036 Assessment of Spinopelvic Balance in Normal Children and Adolescents ²
1507 – 1514 **J-M Mac-Thiong, Montréal, QC**
H. Labelle, Montréal, QC

Friday, June 3rd

É. Berthonnaud, Lyon, FRANCE
R.R. Betz, Philadelphia, PA

When evaluating and treating patients with spinal disorders, a significant knowledge of the normal spinopelvic balance is of primary importance. This study documents the spinopelvic balance in normal children and adolescents, and describes a scheme of correlations between morphological, shape and orientation parameters of the spine and pelvis. It is found that the pelvic incidence regulates the sacral slope and pelvic tilt. In addition, shape and orientation parameters of adjacent anatomical regions are interdependent, and their relationships result in a stable posture with minimum energy expenditure.

Paper 037 Relationship Between Torso Surface Asymmetry and Spinal Deformity
1514 – 1521 During Treatment of Scoliosis with Rigid Brace ²

P. Poncet, Calgary, AB

J. Jaremko, Edmonton, AB

J. Harder, Calgary, AB

R.F. Zernicke, Calgary, AB

J.L. Ronsky, Calgary, AB

Spine and torso models were generated concurrently with x-rays for twenty-three patients undergoing scoliosis brace treatment. Clinical indices of spinal deformity and torso surface asymmetry indices were computed from models obtained when patient was first recruited and at approximately one year's follow-up. Significant correction changes of the torso shape were detected in indices including orientation of cross-sectional principal axes of inertia ($p=0.048$) and Back Surface Rotation ($p=0.08$) though spinal corrections were from not significant to subtle ($0.20 \leq p \leq 0.88$). Trunk asymmetry should be assessed for an objective evaluation and understanding of the effect produced by a specific treatment.

1521 – 1530 Discussion (9 minutes)

Session 2B – Arthroplasty combined– cont'd

520ABC

Moderators: **John Antoniou (Montréal, QC)**
Steven J.M. MacDonald (London, ON)

Paper 038 A Randomized Prospective Study Comparing the Quality of Surgical Fields
1400 – 1407 Resulting from Automatically Determined Tourniquet Cuff Pressure Versus Surgeon Chosen Tourniquet Cuff Pressure

A S.E. Younger, Vancouver, BC

M. Manzary, Vancouver, BC

C. Meakin, Vancouver, BC

G. DeVries, Calgary, AB

J.A. McEwen, Vancouver, BC

J. Inkpen, Vancouver, BC

Patients were randomized between surgeon chosen pressure (control) and an automatically determined tourniquet pressure(study) group. Of the study group 94/106 (88.7%) had good to excellent fields compared to the control group where 100/132 (75.8%) had good to excellent fields ($p<0.05$). In the study group, 5% failed to obtain an automatic pressure. Of the remainder, the average tourniquet pressure was 198 +/- 20.2 mmHg compared to 259.6 +/- 4.4 mmHg for the control group ($p<0.0001$). The automatic measurement of limb occlusion pressure resulted in better operative fields at a lower pressure.

Paper 039 Changes in Lower Limb Alignment and Knee Joint Load After Medial Opening
1407 – 1414 Wedge High Tibial Osteotomy for Patients With Varus Gonarthrosis ²

M. A. Hunt, London, ON
T.B. Birmingham, London, ON
T.R. Jenkyn, London, ON
I.C. Jones, London, ON
P.J. Fowler, London, ON
J.R. Griffin, London, ON

Measures of lower limb alignment and knee joint load during walking were evaluated before and six months after medial opening wedge high tibial osteotomy (HTO) in 95 patients with knee medial compartment osteoarthritis (OA). Full-length standing radiographs were used to calculate the mechanical axis angle, and a gait analysis was performed to calculate the external adduction moment about the knee. Results indicated significant decreases in mechanical axis angle and peak adduction moment. These findings provide an indication of the early success of HTO in reducing the extent of lower limb malalignment and knee joint load during walking.

Paper 040 Acetabular Wear and Osteolysis in RAM Extruded Versus Compression
1414 – 1421 Molded UHMWPE

C A. Busch, Surrey, ENGLAND
R.B. Bourne, London, ON
S.J.M. MacDonald, London, ON
C.H. Rorabeck, London, ON
R.W. McCalden, London, ON
J. Martell, Chicago, ILL

Despite favourable wear characteristics of compression molded HMWPE in vitro preliminary data show no statistical difference in wear between RAM extruded HMWPE and compression moulded polyethylene. This study reviews AP and lateral radiographs for wear using the Martell technique at two, five years and maximum follow up (mean 88.2 months).

1421 – 1430 Discussion (9 minutes)

Paper 041 Effect of Implant Position on Ulnohumeral Load Transfer in Total Elbow
1430 – 1437 Arthroplasty ²

S.M. Guerra, London, ON
L.M. Ferreira, London, ON
G.J.W. King, London, ON
J.A. Johnson, London, ON

This study investigated the effect of the articulation position on joint load transfer in total elbow arthroplasty. To quantify loading, an adjustable humeral component, instrumented with a load cell, was developed to measure ulnohumeral loads *in-vitro*. Computer guidance was implemented to accurately place the linked articulation into eight cadaveric elbows. Axial compression and bending about the flexion axis produced the greatest loads during simulated active elbow flexion. An anteriorly malpositioned flexion-extension axis resulted in increased joint loads during flexion. Translational positional errors were more influential than rotational position on articular loading.

Paper 042 Polyethylene Liner Preparation for Cement Fixation: Optimizing the Stability
1437 – 1444 of a Polyethylene Liner-Cement Interfaceb ²

C. Graham, London, ON
W. Dust, Saskatoon, SK

This study assesses a method of optimizing the polyethylene-cement interface when cementing a constrained liner into a pre-existing acetabular shell. We tested several configurations of liner modification including random roughening, 2mm and 4mm wide grooves. Statistical analysis showed that the grooved liners had significantly higher moment to failure than both the unmodified and roughened liners. There was no difference between the 2 and 4mm grooved liners.

Paper 043
1444 – 1451 The Effect of Cross-Sectional Stem Shape on the Torsional Strength of Cemented Implants²
S. Takaki, London, ON
C. Dunning, London, ON

The torsional strength of cemented implants is likely influenced by stem geometry. Five straight stems with different cross-sectional shapes (circular, oval, triangular, round-rectangular, sharp-rectangular) were custom-machined. The stems were cemented into tubes using bone cement, and subjected to torsion (2.5deg/min)(n=7). At initial failure (crack through the cement mantle or loss of cement-stem adhesion), the sharp- rectangular stem resisted over 33% more torque than the other four stems (p=0.13). At ultimate failure (5° stem rotation), the resistance provided by the circular stem was less than 12% of either rectangular stem (p<0.05). Additional studies are needed to determine the effects of long-term loading.

1451 – 1500 Discussion (9 minutes)

Paper 044
1500 – 1507 CD4+ T Cell Populations in Total Hip Arthroplasty and Osteolysis
J. K. Bow, London, ON
K. Summers, London, ON
B. Singh, London, ON
S.J.M. MacDonald, London, ON

T cells have been implicated in the pathogenesis of osteolysis. The goal of this study was to compare the ratios of CD4+ T cell populations in total hip arthroplasty (THA) patients with and without osteolysis. We found no significant differences in the frequency of peripheral blood CD4+CD25+ regulatory and effector T cells, serum IL-10 and TGF-β concentrations, and immunosuppressive ability of regulatory T cells from patients with osteoarthritis prior to THA, and THA patients with and without radiographic evidence of osteolysis.

Paper 045
1507 – 1514 A Randomized Controlled Trial of Hydroxyapatite Coated Femoral Hip Prostheses²
J. R. Davey, Toronto, ON
D. Camazzola, Toronto, ON
T. Hammond, Toronto, ON

Sixty-two consecutive primary total hip arthroplasties were prospectively randomized to receive either hydroxyapatite coated (35 hips) or nonhydroxyapatite coated (27 hips) femoral prostheses. At a minimum 11 year followup 51 hips (44 patients) were evaluated. Only one femoral stem had been revised (secondary to traumatic periprosthetic fracture). Radiographs were available for 39 hips. None of these femoral stems were loose. Harris Hip scores were evaluated for 36 unrevised hips and did not differ significantly between the two groups. There appears to be no significant advantage to hydroxyapatite coating for this femoral prosthesis at an average follow-up of thirteen years.

Friday, June 3rd

Paper 046
1514 – 1521 Communication Pathways of Joint Fluid in Periacetabular Osteolysis: A CT Analysis of Autopsy Retrieved Hemipelves
D.D.R. Naudie, London, ON
N. Kitmamura, Alexandria, VA
S. Leung, Alexandria, VA
C.A. Engh, Alexandria, VA

This study evaluates forty-four consecutive autopsy specimens of the senior author's own patients in attempt to locate and measure periacetabular bone defects and correlate this information with their communication pathways with the joint space.

1521 – 1530 Discussion (9 minutes)

1400 – 1530 **Workshop #1** **520DEF**
Trauma: Relative Stability Fixation: Locked Plating Workshop

Moderator: Edward J. Harvey
Faculty: **Robin Peter (Switzerland)**, Mark D. MacLeod, Rudolph Reindl, Ross K. Leighton, Donald Weber

Learning Objectives:

1. Understand the biomechanical principles behind the use of locked plate fixation.
2. Understand the indications and limitations of locked plating.
3. Have acquired practical skills in the use of these instruments and implants for fixation of proximal and distal humerus fractures.
4. Be able to critically assess the place of this new technology in his/her practice.

Biomechanical principles Robin Peter
Proximal humerus fractures Edward J. Harvey
Distal Humerus fractures Mark D. McLeod

1530 - 1600 Coffee Break – Poster Session Exhibit Hall & 516C

1530 – 1730 **JOINTS Canada Meeting** **524B**

1600 - 1730 **CORS Session**

Session 4 – Joints & Arthritis **518ABC**

Moderators: **Kevin Deluzio (Halifax, NS)**
Graham J.W. King (London, ON)

Paper 047
1600 – 1607 The Effect of Muscle Loads on Distal Radioulnar Joint Reaction Forces *In-Vitro*
A. E. Kedgley, London, ON
K. Gordon, Guelph, ON
L. Ferreira, London, ON
J.A. Johnson, London, ON
G.J.W. King, London, ON

Friday, June 3rd

This study quantified the joint reaction forces in the distal radioulnar joint using an instrumented ulnar head replacement implant. Muscle activity was simulated in-vitro to determine the effects on joint reaction force. Forces were found to linearly increase with simulated muscle load in all forearm positions for the biceps and pronator teres muscles. However, this did not occur for simulations of the supinator and pronator quadratus muscles, likely due to their broader insertion, smaller size and non-linear lines-of-action. This work has important implications in forearm biomechanical modelling, implant design, fixation and rehabilitation protocols following arthroplasty.

Paper 048
1607 – 1614 The Effect of Active Loading on Translation of the Humeral Head During Glenohumeral Abduction

A E. Kedgley, London, ON
G.A. Mackenzie, London, ON
L.M. Ferreira, London, ON
D.S. Drosdowech, London, ON
G.J.W. King, London, ON
K.J. Faber, London, ON
J.A. Johnson, London, ON

This study was conducted to determine the effect of passive and active muscle loading on humeral head translation during glenohumeral abduction. A shoulder simulator produced unconstrained active glenohumeral abduction using several sets of loading ratios. Significantly greater translations occurred in passive motion as compared to active motion between 30 and 70 degrees of elevation in three dimensions and in the anterosuperior plane. No difference was found between the active motions. Also, translations of the humeral head decreased with active simulation of abduction emphasizing the importance of the rotator cuff muscles in creating and maintaining the ball-and-socket kinematics of the shoulder.

Paper 049
1614 – 1621 Production and Catabolic Effect of 4-Hydroxynonenal in Osteoarthritic Cartilage²

B.J. Morquette, Montréal, QC
S. Qin, Montréal, QC
P. Lavigne, Montréal, QC
J. Fernandes, Montréal, QC
M. Benderdour, Montréal, QC

We demonstrated for the first time that HNE, a lipid peroxidation end product, plays a role in osteoarthritic (OA) cartilage degradation. The level of HNE/protein adducts increased in synovial fluids from OA patients and in cellular extracts of OA chondrocytes treated with free radicals donors (H₂O₂ or SIN). We have found that HNE induces MMP-13 synthesis and activity but in contrast inhibits type II collagen and TIMP-1 synthesis. By immunoprecipitation approach, we demonstrated the formation of HNE/type II collagen adducts in OA cartilage and their increased level in the presence of H₂O₂ or SIN.

1621 – 1630 Discussion (9 minutes)

Paper 050
1630 – 1637 Intra-articular Corticosteroids for Osteoarthritis of the Knee: Does the Dose or Solubility Effect Outcome?

M. McCaffrey, St. John's, NL
F.E. Noftall, St. John's, NL
P. Rhaman, St. John's, NL

Friday, June 3rd

The efficacy of intra-articular corticosteroids has led to their frequent use in the treatment of osteoarthritis (OA) of the knee. It is commonly believed that less soluble preparations given at higher doses provide longer lasting and more significant symptomatic relief. We performed a randomized controlled trial with corticosteroid preparations of different solubilities and dosages to test this longstanding but unproven belief. The pain subscale of the WOMAC was our primary outcome measurement. This study found no statistically significant difference between preparations or dosages. Regression analysis identified early onset of osteoarthritis as predictive of a positive treatment response.

Paper 051
1637 – 1644 Investigating the Effects of Hypothermic Storage on Chondrocyte Survival and Apoptosis in Human Articular Cartilage

S. Hunter, Calgary, AB
N.S. Schachar, Calgary, AB
S. Timmermann, Calgary, AB
K. Muldrew, Calgary, AB

Due to recent advances in diagnostic technology and an increased awareness among clinicians, osteochondral damage is being detected more frequently. Thus, there is a need to preserve and store articular cartilage for the repair of joint surfaces. Chondrocytes, embedded within extracellular matrix must remain viable during storage for successful tissue transplantation. We have been able to store osteochondral tissue for over a month and maintain high chondrocyte viability. Apoptosis can be minimized in articular cartilage during hypothermic storage if biopreservation media (XVIVO-10) is used. Cadaveric osteochondral dowels are a potential source of tissue for banking and allogeneic transplantation.

Paper 052
1644 – 1651 Reliability and Sensitivity to Change of Knee Joint Loads During Walking in Patients with Knee Osteoarthritis ²

T. B. Birmingham, London, ON
M.A. Hunt, London, ON
A. Specogna, London, ON
T.R. Jenkyn, London, ON
I.C. Jones, London, ON
P.J. Fowler, London, ON
J.R. Griffin, London, ON

The peak external knee adduction moment during walking gait has been proposed to be a clinically useful measure of dynamic knee joint load in patients with knee osteoarthritis. However, there is limited information about the reliability of this measure, or its ability to detect change. The test-retest reliability and sensitivity to change of peak knee adduction moments were evaluated in 30 patients with varus gonarthrosis. Indices of relative and absolute reliability were excellent (intraclass correlation coefficient = 0.85, standard error of measurement = 0.36 % BW*Ht), and the sensitivity to change following high tibial osteotomy was high (standardized response mean = 1.2).

1651 – 1700 Discussion (9 minutes)

Paper 053
1700 – 1707 Cryoprotectant Penetration Into Intact Porcine Articular Cartilage

N.M. Johma, Edmonton, AB
L.E. McGann, Edmonton, AB
G.K. Law, Edmonton, AB

Friday, June 3rd

Cryopreserving agents (CPAs) can cryopreserve articular cartilage (AC) but their use is limited due to cellular toxicity. This study examined the time-dependent penetration of multiple CPAs into intact porcine AC. Porcine AC was immersed in CPAs for various amounts of time at three temperatures (4°C, 22°C, and 37°C). The results demonstrated an initial sharp rise in CPA concentration within the matrix for dimethyl sulfoxide and propylene glycol with maximum concentration after 3 to 6 hours. The trehalose and glucose concentration increased minimally even after 24 hours of exposure. The information from this study provides insight into the penetration kinetics of cryoprotectant agents into AC.

Paper 054
1707 – 1714 Localization of Osteoprotegerin Gene Expression in the Human Tibial Plateau At End Stage Osteoarthritis: Correlation With Bony Adaptation By MicroCT²

M. Lincoln, Calgary, AB

T. Trinh, Calgary, AB

C. Lorincz, Calgary, AB

M.R. Doschak, Edmonton, AB

R.F. Zernicke, Calgary, AB

Osteoarthritis (OA) involves pathology in both articular cartilage and subchondral bone. The osteoprotegerin (OPG)/receptor activator of nuclear factor kappa beta ligand (RANK-L) balance is known to modulate bone turnover. We compared the bony changes in human total knee arthroplasty (TKA) and cadaveric controls. A qualitative increase in subchondral and ligamentous insertional bone mineral density was observed on micro-CT sections of TKA bone compared with cadaveric controls. In-situ hybridization of digoxigenase (DIG)-labelled OPG riboprobes showed selective uptake in osteoblasts but not osteocytes or osteoclasts in TKA bone. Those data suggested that the upregulation of OPG expression by osteoblasts may have precipitated the bony hypertrophy of end-stage OA.

Paper 055
1714 - 1721 Modeling Cryoprotectant Toxicity in Articular Cartilage

N.M. Johma, Edmonton, AB

L.E. McGann, Edmonton, AB

J.A.W. Elliott, Edmonton, AB

Cryoprotectant toxicity has become more relevant because of increased use of high concentrations of cryoprotectants for vitrification of biologic tissues. A single toxicity model that integrates cryoprotectant concentration, time and temperature is essential to optimize the cryopreservation of tissues. The Weibull probabilistic distribution has been used in environmental toxicology research. This objective of this study was to fit the Weibull model to experimental data for chondrocyte recovery from articular cartilage exposed to various concentrations of dimethyl sulfoxide at different temperatures as a function of time. This study indicated that the Weibull model is an appropriate model to describe cryoprotectant toxicity to chondrocytes in articular cartilage.

1721 – 1730 Discussion (9 minutes)

1600 – 1730 **Symposium #1** **517D**
Wait List Management: What's Being Done Across Canada? What's Heading Your Way Soon?

Moderator: Kenneth F. Hughes

Faculty: Donald A. Dick, Michael J. Dunbar

Friday, June 3rd

Learning Objectives:

1. Understand the strategies used in different Canadian provinces to manage waiting lists and improve access to care.

1800 – 1900	COA Opening Ceremonies	710A
1900 – 2130	President's Welcome Reception - Poster Pub Session / Job Fair	Exhibit Hall 516C
1930 – 2100	Past-Presidents Dinner – <i>By Invitation Only</i>	Club St. Denis

SATURDAY, JUNE 4TH

SATURDAY, JUNE 4TH

0700 – 0830 INSTRUCTIONAL COURSE LECTURES (concurrent sessions)

ICL-07: ADULT RECONSTRUCTION : HIP 524A
Current Techniques and Controversies in THA – Case-Based Problem Solving

Moderator: Steven J.M. MacDonald

Faculty: Allan E., Gross, Cecil H. Rorabeck, James P. McAuley, Donald S. Garbuz, Michael J. Dunbar, Pascal-André Vendittoli

Learning Objectives:

Through interactive case based discussion, current (preoperative, intraoperative and postoperative) issues surrounding Total Hip Arthroplasty will be examined.

At the end of this session, the participant will be understand the current concepts in THA including Minimally Invasive THA, Resurfacing THA, Alternate Bearings in THA, Management of Complications

ICL-08: TRAUMA: 524B
Primary Care of Complex Trauma: How to Package and Refer?

Moderator: Rudolph Reindl

Faculty: **Robin Peter (Geneva, Switzerland)**, James N. Powell, Allan S.-L. Liew, **James P. Stannard (Birmingham, AL)**

Learning Objectives:

1. Understand the current guiding concepts in complex trauma care.
2. Recognize the orthopedic priorities in the seriously injured patient.
3. Understand the current treatment concepts for the mangled extremity.
4. Be able to apply these concepts to practice in any institution

Priorities in high energy pelvic ring fractures	Robin Peter
Damage control orthopedics	James N. Powell
When and why you should amputate?	Allan S-L Liew
Using the VAC system in early trauma care	James P Stannard

ICL-09: FOOT & ANKLE: 521C
Options for the Painful Flat Foot Deformity

Moderator: Johnny T.C. Lau

Faculty: Alastair S.E. Younger, Ruth E. Chaytor, Timothy R. Daniels, **Mark Myerson (Baltimore, MD)**

Learning Objectives:

1. Differentiate the various etiologies of painful pes planus
2. Perform a focused clinical evaluation
3. Evaluate the role of various surgical options

Etiology of painful flatfeet	Alastair S.E. Younger
Clinical exam and evaluation of painful flatfeet	Ruth E. Chaytor
The Role of triple arthrodesis	Timothy R. Daniels
Treatment of Stage II PTTD: FDL transfer and medial displacement calcaneal osteotomy	Mark Myerson

SATURDAY, JUNE 4TH

- ICL-10:** **GENERAL SESSION :** **525AB**
Finding Orthopaedic Information Resources on the Internet
- Moderator: J.F. Myles Clough
- Learning Objectives:
1. Appreciate, classify and use the variety of orthopaedic information resources on the Internet
 2. Understand how to use the Medline Internet interface, PubMed, effectively for literature searches
 3. Improve his/her ability to find orthopaedic information using search engines
- ICL-11:** **SPINE:** **521A**
Myelopathy/Neurogenic Claudication: Diagnosis, Operative and Nonoperative Management
- Moderator: Steven J. Lewis
Faculty: Raja Y. Rampersaud
- Learning Objectives:
1. Differentiate the various etiologies of claudication
 2. Use a diagnostic algorithm which guides treatment decisions
 3. Appreciate the various surgical and non surgical options which can be offered
- ICL-12:** **GENERAL SESSION:** **521B**
Surgeon Health, Ergonomics and How They Affect Your Outcomes
- Moderator: Michael G. Johnson
Faculty: Dean Kreillaars
- Learning Objectives: At the end of this session, the participant will appreciate how his/her health and the ergonomic conditions in the workplace may affect patient outcomes.
- Rehab medicine Dean Kreillaars
- ICL-13 :** **HAND:** **524C**
Distal Radius Fractures: Best Management to Avoid Complications
- Moderator: Sylvain Gagnon
Faculty: **Scott Wolfe (New York, NY)**
- Learning Objectives:
1. Understand the biomechanics and imaging of distal radius fractures
 2. Be able to choose the current recommended technique and type of fixation in 2005
 3. Be able to apply different method of treatment to prevent complications
- Case Presentations
- 0845 – 1200** MANUS Meeting 524A

SATURDAY, JUNE 4TH

0845 - 1015 COA Podium Presentations (concurrent sessions)

Session 5 – Trauma – Upper Extremity

518ABC

Moderators: **Kenneth J. Faber (London, ON)**
Stéphane Ricard (Fleurimont, QC)

Paper 056 A Multicentre Randomized Control Trial of Nonoperative and Operative
0845 – 0852 Treatment of Displaced Clavicle Shaft Fractures²

J. Hall, Toronto, ON

Canadian Orthopaedic Trauma Society (COTS)

Several recent studies have shown an increased incidence of symptomatic non-unions and malunions after non-operative treatment of displaced clavicle fractures. Our multicenter randomized control trial comparing sling treatment and plate fixation shows statistically significant improvement in patient oriented outcome measures at all time points measured over 1 year of follow-up. Non-operative group complications included six non-unions, one symptomatic malunion and one patient with reflex sympathetic dystrophy in 34 patients. Complications in the operative group included one wound dehiscence and two patients requiring plate removal in 37 patients. This study supports plate fixation of acute clavicle fractures in selected cases.

Paper 057 A Prospective Study of Modular Radial Head Arthroplasty for
0852 – 0859 Unreconstructable Fractures of the Radial Head²

R.R. Grewal, London, ON

K.J. Faber, London, ON

J.C. McDermid, London, ON

D.S. Drosdowech, London, ON

G.J.W. King, London, ON

This cohort study reports outcomes of patients with comminuted radial head fractures treated with a modular radial head arthroplasty. Twenty-six patients (mean age = 54) were prospectively followed at 3, 6, 12, and 24 months following surgery. Patient satisfaction with this procedure was high. This data indicates favorable results using a modular radial head arthroplasty with rapid improvement in disability and physical impairment occurring in all measures in the first 6 months and further improvement in most patients up to 2 years. The Mayo Elbow Performance Index was 82 at one year and 84 at two years.

Paper 058 Novel Reconstructive Procedure for Unstable Radial-sided TFCC Avulsions

0859 – 0906 **P.A. Martineau, Verdun, QC**

S. Bergeron, Kirkland, QC

L. Beckman, Montréal, QC

T. Steffen, Montréal, QC

E.J. Harvey, Montréal, QC

Radial-sided avulsions of the TFCC (Palmer 1d) remain a challenging pathology to treat. No current procedures have addressed these injuries successfully and reproducibly. Ten preserved dissected cadaveric forearm specimens with intact TFCC and without ulnar positive variance underwent biomechanical testing. Specimens were tested intact, then with Palmer 1d TFCC lesion and finally post-reconstruction. Measurement of total displacement with a -20N to 20N load was performed. The results indicate that our novel anatomic intra-articular reconstruction of unstable radial-sided TFCC avulsions was successful in restoring baseline stability to the DRUJ

SATURDAY, JUNE 4TH

without interfering with pronation or supination.

0906 – 0915 Discussion (9 minutes)

Paper 059 Percutaneous Plating of Fractures of the Proximal Humerus: A Prospective
0915 – 0922 Multicentre Clinical Trial

G.Y. Laflamme, Montréal, QC

G. Berry, Montréal, QC

S. Gagnon, Montréal, QC

P. Beaumont, Montréal, QC

Although new locking plates allows for secure fixation of osteoporotic fractures in the proximal humerus, extensive soft tissue dissection is needed for their insertion. We report on a prospective clinical trial of the first 30 patients treated with plating of the proximal humerus through a minimally invasive percutaneous approach. All fractures healed within the first 6 months with no avascular necrosis or axillary nerve injury. At the latest follow-up, the median Constant score was 68 and the mean DASH score was 27. This study suggests that percutaneous plating can be a safe and effective method of fixation.

Paper 060 Type 1 Coronoid Fractures: Does Suture Fixation Improve Elbow Stability? ²
0922 – 0929

D.M. Beingessner, Seattle, WA

C.E. Dunning, London, ON

R.A. Stacpoole, London, ON

J.A. Johnson, London, ON

G.J.W. King, London, ON

Passive and active elbow flexion was performed in eight cadaveric arms to determine the effect of Type 1 coronoid fractures and suture repair on kinematics. Testing was performed in ligamentously intact and MCL deficient elbows; with radial head arthroplasty (RHA); with an intact coronoid, following a Type 1 fracture, and with suture repair of the coronoid. There was an alteration in elbow kinematics and stability following Type 1 coronoid fractures that was not corrected with coronoid repair. Suture fixation of the coronoid is probably unnecessary if the lateral ligaments are repaired and the radial head is repaired or replaced.

Paper 061 How Presenting the Risks of Fracture Surgery to Patients Influences
0929 – 0936 Decision-Making

M. Bhandari, Hamilton, ON

P. Tornetta III, Boston, MA

Risk information is understood differently when it is presented in absolute or relative terms; the latter overemphasizes the magnitude of risk. How surgeons communicate risk may influence patient choice. We evaluated whether presenting information about the benefits of surgery in absolute and relative terms affects an individual's decision to accept or reject alternative surgical procedures in hip fracture management. Our findings show how framing risk in relative terms affects the perception of risk and influences patient choice. Surgeons must use care in utilizing relative risk reduction in the absence of actual risk data.

0936 – 0945 Discussion (9 minutes)

Paper 062 Treatment of Acute Traumatic Elbow Instability Without Medial Collateral
0945 – 0952 Ligament Repair - Functional Role of the Dynamic Stabilizers

SATURDAY, JUNE 4TH

A. A. Kulidjian, Toronto, ON

C. Forthman, Boston, MA

D. Ring, Boston, MA

J.B. Jupiter, Boston, MA

M.D. Mckee, Toronto, ON

In the past, the treatment of acute elbow fracture-dislocations has emphasized repair to the medial collateral ligament (MCL), with favorable results. We report improved results using a strategy based on lateral-sided repair (lateral collateral ligament, radial head, coronoid) without MCL repair. In forty-seven patients, this strategy resulted in a high degree of success with no residual instability (valgus or otherwise). The dynamic stabilizers of the elbow activated through early postoperative motion, are important adjunct to stability. We have devised a reproducible radiographic method to demonstrate this.

**Paper 063
0952 – 0959**

The Impact of Psychological Distress Symptomatology on Quality of Life in Trauma Patients: A Prospective Observational Study²

M. Bhandari, Hamilton, ON

J. Busse, Hamilton, ON

P. Leece, Hamilton, ON

O.R. Ayeni, Hamilton, ON

B.P. Hanson, Davos, SWITZERLAND

E.H. Schemitsch, Toronto, ON

Little is known about the psychological morbidity associated with orthopaedic trauma. Our study aimed to determine the extent of psychological symptoms and whether patient psychological symptoms were predictive of outcomes following orthopaedic trauma. Overall, trauma patients experienced higher intensity of psychological symptoms than population norms. Psychological symptoms, patient age, and ongoing litigation predicted functional outcomes. Patients may benefit from early interventions by social workers and psychologists to process their psychological states post injury.

**Paper 064
0959 – 1006**

Does Delay Matter? The Restoration of Objectively Measured Shoulder Strength and Patient Oriented Outcome in Immediate Fixation Versus Delayed Reconstruction of Displaced Mid-Shaft Fractures of the Clavicle²

J. Potter, Toronto, ON

E.H. Schemitsch, Toronto, ON

C. Jones, Toronto, ON

L.M. Wild, Toronto, ON

M.D. McKee, Toronto, ON

When deciding on treatment for displaced mid-shaft clavicle fractures, patients often inquire if repair of (potential) nonunion results in outcome similar to acute fixation. We used objective muscle strength testing and patient-oriented outcome measures to examine this question. Late reconstruction of nonunion following displaced mid-shaft fractures of the clavicle results in restoration of objective muscle strength similar to that seen with immediate fixation. However, there was a significant loss in muscle endurance as well as a trend towards a decrease in outcome scores (DASH, Constant) following late reconstruction. This information is useful in surgical decision making and in counseling patients.

1006 – 1015

Discussion (9 minutes)

Moderators: **Peter B. MacDonald (Winnipeg, MB)**
Robert Litchfield (London, ON)

Paper 065 Patella Intra Following High Tibial Osteotomy: Medial Opening Versus
0845 – 0852 Lateral Closing Wedge

S. McKenzie, Hamilton, ON
B. Weening, Hamilton, ON
D. Petrucelli, Hamilton, ON
R. Ogilvie, Ancaster, ON
J. de Beer, Hamilton, ON

A radiographic review of 69 lateral closing wedge high tibial osteotomies and 42 medial opening wedge osteotomies was conducted. Patellar height and tibial slope were measured. The Blackburne-Peel (BP) and Insall-Salvati (IS) ratios were used to measure patellar height. Our results show that 18.8% and 47.6% of the lateral closing wedge group had patella-intra (PI) according to the BP and IS ratios respectively. No opening-wedge cases demonstrated patella intra with either ratio. Tibial slope was found to be significantly more neutral in the closing wedge group versus the opening wedge (-2.2° vs. -7.28° respectively).

Paper 066 Clinical Results of Femoral Head/Neck Chondro-Osteoplasty for Femoro-
0852 – 0859 acetabular Impingement

P.E. Beaulé, Santa Monica, CA
M. LeDuff, Los Angeles, CA
N. Harvey, Santa Monica, CA

37 hips in 34 patients, mean age 41, underwent surgical dislocation of the hip with chondro-osteoplasty for the treatment of femoroacetabular impingement. At a mean follow-up of 2.1 years (2.0-4.0), the pre & post-operative outcome scores were for the: WOMAC 59.2 to 81.0 (p<0.001), UCLA Hip Scores for pain 4.2 to 7.6; walking 7.3 to 8.6; function 6.2 to 8.1; activity level 4.3 to 6.9 (p<0.05); and SF-12 physical 37.4 to 48.0 (p<0.003) & mental 46.0 to 51.6 (p<0.01). No hips have undergone further reconstructive surgery. Complications: one failure of fixation of the trochanteric osteotomy and one excision of bilateral ectopic ossification. No cases of osteonecrosis.

Paper 067 A Comparison of Two Methods of Anterior Cruciate Ligament
0859 – 0906 Reconstruction in Skeletally Immature Patients²

C. W. Reilly, Vancouver, BC
K. Mulpuri, Vancouver, BC
N. Saran, Vancouver, BC
R.L. Choit, Vancouver, BC

This study examined functional outcomes following over-the-top versus four-strand ACL reconstruction in skeletally immature patients. 30 skeletally immature patients who underwent ACL reconstruction were followed a minimum of 1 year. Outcomes were measured by physical exam, radiographs, and the IKDC and Lysholm questionnaires. It appears that the braided four-strand method of ACL reconstruction results in increased functional outcome. However, although the four-strand method may result in improved functional outcome, the potential to damage the femoral growth plate remains and this method may not be indicated in young patients.

SATURDAY, JUNE 4TH

0906 – 0918 Discussion (12 minutes)

Paper 068 Four-Year Experience with the Kingston Periacetabular Osteotomy: A Novel
0918 – 0925 Computer-Assisted Technique

J.F. Rudan, Kingston, ON

D. Mayman, Kingston, ON

J. Yach, Kingston, ON

R.R. Ellis, Kingston, ON

W. Long, Kingston, ON

Periacetabular osteotomy provides a joint preserving option for the treatment of acetabular dysplasia but is generally considered technically demanding, which has limited its widespread application. This study evaluates a new computer enhanced technique for a trans-trochanteric periacetabular osteotomy. This multi-use computer interface designed and used at Kingston General Hospital and Queen's University has been previously and successfully used in many different types of surgical procedures. Interim results show few complications and accurate guidance.

Paper 069 Two To Four-Year Follow-Up of a Comparison Of Home Versus
0925 – 0932 Physiotherapy-Supervised Rehabilitation Programmes Following ACL Reconstruction²

J.A. Grant, Calgary, AB

N.G.H. Mohtadi, Calgary, AB

The original RCT demonstrated that a limitedly-supervised post-ACL reconstruction rehabilitation program was both clinically more effective and less costly than the traditional physiotherapy-supervised program. This study contacted patients from the original RCT a minimum of 2 years post-surgery to evaluate whether or not the clinical findings of the RCT were upheld over the long term. This study of 88 patients has upheld the original findings in that the patients who performed the limitedly-supervised (home-based) program had a significantly higher mean disease-specific quality of life score compared to the patients who performed the physiotherapy-supervised rehabilitation program.

0932 – 0942 Discussion (10 minutes)

Paper 070 The Development and Validation of a Quality of Life Measurement Tool for
0942 – 0949 Patients with Meniscal Pathology: The Western Ontario Meniscal Evaluation Tool (WOMET)

S. Griffin, London, ON

A. Kirkley (deceased)

A reliable and valid measurement tool, The Western Ontario Meniscal Evaluation Tool (WOMET) was developed to assess the benefit of conservative and surgical interventions for meniscal pathology. A methodologic protocol designed by Guyatt was used for the development. This measurement tool can be used as the primary outcome tool in clinical trials evaluating the outcome of patients in this population. It can also be used to monitor a patients' progress in private practice.

Paper 071 Comparison of XtraLok[®] Versus Intrafix[®] Tibial Fixation in Hamstring Anterior
0949 – 0956 Cruciate Ligament Reconstruction: A Randomized Clinical Trial

M. Volesky, New York City, NY

D.H. Johnson, Ottawa, ON

A.R. Pickle, Ottawa, ON

SATURDAY, JUNE 4TH

B. Bessette, Ottawa, ON
R. Wilkinson, Ottawa, ON
G. Dervin, Ottawa, ON

This prospective, randomized clinical comparison of tibial fixation in 4-bundle hamstring ACL reconstruction, evaluated mechanical results (laxity) between BioScrew XtraLok[®] (Linvatec) and Intrafix[®] (Mitek Products) at 6 months. 103 sequential patients undergoing ACL reconstruction by three surgeons with identical technique were recruited. KT-1000 arthrometer manual maximum measurements were taken at 6 weeks, 3 and 6 months post-operatively.

At 6 weeks and 3 months, KT-1000 side-to-side differences between the groups are not statistically significant (student-t test, $p=0.87$ and $p=0.34$, respectively). In clinical results at 6 months, tibial fixation with Bioscrew XtraLok has significantly decreased laxity compared to the Intrafix device ($p=0.017$).

Paper 072
0956 – 1003 Clinical Outcome After Combined Anterior Cruciate Ligament Reconstruction and Medial Opening Wedge High Tibial Osteotomy

J. DaSilva, London, ON
N. Graveleau, London, ON
R. Litchfield, London, ON
P.J. Fowler, London, ON
J.R. Griffin, London, ON

Thirty-six patients with anterior cruciate ligament (ACL) insufficiency and varus mal-alignment were treated with combined ACL reconstruction and medial opening wedge high tibial osteotomy (HTO). Average follow-up was 25 months. All patients had improved ligamentous stability and 25 patients returned to full activities. Osteotomy union rate was 100%, mechanical axis angle was corrected from 6 degrees varus to neutral and the mechanical axis deviation was corrected from 2cm medial to 1cm lateral. We experienced 4 complications, including 1 deep infection. Combining ACL reconstruction and HTO simultaneously accomplishes a ligamentously stable knee with corrected alignment, allowing patients to return to activity.

1003 - 1015 Discussion (12 minutes)

Session 7 – Adult Reconstruction - Hip

525AB

Moderators: **Olga L. Huk (Montréal, QC)**
Michael J. Dunbar (Halifax, NS)

Paper 073
0845 – 0852 Cementless Metal-on-Metal Hip Replacement in Patients Less Than Fifty Years of Age: Comparison with a Matched Control Group Using Ceramic-on-Polyethylene After a Minimum 5-Year Follow-Up

J. Girard, Lille, FRANCE
H. Migaud, Lille, FRANCE
C. Chantelot, Lille, FRANCE
P. Laffargue, Lille, FRANCE
A. Duquennoy, Lille, FRANCE

Thirty-nine cementless hip replacements using metal-on-metal articulation were consecutively implanted in 30 patients less than 50 years of age and compared with a matched control group of cementless replacements using ceramic-on-polyethylene articulation. The Harris hip score at follow-up

SATURDAY, JUNE 4TH

(minimum 5 years) for the metal-on-metal was 94.9 (range, 74-100). After the same follow-up, the results of the ceramic-on-polyethylene were significantly worse: 9 osteolyses and 7 surgical revisions related to wear. Five-year survival rates were 97% +/- 2% for the ceramic-on-polyethylene and 100% for the metal-on-metal. The metal-on-metal may be recommended to prevent wear problems in younger and more active patients.

Paper 074
0852 – 0859 Outcome of Tantalum Implants in Advanced AVN
E.J. Harvey, Montréal, QC
J. Theodoropoulos, Chicago, IL
C. Seguin, Montréal, QC
E. Iakoub, Montréal, QC

A tantalum AVN implant was used in 16 patients with advanced AVN (Grade 3/4). No reports have been published of use of this implant in advanced disease. Outcomes included radiological, SF36, Harris hip score and secondary surgeries. HHS improved from 52 to 70. SF36 scores approached controls. At over one year average follow-up 5 patients are revised to THA, however, all hips except one have at least minor pain. Revisions occurred in older patients or those with 100% head involvement. In younger patients, with up to 50% head involvement, this technique seems to be a viable option for advanced AVN.

Paper 075
0859 – 0906 Effect of Delays on Individual Quality of Life Outcome after Primary Total Hip Arthroplasty
D.S. Garbuz, Vancouver, BC
M. Xu, Vancouver, BC
B. Sobolev, Vancouver, BC
C.P. Duncan, Vancouver, BC
B.A. Masri, Vancouver, BC

This prospective cohort study examined the relationship between waiting time for elective total hip arthroplasty (THA) and changes in pre- to post-operative quality of life. It included 147 patients who entered the waiting list for primary THA with osteoarthritis. The Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) questionnaire was used to assess patients at surgical consultation time (baseline) and one year post-operation. Baseline WOMAC score was a significant predictor for follow-up WOMAC score. Expedited access to THA results in a larger proportion of patients showing "better than expected" function at 12 months after the operation.

0906 – 0915 Discussion (9 minutes)

Paper 076
0915 – 0922 Randomised Study Comparing Early Clinical Results After Total Hip Resurfacing and Total Hip Arthroplasty²
P-A. Vendittoli, Montréal, QC
M. Lavigne, Montréal, QC

The dramatic improvement in clinical function after total hip arthroplasty (THA) has been well-documented. Gait studies, however, demonstrate abnormal gait pattern after THA. THA patients may complain of thigh pain, leg length inequality, instability and reduced range of motion. Surface replacement arthroplasty (SRA) has the benefit of restoring a more normal hip anatomy and biomechanics, which could improve clinical function and patient satisfaction after surgery. We compared the clinical function and patient satisfaction in a group of young patients randomized to receive SRA

SATURDAY, JUNE 4TH

or THA. The results are presented and discussed.

Paper 077
0922 – 0929

A Comparative Cohort Study to Evaluate Two-Incision Versus Single-Incision Minimally Invasive Hip Arthroplasty: Assessment of Early Complication Rate and Health Care Resource Utilization

N.V. Greidanus, Vancouver, BC

B.A. Masri, Vancouver, BC

D.S. Garbuz, Vancouver, BC

J. Gaida, Vancouver, BC

C.P. Duncan, Vancouver, BC

We compare two applications of minimally invasive hip arthroplasty (MISTHA) with regards to early complication rate and consumption of health care resources. Complications are associated with both manifestations of MIS surgical technique. 2 incision MIS THA is associated with fewer days in hospital in comparison with 1 incision MIS THA, however requires a greater amount of operating room resources. This paper is among the first to compare 2 incision with 1 incision MISTHA. 2 incision MISTHA may benefit efforts to reduce health resource utilization associated with hip arthroplasty procedures providing that operating room resource consumption and complication rates are not excessive.

Paper 078
0929 – 0936

The Role of Capsular Repair in Preventing Dislocation Following Revision Total Hip Arthroplasty

D. Chivas, Montréal, QC

K. Smith, Montréal, QC

This is the first study to determine if closure of the posterior capsule during revision total hip arthroplasty (THA) results in a reduction in the historically high dislocation rate. Seventy-nine consecutive patients undergoing revision THA with a posterolateral approach and closure of the posterior hip capsule were retrospectively reviewed. At a mean follow-up of 57 months (range 24 - 120 mo), there were only 2 dislocations (2.5%). The historically high dislocation rates with the posterolateral approach in revision THA, can be significantly decreased with posterior capsular closure from approximately 15% to 2.5%.

0936 – 0945

Discussion (9 minutes)

Paper 079
0945 – 0952

Prevalence and Timing of Myocardial Infarction Following Total Joint Replacem

J. de Beer, Hamilton, ON

R. Gandhi, Hamilton, ON

A. Rungi, Kingston, ON

M. Hubmann, Judendorf-Strassengel, AUSTRIA

D. Petruccelli, Hamilton, ON

A. Adili, Hamilton, ON

Retrospective review of 4252 patients undergoing TJR at a single high-volume arthroplasty centre to determine prevalence and timing of myocardial infarction (MI) following TJR. The incidence of peri-operative MI was 1.5%, with a mean of 3 days to time of MI. This cohort was comprised of 55% females with a mean age of 75 years. We found poor correlation between pre-operative risk assessment using the Modified Multifactorial Index score. Our findings suggest that there is a minimum length of stay compatible with patient safety given the inadequacy of currently available preoperative risk assessment tools.

SATURDAY, JUNE 4TH

Paper 080
0952 – 0959 Development of a Wait List Computer Simulation Model for Elective Orthopaedic Surgery
M. J. Dunbar, Halifax, NS
J.T. Blake, Halifax, NS
P. VanBerke, Halifax, NS
L. Molloy, Halifax, NS
A. Hennigar, Halifax, NS

Data from the wait list management system and hospital databases was used to develop a computer model simulating the resource requirements required during patient flow into, through, and out of orthopaedic surgery for TKR, THR and knee arthroscopy. Results from the simulation model suggested that inpatient beds, rather than operating room time was the constraining resource and an extra 25 beds and 30% more OR time would stabilize and subsequently reduce the wait time at the institution. In addition, simulations suggested that pooling surgeon wait lists reduced patient wait time. Simulation models are an effective resource allocation decision-making tool for orthopaedic surgery.

Paper 081
0959 – 1006 Mid-term Results of Acetabular Reconstruction Cages
D.A.L. O'Brien, London, ON
R.B. Bourne, London, ON
S.J.M. MacDonald, London, ON
R.W. McCalden, London, ON
C.H. Rorabeck, London, ON

Fifty-one prospectively followed Contour™ acetabular reconstruction cages, inserted through the direct lateral approach, were reviewed at three years minimum follow-up (range 3 to 6.4 yrs.). To date, four reoperations were required (two each for sepsis and instability) with no failures due to aseptic loosening. The Kaplan-Meier Survival Rate for any re-operation was 87% at 6.4 years. Short to mid-term follow-up of a single type of acetabular reconstruction cage, inserted through the lateral approach, demonstrated this to be a successful reconstruction option in the management of large acetabular bone defects.

1006 – 1015 Discussion (9 minutes)

0845 – 1015 **Live Surgery #2** **517D**
Minimally Invasive Total Knee Arthroplasty

Moderator: Bassam A. Masri
Surgeons: Pierre Ranger, Robert B. Bourne
Location : Hôpital du Sacré-Cœur de Montréal

This session supported in part by an unrestricted educational grant from Smith & Nephew Orthopaedics

1015 – 1045 Coffee Break **Exhibit Hall**

1045 – 1230 **Symposium #2** **517D**
Access to Care: What Can be Done in Canada? The National Standards Committee (NSC) Wants Your Input Into Federal and Provincial Policy – *An Interactive Session.*

Moderator: Hans J. Kreder
Faculty: Edward J. Rumble, David Pitman, Claude F. Martin (CMPA), Renwick Mann (CAS)

SATURDAY, JUNE 4TH

Learning Objectives:

1. Appreciate the shortage of orthopaedic surgeons based on the NSC's report.
2. Understand the present strategy put forward to Federal/Provincial governments by the COA and the NSC.
3. Have contributed input into the proposed policy..
4. Understand that constrained resources are not a medico-legal defense.
5. Appreciate and recognize the difference in liability with physicians as administrators and as care givers.

This session supported in part by an unrestricted educational grant from the MEDEC group of companies

1230 – 1315 Lunch (Box Lunch) Exhibit Hall

1315 – 1415 **COA Business Meeting** 517D
- Founders' Medal Presentation
- President-Elect Address, Transfer of Office

1415 – 1445 **RI Harris Lecturer** 517D
Hubert Labelle

How Can We Generate New Knowledge in Orthopaedics?

1445 – 1515 Coffee Break Exhibit Hall

1515 - 1645 COA Podium Presentations (concurrent sessions)

Session 8 – Trauma – Lower Extremity 518ABC

Moderators : **Donald Weber (Edmonton, AB)**
Rudolph Reindl (Montréal, QC)

Paper 082 Long-Term Follow-up of Isolated Tibial Shaft Fractures Treated With
1515 – 1522 Intramedullary Nailing
K.A. Lefavre, Vancouver, BC
P.A. Blachut, Vancouver, BC
H. Chan, Vancouver, BC

Fifty-six patients, with a median 14 years follow-up of isolated tibial shaft fracture treated with an IM nailing, underwent functional evaluation with SMFA and SF-36 questionnaires, as well as an injury specific questionnaire. Thirty three also underwent clinical and radiological evaluation.

Overall, SF-36 scores (PCS 49.9, MCS 52.0) were near normal. Five (15.2%) had physical findings of venous stasis, while a third reported symptoms A third had at least mild OA on radiographs (knee-7, ankle-11). A third of patients had a loss in ankle dorsiflexion, and more than half reported knee pain that was limiting to at least one activity.

Paper 083 Trochanteric Versus Piriformis Entry Portal for the Treatment of Femoral
1522 – 1529 Shaft Fractures²
R.K. Leighton, Halifax, NS
W.M. Ricci, St. Louis, MO
J. Schwappach,, Seattle, WA
K. Coupe, Houston, TX
M. Tucker, Augusta, GA
A. Blackwell, St. Louis, MO

SATURDAY, JUNE 4TH

R. Sander, Temple Terrace, FL

Antegrade femoral nailing through the greater trochanter, using nails designed for piriformis entry, is associated with varus and iatrogenic comminution. Nails designed for greater trochanter insertion theoretically reduce these complications, but clinical outcomes comparing these to piriformis entry remain unknown. We compared femoral shaft fracture repair with a nail designed for trochanteric entry to an identical nail without a trochanteric bend inserted through the piriformis fossa.

The trochanteric nail was easier to insert with decreased operative and fluoroscopy time. It resulted in equally high union rates, low complication rates, and functional results similar to conventional nailing through the piriformis fossa.

Paper 084
1529 – 1536 Predictors of Clinical and Radiographic Outcome in Patients with Acetabular Fractures and Concomitant Posterior Hip Dislocations ²
M. Bhandari, Hamilton, ON
G. Matthys, Manhattan Beach, CA
J.M. Matta, Los Angeles, CA

There has been considerable debate regarding the factors that predict clinical and radiographic outcomes in patients with acetabular fractures and associated posterior hip dislocations. We used a prospective database of acetabular fractures to identify variables associated with clinical and radiographic outcomes. Quality of fracture reduction was identified as the only significant predictor of radiographic grade, clinical function, and development of post-traumatic arthritis. Our findings support Letournel's report that quality of the fracture reduction remains the most important factor associated with outcome in patients with acetabular fractures and concomitant posterior hip dislocations.

1536 – 1542 Discussion (6 minutes)

Paper 085
1542 – 1549 Failed Pinning of Un-Displaced Femoral Neck Fractures in the Elderly
C. W. Brown, Ottawa, ON
B. Deheshi, Ottawa, ON
G. Dervin, Ottawa, ON

Femoral neck fractures in the elderly has a devastating impact on health and resources. Past trends suggest pinning un-displaced fractures in the more active elderly patients and resorting to arthroplasty in those less active. In our study the failure rate for un-displaced fractures (18.4%) was greater than that quoted in the literature and greater than the failure rate of fractures treated with arthroplasty (7.4%). Failures consisted of AVN (5), nonunion/malunion (1) and loss of fixation (1). This data suggests that arthroplasty would decrease the failure rate in our study group.

Paper 086
1549 – 1556 Treatment of Distal Tibia Fractures With Static Interlocking Intramedullary Nailing
B. LaRue, Sherbrooke, QC
J-S. Gimaël, Alma, QC
É. Anctil, Sherbrooke, QC
C. Loranger, Amos, QC
S. Ricard, Sherbrooke, QC

SATURDAY, JUNE 4TH

Paper 087
1556 – 1603 Factors Associated with Increased Radiation Exposure During Femoral and Tibial Intramedullary Nailing²
R.K. Leighton, Halifax, NS
W.M. Ricci, St. Louis, MO
J. Schqappach, Seattle, WA
D. McGinnis, Aurora, CO
M. Tucker, Augusta, GA
K. Coupe, Houston, TX

Reducing exposure to radiation is a concern to physicians and supporting staff. Little is known about the factors leading to increased exposure in intramedullary nailing of long bone fractures. This study examines antegrade and retrograde nailing of femur and tibia fractures. Factors that increased radiation exposure were obesity, severely comminuted fractures, nails inserted through the piriformis fossa, and insertion of more locking bolts in femoral nails. In addition, femoral nails required more radiation exposure than tibial nails.

Paper 088
1603 – 1610 A Prospective Cohort Study of the Epidemiology of Symptomatic Venous Thromboembolism (VTE) After Isolated Leg Fractures Distal to the Knee Without Thromboprophylaxis²
R. Selby Toronto, ON
W.H. Geerts, Toronto, ON
M.A. Crowther, Hamilton, ON
H.J. Kreder, Toronto, ON
M. Bent, Toronto, ON
E.H. Schemitsch, Toronto, ON
P. Weiler, Toronto, ON

We report preliminary results from the first, multicenter prospective study designed to define the incidence of symptomatic (Venous Thromboembolism) VTE in patients with isolated leg fractures distal to the knee. 826 enrolled patients have completed 3 months of follow up. By 3 months, only 7 patients had sustained a symptomatic VTE with no fatal PE. Symptomatic and fatal VTE were infrequent complications after isolated leg fractures distal to the knee without thromboprophylaxis. Routine thromboprophylaxis may not be warranted in isolated leg fractures distal to the knee.

1610 – 1618 Discussion (8 minutes)

Paper 089
1618 – 1625 A Prospective Randomized Controlled Trial of a Bioresorbable Calcium Phosphate Paste (α -BSM) in Displaced Intra-articular Calcaneal Fractures²
J. Reed, Calgary, AB
I.L.D. Le, Calgary, AB
R.E. Buckley, Calgary, AB
R.K. Leighton, Halifax, NS

These results support the use of an injectable, in situ hardening calcium phosphate paste to prevent the early loss of calcaneal height and maintain a more anatomic calcaneal reduction.

Paper 090
1625 – 1632 Classification and Treatment of Femoral Neck Nonunions in Young Patients
R.K. Leighton, Halifax, NS

Retrospective data over an 8-year period was collected on twenty-four young patients with non-union of a femoral neck fracture who were followed

SATURDAY, JUNE 4TH

to union. The cause of each nonunion was identified and a classification of the nonunions was established in order to clarify treatment options. Patients were treated by a single surgeon. The treatment protocol was based on the classification of the femoral neck nonunion. There were no nonunions in the treated patients; however 2 patients who showed signs of avascular necrosis prior to treatment ultimately developed AVN.

Paper 091
1632 – 1639 Acute Knee Dislocation, Evaluation of Reconstructive Surgery Using Artificial Ligaments²
P. Ranger, Montréal, QC
P. Dahan, Montréal, QC
E. De Oliveira, Montréal, QC
G.K. Berry, Montréal, QC
M. Talbot, Montréal, QC
J. Fernandes, Montréal, QC

Acute total knee dislocations are uncommon injuries for which some surgeons use artificial ligaments as their choice of graft for reconstruction. The goal of this study is to evaluate on a short and long term basis the stability and function of the LARS reconstructed knee. Flexion ROM was the only parameter which showed significant difference ($p < 0.05$) between subgroups. Therefore this treatment option for dislocated knee reconstruction seems to give good and lasting results even though patient's quality of life may suffer

1639 – 1645 Discussion (6 minutes)

Session 9 – Tumour, Foot & Ankle

520ABC

Moderator: **Norman S. Schachar (Calgary, AB)**
Norbert Dion (Charlesbourg, QC)

Paper 092
1515 – 1522 Oncologic and Functional Results Following Uncemented Proximal Tibial Endoprosthetic Replacement for Tumour
M. Flint, Toronto, ON
R.S. Bell, Toronto, ON
J.S. Wunder, Toronto, ON
P. Ferguson, Toronto, ON
A.M. Griffin, Toronto, ON

Forty-six patients with an uncemented proximal tibial endoprosthesis were reviewed following resection of a proximal tibial tumor. The mean age was 34 years and the majority were male. The most common malignant diagnosis was osteosarcoma. Oncologic and functional analysis was performed on these cases. At latest follow-up 30 of the patients remain alive with no evidence of disease and 11 had died. The most common complication was deep infection (7/46). Only 6 patients had mechanical prosthesis related complications. At latest follow up the average TESS score was 76.3 and MSTs score 75.5 with an average extensor lag of 6.5°.

Paper 093
1522 – 1529 Dedifferentiated Chondrosarcoma: The Role of Chemotherapy
I.D. Dickey, Bangor, ME
P.S. Rose, Rochester, MN
B. Fuchs, Zurich, SWITZERLAND
L. Wold, Rochester, MN
S. Okuno, Rochester, MN
C.P. Beauchamp, Scottsdale, AZ

SATURDAY, JUNE 4TH

F.H. Sim, Rochester, MN

The influence of advancements in imaging and chemotherapy on patient with dedifferentiated chondrosarcoma was determined. There were 42 cases in which twenty-seven patients received adjuvant therapy. Median survival was 8 months and 5-year survival was 4.8%. There was no statistical difference ($p=0.62$) in survival between patients who did and did not receive chemotherapy, had wide versus radical resection, or had limb sparing versus sacrificing procedures. There were no statistically significant differences between patients treated prior to 1986 and those subsequently. Despite advances, dedifferentiated chondrosarcoma continues to carry a poor prognosis. The routine adjuvant chemotherapy in this population should be questioned

Paper 094 Oncologic and Functional Outcome of Scapular Chondrosarcoma

1529 – 1536

A.M. Griffin, Toronto, ON

M. Shaheen, Toronto, ON

P.C. Ferguson, Toronto, ON

R.S. Bell, Toronto, ON

J.S. Wunder, Toronto, ON

Twenty-three patients with scapular chondrosarcomas presented to our institution between 1989 and 2003. Twenty-two were treated surgically while 1 presented with metastases and was treated palliatively. 14 patients underwent partial scapulectomy and 8 had a Tikhoff-Linberg procedure. There were no local recurrences and only 2 patients have suffered a systemic recurrence at mean follow-up of 52 months. Mean functional scores were: TESS - 88, MSTs 1987 - 27 and MSTs 1993 - 84. Overall, the oncologic and functional outcome for these patients was excellent.

1536 – 1545 Discussion (9 minutes)

Paper 095 Reconstruction of the Extensor Apparatus With a New Polyester Ligament Following Extensive Resection of Malignant Tumours Around the Knee Joint

1545 – 1552

D. Martin, Vienna, AUSTRIA

M. Sabeti, Vienne, AUSTRIA

T. Klemens, Vienna, AUSTRIA

K. Rainer, Vienna, AUSTRIA

We describe a new method of reconstruction of the extensor apparatus after extensive resection of malignant tumours around the knee joint with a polyester ligament. Twenty two patients after a mean follow up of 18 months (6 to 36 months) were treated. 6 patients had excellent knee function with a lag of extension less than 5 degrees, 4 of less than 20, 3 had less than 40 degrees and 6 patients could not lift their limb extended against gravity, although no patient required any kind of walking aid. The mean Enneking Score was 81,5 the mean TESS Score was 83.

Paper 096 Comparison of Outcomes of Soft Tissue Sarcoma Arising in the Popliteal Fossa or Posterior Thigh

1552 – 1529

P. W. Clarkson, Vancouver, BC

A.M. Griffin, Toronto, ON

C.N. Catton, Toronto, ON

B. O'Sullivan, Toronto, ON

P.C. Ferguson, Toronto, ON

J.S. Wunder, Toronto, ON

R.S. Bell, Toronto, ON

SATURDAY, JUNE 4TH

Many authors believe that size, histological grade and depth are the best predictors of outcome in soft tissue sarcoma. Enneking's surgical staging system included compartmental status, and was intended to guide surgical intervention as well as provide prognostic information. Advances in surgical and radiotherapy techniques may mean that extracompartmental status is no longer a poor prognostic factor. We compared a group of popliteal fossa sarcomas with a group from the posterior thigh, and found that although the former group required more extensive surgery to obtain wide margins, their functional and survival outcomes were similar.

Paper 097
1529 – 1606 Outcome Following Pelvic Sarcoma Resection Reconstructed with Saddle Prosthesis

F. Al-Jassir, Montréal, QC

G. Beadel, Toronto, ON

R.É. Turcotte, Montréal, QC

A.M. Griffin, Toronto, ON

R.S. Bell, Toronto, ON

We evaluate the outcome (Functional, Oncological, and complications) after resection of pelvic sarcoma and reconstruction with the saddle prosthesis. 27 patients with a mean follow up of 45 months. 14 patients were free of disease, 11 patients were deceased, and 2 patients were alive with disease. MSTS 93 was 51 %, MSTS 87 was 15, and TESS was 64 %. Infection occurred in 10, fracture in 6, and dislocation in 6 patients. Vertical migration stabilized after 2 yrs. 5 patients were retired, 5 had full-time employment, 6 were disabled, and 11 were deceased. Reconstruction with saddle prosthesis following resection for pelvic sarcoma is associated with significant morbidity.

1606 – 1615 Discussion (9 minutes)

Paper 098
1615 – 1622 Kellers' Excision Arthroplasty for Hallux Rigidus

B. Singh, Maidstone, ENGLAND

F. Khan, Woolwich, ENGLAND

22 patients who underwent 34 Kellers' excision arthroplasty were followed up at an average of 35 months. They were assessed using AFAOS, satisfaction and radiological evaluation. The average hallux score was 85 (62 – 100) while the average lesser toe score was 92 (75 – 100). The average pain score was 36 (20 – 40) for the hallux and 38 for the lesser toes (20 – 40). 23/34(68%) had good to excellent, 6/34 (18%) had fair and 5/34(14%) had poor results. The great toe was moderately short, but most patients do not seem to mind this. 91% patients were satisfied with the results.

Paper 099
1622 – 1629 Hindfoot Arthrodesis Following Bone Loss: Crossing the Void

S. Walsh, Montréal, QC

G.K. Berry, Montréal, QC

R. Reindl, Montréal, QC

E.J. Harvey, Montréal, QC

A variety of surgical procedures are reported for the management of large volumetric bone loss about the ankle. Although the success rates of these various methods are generally adequate for fusion, they commonly utilize autogenous bone graft and usually result in limb shortening. In seven patients a titanium spinal cage was utilized as a structural support augmented with bone graft for complex ankle arthrodesis. This technique

SATURDAY, JUNE 4TH

offers immediate structural support, maintenance of limb length, and limits autogenous graft morbidity. Early results of ankle arthrodesis with this cage are encouraging with regard to fusion rates, aesthetic attribute and functional outcome.

Paper 100
1629 – 1636 Management of Chronic Osteomyelitis of Femur
N. Aslam, Toronto, ON
K. Nagarajah, Oxford, ENGLAND
M. McNally, Oxford, ENGLAND

Chronic osteomyelitis is a very difficult condition to treat. It presents a considerable challenge. A structured approach with a multi-disciplinary team is important.

53 patients with chronic femoral osteomyelitis were treated. 31 cases followed fracture fixation, 14 haematological, 2 knee fusion and 2 iatrogenic. Cierny and Mader grade was IV in 28 cases (12 non-unions). Union was achieved in 11 of 12 nonunions. 85% of cases were infection free with the current treatment. 92% union rate was achieved. Eradication of infection and functional preservation can be achieved by wide local debridement with good soft tissue coverage and skeletal stabilisation.

1636 – 1645 Discussion (9 minutes)

1515 – 1745 **Live Surgery #3** **517D**
Minimally Invasive Total Hip Arthroplasty

Moderators: Michael Tanzer, George-Henri Laflamme
Surgeon : G. Yves Laflamme
Location: Hôpital du Sacré-Coeur de Montréal

This session supported in part by an unrestricted educational grant from Zimmer of Canada

1700 – 1800 Presidents' Cocktail **St. Gabriel Room, 4th Floor**
- *By Invitation Only* **InterContinental Hotel**

1830 – 2400 **Fun Night at the Chalet de la Montagne** **Châlet de la Montagne**
"Jazz and Dance the Night Away"

SUNDAY, JUNE 5TH

0700 – 0830 INSTRUCTIONAL COURSE LECTURES (concurrent sessions)

ICL-14: Foot & Ankle: 523AB
Spectrum of Post-Traumatic Foot and Ankle Disorders

Moderator: Murray J. Penner

Faculty: Mark Glazebrook, Gregory K. Berry, Richard E. Buckley, **Mark Myerson (Baltimore, MD)**

Learning Objectives:

At the end of this session, the participant will appreciate the therapeutic options to treat or to avoid a range of post traumatic disorders of the foot and ankle.

Ankle arthroscopy for post-traumatic ankle arthritis	Mark Glazebrook
Management of Missed Lisfranc injuries	Gregory K. Berry
Factors determining outcome for calcaneal fractures	Richard E. Buckley
Surgical treatment of failed calcaneus fractures treated non-operatively	Mark Myerson

ICL-15: Trauma: 524B
Prevention of Hip Fractures: Practical Orthopaedic Interventions

Moderator: Earl R. Bogoch

Faculty: Pierre Guy, Karim Khan, **Thomas A. Einhorn (Boston, MA)**

Learning Objectives:

1. Recognize fragility fractures as signs of future fall and fracture
2. Appropriately refer patients for evidenced based strategies proven to decrease the risk of falls and fracture in the elderly
3. Use simple and pragmatic interventions to decrease subsequent fractures

Second hip fractures	Pierre Guy
Evidence-based fall prevention strategies	Karim Khan
Early referral from the fracture clinic	Earl R. Bogoch

This session sponsored partly by an unrestricted educational grants from The Alliance for Better Bone Health (Proctor & Gamble/Sanofi-Aventis), Novartis and Eli Lilly.

ICL-16: Sports Medicine: 524C
What to do About Ankle Instability in 2005?

Moderator: Mark Glazebrook

Faculty: **Håkan Alfredson (Umea, Sweden)**, Timothy R. Daniels, **Jon Karlsson (Gothenburg, Sweden)**

Learning Objectives:

1. Understand the diagnostic criteria for ankle instability and differentiate Functional versus Mechanical causes
2. Understand indications for operative and non operative treatments.
3. Understand the different surgical procedures for ankle instability and their appropriate indications.

SUNDAY, JUNE 5TH

Diagnosis of Ankle Instability :Functional versus Mechanical Håkan Alfredson
Ankle instability: Operative or Non-op Timothy R. Daniels
Surgical techniques to stabilize the mechanically unstable ankle Jon Karlsson

ICL-17: General Session: 525AB
Young Surgeons' Forum: How to Start Off Well in Practice

Moderator: Alastair S.E. Younger
Faculty: M. Dubé, MD, Practice Solutions, Canadian Medical Association - Practice Management Education Section

Learning Objectives:

This session reveals a physician's own experience with common practice management mistakes. Beginning with an overview of basic business principles, this presentation will provide valuable insights and useful pointers on all major areas of managing a medical practice.

ICL-18: Spine 521A
Spinal Column Fractures: Cervical, Thoracic and Lumbar – What to Keep? What to Refer?

Moderator: Michael G. Johnson
Faculty: Garth E. Johnson

Learning Objectives:

1. Appreciate the spectrum of complexity of these injuries
2. Use a diagnostic algorithm which guides treatment decisions
3. Appreciate the various surgical and non surgical options which can be offered

ICL-19: Paediatrics: 521B
Paediatric Orthopaedics for the Community Surgeon

Moderator: Thierry E. Benaroch

Learning Objectives:

Through completion of this session, the participant will appreciate most updated knowledge in the field of pediatric orthopedic elective and trauma care.

ICL-20 : General Session: 524A
"Investiring" : Benefits of Strategic Asset Allocation

Faculty: France Grenier, Louise Belliard – Royal Bank of Canada

0830 – 0845 Coffee Break Exhibit Hall

0845 – 1015 Live Surgery #4 517D
Hallux Valgus Correction Surgery

Moderator: Alastair S.E. Younger
Surgeon: Gregory K. Berry
Location: Montreal General Hospital

SUNDAY, JUNE 5TH

0845 – 1015 **Symposium #3** **520ABC**
"No Bones About Them!" An Update on Pathophysiology and Evidence-Based Treatment of Acute and Chronic Achilles and Rotator Cuff Injuries

Moderator: Karim Khan

Faculty: **Håkan Alfredson (Umea, Sweden), Jon Karlsson (Gothenburg, Sweden)**, Robert H. Hawkins

Learning Objectives:

1. Understand the pathophysiology of tendinopathies and how it affects treatment.
2. Appreciate new therapeutic approaches to chronic tendinopathy (including sclerotherapy).
3. Appreciate the evidence-based recommendations for the treatment of Achilles injuries.
4. Appreciate the novel surgical techniques in the care of rotator cuff injuries.

The pathophysiology of "tendinosis" and how it affects treatment choices	Karim Khan
New Therapeutic Approaches in chronic tendinopathy	Håkan Alfredson
Evidence-Based Achilles Care	Jon Karlsson
Advances in rotator cuff surgery	Robert H. Hawkins

0845 – 1045 COTS Meeting Hyatt Regency Hotel
Level 6 - Étè de Indiens Room

0845 – 1015 COA Podium Presentations (concurrent sessions)

Session 10 – Paediatrics **518ABC**

Moderators: **J. Loren Leheay (Halifax, NS)**
Guy Grimard (Montréal, QC)

Paper 101 Intramedullary Flexible Nail Fixation of Unstable Paediatric Tibial Diaphyseal Fractures
0845 – 0852
F.D. Lalonde, San Diego, CA
R.C. Goodwin, Cleveland, OH
T.P. Gaynor, San Diego, CA
A. Mahar, San Diego, CA
R. Oka, San Diego, CA

Few published series demonstrate the complications of flexible intramedullary nailing of unstable tibial diaphyseal fractures in children. A retrospective review of 19 patients was performed, as well as a biomechanical analysis. Two common implant configurations were compared, double or divergent C and medial C and S. Five patients (26%) had complications. Two angular deformities (>10°) occurred with the medial C and S. The C and S demonstrated lower range of motion than the double C. Despite its inferiority in biomechanical testing, the double C construct was associated with fewer complications and is the authors' preferred technique.

Paper 102 Juvenile Idiopathic Scoliosis: The Effectiveness of Part-time Bracing
0852 – 0859 **J.G. Jarvis, Ottawa, ON**
S. Garbedian, Ottawa, ON
G. Swamy, Ottawa, ON

SUNDAY, JUNE 5TH

In order to determine the effectiveness of part-time bracing in juvenile idiopathic scoliosis (JIS) a retrospective review of 34 patients treated with a Charleston bending brace for JIS was undertaken. The patients were analyzed in three groups including: 1) success; 2) progression; 3) progression requiring surgery. Of 23 patients meeting the inclusion criteria, 9 achieved success, 7 progressed, and 7 required surgery. Success correlated with best in brace correction radiograph but not with initial curve magnitude. Part-time bracing is as successful as full-time bracing in JIS and better than the natural history.

Paper 103
0859 – 0906 The Results of Surgical Treatment for Displaced Paediatric Proximal Humerus Fractures
T.P. Carey, London, ON
R. El-Hawary, Dallas, TX
C.A. Black, London, ON
K.K. Leitch, London, ON

The majority of pediatric proximal humerus fractures are successfully treated non-operatively. Significantly displaced fractures have traditionally been treated surgically with percutaneous pinning. This review of 23 surgically treated patients demonstrates a high rate of infection associated with percutaneous pinning. The technique of cannulated screw fixation offers a safe surgical alternative for the treatment of these fractures in the adolescent population

0906 – 0915 Discussion (9 minutes)

Paper 104
0915 – 0922 Thoracoplasty in Adolescent Idiopathic Scoliosis: A Critical Appraisal
T. Kostamo, Vancouver, BC
R.L. Choit, Vancouver, BC
B.J. Sawtzky, Vancouver, BC
S.J. Tredwell, Vancouver, BC

Thoracoplasty has been described as primarily a cosmetic resection of the rib hump. The purpose of our study was to investigate whether removal of a normal spine stabilizer affected the correction of the spine, particularly in the sagittal plane. 38 adolescent idiopathic scoliosis patients who underwent thoracoplasty were compared with 18 controls in terms of maintenance of correction and patient satisfaction using the SRS questionnaire. Thoracoplasty had no effect on curve correction in the coronal plane. It did show a significant effect on sagittal plane correction of the thoracic hypokyphosis without any significant detractors in terms of patient outcome

Paper 105
0922 – 0929 Management of Subtrochanteric Fractures in Skeletally Immature Adolescents
J.G. Jarvis, Ottawa, ON
R.M. Letts, Ottawa, ON
D. Davidson, Ottawa, ON

Subtrochanteric femoral fractures are uncommon in children, consequently there are no good treatment guidelines in the literature. This series reviewed all subtrochanteric femur fractures in skeletally immature adolescents older than 10 years treated at a pediatric trauma center. There were fifteen adolescents with open growth plates. Treatment was non-operative in four and operative in eleven. Each of the adolescents treated non-operatively developed an unsatisfactory result, while eight of the eleven who were treated operatively experienced a satisfactory result. These

SUNDAY, JUNE 5TH

results suggest improved outcome with operative treatment in this patient population.

Paper 106
0929 – 0936 Caregiver Priorities and Child Health Index of Life with Disabilities (CPCHILD): Development & Validation of an Outcome Measure of Health Status and Well Being in Children with Severe Cerebral Palsy

U.G. Narayanan, Toronto, ON

D.L. Fehlings, Toronto, ON

K. Campbell, Toronto, ON

S. Weir, Toronto, ON

S. Knights, Toronto, ON

S. Kiran, Toronto, ON

This study describes the development and initial validation of a new disease-specific outcome measure of health status and burden of care in children with severe cerebral palsy. The instrument, Caregiver Priorities and Child Health Index of Life with Disabilities (CPCHILD), has 36 items spanning six domains: (1) Personal care/ADLs, (2) Positioning/Mobility, (3) Communication/Social interaction, (4) Comfort/Emotions & Behaviour, (5) Health, (6) Quality of life and additionally (7) Caregiver's perspective on the importance of these items to the child's quality of life. The CPCHILD is a reliable and valid measure of caregivers' perspectives on the health status, functional limitations, and well-being of children with severe cerebral palsy.

0936 – 0945 Discussion (9 minutes)

Paper 107
0945 – 0952 Surgical Treatment of Recurrent Dislocation of the Patella in Children

B. Benoit, Montréal, QC

G.Y. Laflamme, Montréal, QC

B. Morin, Montréal, QC

G. Grimard, Montréal, QC

The most commonly used surgical techniques used to treat recurrent or habitual patellar dislocation in the child do not specifically address the patella alta, one of the major causes of patellar dislocation. Twelve knees in eight patients had a lowering of the patella by total tendon transfer, lateral release and vastus medialis obliquus advancement. At two years of follow-up, only one knee had redislocated. Radiographically, the patellar height was anatomically restored in all other knees. All patients were pain free. This surgical technique is a good treatment option in the immature patient with recurrent or habitual patellar dislocation.

Paper 108
0952 – 0959 Radial Head Dislocation in Osteogenesis Imperfecta

A. MarcDargent Fassier, Montréal, QC

C. Janelle, Montréal, QC

F. Rauch, Montréal, QC

M. Aarabi, Toronto, ON

F. Fassier, Montréal, QC

In this cross-sectional study we analyzed 489 upper limb radiographs from 254 patients with osteogenesis imperfecta (OI), age range 6 weeks to 23 years, to determine the prevalence of radial head dislocation (RHD) and subluxation (RHS). We observed 83 cases of RHD or RHS. The frequency of radial head misalignment was significantly higher in OI type V (affecting 86% of analyzed limbs) than in the other OI types (between 0% and 28.6%). In all OI types, RHD and RHS were significantly associated with the presence of a malformed capitellum and a malformed radial head or neck.

SUNDAY, JUNE 5TH

Paper 109
0959 – 1006 Iatrogenic Ulnar Nerve Injury in the Management of Supracondylar Fractures: Number Needed to Harm (NNH)

H. Jackman, Vancouver, BC

K. Mulpuri, Vancouver, BC

S. Tennant, Vancouver, BC

R.L. Choit, Vancouver, BC

B. Tritt, Vancouver, BC

S.J. Tredwell, Vancouver, BC

Supracondylar humeral fractures are the most common elbow injury in children, usually sustained from a fall on the outstretched hand. Iatrogenic ulnar nerve injury is not uncommon following cross K wiring. NNH is the number of cases needed to treat in order to have one adverse outcome. A systemic review was undertaken to calculate relative risks, risk difference and number needed to harm following management of supracondylar fractures with cross or lateral K wires. It was found that there was one iatrogenic ulnar nerve injury for every 27 cases that were managed with crossed K wires.

1006 – 1015 Discussion (9 minutes)

Session 11 – Spine

524C

Moderators: **Rudolph Reindl (Montréal, QC)**
William Oxner (Halifax, NS)

Paper 110
0845 – 0852 The Efficacy of Video-Assisted Thoracoscopic Surgery for Anterior Release and Fusion in the Management of Paediatric Spinal Deformities

C.W. Reilly, Vancouver, BC

R.L. Choit, Vancouver, BC

G.P. Slobogean, Vancouver, BC

This study examined clinical and radiological outcomes following video assisted thoracoscopic surgery (VATS) for anterior release and fusion in the correction of paediatric scoliotic deformities. 19 patients who underwent VATS were compared with 19 open thoracotomy patients to compare degree of correction and perioperative morbidity. Demographic parameters were similar between the groups and there was no significant difference in operative time or total blood loss. VATS offered the same degree of correction as open thoracotomies and has the potential to decrease post-operative morbidity while still allowing the same degree of correction as traditional open thoracotomies.

Paper 111
0852 – 0859 Early Functional Outcomes Following Total Disk Arthroplasty with the Charité III Total Disk Endoprosthesis

A.J. Beggs, London, ON

K.R. Gurr, London, ON

We are reporting our case series of lumbar total disc endoprostheses. Oswestry and SF-36 scores were obtained from patients preoperatively and postoperatively for discs in situ for 6, 12 and 24 months. Oswestry scores improved from 53 to 32 at 6 months (N=34); 55 to 31 at 12 months (N=28); and 52 to 25 at 24 months (N=17). SF-36 scores improved from 30 to 54 (physical) and 40 to 62 (mental) at 6 months; 29 to 55 (physical) and 38 to 63 (mental) at 12 months; and 29 to 62 (physical) and 41 to 67 (mental) at 24 months.

SUNDAY, JUNE 5TH

Paper 112
0859 – 0906 Posterior Cervical Spine Fixation Utilizing Segmental Screw–Rod Fixation
M. J. Goytan, Winnipeg, MB
M. Campos-Benitz, Winnipeg, MB
C. Peschken, Winnipeg, MB
M.G. Johnson, Winnipeg, MB

Posterior segmental fixation of the cervical spine facilitates fixation in sub-optimal bone, abnormal anatomy, and complex deformity. Compared to lateral mass plates a screw rod construct provides a stable construct in osteoporotic bone or in cases where the lateral masses are fractured or missing.

0906 – 0915 Discussion (9 minutes)

Paper 113
0915 – 0922 Sagittal Alignment of the Spine and Pelvis in the Presence of L5-S1 Isthmic Spondylolysis and Low-Grade Spondylolisthesis²
H. Labelle, Montréal, QC
P. Roussouly, Lyon, FRANCE
S. Goology, Lyon, FRANCE
M. Wedenbaum, New York, NY

This study using digitized radiographs and custom software demonstrates that patients with spondylolysis and low-grade spondylolisthesis have increased Pelvic and L5 Incidence as well as a more vertically oriented L5-S1 intervertebral disc than patients without radiographic abnormality of the spine. We propose that shear across the more vertical L5-S1 disc may underlie the etiology of spondylolysis when Pelvic Incidence is high, while a “nutcracker” mechanism may be involved when Pelvic Incidence is low.

Paper 114
0922 – 0929 Modifiable Lifestyle Factors in Patients Presenting to a Tertiary Spine Surgery Clinic
E. Wai, Ottawa, ON
A. Gruscynski, Ottawa, ON
G.E. Johnson, Ottawa, ON
D. Chow, Ottawa, ON
J. O’Neil, Ottawa, ON
L. Vexler, Ottawa, ON
M. Bensimon, Ottawa, ON

Back pain is a complex problem affecting the majority of the population at some point in their life. This cross-sectional study evaluated patients presenting to a tertiary spine clinic with a primary complaint of back pain for modifiable lifestyle factors which may be associated with their back pain. Patients were also asked if any of these lifestyle factors had been addressed by primary care practitioners prior to referral to the spine surgeon’s office.

Paper 115
0929 – 0936 Interbody Fusion With Allograft and RhBMP-2 Leads to Consistent Fusion but Early Subsidence
R. Vaidya, Detroit, MI
S. Bartol, Detroit, MI
K. Wilkins, Detroit, MI
F.R.T. Nelson, Detroit, MI

RhBMP2 was used in 36 consecutive patients requiring interbody fusion with 55 levels (13 patients 20 levels ALIF, 12 patients 17 levels TLIF, 11 patients 18 levels ACDF) using anterior cervical locking plates and lumbar posterior pedicle screw constructs. All patients showed radiographic fusion at 6

SUNDAY, JUNE 5TH

months. Early lucency, subsidence, and increased pain occurred between 6 weeks and 3 months in 70% of ALIFS, 53% of TLIFS and 33% of ACDF's. The average subsidence was 27% in ALIFS, 24% in TLIFS, and 53% in ACDF. Pain improved by the 6th month. We recommend alternative structural support when using RhBMP2.

0936 – 0945 Discussion (9 minutes)

Paper 116
0945 – 0952 Evaluation of Bone Cement Infiltration within Vertebra Using Morphological Parameters

F. Chandielier, Sherbrooke, QC
G. Baroud, Sherbrooke, QC

To reduce vertebral fractures, emerging techniques such as vertebroplasty need to be improved by studying cement infiltration and leakage within bone. Thus we investigated samples extracted from lumbar spines using μ CT to evaluate morphological parameters (trabecular thickness and separation, structural index). The specific finding is that relevant shifts of the trabecular thickness and separation Gaussian medians associated to sharpened distributions are related to donors' age. These morphological parameters, correlated to common fluid laws, enable the prediction of bone cement flow within vertebrae and provide new ways for designing biomaterials and estimate key vertebroplasty parameters regarding time, pressure and injection site.

Paper 117
0952 – 0959 Results of Posterolateral Fusion Versus Combined Posterolateral and Interbody Fusion in One Level Degenerative Disorders of the Lumbar Spine – Two-Year Follow-up

E.P. Abraham, Saint John, NB

The purpose of the study is to evaluate the outcome of two methods: Posterolateral fusion and instrumentation versus posterolateral fusion, instrumentation and interbody fusion using clinical and radiological criteria in demographically similar groups. This is a prospective cohort study of 64 patients randomized to two therapeutic strategies (Level II study).

Paper 118
0959 – 1006 Analysis of the Correlation Between the Pedicle Shape and the Spinal Canal Anatomy in Scoliotic Anatomic Specimens²

S. Parent, Montréal, QC
H. Labelle, Montréal, QC
W. Skalli, Paris, FRANCE
J. de Guise, Montréal, QC

The objective of the present study was to analyze the correlation between the pedicle shape and spinal canal anatomy in scoliotic specimens. Vertebral canal anatomy was evaluated in a series of thirty anatomic scoliotic specimens and compared to thirty normal specimens. Spinal canal enlargement inversely correlated with pedicle width modifications on the concavity of scoliotic curves. These findings suggest that changes in pedicle anatomy are secondary to local changes in spinal cord position.

1006 – 1015 Discussion (9 minutes)

1015 – 1045 Health Break

Exhibit Hall

SUNDAY, JUNE 5TH

1045 – 1215 COA Podium Presentations (concurrent sessions)

Session 12– Sports Medicine – Upper Extremity

517D

Moderators: Pierre Ranger (Laval, QC)
Nicholas G.H. Mohtadi (Calgary, AB)

Paper 119 The Inter-rater Reliability of a Diagnostic Shoulder Arthroscopy

1045 – 1052 **T. Sasyniuk, Calgary, AB**
N.G.H. Mohtadi, Calgary, AB
R.M. Hollinshead, Calgary, AB
M. Russell, Calgary, AB

The standard of reference by which many imaging studies and clinical tests are often measured is arthroscopy. However, the inter-rater reliability of a surgeon's arthroscopic diagnosis a relatively unexplored area of investigation. The purpose of the study was to determine the inter-rater reliability among a group of experienced orthopaedic shoulder surgeons in evaluating the intra-articular structures involved in a real-time diagnostic shoulder arthroscopy using a videotape model. Given the conditions of this study, the agreement among experienced shoulder surgeons was structure dependent ranging from poor to very good and was influenced by the prevalence of pathology.

Paper 120 Arthroscopic Subacromial Decompression in Stage II Impingement – Five to Twelve Years

1052 – 1059 **D.J. Ogilvie-Harris, Toronto, ON**
C-H. Choi, Toronto, ON

Arthroscopic subacromial decompression was carried out in 104 consecutive patients who had stage II subacromial impingement with failed conservative treatment. The results were assessed preoperatively and at follow up using the UCLA score. After an average of 8.4 years follow up, the final results were as following; 57 shoulders (55%) in excellent, 25 (24%) in good, 16 (15%) in fair and 6 (6%) in poor. Late full thickness tears developed in 9% of patients and can be treated with an open repair of rotator cuff. Arthroscopic subacromial decompression was very effective for stage II impingement syndrome.

Paper 121 An Outcome Study of Shoulder Stabilization – Comparison of Arthroscopic Versus Open

1059 – 1106 **B. Singh, Maidstone, ENGLAND**
P.G. Anil Kumar, Woolwich, ENGLAND
S. Burt, Woolwich, ENGLAND
A. Dutta, Woolwich, ENGLAND
W.A. Scott, Woolwich, ENGLAND

We undertook the current study to analyze the factors involved with failed previous stabilization surgery for patients with anterior or anteroinferior glenohumeral instability. Between 1997 and 2003 we treated 74 patients with traumatic unidirectional instability. The average age was 32 and the average follow up was 58 months. There were 16 females and 58 males. All patients underwent a primary diagnostic arthroscopy followed by arthroscopic stabilization in 47 and open stabilization in 27 cases. Ten had a recurrence of instability. Of these two had significant trauma. Of the remaining, six were in the arthroscopic group and two in the open procedure group.

SUNDAY, JUNE 5TH

1106 – 1115 Discussion (9 minutes)
Paper 122 A Randomised Clinical Trial Comparing Mini-Open to Open Rotator Cuff Repair
1115 – 1122
N.G.H. Mohtadi, Calgary, AB
R.M. Hollinshead, Calgary, AB
J. Fletcher, Calgary, AB
T. Sasyniuk, Calgary, AB

This randomized clinical trial utilizing the validated rotator cuff disease specific quality of life outcome measure (RC-QOL) and adequate power demonstrates no difference in outcome for full thickness rotator cuff tears comparing open to mini-open surgical techniques.

Paper 123 Diagnostic and Treatment Differences Among Experienced Shoulder Surgeons for Instability Conditions of the Shoulder
1122 – 1129
P.B. MacDonald, Winnipeg, MB
J. Chahal, Winnipeg, MB
K. Kassiri, Winnipeg, MB
M. Dyck, Winnipeg, MB

Expert North American shoulder surgeons were polled on the diagnosis and treatment of five shoulder conditions. To quantify inter-observer agreement in the diagnosis and treatment of shoulder instabilities, they chose one of five diagnostic conditions and one or more of seven treatment options. The greatest diagnostic and treatment differences were noted for a painful shoulder in a throwing athlete with subtle anterior instability and a patient with voluntary posterior instability with an asymptomatic sulcus sign. An arthroscopic approach was consistently preferred to open surgery. These inconsistencies highlight the need for standardized diagnostic criteria and more universal treatment plans.

Paper 124 Vascular Anatomy of the Subacromial Space: A Map of Bleeding Points for the Arthroscopic Surgeon
1129 – 1136
H. Yepes, Halifax, NS
A. Al-Hibshi, Halifax, NS
M. Tang, Halifax, NS
S.F. Morris, Halifax, NS
C. Geddes, Halifax, NS
W.D. Stanish, Halifax, NS

Shoulder Arthroscopy techniques may pose surgical risk to vascular structures that may cause active bleeding during surgery. The vascularity of the subacromial structures showed constant patterns of distribution and specific sources of bleeding were analyzed. Knowledge of the vascular anatomy may decrease the bleeding during subacromial arthroscopy surgery.

1136 – 1145 Discussion (9 minutes)

Paper 125 Clinical Outcome Following Arthroscopic Stabilization with Capsular Plication (A Preliminary Report)²
1145 – 1152
R.M. Holtby, Toronto, ON
H. Razmjou, Toronto, ON
F. Moola, Toronto, ON
H. Damecen, Louisville, KY
C.S. Wright, Toronto, ON

SUNDAY, JUNE 5TH

The purpose of this study was to examine clinical outcomes of capsular plication using subjective outcome measures and objective clinical examination with emphasis on range of motion. Data of consecutive patients (25 at 6 months and 20 at 12 months) who required arthroscopic stabilization over a period of 3 years were retrospectively reviewed. At 6 and 12 month post-operatively, the disease specific outcome measure, ASES, and relative Constant, showed significant changes in quality of life. There was no loss of external rotation at 0° and 90° of external rotation at one year post-operatively.

Paper 126
1152 – 1159 Validation of Scales Used to Assess Outcome of CMC Arthroplasty
J.C. MacDermid, London, ON
R. Humphrey, London, ON
D.C. Ross, London, ON
R. Richards, London, ON

This study determined the validity of 3 patient self-report scales (PRWE, DASH and AUSCAN) to assess outcomes of CMC arthroplasty. Factor analyses did not support the described structure of the three scales. There was a strong relationship between pain or function subscales across different instruments ($r>0.80$). Known construct testing regarding WSIB status and arthritis severity supported the discriminative validity of all scales ($p<0.05$) except for the function (PRWE) and stiffness (AUSCAN) subscales ($p=0.08$). Separation of pain/function concepts may be difficult when evaluating outcomes in hand arthritis. The DASH is not unidimensional in this population.

Paper 127
1159 – 1206 Implementation of a Centralized Wait List Management System for Elective Orthopaedic Surgery
M.J. Dunbar, Halifax, NS
L. Molloy, Halifax, NS
A. Hennigar, Halifax, NS
M. Davies, Halifax, NS

A centralized wait list management system (VLS) for KR, THR and knee arthroscopy was developed to collect and analyze data on parameters of patients' wait for surgery. A triage system for rating patient priority was implemented. Data on the VLS and other systems related to aspects of patients' wait for surgery were collected and imported. Patients' functional status was significantly worse than population norms, they were adversely affected while waiting and are unsatisfied with their access to surgery. Traffic ratios (ratio of booked to completed surgeries) exceed the maximum value for a stable wait list and the waits for surgery exceed national and international recommendations for maximum wait-times.

1206 – 1215 Discussion (9 minutes)

Session 13– Adult Reconstruction – Knee **520ABC**

Moderators: **Olga L. Huk (Montréal, QC),**
Eric Bohm (Winnipeg, MB)

Paper 128
1045 – 1052 Important Variables and the Severity of Problems for Patients Undergoing Total Knee Arthroplasty as Measured by the Patient Specific Index (PASI): A 24-Month Follow-Up
C. MacDonald, Toronto, ON
A. Zahrai, Winnipeg, MB

SUNDAY, JUNE 5TH

R.M. Walker, Toronto, ON
J. Rooney, Sydney, AUSTRALIA
E.H. Schemitsch, Toronto, ON
J.G. Wright, Toronto, ON
J.P. Waddell, Toronto, ON

The purpose of this study was to determine which activities are important to patients and to determine the severity of those problems. The five most important activities were walking outside, driving, walking indoors, stair climbing and daytime pain. Importance of these did not change postoperatively. The five most severe problems causing limitation were a limp, stiffness, loss of energy, daytime pain and locking. All these activities become statistically less severe over 24 months. Activities that are important to patients are different than the problems that are ranked by severity. Surgeons can educate patients that the severity of problems do improve over time following TKA.

Paper 129
1052 – 1059 A Randomised Blinded Clinical Trial Assessing Efficacy of Peri-Articular Injection in Total Knee Replacement

B.J. Shore, London, ON
C.A. Busch, Surrey, ENGLAND
R. Bhandari, London, ON
S. Ganapathy, London, ON
S.J.M. MacDonald, London, ON
C.H. Rorabeck, London, ON
R.B. Bourne, London, ON
R.W. McCalden, London, ON

This Blinded Randomized Clinical Trial outlines: how peri-articular intra-operative multimodal analgesia significantly reduces post-operative analgesia requirement. 64 patients undergoing total knee replacement were randomised to receive a peri-articular intra-operative injection containing ropivacaine, ketorolac, epimorphine and epinephrine or nothing. Patients who received the injection demonstrated greater satisfaction and pain relief. Finally, patients in the injected group did not show any signs of cardio and central nervous system toxicity.

Paper 130
1059 – 1106 Minimum Ten-Year Follow-up of a Mobile Bearing Total Knee Replacement

S.J.M. MacDonald, London, ON
J.T. Marr, London, ON
R.B. Bourne, London, ON
C.H. Rorabeck, London, ON

The Self Aligning (SAL I) total knee prosthesis (Sulzer, Winterthur) is a first generation cruciate retaining mobile bearing implant allowing unrestricted rotation and up to 5 mm. of translation. A consecutive series of 203 SAL I components in 167 patients were implanted between 1990 and 1994 and were reviewed clinically and radiographically. Quality of life outcomes (SF-12 and WOMAC) were also reviewed pre-operatively and regular intervals. This first generation mobile bearing knee implant in this series, continues to function well at a minimum ten years follow-up, with a mechanical failure rate (8%) comparable to fixed bearing designs.

1106 – 1115 Discussion (9 minutes)

SUNDAY, JUNE 5TH

Paper 131
1115 – 1122 Mid and Long-Term Outcome of Total Knee Arthroplasty for Adult Juvenile Idiopathic Arthritis Patients ²
E.R. Bogoch, Toronto, ON
B.M. Jolles, Lausanne, FRANCE

The purpose of this study was to evaluate the mid- and long-term outcomes of total knee arthroplasty in adult patients who have a history of juvenile idiopathic arthritis (JIA).

Between 1989 and 2001, 22 JIA adult patients were treated with primary arthroplasty. Technical challenges included fixed valgus and flexion deformity. Patients were evaluated (mean 8.0 years) using established alignment systems.

Knee arthroplasty provided relief of pain and stiffness and moderate improvement in range of motion in this severely affected patients. Although outcomes were scored poorly on established instruments, patients rated their benefits of the operation highly.

Paper 132
1122 – 1129 Mid-Term Clinical Follow-Up of the Genesis II Total Knee Arthroplasty System
M-H. Mahoney, London, ON
J.S. Guerin, London, ON
R.B. Bourne, London, ON
S.J.M. MacDonald, London, ON
R.W. McCalden, London, ON

The Genesis II total knee prosthesis was a successor to the Genesis I TKR in which three degrees of external rotation was built into the femoral component to improve patellofemoral tracking and eliminate rotational incongruity. The midterm (minimum 5 year) results of 343 Genesis II cemented components were reviewed in 324 patients. Kaplan-Meier survivorship was 98% at a mean 7.6 years.

Paper 133
1129 – 1136 Influence of BMI on Clinical Outcomes Following Primary Unilateral TKA
J. de Beer, Hamilton, ON
A. Al-Rabiah, Hamilton, ON
D. Petruccelli, Hamilton, ON
A. Adili, Hamilton, ON
M.J. Winemaker, Hamilton, ON

Retrospective analysis of 371 obese (BMI ≥ 30) and 249 non-obese (BMI <30) primary unilateral TKA patients with minimum one-year follow-up to determine influence of obesity versus non-obesity on clinical outcomes following primary unilateral total knee arthroplasty (TKA) for osteoarthritis. Obese patients fare just as well as non-obese patients, experiencing a greater degree of improvement in observed and self-reported outcome measures.

1136 – 1145 Discussion (9 minutes)

Paper 134
1145 – 1152 Does Patient Perception of Alignment Affect Outcome in Total Knee Arthroplasty?
R. Gandhi, Hamilton, ON
D. Petruccelli, Hamilton, ON
A. Adili, Hamilton, ON
M.J. Winemaker, Hamilton, ON

SUNDAY, JUNE 5TH

J. de Beer, Hamilton, ON

A prospective evaluation was undertaken utilizing the SF12 score, Oxford Knee score, Knee Society Score (KSS), visual analog pain score, and a non-validated questionnaire to determine patient self-perception of leg alignment after knee arthroplasty, and impact of satisfaction with alignment on clinical outcomes. 21/84 (25%) patients were dissatisfied with their new leg alignment and this group subsequently reported greater pain scores ($p < 0.001$) and lower SF12 scores ($p < 0.002$). Oxford Scores and KSS showed no difference between groups. We suggest that patient satisfaction with postoperative lower extremity alignment is an important issue affecting subjective outcomes in total knee arthroplasty (TKA).

Paper 135
1152 – 1159 Can a Change in Implant Articular Geometry Affect Postoperative Range of Movement in Patients Undergoing Primary TKA for Osteoarthritis?

S.S. Bajammal, Hamilton, ON

D. Petruccelli, Hamilton, ON

A. Adili, Hamilton, ON

M.J. Winemaker, Hamilton, ON

J. de Beer, Hamilton, ON

To evaluate the effect of implant articular geometry on postoperative range of motion (ROM) after primary total knee arthroplasty for osteoarthritis, we conducted a retrospective case-control study of 120 patients (60 in each group) comparing Scorpio® Posterior Cruciate Substituting implant using Superflex® versus traditional tibial insert. Cases and controls were matched 1:1 for surgeon and gender. Both groups had similar baseline characteristics. Except for KSS Clinical Score at 6 months (mean: 92.8 for Superflex® versus 87.6 for traditional insert; $p = 0.029$), there was no statistically significant difference between the two groups in knee scores or ROM up to 1-year postoperatively.

Paper 136
1159 – 1206 A Survey of Postoperative Primary Hip and Knee Arthroplasty Patient Activity Level as Measured by the UCLA Activity Score

D. Williams, Hamilton, ON

D. Petruccelli, Hamilton, ON

W. Elliott, Burlington, ON

S. Bauman, Hamilton, ON

J. de Beer, Hamilton, ON

It is known that activity level correlates with wear in total joint arthroplasty. UCLA activity score surveys were sent to 467 knee and hip arthroplasty patients with good/excellent clinical outcomes as determined by 1-year postoperative Knee Society (KSS) and Harris Hip (HHS) scores. The UCLA activity score was correlated with clinical outcomes and demographic data. Average UCLA score was 6.2 for hips, 6.3 for knees, indicating moderate activity levels. Hip arthroplasty UCLA score significantly correlated with age, gender and 1-year Oxford score. Knee arthroplasty UCLA score significantly correlated with gender, 1-year functional KSS and Oxford score.

1206 – 1215 Discussion (9 minutes)

1045 – 1215 **Workshop #2** **520DEF**
Navigation in Orthopaedics: Hands-On for Spine, Arthroplasty, Sports and Trauma Applications

Moderator: Raja Y. Rampersaud

SUNDAY, JUNE 5TH

Faculty: David G. Chess, David R. Pichora

Learning Objectives:

1. Understand the steps involved in using computer-assisted technology.
2. Have sampled this technology in an arthroplasty, a spine, and a trauma surgery environment.
3. Be able to critically assess the place of this new technology in his/her workplace.

1215

END OF MEETING

International Carousel Presidents Dinner – *By Invitation Only*
Québec City, QC



Canadian Society for Surgery of the Hand

**ANNUAL SCIENTIFIC PROGRAMME
PALAIS DE CONGRÈS, MONTRÉAL, QUEBEC
JUNE 4TH, 2005**

Royal College of Physicians and Surgeons of Canada Guest Speaker:
Dr Scott Wolfe (Hospital for Special Surgery, New York)

PROGRAMME

7:00-8:30: **Combined COA and Manus Canada Guest Speaker Instructional Course Lecture: ROOM 521C**
Dr Scott Wolfe, Hospital for Special Surgery, New York

Distal radial fractures: Best management to avoid complications

SCIENTIFIC PROGRAM: ROOM 524A

- 8:30-8:45: Refreshment Break**
- 8:45-8:51: Return to work as a primary outcome in studies comparing open and endoscopic carpal tunnel release: A review of randomized controlled trials.
B Ayeni, A Thoma. Hamilton Ontario
- 8:52-8:58: The abductor pollicis longus accessories: A potential tendon donor site in the absence of plamaris longus.
H St-Amand, E Mailhot, D Cloutier. Laval, Québec
- 8:59-9:05: Radiation exposure in hand surgery: Mini vs standard C-arm.
GS Athwal, RA Bueno, SW Wolfe. New York, New York
- 9:05-9:10: Discussion
- 9:10-9:16: A qualitative evaluation of patterns of healing in bone-grafted scaphoid nonunions: A pilot study.
K Boyd, R McMurtry. London, Ontario
- 9:17-9:23: Treatment of scaphoid non-union by vascularized bone grafts from the palmar distal radius.
A Denault, D Cloutier. Laval Quebec
- 9:24-9:30: The joint reaction force in the distal radioulnar joint during in-vitro forearm rotation.
KD Gordon, AE Kedgley, LM Ferriera, GJW King, JA Johnson. London, Ontario

- 9:30-9:35: Discussion
- 9:35-9:41: Indications and outcomes of spinal accessory nerve transfer to suprascapular nerve in obstetrical brachial plexus palsy.
JC Lin, P Egerszegi, C Stanciu, L Caouette-Laberge. Montréal, Québec
- 9:42-9:48: Outcomes following implementation of a regional replantation program: The Quebec Provincial Replantation experience, a model for Canadian health care systems.
A Nikolis, A Gagnon, A Chollet, I Perrault et al. Montréal, Québec
- 9:49-9:55: Functional results following replantation of the hand amputated by a machete at the level of the radiocarpal joint in a teenage patient: A case report.
J Toy, J Olson, M Morhart. Edmonton, Alberta
- 9:56-10:02: Hand trauma in shop class.
RC Beavis, DA Classen. Saskatoon, Saskatchewan
- 10:03-10:09: Primary closure of the radial forearm flap donor site using rotational flaps.
JC Lin, M Tardif, C Cordoba, A Nikolis, PG Harris. Montréal, Québec
- 10:09-10:14: Discussion
- 10:14-10:35: Refreshment Break**
- 10:35-10:41: External Fixators for Intra-articular wrist fractures.
JS Koay. Fairmont, West Virginia
- 10:42-10:48: "Dart thrower's" wrist motion is achieved in vivo with minimal radiocarpal motion
SW Wolfe, JJ Crisco, JC Coburn, E Akelman, A-PC Weiss, DC Moore. New York, New York
- 10:49-10:55: The PRUJ-Plasty for the "lost" elbow joint
Derek Younge, Al Ain, United Arab Emirates
- 10:55-11:00: Discussion
- 11:00: Introduction of Royal College Guest Speaker: Sylvain Gagnon
- 11:00-11:45: **Manus Canada Royal College Guest Speaker: Dr Scott Wolfe**
Percutaneous Fixation of Scaphoid Fractures.
- 11:45-12:00: Manus Canada Annual Business Meeting

Canadian Orthopaedic Foot and Ankle Society
Third Annual Specialty Day Meeting

Montreal, QC
June 5, 2005
Room 524A

Programme Committee:

Johnny TC Lau, M.D., FRCSC (Programme Chair)
Cynthia Vezina, Yuri Kojima, and Doug Thomson (COA)

8:30-9:30: Paper Session

(10 minutes per paper = 6 minute presentation followed by 4 minutes of discussion)

- 8:30-8:40: **Haddad, D. (Ottawa, ON)**
Surgical Management of Achilles Tendon Ruptures With LARS Synthetic
- 8:40-8:50: **Willits, K. (London, ON)**
Outcome of Posterior Ankle Arthroscopy for Hindfoot Impingement
- 8:50-9:00: **Aslam, N. (Toronto, ON)**
Ilizarov Technique for Salvage Ankle Arthrodesis
- 9:00-9:10: **Lalonde, K-A. (Pittsburgh, PA)**
An Outcome Study of Chronic Achilles Tendinosis Following Excision of the Achilles Tendon and Flexor Hallucis Longus Transfer
- 9:10-9:20: **Aslam, N. (Toronto, ON)**
First Metatarsophalangeal Joint Arthrodesis Using a Vitallium Plate with a Mean Two Year Follow-Up
- 9:20-9:30: **Daniels, T. (Toronto, ON)**
Patient Satisfaction with Care in a Multidisciplinary Clinic Designated for Management of Neuropathic Foot Disease
- 9:30-10:00: **Symposium on PTT Dysfunction**
1) "How to Avoid Arthrodesis for Stage II PTT Dysfunction"
Dr. Mark Myerson
2) "Management of Stage IV PTT Dysfunction"
Dr. Mark Myerson
- 10:00-10:15: **BREAK**
- 10:15-11:00: **Symposium on Ankle Arthritis**
1) "Medial Ankle Instability"
Dr. Victor Valderrabano
2) "Gait Analysis of Total Ankle Arthroplasty"
Dr. Tim Daniels
3) "Salvage of Complex Ankle Deformity"
Dr. Mark Myerson
- 11:00-11:15: **Summary of COFAS Research Activity**
- 11:15-12:00: **COFAS Business Meeting**

POSTERS

COA and CORS 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 2 nd	1630 – 2100
Must be completed by:	Friday, June 3 rd	0730
Poster Exhibit:	Friday, June 3 rd – June 5 th	0700 – 2000
Poster Dismantling begins:	Sunday, June 5th	1200 – 1300
Must be completed by:		1300
Poster viewing with authors:	Friday, June 3 rd	1030 – 1100 1230 – 1330 1530 – 1600 1900 – 2100

¹ COF/HHH - ² Industry/Grants = denotes funding

Special Presentation – Hong Kong Ambassador

A Randomised, Prospective, Control Study to Investigate the Use of Drained Blood Re-Infusion System After Total Knee Arthroplasty
Cheng Sze Chung, Kwon Wah Hospital, Hong Kong

COA Scientific Posters

Adult Reconstruction

- 1 A Biomechanical Comparison of Different Methods of Operative Fixation of the Acromioclavicular Joint ²
D.Y. Yoo, Toronto, ON
A. McConnell, Toronto, ON
E.H. Schemitsch, Toronto, ON
M.D. McKee, Toronto, ON
- 2 A Comparison of Five Measures of At-Work Disability in Workers with Shoulder & Elbow Disorders ²
D. Beaton, Toronto, ON
S. Solway, Toronto, ON
S. Pitts, Toronto, ON
R.R. Richards, Toronto, ON
- 3 Acetabular Revision: Outcomes and Complications of Reconstruction Rings
F. Moola, Houston, TX
O.L. Huk, Montréal, QC
D.J. Zukor, Montréal, QC
J. Antoniou, Montréal, QC
- 4 Are Patients Able to Recall Their Preoperative Function Following Total Hip Replacement? ²
J. Howell, ENGLAND
D.S. Garbuz, Vancouver, BC

POSTERS

C.P. Duncan, Vancouver, BC

- 5 Creatine Monohydrate Supplementation Does not Improve Functional recovery Following Total Knee Arthroplasty
J. de Beer, Hamilton, ON
B.D. Roy, Hamilton, ON
M.A. Taamopolsky, Hamilton, ON
- 6 Employment Status of Patients Awaiting Hip Replacement Surgery
E.R. Bohm, Winnipeg, MB
- 7 Factors Influencing the Outcome of Fresh Osteochondral Allograft Transplants in the Knee
P. Zalzal, Toronto, ON
O. Safir, Toronto, ON
D. Backstein, Toronto, ON
S. Elfassy, Toronto, ON
E. Clouatre, Toronto, ON
E. Olshewski, Toronto, ON
A.E. Gross, Toronto, ON
- 8 False Radiographic Evaluation Post Vascularized Bone Grafts for Scaphoid Fracture
E.J. Harvey, Montréal, QC
P. Morin, Birmingham, AL
E. Iakoub, Montréal, QC
G.K. Berry, Montréal, QC
R., Reindl, Montréal, QC
- 9 Fluoroscopy as a Tool for Measuring Anteversion of an Acetabular Component
B. LaRue, Sherbrooke, QC
É. Anctil, Sherbrooke, QC
- 10 Functional and Radiological Outcome Following Tantalum Rod Insertion for Osteonecrosis of the Femoral Head²
H. Mehdian, Toronto, ON
E.H. Schemitsch, Toronto, ON
M.D. McKee, Toronto, ON
- 11 Higher Rates of Intra-operative Wound Contamination Over Time During Orthopedic Implant Procedures: Comparison of Immediate Skin Incision, Deep Implant and Wound Closure Cultures and Evidence Supporting Settling of Airborne Skin Organisms²
J.N. Powell, Calgary, AB
K.M. Hope, Calgary, AB
W. Runge, Calgary, AB
K. Bush, Calgary, AB
D. Holton, Calgary, AB
T.J. Louie, Calgary, AB
W. Krulicki, Calgary, AB
L. Ward, Calgary, AB
A. VanSteelandt, Calgary, AB
K. Kelly, Calgary, AB
G. Evans, Calgary, AB
M. Shewchuk, Calgary, AB
- 12 Magnetic Resonance Imaging with Gadolinium Arthrography to Assess Acetabular Cartilage Delamination

POSTERS

P.E. Beaulé, Santa Monica, CA
E. Zaragoza, Santa Monica, CA

- 13 Medium Term Results of the Synergy Stem ²
T. Danesh-Clough, London, ON
R.B. Bourne, London, ON
C.H. Rorabeck, London, ON
S.J.M MacDonald, London, ON
R.W. McCalden, London, ON
- 14 Mid-term Results of a Randomized Controlled Trial to Compare Posterior Cruciate Sparing Versus Posterior Cruciate Substitution in Total Knee Arthroplasty
S.J. M. MacDonald, London, ON
C.H. Rorabeck, London, ON
J.T. Marr, London, ON
- 15 MRI Evaluation of Fresh Osteochondral Grafting of Distal Femur and Proximal Tibia
W.B. Henderson, Toronto, ON
A.E. Gross, Toronto, ON
O. Safir, Toronto, ON
P. Zalzal, Toronto, ON
D. Backstein, Toronto, ON
B. Liberman, Toronto, ON
- 16 Necessity of Cementing the Keel of the Tibial Baseplate in TKA
D. Williams, Hamilton, ON
D. Wismer, Hamilton, ON
J. de Beer, Hamilton, ON
- 17 Patient Beliefs Concerning the Relationship Between Obesity and Treatment Outcomes for Knee Arthritis
M. M. Harrison, Kingston, ON
P.E. Carson, Kingston, ON
R. Good, Kingston, ON
D.A. Tripp, Kingston, ON
- 18 Performance of an Enhanced Polyethylene Bearing (Hylamer-M) In Primary Total Knee Arthroplasty at a Mean 7 Year Follow-up
D.D.R. Naudie, London, ON
M.B. Collier, Alexandria, VA
C. Anderson Engh, Jr., Alexandria, VA
G. Anderson Engh, Alexandria, VA
- 19 Post Injection Rest in Osteoarthritis of the Knee: Effect on Pain Relief and Knee Function After Intra-Articular Corticosteroids. A Prospective Randomized Controlled Trial
N.C. Stone, St. John's, NL
P. Rahman, St. John's, NL
J. Harnett, St. John's, NL
D. Squire, St. John's, NL
- 20 Radiographic Comparison of Hip Biomechanics after Hip Resurfacing and Total Hip Arthroplasty

POSTERS

M. Lavigne, Montréal, QC

P-A. Vendittoli, Montréal, QC

- 21 Revision of Unicompartmental Knee Replacement to Total Knee Replacement – Technical Considerations
J. Gollish, Toronto, ON
N. Martinex, Toronto, ON
B. Jones, Toronto, ON
- 22 Routine Postoperative Duplex Ultrasonography Screening for Deep Vein Thrombosis – A Study of 1766 Arthroplasties.
K.Y. Yang, London, ON
R.B. Bourne, London, ON
S.J.M. MacDonald, London, ON
C.H. Rorabeck, London, ON
R.W. McCalden, London, ON
- 23 Serum Cobalt and Chromium Levels in Patients with Metal-on-Metal Resurfacing Hip Prostheses
D.G. Allen, Springfield, IL
R. Trammel, Springfield, IL
- 24 Serum Titanium Levels in Patients with Modular versus Nonmodular Hip Prostheses
R. Trammell, Springfield, IL
D.G. Allan, Springfield, IL
- 25 Short-term Clinical Outcome of Patients Treated with the Cormet 2000® Resurfacing Hip Replacement²
D.G. Allan, Springfield, IL
R. Trammel, Springfield, IL
- 26 Should the Amount of Under-reaming be Constant for all Sizes of Cementless Acetabular Cups?
A. Behboudi, Halifax, NS
M.J. Dunbar, Halifax, NS
K. Deluzio, Halifax, NS
- 27 The Comparison of the Oxford 12-item Score and the Western Ontario and McMaster Universities Index in Evaluating the Postoperative Outcome of Primary Total Hip Arthroplasty
D.S. Garbuz, Vancouver, BC
M. Xu, Vancouver, BC
B. Sobolev, Vancouver, BC
C.P. Duncan, Vancouver, BC
B.A. Masri, Vancouver, BC
N.S. Greidanus, Vancouver, BC
- 28 The Mini Incision as Compared to a Standard Incision for Primary Total Hip Arthroplasty Via the Direct Lateral Approach
D.A.L. O'Brien, London, ON
C.H. Rorabeck, London, ON
- 29 The Pharmacokinetics of Simplex-Tobramycin Bone Cement In Patients with Renal Dysfunction

POSTERS

M.E. Forsythe, Montréal, QC

R. Crawford, Chermshire, AUSTRALIA

S. Whitehouse, Chermshire, AUSTRALIA

S. Crawford, Chermshire, AUSTRALIA

G. Koerbin, Chermshire, AUSTRALIA

G. Sterling, Chermshire, AUSTRALIA

- 30 The Resurfacing Approach In Total Hip Arthroplasty
E. Lichtblau, Montréal, QC
- 31 What Is the Role of Isolated Tibial Polyethylene Insert Exchange In Revision Total Knee Arthroplasty (TKA)?
D. Kaneko, Tokyo, JAPAN
R.B. Bourne, London, ON
C.H. Rorabeck, London, ON
S.J.M. MacDonald, London, ON
R.W. McCalden, London, ON
G. Krishnamoorthy, London, ON
- 32 Advance Medial Pivot TKA: A prospective randomized Roentgen Stereophotogrammetric Analysis (RSA) study²
M.J. Dunbar, Halifax, NS
D. Amirault, Halifax, NS
M. Gross, Halifax, NS
A. Hennigar, Halifax, NS
- 33 Compressive Forces In The Knee During Passive Flexion
G. Mackenzie, London, ON
S.E. Roth, London, ON
R. El-Hawary, Dallas, TX
G.J.W. King, London, ON
D. G. Chess, London, ON
J.A. Johnson, London, ON
- 34 Total Shoulder Arthroplasty: Comparison of Three Methods of Version Measurement.
D. Nguyen, London, ON
L. Ferreira, London, ON
J. Brownhill, London, ON
A. Kedgley, London, ON
J.C. MacDermid, London, ON
G.J.W. King, London, ON
D. Drosdowech, London, ON
J.A. Johnson, London, ON
K.J. Faber, London, ON
- 35 The Effect of Radial Head Implant Head Position on Forearm Kinematics *in vitro*
R.A. Stacpoole, London, ON
S.M. Geurra, London, ON
L.M. Ferreira, London, ON
J.A. Johnson, London, ON
G.J.W. King, London, ON
- 36 Predicting Femoral Rotation by Using the Ipsilateral Lesser Trochanter: A Cadaveric Study
T.V. Tufescu, Saskatoon, SK
B. Ardell, Saskatoon, SK

POSTERS

W. Dust, Saskatoon, SK

- 37 Mid-term Results of Acetabular Reconstruction Cages
D.A.L. O'Brien, London, ON
R.B. Bourne, London, ON
S.J. M. MacDonald, London, ON
R.W. McCalden, London, ON
C.H. Rorabeck, London, ON
- 38 Mid-Term Results of Exeter vs. Endurance Cemented Stems Performed by a Single Surgeon
J.J. Sherfey, London, ON
R.W. McCalden, London, ON

Paediatrics

- 39 A Randomized Clinical Trial Comparing the Moss Miami (MM) and Universal Spinal Instrumentation (USS) Systems for Posterior Spinal Fusion in Adolescent Idiopathic Scoliosis (AIS)²
J.G. Wright, Toronto, ON
S. Donaldson, Toronto, ON
D. Stephens, Toronto, ON
A. Howard, Toronto, ON
B. Alman, Toronto, ON
D. Hedden, Toronto, ON
- 40 Application of the Dynamic Hip Screw in Pediatric Orthopaedics
F. Moola, Houston, TX
R. Hamdy, Montréal, QC
M. Aarabi, Toronto, ON
- 41 Center of Mass Development Ages 1-16
J.L. Leahey, Halifax, NS
J. Amirault, Wolfville, NS
S. Brown, Toronto, ON
- 42 Displace Olecranon Fractures in Children: A Biomechanical Analysis of Fixation Methods
S. Parent, San Diego, CA
M. Anderson, San Diego, CA
F. Faro, San Diego, CA
A. Mahar, San Diego, CA
F.D. Lalonde, San Diego, CA
P. Newton, San Diego, CA
- 43 Natural Evolution of Perthes' Disease in British Columbia
K. Mulpuri, Vancouver, BC
E. Gerlissen, THE NETHERLANDS
B. Tritt, Vancouver, BC
B.J. Sawatzky, Vancouver, BC
R.L. Choit, Vancouver, BC
S.J. Tredwell, Vancouver, BC
- 44 Normal Patterns of Centre of Mass Displacements During Gait in Children and Their Relation to Pathological Conditions¹
L. Leahey, Halifax, NS

POSTERS

J. Amirault, Halifax, NS

M.J. Dunbar, Halifax, NS

- 45 Patients' and Parents' Perceptions of Post-operative Appearance in Adolescent Idiopathic Scoliosis (AIS) ²
P. Smith, Toronto, ON
S. Donaldson, Toronto, ON
D. Hedden, Toronto, ON
D. Stephens, Toronto, ON
B. Alman, Toronto, ON
A. Howard, Toronto, ON
J.G. Wright, Toronto, ON
- 46 Internal Contracture of the Shoulder in Brachial Plexus Birth Palsy: Clinical Result of Sub-scapularis Release
C. Stanciu, Montréal, QC
D. Rouleau, Montréal, QC
- 47 Procedural Sedation for the Reduction of Paediatric Forearm Fractures
K. Mulpuri, Vancouver, BC
S. Tennant, Vancouver, BC
R.L. Choit, Vancouver, BC
B. Tritt, Vancouver, BC
S.J. Tredwell, Vancouver, BC
- 48 Analysis of Factors Predictive of Subsequent Contralateral Slipped Capital Femoral Epiphysis
F.D. Lalonde, San Diego, CA
T.P. Gaynor, San Diego, CA
M.E. Pring, San Diego, CA
D.R. Wenger, San Diego, CA

Spine

- 49 Assessment of the Sagittal Curves of the Spine: Comparison Between the Anatomical Cobb Angle and the Maximum Cobb Angle ²
F-M Pinel-Giroux, Montréal, QC
J-M. Mac-Thiong, Montréal, QC
H. Labelle, Montréal, QC
- 50 Cadaveric Study of A New Cannula to Ease Cement Injection During Vertebroplasty
G. Baroud, Sherbrooke, QC
F. Cabana, Sherbrooke, QC
- 51 Fuzzy Logic as an Aid to Surgery Planning in Idiopathic Scoliosis ²
H. Labelle, Montréal, QC
M-L. Nault, Montréal, QC
C-É. Aubin, Montréal, QC
M. Balzinski, Montréal, QC
- 52 Cadaveric Study of the Injection and Intra-Vertebral Pressure in Vertebroplasty
G. Baroud, Sherbrooke, QC
C. Vant, Guelph, ON

POSTERS

- 53 Interobserver and Intraobserver Reliability in Interpreting Radiographic Fusion after Lumbar Interbody Arthrodesis with the Prospace™ Osteoconductive Interbody Implant and Supplementary Unilateral Intertransverse Arthrodesis using Local Bone Harvested at Decompression
D.A. Bednar, Hamilton, ON
A. Rabinovich, Hamilton, ON
B. Toorani, Manama, BAHRAIN
S. Bajammal, Hamilton, ON
P. Alexander, Burlington, ON
A. Franchetto, Hamilton, ON
- 54 Lumbar Fusion Safely Achieved with Anterior Plating ²
P.G. Perkins, Reading, PA
- 55 Scoliosis Patient Outcomes based on the SRS-22 Questionnaire
M.J. Moreau, Edmonton, AB
D. Taylor, Edmonton, AB
J.K. Mahood, Edmonton, AB
D.L. Hill, Edmonton, AB
E. Lou, Edmonton, AB
J. Raso, Edmonton, AB
- 56 Subjective and Objective Variability in Assessing Lumbar Spinal Stenosis on Magnetic Resonance Imaging
S. Al Eissa, Calgary, AB
A. Alargani, Calgary, AB
R. Hu, Calgary, AB
S. Casha, Calgary, AB
- 57 The Importance of Spino-Pelvic Balance After Spinal Instrumentation for High Grade Developmental Spondylolisthesis ²
H. Labelle, Montréal, QC
P. Roussouly, Lyon, FRANCE
E.E. Transfeldt, Minneapolis, MN
T. Kresko, Boston, MA
M. O'Brien, Wheatridge, CO
E. Berthonnaud, Montréal, QC
- 58 Transplants of Fetal Spinal Cord Maintain Long Term Motoneuron Rhythmic Firing Properties after Spinal Transection in Rats ²
E. Beaumont, Montréal, QC
J.D. Houle, Little Rock, AR
P. Gardiner, Winnipeg, MB
- 59 The Effect of Cyclic Mechanical Load on the Expression of Alpha 5, Beta 1 Integrin in Porcine Intervertebral Disc Cells Cultured *In Vitro* ²
S. Yu, Toronto, ON
B. Yang, Toronto, ON
S. Roth, Toronto, ON
C. Whyne, Toronto, ON
B. Johnstone, Toronto, ON
J. Yoo, Toronto, ON
J. Finkelstein, Toronto, ON
A.J.M. Yee, Toronto, ON

POSTERS

- 60 Endoscopic Laser Speckle Perfusion Imaging in the Human Knee
J. Reed, Calgary, AB
R. Bray, Calgary, AB
K. Forrester, Calgary, AB
C. Leonard, Calgary, AB
C. Stewart, Calgary, AB
- 61 The Factor Validity of the Western Ontario Rotator Cuff Index ²
H. Razmjou, Toronto, ON
Y. Mewa, Cork, IRELAND
J. Wessel, Hamilton, ON
R. Holtby, Toronto, ON
- 62 The Functional and Objective Outcome of Arthroscopic Tennis Elbow Release
P. Shah, Ahmedabad, INDIA
J.C. MacDermid, London, ON
G.J.W. King, London, ON
- 63 Cutaneous Vascular Zones of the Achilles tendon
H. Yepes, Halifax, NS
A. Al-Hibshi, Halifax, NS
M. Tang, Halifax, NS
S.F. Morris, Halifax, NS
C. Geddes, Halifax, NS
W.D. Stanish, Halifax, NS
- 64 Gesture Standardization Increases the Reproducibility of 3D Kinematic Measurements of the Knee Joint
F. Lavoie, Montréal, QC
M. Laplante, Montréal, QC
G. Parent, Montréal, QC
N. Duval, Montréal, QC
J.A. de Guise, Montréal, QC

Trauma

- 65 An Economic Analysis of Management Strategies for Closed and Open Grade I Tibial Shaft Fractures ^{1,2}
M. Bhandari, Hamilton, ON
J. Busse, Hamilton, ON
S. Sprague, Hamilton, ON
A.P. Johnson-Masotti, Hamilton, ON
M. Gafni, Hamilton, ON
- 66 Does A New “Push-Off Test” Or Other Physical Impairments Explain Disability In Daily Activities And Work In Patients With Wrist And Elbow Problems?
J.C. MacDermid, London, ON
S. Michlovitx, Philadelphia, PA
R. Rafuse, London, ON
C. Wells-Rowell, London, ON
O. Wong, London, ON
L. Bisbee, London, ON
- 67 Femoral Nailing in the Obese Patient: The Agony of Antegrade Nailing ²
R.K. Leighton, Halifax, NS

POSTERS

W.M. Ricci, St. Louis, MO
M. Tucker, Augusta, GA
J. Schqappach, Seattle, WA
K. Coupe, Houston, TX

- 68 Functional Outcome After Operative Treatment of Tibial Plateau Fractures in Patients over 60 Years Old
P.A.C. van Rijn, The Hague, THE NETHERLANDS
D.W. Sanders, London, ON
M.D. MacLeod, London, ON
C. U. Tieszer, London, ON
- 69 Impact of Surgical Delay of 48 Hours or More on Morbidity and Mortality Rates Following Hip Fracture
P. Tétreault, Montréal, QC
G. Boubez, Montréal, QC
J.F. Fernandes, Montréal, QC
F. Dehnade, Montréal, QC
- 70 Getting Surgeons to Respond to Surveys: A Comparison of a Mail versus an Internet-based Survey²
M. Bhandari, Hamilton, ON
P. Leece, Hamilton, ON
S. Sprague, Hamilton, ON
M.F. Swionkowski, Minneapolis, MN
E.H. Schemitsch, Toronto, ON
P. Tornetta III, Boston, MA
P.J. Devereaux, Hamilton, ON
G.H. Guyatt, Hamilton, ON
- 71 Management of Chronic Osteomyelitis of Femur
N. Aslam, Toronto, ON
K. Nagarajah, Oxford, ENGLAND
M. McNally, Oxford, ENGLAND
- 72 Open Forearm Fractures - A Patient Outcome Study
A.A. Barthos, Toronto, ON
K.A. Syed, Toronto, ON
N. Aslam, Toronto, ON
M.D. McKee, Toronto, ON
J.P. Waddell, Toronto, ON
E.H. Schemitsch, Toronto, ON
- 73 Performance of Three Disease-specific and Two Generic Measures of Outcome in Patients with Talar Neck Fractures.
A. Zahari, Winnipeg, MB
C. MacDonald, Toronto, ON
J. Rooney, Sydney, AUSTRALIA
M. Bhandari, Hamilton, ON
M.D. McKee, Toronto, ON
J.P. Waddell, Toronto, ON
E.H. Schemitsch, Toronto, ON
- 74 Targeting Fragility Fractures in an Orthopaedic Treatment Unit: Cost-Effectiveness of a Dedicated Coordinator²
B. Sander, Toronto, ON
V. Elliot-Gibson, Toronto, ON
D.E. Beaton, Toronto, ON

POSTERS

E.R. Bogoch, Toronto, ON
A. Maetzel, Toronto, ON

- 75 Improved Outcomes for Patients with Post-Irradiation Sarcoma of Bone
M. Shaheen, Toronto, ON
S. Riad, Toronto, ON
C.E. McLaughlin, Toronto, ON
A.M. Griffin, Toronto, ON
P.C. Ferguson, Toronto, ON
R.S. Bell, Toronto, ON
J.S. Wunder, Toronto, ON
- 76 Missed Musculoskeletal Injuries in a Level 1 Trauma Center
A. al-MuTair, Hamilton, ON
D.A. Bednar, Hamilton, ON

CORS SCIENTIFIC POSTERS

Arthroplasty

- 77 Early Results of Birmingham Hip Resurfacing: A Report of 66 Consecutive Procedures
J.R. Werle, Calgary, AB
J.R. MacKenzie, Calgary, AB
J.N. Powell, Calgary, AB
L.J. Van Zuiden, Calgary, AB
- 78 An In-vitro Model for the Formation of *Staphylococcus Aureus* Biofilm.
J. Page, County Durham, UK
T. Fawcett, Durham, UK
A. Jennings, County Durham, UK
- 79 Components Replaced in Hip and Knee Revisions – Findings from CJRR
S. Gopinath, Toronto, ON
- 80 Cytotoxicity of Cobalt and Chromium Ions in Human MG-63 Osteoblasts *In-Vitro*
C. Fleury, Montréal, QC
A. Petit, Montréal, QC
F. Mwale, Montréal, QC
D.J. Zukor, Montréal, QC
J. Antoniou, Montréal, QC
M. Tabrizian, Montréal, QC
O.L. Huk, Montréal, QC
- 83 Development of a Wear Measurement Technique for UHMWPE Tibial Inserts
X. Yuan, London, ON
D.W. Holdsworth, London, ON
R.B. Bourne, London, ON
- 84 Improved Implant Migration Descriptor for Roentgen Stereophotogrammetric Analysis (RSA)
C. Munro, Halifax, NS
M.J. Dunbar, Halifax, NS
K. Deluzio, Halifax, NS

POSTERS

- 85 Induction of the Heme Oxygenase-1 Protein Expression by Cobalt Ions in Human U937 Macrophages
C. Tkaczyk, Montréal, QC
A. Petit, Montréal, QC
F. Mwale, Montréal, QC
D.J. Zuckor, Montréal, QC
J. Antoniou, Montréal, QC
M. Tabrizian, Montréal, QC
O.L. Huk, Montréal, QC
- 86 Non-elective Hip and Knee Replacements in Canada
S. Gopinath, Toronto, ON
- 87 Tyrosine Kinases Regulate Activation of Matrix Metalloproteinase-1 Expression in Cobalt and Chromium Ions-Stimulated Human U937 Macrophages
F. Mwale, Montréal, QC
L. Luo, Montréal, QC
D.J. Zukor, Montréal, QC
O.L. Huk, Montréal, QC
J. Antoniou, Montréal, QC
A. Petit, Montréal, QC

Bone / Ligament / Tendon

- 88 Biomechanical Testing of the Dorsal Wrist Capsule
J.B. Payandeh, Toronto, ON
A.J. McConnell, Toronto, ON
E.H. Schemitsch, Toronto, ON
H.P. von Schroeder, Toronto, ON
- 89 Culture of Osteoblasts in a Pluronic® F-127 gel: Effect on Cell Phenotype and Viability²
C.A. Lacerda, Montréal, QC
Q. Shi, Montréal, QC
M. Benderdour, Montréal, QC
J.C. Fernandes, Montréal, QC
- 88 Femur Fractures: Does Knee MRI Have a Role? ²
J.L. Howard, London, ON
D.W. Sanders, London, ON
C.U. Teiszer, London, ON
M.D. MacLeod, London, ON
- 89 Patterns of Injury in Lateral Compression Fractures of the Pelvis: A Retrospective CT Study
A. Khoury, Toronto, ON
H.J. Kreder, Toronto, ON
S.E. Roth, Toronto, ON
M. Hardisty, Toronto, ON
C. Whyne, Toronto, ON
- 90 Surgeon Accuracy in the Intraoperative Selection of the Flexion-Extension Axis of the Elbow
J.R. Brownhill, London, ON
K. Furukawa, Nagasaki, JAPAN
K.J. Faber, London, ON
J.A. Johnson, London, ON

POSTERS

G.J.W. King, London, ON

- 91 The Initial Strength of Repair Methods for Acute Medial Collateral Ligament Injuries of the Elbow
J. Pichora, Lonodn, ON
K. Furukawa, Nagasaki, JAPAN
L. Ferreira, London, ON
K.J. Faber, London, ON
J.A. Johnson, London, ON
G.J.W. King, London, ON

Joint and Arthritis

- 92 Assessment of Modified Fibrin Hydrogels for Tissue Engineering of Articular Cartilage²
E. Dare, Ottawa, ON
D. Carlsson, Ottawa, ON
G. Dervin, Ottawa, ON
M. Griffith, Ottawa, ON
M. Hincke, Ottawa, ON
- 93 Comparing Three Attachment Systems Used to Determine Knee Kinematics During Gait²
I. Sudhoff, Montréal, QC
S. Van Driesche, Watteau, FRANCE
S. Laporte, Paris, FRANCE
J.A. de Guise, Montréal, QC
W. Skalli, Paris, France
- 94 Comparison of Upperlimb Kinematics Collected by Electromagnetic Tracking versus Digital Camera Systems in a Gait Analysis Lab²
E. Hassan, London, ON
T.R. Jenkyn, London, ON
C.E. Dunning, London, ON
- 95 Complications Associated with the Delta-III Reverse Ball-and-Socket Shoulder Prosthesis
M.K. Gilbert, Vancouver, BC
C. Pirkl, Zurich, SWITZERLAND
C. Gerber, Zurich, SWITZERLAND
- 96 Decreasing Pressure on the Second Metatarsal Head by Using a Metatarsal Cushion or Bar: *Clinical Trial*
A. Deshaies, Sherbrooke, QC
N. Murphy, Rock-Forest, QC
P. Roy, Sherbrooke, QC
P. Deshaies, St-Denis de Brompton, QC
É. Anctil, Sherbrooke, QC
- 97 Design and Development of an Adjustable Elbow Prosthesis to Investigate the Effects of Implant Position on Elbow Kinematics²
S.M. Guerra, London, ON
L.M. Ferreira, London, ON
G.J.W. King, London, ON
J.A. Johnson, London, ON

POSTERS

- 98 Development of Osteochondral Scaffolds and Evaluation of Mechanical Characteristics of Different Polymers Aiming at Cartilage Repair ²
C. Auclair-Daigle, Montréal, QC
J. Fernandes, Montréal, QC
J. Zhu, Montréal, QC
R. DiRaddo, Boucherville, QC
A-M Yousefi, Boucherville, QC
C. Gauvin, Boucherville, QC
- 199 Decreasing Pressure on the Second Metatarsal Head by Using a Metatarsal Cushion or Bar: *Clinical Trial*
A. Deshaies, Sherbrooke, QC
N. Murphy, Rock-Forest, QC
P. Roy, Sherbrooke, QC
P. Deshaies, St-Denis de Brompton, QC
É. Anctil, Sherbrooke, QC
- 100 Evaluation of the Three-Dimensional (3D) Kinematics of the Scapulohumeral Joint in Order to Design and Evaluate a New Humeral Prosthesis: Preliminary Results ²
A. Levasseur, Montréal, QC
N. Hagemeister, Montréal, QC
P. Tétrault, Montréal, QC
N. Nuño, Montréal, QC
J.A. de Guise, Montréal, QC
- 101 Evaluation of the Impact on the Knees via 3D Accelerometric Analysis During a Walking and Balancing Exercise: Reliability of Measurement on an Asymptomatic and Gonarthrosic Elderly Population ²
K. Turcot, Montréal, QC
K. Boivin, Montréal, QC
R. Aissaoui, Montréal, QC
M. Pelletier, Montréal, QC
N. Hagemeister, Montréal, QC
G. Parent, Montréal, QC
J.A. de Guise, Montréal, QC
- 102 Hypothermic Storage of Porcine Articular Cartilage
N.M. Jomha, Edmonton, AB
L.E. McGann, Edmonton, AB
G.K. Law, Edmonton, AB
- 103 Intercarpal Motion in the Proximal Row of the Human Wrist Joint ²
M. Beek, Kingston, ON
C.F. Small, Kingston, ON
R.W. Sellens, Kingston, ON
H. Grant, Kingston, ON
R.E. Ellis, Kingston, ON
D.R. Pichora, Kingston, ON
- 104 Prediction of Biomechanical Performance of 3D Plotted Polymeric Scaffolds for Tissue Engineering ²
C. Gauvin, Boucherville, QC
A-M. Yousefi, Boucherville, QC
R. DiRaddo, Boucherville, QC
J. Fernandes, Montréal, QC
- 105 The Acromiohumeral Distance as a Function of Glenoid Version

POSTERS

M.K. Gilbert, Vancouver, BC

F.E. Brunner, Zurich, SWITZERLAND

H.A.C. Jacob, Zurich, SWITZERLAND

C. Gerber, Zurich, SWITZERLAND

- 106 The Effect of Variable Muscle Loading Ratios on the Kinematics of Glenohumeral Abduction
A.E. Kedgley, London, ON
G.A. Mackenzie, London, ON
L.M. Ferreira, London, ON
D.S. Drosdowech, London, ON
G.J.W. King, London, ON
K.J. Faber, London, ON
J.A. Johnson, London, ON
- 107 Use of a Radiographic Grading Scheme for Classification of Osteoarthritis; A Useful Tool in the Assessment of a Patient's Requirement for Arthroplasty
H.S. Hundt, Kingston, ON
T.D.V. Cooke, Kingston, ON
M.M. Harrison, Kingston, ON
- 108 Utility of the Dart-Throwing Motion in Daily Activities
J. Seary, Kingston, ON
P. Kwan, Kingston, ON
C. Small, Kingston, ON
R. Sellen, Kingston, ON
H. Linley, Kingston, ON
D.R. Pichora, Kingston, ON

Soft Tissue & Spine

- 109 Assessment of Mechanical Properties of Trypsin Denatured Nucleus Pulposus Using Quantitative MRI
D. Perié, Toulouse, FRANCE
C.N. Demers, Montréal, QC
J.C. Iatridis, Burlington, VT
T. Goswami, Montréal, QC
G. Beaudoin, Montréal, QC
F. Mwale, Montréal, QC
J. Antoniou, Montréal, QC
- 110 Bone Absorption in BMP-2 Supported Allograft Spine Fusion
F.R.T. Nelson, Detroit, MI
R. Vaidya, Detroit, MI
S. Bartol, Detroit, MI
K. Wilkins, Detroit, MI
- 111 Repeatability of Subject Repositioning on a 3D Torso Surface Imaging System for the Assessment of Scoliosis²
P. Poncet, Calgary, AB
L. Westover, Calgary, AB
J. Harder, Calgary, AB
R.F. Zernicke, Calgary, AB
J.L. Ronsky, Calgary, AB

POSTERS

- 112 Selective Inhibition of Type X Collagen Expression in Human Mesenchymal Stem Cell Differentiation on Polymer Substrates Surface-Modified by Glow Discharge Plasma
V. Nelea, Montréal, QC
L. Luo, Montréal, QC
J. Antoniou, Montréal, QC
C.N. Demers, Montréal, QC
D. Lerouge, Montréal, QC
M. Wertheimer, Montréal, QC
F. Mwale, Montréal, QC
- 113 Biomechanical Comparison of Torsional Stability in Locking versus Standard Plating of Humeral Shaft Fractures
M. Fouse, Montréal, QC
Q. Hoyton-That, Montréal, QC
G.K. Berry, Montréal, QC
E.J. Harvey, Montréal, QC
R. Reindl, Montréal, QC
T. Steffen, Montréal, QC
- 114 Biomechanical Stability of a Retrotuberous Opening Wedge High Tibial Osteotomy
Z. Fouad, Montréal, QC
G.Y. Laflamme, Montréal, QC
H. Viens, St. Lambert, QC
LH. Yahia, Montréal, QC
- 115 The Biomechanical Consequences of High Transverse Hemi-Sacrectomy
R. Hugate, Rochester, MN
I.D. Dickey, Rochester, MN
F. Sim, Rochester, MN
M. Yaszemski, Rochester, MN
- 116 Early Results Using SaluCartilage™ for Articular Cartilage Defects
D.N. Ku, Atlanta, GA
K.E. Shropshire, Atlanta, GA

EXHIBITORS

Location: Room 517BC

Exhibit Timetable:

Exhibitor Set-Up :	Thursday, June 2nd	0900 – 1700
Exhibit hours :	Friday, June 3rd	0800 – 1700
		1900 – 2130 – Opening Reception
	Saturday, June 4th	0800 – 1600
	Sunday, June 5th	0800 – 1100
Exhibit Dismantling	Sunday, June 5th	1100 – 2300

^P – denotes Platinum sponsor

^G – denotes Gold sponsor

Abbott Labs – Booth 71

Anatech Inc. – Booth 24

5920 #6 Road
Unit 205
Richmond, BC V3K 6Z5

Tel: 604-273-2836

Fax: 604-270-4512

www.anatechinc.com

Anatech Inc., a truly Canadian company, is a leading distributor of innovative supports designed for an active lifestyle. Our line includes quality orthopedic bracing, specializing in custom work, plus cast room supplies, prosthetic sleeves, pedorthotics, sports medicine and rehabilitation products.

Arthrosurface – Booth 37

28 Forge Parkway
Franklin, MA 02038 USA

Tel: 508-520-3003

Fax: 508-528-4604

www.arthrosurface.com

The **HemiCAP™** system is designed to resurface significant cartilage lesions in young active patients. It includes a 3-D mapping technology, universal instruments and a precisely matched implant. The **HemiCAP™** implant restores a smooth joint surface without changing height, version or tissue tension.

Associated Health Systems Inc. – Booth 55

111468 149 Street
Edmonton, AB T5M 1W7

Tel: 780-451-6720

Fax: 780-451-5501

Berretta Medical Inc. – Booth 36

5545 St. Jacques St. West
Montréal, QC H4A 2E3

Tel: 514-369-3311

Fax: 514-369-1911

^G **Biomet Canada, Inc. – Booths 58-61**

790 Redwood Sq.
Oakville, ON L6L 6N3

Tel: 905-828-8066

Fax: 905-825-8075

www.biomet.com

Biomet, Inc. is a worldwide leader in the design and manufacture of implants which replace arthritic hip, knees, and shoulders. Biomet employs over 5,000 team members across 18 manufacturing facilities throughout the world. Headquartered in Warsaw, Indiana, Biomet has facilities in over 50 locations worldwide and currently distributes its products in more than 100 countries throughout the world.

EXHIBITORS

Bioniche Pharma – Booth 35

275 Labrosse
Pointe Claire, QC H9R 1A3

Tel: 514-697-6636
Fax: 514-697-7966
www.bioniche.com

Suplasyn is a non-animal derived hyaluronic acid injection to alleviate the symptoms of osteoarthritis supported by positive clinical results. Suplasyn is available as 2mL injections for large joints, as well as in mini-dose formats of 0.7mL for small joints.

BrainLAB Inc – Booth 56

3 Westbrooke Corporate Center
Suite 400
Westchester, IL 60154 USA

Tel: 708-409-1343
Fax: 708-409-1619
www.brainlab.com

BrainLAB specializes in the development, manufacture, and marketing of medical technology for radiosurgery / radiotherapy, orthopedics, neurosurgery, and ENT. Products developed by BrainLAB include software and hardware components for image-guided surgery and radiotherapy as well as integrated systems for stereotactic radiosurgery.

Canada Microsurgical Ltd. – Booth 32

5024 South Service Road
Burlington, ON L7L 5Y7

Tel: 905-632-7800
Fax: 905-632-7938

We are the Distributor for : OSI TABLES , JARIT, PADGETT and RUGGLES INSTRUMENTS, THOMPSON RETRACTORS, LUXTEC, INTEGRA NEWDEAL (FOOT & ANKLE),ARTHROCARE SPINE, PARALLAX and DURAGEN,NEURAGEN

Canadian Institute for Health Information (CIHI) – booth 72

377 Dalhousie St., Suite 200
Ottawa, ON K1N 9N8

Tel: 613-241-7860
Fax: 613-241-8120
www.cihi.ca

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.

Citagenix Inc – Booth 27

1105 Autoroute Chomedey
Laval, QC H7W 5J8

Tel: 450-688-8699
Fax: 450-688-1977
www.citagenix.com

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

Conmed Linvatec – Booths 18 – 23

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

Tel: 905-814-2959
Fax: 905-814-0901
www.linvatec.com

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

DePuy – Johnson & Johnson Medical Products –

Booths: 7, 7A, 8, 8A

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

Tel: 905-946-9501
Fax: 905-946-3089
www.jjmpca

The DePuy Family of Canadian Companies markets and distributes a wide range of

EXHIBITORS

Orthopaedic reconstructive products and devices including hip, knee, ankle, shoulder, wrist, elbow and finger replacements, as well as operating room products to the Canadian Healthcare marketplace.

Our DePuySpine business markets innovative technologies for the treatment of cervical, thoracic, lumbar and sacral spinal pathologies. DePuyMitek provides a full range of absorbable sutures and anchors for tissue repair to bone. DePuy's emphasis on "iOrthopaedics" (Intelligent Orthopaedics) will be evident at this year's COA meeting, with focus on technology ranging from Computer-assisted Navigation to Mobile-bearing Knees to Alternative-bearings in Hips.

DePuy's core value system emphasizes our commitment to provide innovative and superior products and services.

We strive to maintain an unparalleled dedication to our Customers an empowered and diverse workforce, a passion for speed and an environment of superb teamwork.

DePuy products are marketed and distributed in Canada through Johnson & Johnson Medical Products, a division of Johnson Inc., and headquartered in Markham, Ontario.

Dj Ortho, Canada Inc. – Booth 44

745 Bonhill Rd., Unit 8
Mississauga, ON L5T 1C1

Tel : 905-795-1969

Fax : 866-866-5032

www.djortho.com

Manufacturer and distributor of rigid knee braces, soft bracing goods and complementary orthopaedic products for the purpose of injury protection and rehabilitation of soft tissue and bone post injury and surgery.

DS Biotech – Booth 67

10647 – 65 Avenue
Edmonton, AB T6H 3V5

Tel: 780-431-0041

Fax: 780-438-7264

DS Biotech is a distributor of Quality joint health products in Canada. We are the exclusive Canadian distributor of **CosaminDS**. **CosaminDS** is the #1 recommended brand of **glucosamine/chondroitin sulfate** by orthopaedic surgeons and rheumatologists in the US. We are also the western Canadian distributor of **Suplasyn viscosupplementation**.

Elsevier Canada – Booth 53

1 Goldthron Avenue
Toronto, ON M8Z 5S7

Tel: 416-253-3640

Fax: 416-359-9534

www.elsevier.ca

Exactech Canada – Booth 3

220 Nebo Road, Unit 3
Hamilton, ON L8W 2E4

Tel: 905-389-7776

Fax: 908-389-7360

www.exac.com

Exactech is a manufacturer and distributor of medical products for orthopaedics. We offer a full line of Orthopaedic products including total joints, specialty devices, cement and delivery systems, antibiotic spacers and a complete line of osteoinductive and osteoconductive biologic products.

Garvinci Inc. – Booth 30

31 rue Dufour, Suite A-14

Tel: 450-472-2171

Fax: 450-663-3354

EXHIBITORS

St-Eustache, QC J7R 5X2

www.garivinci.com

Garvinci Inc. Est un groupe pharmaceutique canadien impliqué dans l'enregistrement, le marketing et la mise en marché de produits pharmaceutiques et d'instruments médicaux innovateurs dans des secteurs thérapeutiques à forte croissance.

GE Healthcare – Booth 42

2300 Meadowvale Blvd.
Mississauga, ON L5N 5P9

Tel: 905-567-2123

Fax: 905-567-2188

www.gehealthcare.com

Generation II – Booth 65

1211 Jacobson Way
Richmond, BC V6W 1L5

Tel: 604-241-8152

Fax: 604-241-8153

www.g2orthotics.com

Ossure GII is a worldwide leader dedicated to the pursuit of excellence in human performance. Specializing in orthotics & prosthetic design and manufacture (knee bracing for ligament injuries and osteoarthritis).

Genzyme Biosurgery Canada – Booth 31

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

Tel: 905-625-0011

Fax: 905-625-7811

www.genzyme.com

Synvisc® viscosupplement for the treatment of osteoarthritis of the knee and hip.

Global Medical Products – Booth 54

5230 South Service Road
Burlington, ON L7L 5K2

Tel: 905-634-7799

Fax: 905-634-2868

Innovation Sports, Inc. – Booth 45

19762 Pauling
FoothillLS Ranch, CA 92610 USA

Tel: 949-859-4407

Fax: 949-609-3108

www.isports.com

Rigid knee braces, soft supports, post-operative & rehabilitative products, including: the custom C.Ti.2. New products include: Cti Wrist, a custom/off-the-shelf line of wrist orthoses, Ultrawrap wrap around hinged soft braces and cold therapy system.

J.K. Orthopmed LTD – Booth 29

1755 boul. St-Régis, Suite 240
Dollard-des-Ormeaux, QC H9B 2M9

Tel: 514-421-3227

Fax : 514-421-3338

The LARS ligament is an augmentation device (scaffold) for the reconstruction of ligaments or tendons, for the knee, the shoulder, the ankle and muscular reconstruction for tumor cases.

KCI Medical Canada, Inc. – Booth 28

95 Topflight Drive
Mississauga, ON L5S 1Y1

Tel: 905-565-7187

Fax: 905-565-4073

www.kci-medical.com

KCI is a global medical technology company with leadership position in advanced wound care and therapeutic surfaces. KCI provides a wide range of proprietary products, which can significantly improve clinical outcomes and reduce the cost of patient care.

Kyphon Inc. – Booth 47

1221 Crossman Avenue
Sunnyvale, CA 94089 USA

Tel : 408-548-6500

Fax: 408-548-6505

www.kyphon.com

EXHIBITORS

Kyphon develops and markets medical devices designed to restore spinal anatomy using proprietary minimally invasive technologies. The company provides spine specialists with a complete solution for performing Balloon Kyphoplasty, a minimally invasive surgical procedure for the treatment of spinal fractures due to osteoporosis and cancer.

Lasswell Medical Co., Ltd. – Booth 38

405 Industrial Drive, Unit #21
Milton, ON L9T 5B1

Tel: 905-876-4604
Fax: 905-876-1004
www.lasswell.com

Exclusive Canadian Distributor of Sports Medicine Arthroscopy Products including: Arthrex, ArthroCare, Breg, CryoLife Ortho.

Conmed Linvatec – Booths 18 – 23

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

Tel: 905-814-2965
Fax: 905-814-0901
www.linvatec.com

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

Medexus Inc. – Booth 39

7895 Tranmere Dr., Unit 4
Mississauga, ON L5S 1V9

Tel: 905-676-0003
Fax: 905-676-9171
www.medexus.com

120Medexus is committed to improving people's lives by bringing innovative products to patients and Healthcare providers. Products include **Hyalgan™**, indicated in the treatment of Osteoarthritis and **Calcia™**, a leading combination of calcium and vitamin D that helps build healthy bones.

Medtronic Sofamor Danek – Booth 40 & 41

6733 Kitimat Road
Mississauga, ON L5N 1E3

Tel: 905-816-5335
Fax: 905-826-6620
www.medtronic.com

Medtronic is the world's leading medical technology company, providing life-long solutions for people with chronic disease such as heart disease, diabetes, gastro, uro, neurological, spinal and cranial disorders, diseases of the ear, nose and throat and vascular illnesses.

Ortech Data Centre Inc. – Booth 62

835 Lorne Avenue
London, ON N5W 3K9

Tel: 519-433-2925

ORTECH is the definitive source in On-line Medical/Rehabilitation Informatics. Researchers/Clinicians can manage their clinical practice, perform independent studies, and/or multi-centre trials with their premier privacy compliant, customizable, complete musculoskeletal database system, the "International Orthopaedic On-line Database".

ORTHOsoft – Booth 73 & 74

75 Queen St., Suite 3300
Montréal, QC H3C 2N6

Tel: 514-861-4074
Fax: 450-866-2197
www.orthosoft.ca

ORTHOsoft's, a Canadian company, offers simple navigation solutions and its imageless applications, which do not require CT images, cover customized design implant or universal applications, and could ultimately extend the life of the implant, enable optimal joint positioning, and improve the patient's quality of life.

EXHIBITORS

OSTEK Orthopaedics – Booth 46

230 Alscot Drive
Oakville, ON L6J 4R4

Tel: 905-845-2961
Fax: 905-849-7790

Ostek is the Canadian Distributor for Micro Aire Orthopaedic Power Instruments and Accessories. Miccor Aire is a leading manufacturer of powered surgical instruments, blades, burs and drill bits distributed worldwide.

^P Pfizer Canada Inc. – Booths 78 - 83

17300 Transcanada Hwy
Kirkland, QC H9J 2M5

Tel: 514-695-0500
Fax: 514-426-6831
www.pfizer.ca

Pfizer is committed to discover and develop innovative medicines and other products which improve the quality of life of people and animals around the world.

Q-Med Inc. – Booth 25 & 26

701 Evans Ave., Suite 910
Toronto, ON M0C 1A3

Tel: 416-513-1323
Fax: 416-513-1325
www.q-med.ca

The new, one single-injection DUROLANE[®] is now approved for the treatment of osteoarthritis (OA) of the knee and hip. The increased residence time of DUROLANE[®] means long-lasting effectiveness from one single injection. DUROLANE[®] offers a flexible, timesaving advantage that may reduce the risk of injection-related infection.

Rivex Pharma Inc. - Booth 4

3 – 3-5 Industrial Parkway South
Aurora, ON L4G 6X7

Tel: 905-841-2300
Fax: 905-841-2244
www.rivexpharma.com

Orthovisc[®] - Hyaluronic acid injection for osteoarthritis.

^P Smith & Nephew – Booths 48 - 51

6685 Millcreek Drive, Unit 5
Mississauga, ON L5N 5M5

Tel: 905-813-6512
Fax: 905-813-7775
www.smith-nephew.com

Smith & Nephew is a global medical technology business, specializing in Endoscopy, Orthopaedics and Advanced Wound Management products. Smith & Nephew ranks as the global leader in arthroscopy and one of the world's leaders in advanced wound management and is one of the fastest growing orthopaedics companies in the world. Smith & Nephew is dedicated to helping improve people's lives.

Smith & Nephew w/BSN – Booths 52 & 57

4707 Levy St.,
St. Laurent, QC H4R 2P9

Tel: 514-956-1202
Fax: 514-956-1777

Stellar Pharmaceuticals Inc. – Booth 66

544 Egerton Street
London, ON N5W 3Z8

Tel: 519-434-1540
Fax: 519-434-4382
www.stellarint.com

NeoVisc[®] - a 1.0% solution of highly purified Sodium Hyaluronate viscosupplement indicated for the treatment of OA of the Knee, Shoulder or Hip. Skelite[®] - A Synthetic Bone Void Filler.

[®] Stryker Canada – Booths 12 - 17

45 Innovation Dr.
Hamilton, ON L9H 7L8

Tel: 800-668-8324
Fax: 905-690-5699
www.stryker.ca

Stryker Canada markets and distributes the products and services developed globally by Stryker. Our specialty surgical and medical products include; orthopaedic implants,

EXHIBITORS

trauma systems, powered surgical instruments, endoscopic systems, spine, and surgical navigation.

^o **Synthes (Canada) Ltd. – Booths 5 & 6**
2566 Meadowpine Blvd.
Mississauga, ON L5N 6P9

Tel: 905-567-0440
Fax: 905-567-3185
www.synthes.com

Synthes develops, manufactures, and markets the AO ASIF system of instruments and implants, which are used by surgeons for many applications including the internal fixation of the spine and cranium.

Thunder Bay Regional Health Sciences Centre – Booth 43
980 Oliver Road – Medical Staff Office
Thunder Bay, ON P7B 6V4

Tel: 807-684-6027
Fax: 807-684-5893

Thunder Bay Regional Health Sciences Centre, Canada's newest 375 bed state-of-the-art acute care facility offers career and lifestyle opportunities. We excel in leading edge technology including EMR, PACS, video/telemedicine and are on one of 11 designated Trauma Centres in Ontario. We are also home to Canada's newest Medical School, the Northern Ontario School of Medicine.

Wright Medical Technology Canada Ltd. – Booths 9 - 11
6581 Kitimat Road, Unit #8
Mississauga, ON L5N 3T5

Tel: 905-826-1600
Fax: 905-826-1300
www.wmt.com

We are a global orthopaedic medical device company specializing in the design, manufacture, and marketing of reconstructive joint devices and biologics. Wright's product offerings include large joint implants, extremity implants, and both synthetic and tissue-based bone graft substitute materials.

^p **Zimmer of Canada Ltd. – Booths 68 – 70 & 75 - 77**
2333 Argentia Road
Mississauga, ON L5N 5N3

Tel: 905-567-3118
Fax: 905-858-8747
www.zimmer.com

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

Friday, June 3rd to Sunday, June 5th

Canadian Orthopaedic Association

Table 1

Canadian Orthopaedic Foundation

Table 2

EXHIBITOR FLOOR PLAN

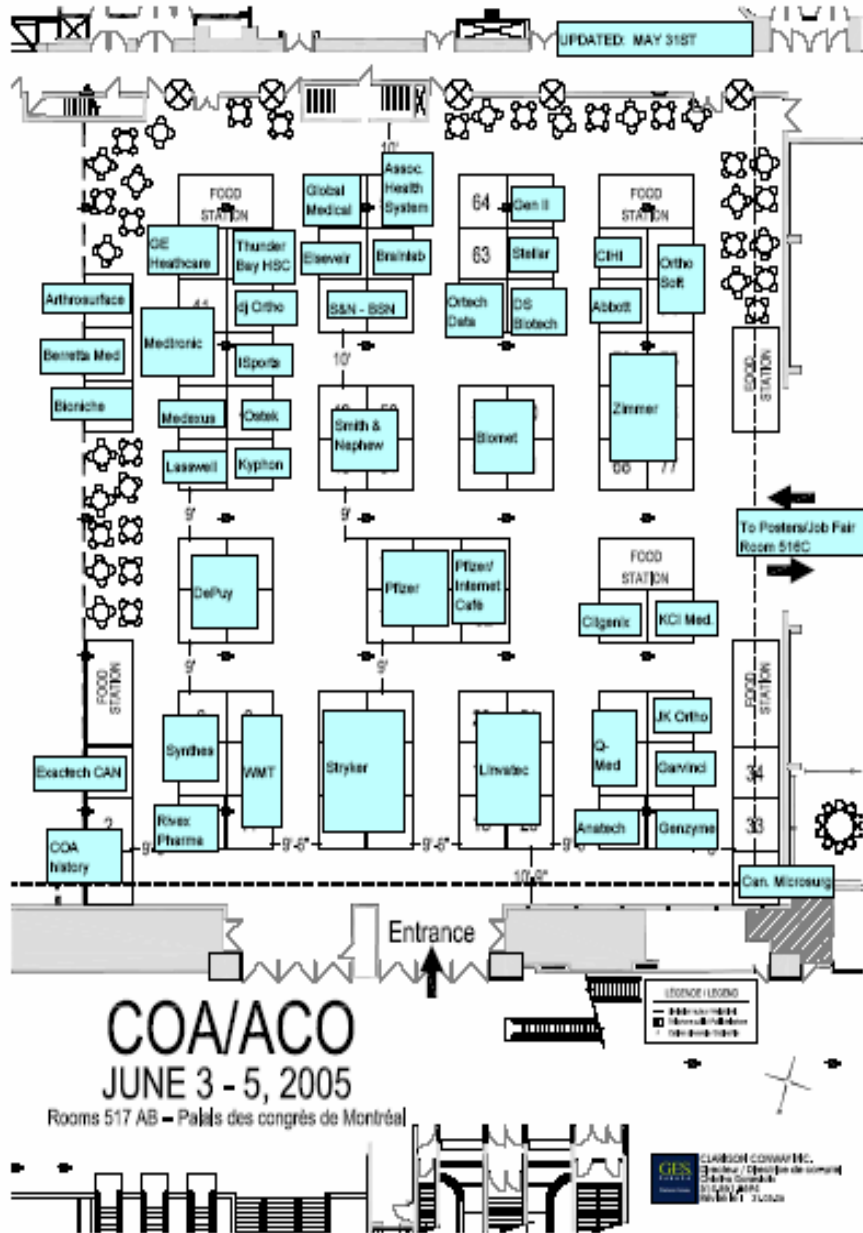
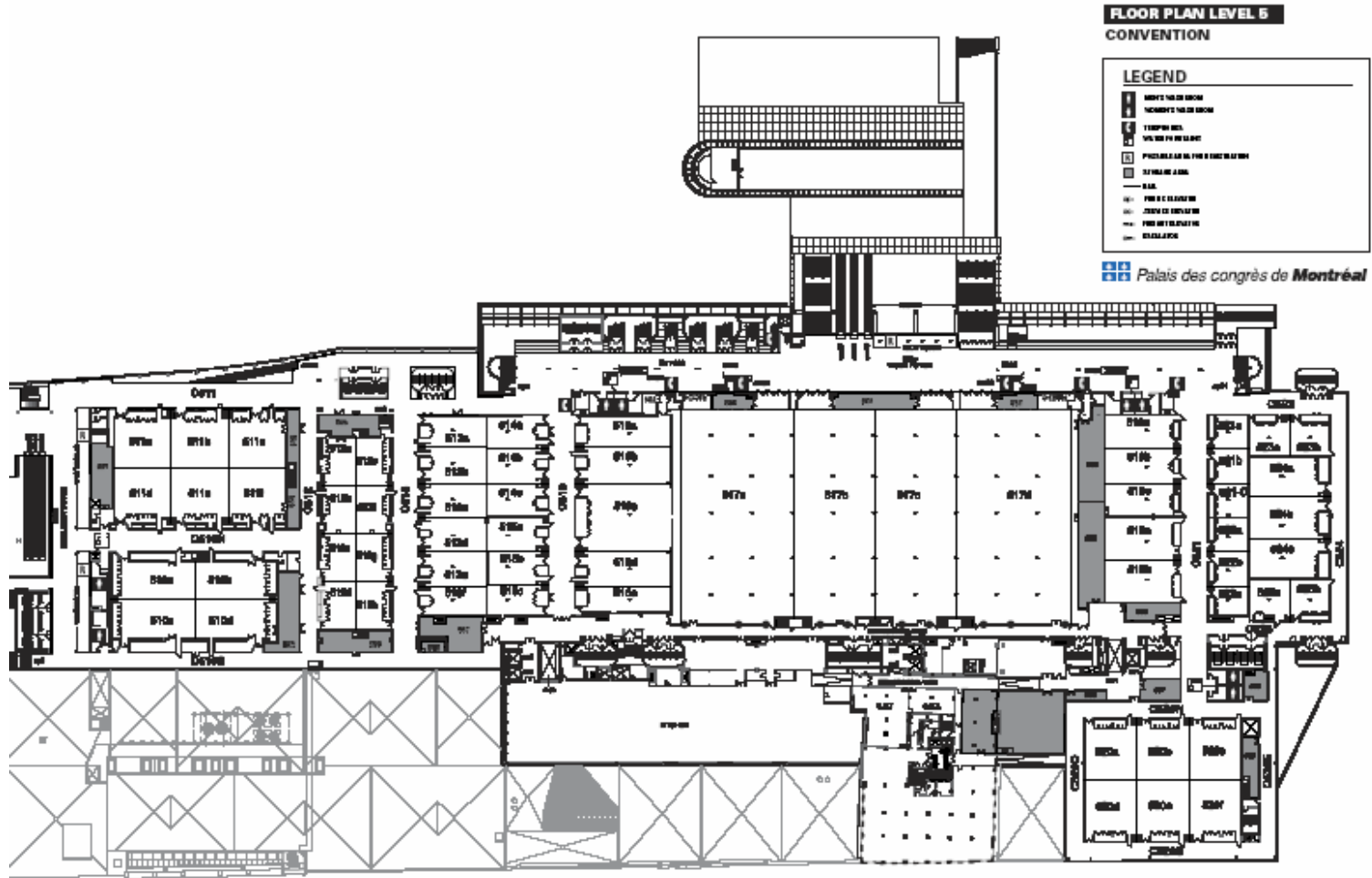


EXHIBIT & POSTER FLOOR PLAN

PALAIS DE CONGRÈS FLOOR PLAN



New Members

Active Members

Dr. Éric Anctil (QC)
Dr. Frédéric Balg (QC)
Dr. Zaheer Kukkadi (SK)
Dr. Sunail Kumar (AB)
Dr. Lee-Anne Laverty (QC)
Dr. Jerome Levesque (ON)
Dr. Douglas Naudie (ON)

Dr. Troy G. Pinsonneault (BC)
Dr. Bal Rajagopalan (USA)
Dr. Henry Sagi (USA)
Dr. David Simmonds (ON)
Dr. Chantal Théoret (QC)

Associate Members

Dr. Ayesha Abdeen (AB)
Dr. Ghassan Alami (QC)
Dr. Lauren Allen (SK)
Dr. Hatem Al Harbi (ON)
Dr. Abdulaziz Al-Omar (QC)
Dr. Mario Aubin (QC)
Dr. Alan Beggs (ON)
Dr. Joseph Bergman (AB)
Dr. Mathieu Carrier (QC)
Dr. Anthony Cervinka (ON)
Dr. Ali Chaudhary (ON)
Dr. Benjamin Deheshi (ON)
Dr. Paul Dooley (AB)
Dr. Marie Gdalevitch (QC)
Dr. Caroline Germain (QC)
Dr. Panagiotis (Peter) Glavas (QC)
Dr. Catherine Hui (AB)

Dr. Gerard March (NL)
Dr. Brad Petrisor (ON)
Dr. Alexander Rabinovich (ON)
Dr. Marie-Eve Roger (QC)
Dr. Dominique Rouleau QC)
Dr. Kevan Saidi (ON)
Dr. Mark Shekhman (BC)
Dr. Farshid Tabloie (ON)
Dr. Warren Terry (MB)
Dr. Thomas Turgeon (USA)
Dr. Tamim Umran (BC)
Dr. Andrew Urmson (SK)
Dr. James Wagg (AB)
Dr. Tom Woods (AB)
Dr. Horacio Yepes (NS)
Dr. Darryl Young (ON)

Next Annual Meetings

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

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

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

64th COA Annual Meeting
43rd 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**

ORDER FORM

Print subscription rates for 2004 (Volume 86)

Standard Trainee
(Resident)*

Combined (American and British Volumes)	<input type="checkbox"/> £153.00	<input type="checkbox"/> £76.50
British Volume (8 issues + 3 supplements)	<input type="checkbox"/> £ 69.00	<input type="checkbox"/> £34.50
American Volume International rate (12 issues)	<input type="checkbox"/> £105.50	<input type="checkbox"/> £52.75

*Orders **must** be accompanied by a letter confirming your status, as a trainee, from your head of training programme.

METHOD OF PAYMENT

I enclose my cheque for £_____ All cheques must be made payable to the **Journal of Bone and Joint Surgery** in pounds Sterling and drawn on a UK bank account. We are unable to accept EuroCheques.

Please debit my credit card account with £_____ (Visa, MasterCard, Amex)

Credit card number: _____ / ____ Expiry date on the card ____ / ____

Signature _____

UK/EC Your VAT Registration No. _____ (Our VAT No. GB 232423501)

DELIVERY ADDRESS

Name _____ Email _____

Address _____

Town _____ Postcode _____ Country _____

Please complete this form and return it to **The Subscriptions Manager**, 22 Buckingham Street, London WC2N 6ET, UK or fax it to the **Subscriptions Department** on +44 (0)20 7782 0995. We do not sell names and addresses to any third parties. Your details will only be used to keep you informed of products available through the JBJS. Please tick the box if you do not wish to receive any information.

NAPA02