ISAKOS
newsletter

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INSIDE THIS ISSUE

International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine
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VIVA BRAZIL!

The 8th Biennial ISAKOS Congress will bring world leaders in arthroscopy, knee surgery and sports medicine to the beautiful city of Rio de Janerio, Brazil for 5 exciting days of scientific presentations on a wide variety of topics. Known internationally for the quality and diversity of presentations, the ISAKOS Congress will include scientific papers, symposia, lectures, live surgical demonstrations, instructional course lectures and more.

Rio de Janeiro is the second largest city in Brazil, and is known to be a city of contrasts with colonial architecture transposed with strikingly modern buildings. Combining elements of a sophisticated modern city, a beachfront resort destination, and the adventure of the rain forest – there is something for everyone in Rio! Notable local landmarks include Ipanema and Copacabana beaches, Sugarloaf mountain with its cable car, Maracanã Stadium (one of the world's largest football stadiums), as well as the Christ the Redeemer Statue, which was recently named one of the "New Seven Wonders of the World". Rio de Janeiro was also recently selected as the host city for 2016 Olympic Summer Games

Known as the "cultural capital" of Brazil, Rio de Janeiro offers visitors the chance to enjoy traditional Brazilian music such as bossa nova, a musical genre that was born in Rio, and samba. Rio de Janeiro also boasts more than fifty cultural museums including the Modern Art Museum, the National Museum of Fine Arts and the Bank of Brazil Cultural Center, as well as Quinta da Boa Vista (the Native Art Museum) and the Indian Museum.

The 8th Biennial ISAKOS Congress will be held at the Riocentro Convention Center. Utilizing a combination of both indoor and outdoor event space, Riocentro was specifically developed to host indoor or outdoor, national and international events. Riocentro was chosen the best convention center in South America by the World Travel Awards for the last five years.

WE LOOK FORWARD TO SEEING YOU IN RIO DE JANEIRO FOR THE ISAKOS CONGRESS 2011.

DON'T FORGET TO SUBMIT YOUR ABSTRACT!
Abstract submission will close on April 1, 2010.

8TH BIENNIAL ISAKOS 2011
RIO DE JANEIRO • BRAZIL • MAY 15–19, 2011
CONGRESS
Call for Abstracts

ISAKOS WELCOMES NEW MEMBERS

Biju Jacob Abraham, M.S(Orth), FRCSEd, INDIA
Kiran Kumar Vedavyas Acharya, MBBS MS, INDIA
Srimannarayana Addagalla, MS, INDIA
Ankur Agarwal, MSOrthopaedics, INDIA
Mohan Krishna Althuri, MBBS, MSORTHOPAEDICS, INDIA
Ashish Anand, MD, USA
Pawel Bak, POLAND
Manabendra Nath Basu Mallick, MS- Orthopedics, INDIA
Raul Bauab Filho Bauab, BRAZIL
Mohit Bhandari, MD, MSc, FRCSC, CANADA
Kanchan Bhattacharyya, MBBS, MS, DNB (Orth), INDIA
Peter Blank, DO, USA
Prashanth R Bogadi, M.B,MS,MCh,MRCS Ed, INDIA
Debasis Chatterjee, MS Orth, FRCS, INDIA
Hetal Chiniwala, MS, DNB, INDIA
Sungwook Choi, MD, SOUTH KOREA
Rafael Cordido, MD, VENEZUELA
Tal S David, MD, USA
Katya Delgado, MD, PERU
Ashish Devgun, MS (Orth), INDIA
Fernando Rogerio Dimarzio, BRAZIL
Marcin Edward Domzalski, MD, POLAND
Oleg Dzobotun, UKRAINE
Oleg Eismont, BELARUS
José Rafael Gamboa, VENEZUELA
Ramesh Garipalli, MS, (Orthopaedics), INDIA
Andreas H. Gomoll, MD, USA
Oleg Andreevich Goriachev, RUSSIA
Deepak Goyal, MBBS, MS (Ortho), DNB (Ortho), INDIA
David Griffiths, MA,FRCS,FRCS(ORTH)., UNITED KINGDOM
David Robert Guelich, MD, USA
Arun Gupta, INDIA
Takahiro Hamada, JAPAN
Richard Michael Harbury, FRACS, AUSTRALIA
Atsuhiro Hasuo, JAPAN
Oliver Hatz, SWITZERLAND
Masazumi Hirata, MD, JAPAN
Hok-Ming Ho, MBChB, HONG KONG
fernando horinouchi, BRAZIL
Tavor Hovav, ISRAEL
Vladimir Vladlenovich Inzhevatov, RUSSIA
Blaz Iskra, MD, SLOVENIA
Srinivasan Jayaraman, MS(Ortho), INDIA
Clement Joseph, MS, INDIA
George Chandy Kalayathinal, MS, MCH Ortho, INDIA
Nilesh Dilip Kamat, MBBS,DNB,MRCS(Ed), INDIA
Maciej Karaczun, POLAND
Sina Kasraeian, MD, USA
Maciej Krzysztof Kentel, POLAND
Subair Khan, Master In Orthopaedics, INDIA
Vikas Khanduja, MB BS, MSc, FRCS (Orth), UNITED KINGDOM
Kentaro Kikuchi, MD, JAPAN
Kazuhiko Kikugawa, MD, PhD, JAPAN
Sang-Beom Kim, KOREA
Yoshiaki Kimura, JAPAN
Tomonori Kinugasa, MD, PhD, JAPAN
Yogesh V Kolwadkar, MCh Orth, MRCSEd, MS Ortho, INDIA
Tatsuro Komatsuda, MD,PhD, JAPAN
Piotr Andrzej Kominiak, POLAND
Sujit N Korday, MS(Orth), MCh(Orth), FRCS(Edin), INDIA
Oleksiy Korsunskyy, UKRAINE
Karol Krajewski, POLAND
Eric J Kropf, MD, USA
Sebastian Krupa, POLAND
Gaurav Kumar, MS Ortho, INDIA
Suresh Kumar, MS, INDIA
Krishna Kumar, MBBS,MS,DNB,MRCS(Ireland), QATAR
Pratip Mandal, MBBS, DNB, INDIA
Krochmalski Marek, POLAND
Valentin Ivanov Matev, MD, BULGARIA
Tomoyuki Matsumoto, MD, PhD, JAPAN
Tadaki Matsumura, JAPAN
Takehiko Matsushita, MD, JAPAN
Waldemar Michalak, POLAND
Takahide Miyama, MD, PhD, JAPAN
Ignacio Munoz, SPAIN
William Delany Murrell, BS, MD, USA
Tae-Seok Nam, SOUTH KOREA
Waseem Akram Khan Niazi, FCS(ORTH)SA, SOUTH AFRICA
Hamza Özer, MD, TURKEY
Debabrata Padhy, MS, INDIA
Amite Pankaj, MS, MRCS, DNB, INDIA
Denis Pasero, FRANCE
Ritesh S Patel, MSortho, INDIA
Shirish Shivanand Pathak, MS (Orth) D.N.B., INDIA
Ludovico Pieri, MD, BRAZIL
Carlos Alberto Atherinos Pierri, BRAZIL
Elena Grigorievna Pligina, RUSSIA
Sunil Putalapattu, MRCS Ed, MS(Orth), DNB(Orth), INDIA
Dipak Raj, FRCS (Tr & Orth), UNITED KINGDOM
Parakkal Rajasekar, MBBS, DHA, DNB, MNAMS, INDIA
Alankar Ambadas Ramteke, MS (Orth), AUSTRALIA
Eric Raven, MD, NETHERLANDS
Krzysztof Rekawek, POLAND
Bernardo Ely Cordeiro dos Santos, MD, orthopaedics surgeon, BRAZIL
Sergio De Assis Cordeiro Dos Santos, MD, BRAZIL
Yog Raman Sareen, MS(ORTHOPEDICS), INDIA
Maciej Sedzicki, POLAND
Abdullah Nalakath Shamimudeen, MS,FRCS,FRACS, AUSTRALIA
Sergey Alexandrovich Shetinin, RUSSIA
Kanichi Shimokawa, JAPAN
Masamichi Shimura, JAPAN
Harjeet Singh, MBBS, MRCS, MS Ortho, MALAYSIA
Anil Kumar Singhal, MS (Orth), INDIA
Avijan Sinha, INDIA
Andi Lomata Sitanggang, orthopaedic surgeon, INDONESIA
Mohammed H Sobhy, MD, PhD FRU (ortho), EGYPT
Grzegorz Sobieraj, POLAND
Shekhar Srivastav, MS Orthopedics, INDIA
Tomasz Stodulski, POLAND
Dong Hyun Suh, PhD, MD, KOREA
Kang Sun, Medical Doctor, CHINA
Robert Surus, POLAND
Alexey Dmitryevich Syreskin, RUSSIA
Tomonori Takagaki, JAPAN
Katsumi Takase, MD, PhD, JAPAN
Zlatko Temelkovski, MACEDONIA
Muzaffar Tengku, M.Med (Orthopaedics), MALAYSIA
Ricardo Trigo, MD, BRAZIL
Kalpesh Maheshchandra Trivedi, MS(Ortho), INDIA
Sharmila Sachin Tulpule, MS Orthopaedics, INDIA
Hajime Utsunomiya, MD, JAPAN
Volodymyr Mykolaevich Vitiaz, UKRAINE
C. Scott Walthour, MD, USA
Russell F Warren, MD, USA
Arkadiusz Wiatr, MD, POLAND
Darivsz Witonski, POLAND
Toshihiko Yamashita, MD, PhD, JAPAN
Lyubomyr Yuriyehuk, UKRAINE

FFF Does everyone know what FFF is?

Editor's Note

***James* H. *Lubowitz*, MD** (USA)

I first heard of FFF from Tassos Georgoulis from Ionniana, Greece. We were talking about anterior cruciate ligament (ACL) surgery, discussing research and surgeons we had visited, and Tassos said "Ah ha, I see you are a member of FFF!"

"What is FFF?" I asked.

"You don't know?" replied Tassos.

"No," I answered.

Tassos then revealed, "FFF is **Friends of Freddie Fu**!"

"**Friends of Freddie Fu**?" I inquired.

"Yes" answered Tassos.

Tassos went on to explain that among our many good friends from ISAKOS, AANA, AOSSM, APOSSM, ESSKA, SLARD, and all of the myriad orthopaedic societies, one man stands out for his uniquely energetic pursuit of friendships and relationships.

That man is our current ISAKOS President, Freddie Fu.

FFF? Absolutely, and count me in!

Freddie Fu is not the first to carry the mantle of ISAKOS presidency. Readers will agree that most, if not all, past ISAKOS Presidents are marked by a cadre of collegial colleagues they call friends. In this sense, Freddie Fu continues a great tradition. Yet, each past president has inimitable strengths that have made them great leaders.

Likewise, Freddie Fu.

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President's Message

Freddie* H. *Fu (USA)

The ISAKOS Executive Committee would like to take this opportunity to thank all of our members for your efforts and support following the 2009 ISAKOS Congress in Osaka, Japan. ISAKOS currently has more than 2800 members from 89 different countries.

Preparations are underway for the 2011 ISAKOS Congress. Abstract Submission for the 2011 ISAKOS Congress is currently available, and will remain available until April 1, 2010. For more information on Abstract Submission, as well as other Congress information, please visit the **ISAKOS Congress website**.

The ISAKOS Executive Committee is pleased to announce that the ISAKOS eLearning Library is currently under development. The ISAKOS eLearning Library will include Surgical Demonstration videos, archived Congress content, and Committee Projects. We hope to have the ISAKOS eLearning Library available very soon.

ISAKOS is pleased to announce the second "ISAKOS-APOSSM-AANA-CMA International Forum on Orthopaedic Sports Medicine & Arthroscopy Surgery" to be held in Shanghai, China on May 13–15, 2010. This course represents the second cooperative effort between ISAKOS, the Arthroscopy Association of North America (AANA) and CMA (including the Chinese Society of Sports Medicine (CSSM) and Chinese Orthopaedic Association (COA). ISAKOS Past President Gary Poehling will serve as the Course Chairmen, along with Chen Shiyi, member of the ISAKOS Education Committee, and Vice President of CSSM.

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NEW MEMBERS

We depend on our members to make the society what it is today and to embrace the potential it has in the future. It is the responsibility of members to recruit NEW MEMBERS to join ISAKOS and its goal to reach across the world.

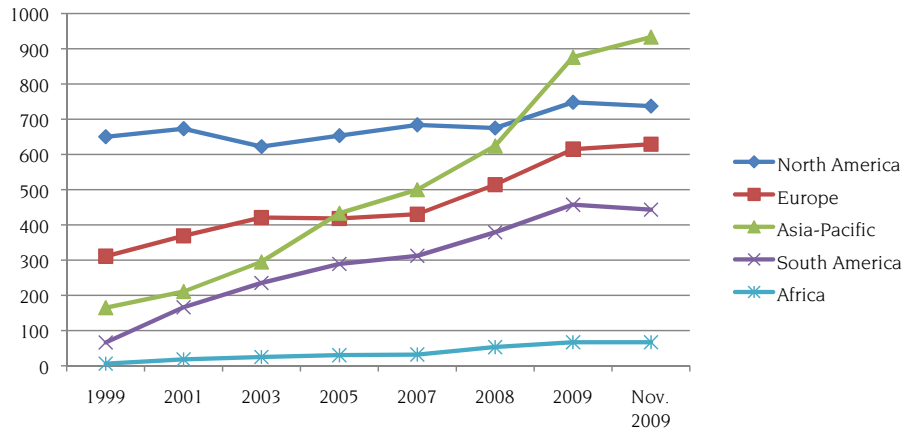
Download an application online at **www.isakos.com** or contact the ISAKOS office at (925) 807–1197 for a NEW MEMBER Recruit Packet.

ISAKOS MEMBERSHIP BY CATEGORY

# of Members	Category
1638	Active
16	Affiliate
948	Associate
13	Corresponding
180	Emeritus
14	Honorary
2809	**- Total Count -**

ISAKOS MEMBERSHIP GROWTH BY REGION 1999 TO NOVEMBER 2009

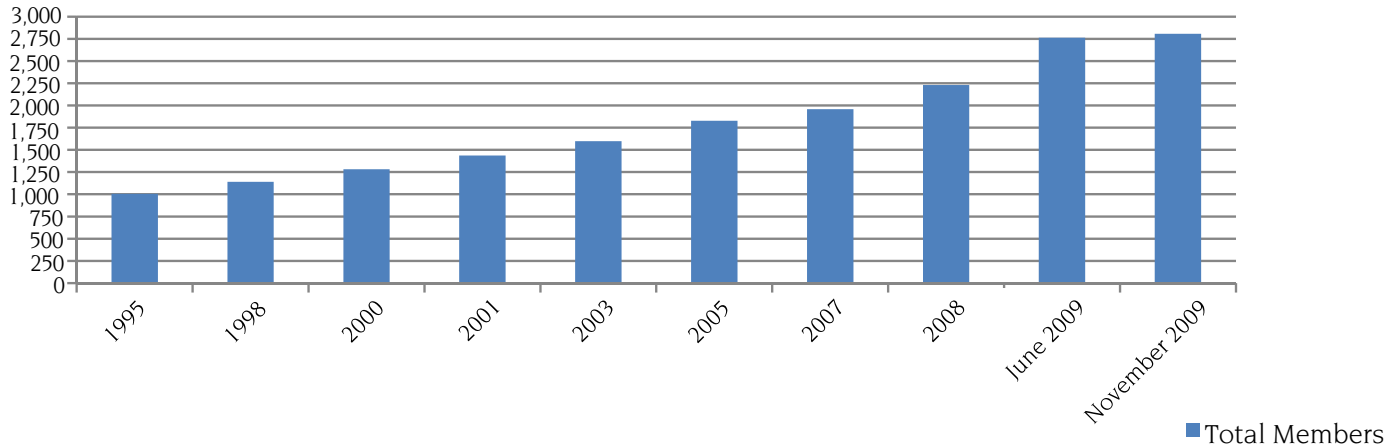
Growth by Region	1999	2001	2003	2005	2007	2008	June 2009	Nov. 2009
North America	650	673	622	653	684	675	748	737
Europe	311	369	421	418	430	514	615	629
Asia-Pacific	165	211	295	433	500	624	876	933
South America	66	166	235	289	312	379	457	443
Africa	6	18	25	30	32	53	67	67
TOTAL	**1,198**	**1,437**	**1,598**	**1,828**	**1,958**	**2,245**	**2,763**	**2,809**



ISAKOS MEMBERSHIP GROWTH

Year	Total Members
1995	1,005
1998	1,141
2000	1,282
2001	1,437
2003	1,598
2005	1,828
2007	1,958
2008	2,231
June 2009	2,763
November 2009	2,809

TOTAL MEMBERS



Pay Your ISAKOS Membership Dues Today!

Please visit **www.isakos.com** and log in to ISAKOS Members Only to pay your membership dues online or download your invoice. Your membership dues must be paid in full to receive the following ISAKOS Member Benefits:

- Automatic subscription to the official ISAKOS Journal – *Arthroscopy: the Journal of Arthroscopic and Related Surgery*
- Optional online subscription to *Knee Surgery, Sports Traumatology, Arthroscopy* (KSSTA), the official journal of the European Society of Sports Traumatology, Knee Surgery and Arthroscopy (ESSKA)
- ISAKOS Biannual Newsletter in print
- ISAKOS Today – the NEW biannual online ISAKOS Newsletter
- Discounted registration fees for the ISAKOS Congress
- Access to "Members Only" at www.isakos.com
- Opportunity to participate in ISAKOS Teaching Centers and Approved Courses
- Complimentary publications from ISAKOS Committee Projects

ISAKOS COMMITTEE MEETING SCHEDULE AT THE AAOS Annual Meeting

THE LOEWS HOTEL NEW ORLEANS 300 POYDRAS STREET NEW ORLEANS, LOUISIANA MARCH 7–9, 2010

Sunday, March 7, 2010

Time	St. Landry
1:00–2:20 PM	Finance
2:30–6:30 PM	Executive

Monday, March 8, 2010

Time	Louisiana I	Louisiana II
8:00–9:20 AM	Education Resource Development	
9:30–10:50 AM	Arthroscopy	Journal Advisory
11:00 AM–12:20 PM	Orthopaedic Sports Medicine	Communication
12:30–1:50 PM	Scientific	Education
2:00–3:20 PM	Knee	
3:30–4:50 PM	Upper Extremity	Membership

Tuesday, March 9, 2010

Time	Louisiana I	Louisiana II
7:30–8:50 AM	Strategic Planning	Newsletter
8:30–9:50 AM		Program
10:00–11:50 AM	Board of Directors with Committee Chairs	
12:00–1:00 PM	BOD	

YOUR COMMITTEES AT WORK

ARTHROSCOPY COMMITTEE

The Arthroscopy Committee continues to work on the Terminology Project. The Shoulder, Ankle and Knee sections have been completed and are available on the ISAKOS website in the Members Only section. The Hip terminology under the leadership of Francois Kelberine, Elbow under Greg Bain and Wrist and Hand under Luigi Pederizini are currently being worked on and a planned to be ready for the next ISAKOS meeting in Rio de Janiero. The Terminology project is a living document thus we are constantly working on this. It is our aim to agree to one classification system for each condition and have this accepted internationally, with the aim to rationalize the many classification systems that currently exist. We are starting with the knee.

The Normal Arthroscopic Anatomy of the Major Joints video has been completed and is soon to be on the ISAKOS website. Once the terminology projects have been finalized pathological anatomy videos will be developed.

Mark Clatworthy
Arthroscopy Committee Chairman

COMMUNICATIONS COMMITTEE

The Communications Committee has been working in the proposed Electronic Library Project for the ISAKOS, and will continue to work with the other ISAKOS Commitees in the development of this resource for our members. We believe this will be a very useful tool to spread scientific knowledge around the entire world.

At the present, together with the secretary department, we are developing the meeting abstracts and summaries of the ISAKOS Congress 2009 held in Osaka, Japan, in order to be published in the ISAKOS website.

The Communications Committee has been advertising the future ISAKOS 2011 meeting in all the different events that each one of the members have attended to as a faculty.

At this period of the year about to end, first of all I would like to thank all the members of the committee for their tasks, dedication and support during this year and together with all of them we hope that the coming 2010 brings the best for the ISAKOS society.

***Ramon Cugat* MD**
Communications Committee Chairman

KNEE COMMITTEE

The Knee Committee has been quietly working in the background. The article on reconstruction of the medial patellofemoral that appeared in the last ISAKOS newsletter was the result of a collaboration of surgeons in Denmark, South Africa, USA and Australia. This collaboration has continued in an online fashion and brought on board surgeons from other countries as well. The aim is to find common ground in addressing patellar instability and to be able to produce a practical, evidence-based algorithm for clinicians treating this condition.

Like all committees, the Knee Committee has contributed suggestions for the meeting in Rio to the Program Committee. We continue to work on the Navigation and Biologics projects, with the results of the online survey regarding the use of computer-assisted surgery for TKA being presented in this newsletter. Also in this newsletter you will find an article on meniscal tear classification from the team so ably lead by Allen Anderson.

The Knee Committee will meet next at the AAOS in New Orleans.

Julian Feller
Knee Committee Chairman

MEMBERSHIP COMMITTEE

ISAKOS is the biggest international society for arthroscopic surgery and orthopaedic sports medicine and ISAKOS Membership Committee is still working on projects to have new ISAKOS members. ISAKOS has increased the number of active members from **1,005** in January 1995 to **1,828** in June 2005 by adding 823, and to **2,231** in 2008 with a participation of 403 new members. As of October 2009, this number draws attention as having **2,777** active members from **89 countries** all over the world. As the "Membership Committee" chairman of such a large international society, let me say that it is apparent that how much this number pleased us. More information related to the increase in ISAKOS membership in recent years can be found on page 4. Also, members from Asia-Pacific region have been increased significantly at last two years.

ISAKOS Office has been working this summer on some new marketing initiatives that are listed below.

- **ISAKOS Marketing Sumo** – The ISAKOS Office has updated the ISAKOS Marketing postcard. These postcards will be sent to upcoming Approved Courses and other marketing opportunities as requested by the membership.

- **The ISAKOS Membership Application** – the ISAKOS Office has also simplified and updated the ISAKOS Membership Application. The new Membership Application is only two pages, and will utilize the Online Sponsorship Request System, thereby encouraging current members to visit the ISAKOS website more frequently.
- **ISAKOS Regional Coordinator Marketing** – Dr. Anderson has sent a letter to North American fellowship programs encouraging both the fellowship directors and departing fellows to join ISAKOS. These letters will continue to be sent annually, and as requested.
- **ISAKOS Approved Course Marketing** – shipments of ISAKOS Marketing Materials (postcards, applications, newsletters, Call for Abstracts, posters, etc) have been sent all over the world, including Slovenia, Serbia, Czech Republic, Brazil, Iran and China. If you are holding a course and would like to request ISAKOS Marketing Materials, please email **isakos@isakos.com.**

Finally, thanks to **Dr. F. Fu / President** of ISAKOS and his **Board Members** for their efforts and high level energy spending for the future of ISAKOS, and thanks to ISAKOS office, **Michele**, **Katie** and co-workers.

Our next Committee Meeting will be held in New Orleans at AAOS Annual Meeting on **March 8, 2010.**

MN DORAL MD/Chair **& AA ANDERSON MD**/Co-Chair

SCIENTIFIC COMMITTEE

The ISAKOS Scientific Committee has during the last few moths continued to work on articles to the ISAKOS Newsletter. In this version of the Newsletter, Bruce Levy, MD writes an article on **"The Multi-ligament Injured Knee: Evidence Based Treatment Strategies"**. This paper is very much according to the intentions of the Scientific Committee to publish evidence-based information on different treatment protocols. The committee has also continued its work on Evidence-based Systematic review series in co-operation with the journal of Arthroscopy- Up to now, the journal has published 6 papers and the series will continue, when more papers of high quality are available.

The Scientific committee continues the work on "Handbook of Research Methods". We are aiming for practical guidelines that will be of help to authors publishing in the Journal. The plan is that this work will be finished in time for the 2011 congress in Rio de Janeiro.

Finally, we are looking forward to active participation in the scientific programme of the 2011 congress. It is our hope that we will be able to bring good scientific work forward, especially with high impact on the 2011 Congress program.

Jon Karlsson
Scientific Committee Chairman

UPPER EXTREMITY COMMITTEE

The Upper Extremity Committee are working on projects to improve knowledge and understanding of AC-joint pathology. An internet survey on AC-joint dislocation with emphasis on etiology, classification and treatment is under preparation. Secondly, The Upper Extremity Committee is planning a multicenter study on the treatment of the acute and chronic unstable AC-joint. Treatment methods and indication differs throughout the world, and the purpose of the study is to have an indication of what the ideal treatment approach should be. Preliminary results will be published at the Closed Current Concept Meeting in Copenhagen June 2010 just prior to the ESSKA meeting in Oslo, where the Committee will be running a symposium on AC-joint instability. Fifteen members of the Committee have already registered for the meeting. It is the goal that 20 will participate. The Committee hopes that some preliminary results of this investigation as well as results of the internet survey are ready for presentation at the ISAKOS Congress in Rio de Janerio 2011. It is our hope in the ISAKOS Upper Extremity Committee that we will be able to assist the Program Committee for the next ISAKOS Congress in Rio 2011 to ensure that the success from previous congresses can be upheld.

Outlines from the consensus meeting in Copenhagen on AC-joint disorders will be available for the ISAKOS to publish on the website, and a Current Concept Report will be written and submitted for publication in either the ISAKOS Newsletter or Arthroscopy. Further planned projects are Internet On line Education based on current concepts meetings in the Upper Extremity Committee.

The Upper Extremity Travelling Fellowships was given to Dr. Sigitas Ryliskis from Lithuania for 2009, and for 2010 Dr. Hatem Said, Egypt. Dr. Ryliskis has made arrangements with Dr. Robert Marx and Dr. Louis Bigliani and in New York. For the second part of this travelling fellowship Dr. Ryliskis is visiting the undersigned at the Parkens Privathospital in Copenhagen.

For the ISAKOS Newsletter the following papers are planned for the next two years: Ben Kibler, USA on AC-injuries, Matthew Provencher, USA, on Chondrolysis, and Vicente Gutierrez, Chile on Bone Defects.

The next meeting of the Upper Extremity Committee will be on Monday March the 8th prior to the AAOS congress in New Orleans.

Lastly – on the behalf of the Upper Extremity Committee I would like to express a huge congratulation to Moises Cohen and his fellow countrymen for the victory in the IOC conference in Copenhagen. It is the hope and the goal of the Upper Extremity Committee to make important decisions in Copenhagen again for Rio – this time for Rio 2011.

Klaus Bak, MD
Upper Extremity Committee





8TH BIENNIAL

ISAKOS 2011

RIO DE JANEIRO ▪ BRAZIL ▪ MAY 15–19, 2011

CONGRESS

Call for Abstracts

ISAKOS is pleased to announce it is accepting abstract submissions for the 2011 ISAKOS Congress. Please submit your abstract online today at **www.isakos.com**

CONGRESS CONTENT:

- *Five Meeting Days with 300 Scientific Papers*
- *Symposia*
- *Instructional Course Lectures*
- *Panel Discussions, Debates and Lectures*
- *Surgical Demonstrations*
- *Hands on Workshops*
- *Technical Exhibits*
- *Congress Awards*
- *Social Events and Spouse Program*
- *CME Accreditation*

BECOME A MEMBER OF ISAKOS:

ISAKOS is an international society of surgeons established to advance the worldwide exchange and dissemination of education, research and patient care in arthroscopy, knee surgery and orthopedic sports medicine. Please visit the ISAKOS website at **www.isakos.com** *to apply for ISAKOS membership online.*

Abstract Submission Deadline: April 1, 2010

International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine

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www.isakos.com

8TH BIENNIAL

ISAKOS 2011 CONGRESS

RIO DE JANEIRO ▪ BRAZIL ▪ MAY 15–19, 2011

Submit your abstract online today!
Abstract submission deadline: April 1, 2010

Online Abstract Submission Instructions

ISAKOS is pleased to announce the Call for Abstracts for the 2011 Congress. To submit an abstract, visit the 2011 ISAKOS Congress website www.isakos.com/meetings/2011congress.

Authors need to have the following information readily available when submitting an abstract:

1. Complete contact information for the Presenting and the Corresponding authors including the institution of research. (It will help to have the ISAKOS ID number readily available for as many authors as possible. If needed, you may contact the ISAKOS Office to obtain an author's ISAKOS ID number.)
2. Provide the abstract title in proper case for publishing.
3. Submit the abstract text as plain text into a text box located in the online application. Please note, graphics and tables are not accepted.
4. Complete the Financial Disclosure Statement, American Food and Drug Administration (FDA) statement, and Copyright License Agreement on behalf of all authors.
5. Author warranty: authors are must read and abide by the guidelines below in order to be considered for presentation.

General Guidelines

1. The same First Author may submit a maximum of three abstracts for consideration at the 2011 ISAKOS Congress. Authors **do not** have to be ISAKOS members to submit an abstract.
2. Persons submitting an abstract (Corresponding Author) to ISAKOS do so with the understanding that they and all the authors listed on the abstract will abide by the conditions, deadlines, policies and decisions of the ISAKOS Board of Directors and Program Committee.
3. Abstracts are only accepted for consideration via the online abstract application form. Abstracts submitted to the ISAKOS office in any other fashion will not be considered for presentation at the ISAKOS Congress.
4. The abstract submission system is open. The deadline for submission is April 1, 2010 at 11:59 P.M. Pacific Standard Time. Abstracts will not be accepted after that date.
5. If the abstract is accepted for podium presentation, all presenters must speak in English, and be prepared to answer questions from the audience in English.
6. Please indicate the preference of presentation method for the submitted abstract: paper/podium, poster or electronic poster (e-poster) presentation. The ISAKOS Program Committee will make final decisions on the mode of presentation however; efforts will be made to comply with the stated preference.
7. All presenters, co-authors, faculty members, etc. who will attend the Congress are expected to register for the meeting and pay all registration and travel costs. No exceptions are made. If attendance is dependent on outside funding, please secure financial assistance before submitting an abstract.
8. Persons submitting an abstract to ISAKOS must complete a Financial Disclosure Statement and an American Food and Drug Administration statement. Although ISAKOS is an international society, it receives continuing medical education accreditation and is planned and implemented with the essential areas and policies of the Accreditation Council for Continuing Medical Education (ACCME). ISAKOS does not view the existence of disclosed interest or investments as necessarily implying bias or decreasing the value of the presentation. These disclosures will not be seen or taken into consideration when the abstract is considered for presentation.
9. Persons submitting an abstract to ISAKOS must complete a Copyright License Agreement so the chosen abstracts can be published in the journal *Arthroscopy: The Journal of Arthroscopic and Related Surgery*; the ISAKOS final program; the ISAKOS Congress proceedings; and on the ISAKOS and *Arthroscopy: The Journal of Arthroscopic and Related Surgery* websites.

2011 Congress Awards

JOHN JOYCE AWARD

Sponsored by Smith & Nephew, Inc., Endoscopy Division

A cash prize will be awarded for the best arthroscopy paper presented during the scientific program at the 2011 Congress. All arthroscopy papers presented will automatically be considered for this award. The winners will be announced in Rio de Janeiro, Brazil at the awards ceremony and an honorarium will be awarded. Second and third place prizes will also be granted.

RICHARD B. CASPARI AWARD

Sponsored by DePuy Mitek

The Richard B. Caspari Award was established in 2003 to reward the best upper extremity paper presented during the scientific program of the Congress. A panel comprised of members of the ISAKOS Upper Extremity Committee will select two prize-winning papers in 2011. The winners will be announced and an honorarium will be awarded in Rio de Janeiro, Brazil at the awards ceremony.

SCIENTIFIC AWARD

The Scientific Award was established in 2007 for the best scientific paper read during the scientific program of the Congress. A panel comprised of members of the ISAKOS Scientific Committee will select the prize-winning paper read at the 2011 Congress. The winners will be announced and an honorarium will be awarded in Rio de Janeiro, Brazil at the awards ceremony.

ACHILLES ORTHOPAEDIC SPORTS MEDICINE RESEARCH AWARD

Sponsored by DJO, Inc.

An honorarium will be awarded to a researcher who has performed the most outstanding clinical or laboratory research in the field of orthopaedic sports medicine. To apply for this award please complete the online application and upload your complete manuscript at www.isakos.com/awards. Applications accepted September 2009–October 1, 2010.

ALBERT TRILLAT YOUNG INVESTIGATOR'S AWARD

Sponsored by Stryker

An honorarium will be awarded to a young investigator who has done outstanding clinical or laboratory research contributing to the understanding, care or prevention of injuries to the knee. All applicants must be under 40 years of age at the time of the 2011 Congress. To apply for this award please complete the online application and upload your complete manuscript at www.isakos.com/awards. Applications accepted September 2009–October 1, 2010.

PATELLOFEMORAL RESEARCH EXCELLENCE AWARD

Sponsored by The Patellofemoral Foundation, Inc.

The Patellofemoral Research Excellence Award was established in 2003 to encourage outstanding research leading to improved understanding, prevention and treatment of patellofemoral pain or instability. To apply for this award please complete the online application and upload your complete manuscript at www.isakos.com/awards. Applications accepted September 2009–October 1, 2010.

THE USE OF ENDOTHELIAL PROGENITOR CELLS IN ORTHOPAEDICS: *Is There Potential?*

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Endothelial progenitor cells (EPCs) are defined as bone-marrow derived precursor cells that can differentiate into endothelial cells and participate in the establishment of neovasculature. Bone marrow is the primary source of endothelial progenitors. However, they can be mobilized to the peripheral circulation and may seed remote organs. EPCs have been shown to express various endothelial surface markers such as CD34, VEGFR2, and CD133, and to home to sites of ischemia. EPCs major role in new vessel formation and their ability to proliferate and differentiate in vitro into endothelial cells present them as an ideal therapeutic alternative for ex vivo expansion and transplantation into ischemic areas.

Studies have shown that infusion of peripheral blood–derived endothelial progenitor cells may demonstrate potential to improve neo-vascularisation and myocardial function in a variety of animal models with acute infarct. Improvement in tissue perfusion has also been demonstrated following infusion of ex vivo expanded EPCs and autologous bone marrow mononuclear cells in animal models with peripheral vascular insufficiency. After these encouraging experimental data, human trials of progenitor cell therapy for cardiovascular disease have also been conducted during the past 5 years reporting the favourable effects of EPCs on post-infarction remodelling and neovascularisation in the infarct territory.

Vascular in-growth at the fracture site has a cardinal role in the healing process and regeneration of the bone post fracture. On the other hand, segmental bone defects after severe trauma, infection, and surgical removal of tumors remains a major clinical problem to be addressed. These facts together with the reports documenting the remarkable therapeutic potential of EPCs to improve neo-vascularization and tissue perfusion in other disciplines have been the major driving forces for the researchers to launch studies investigating the effects of endothelial progenitor cell therapy on fracture healing during the last few years. Previously it was documented that EPCs mobilized by signals from the bone regeneration sites may contribute to neo-vascularization and new bone formation in fracture healing. Effects of local treatment with ex vivo expanded EPCs on healing of a critical sized bone defect has also been reported very recently. Rozen et al implanted ex-vivo expanded autologous EPCs into a wedged-shaped gap platform in sheep tibiae and compared the bone regeneration with a control group treated with sham operation. Radiographic and micro-computed tomographic (micro-CT) analysis at 12 weeks after the procedure revealed complete bridging of the gap in six out of seven animals with better parameters of bone formation in the EPC-transplanted group compared to sham-treated animals where the new bone formation was minimal. Histological analysis of gap tissue at 12 weeks showed dense and massive woven bone formation all throughout the defect in the EPC-transplanted group compared to control group where the defect was mostly filled with fibrotic scar tissue. The authors stated that the results of this study may open new therapeutic opportunities for the treatment of large scale bone injuries.

Impressive preliminary results from other studies using ex-vivo expanded EPCs to promote bone healing in animal models with segmental bone defects were presented during the last Orthopaedic Research Society (ORS) meeting.

Controversies still exist in exact definition and description of EPCs in the literature. One of the main questions to be answered is "Through which biological mechanisms EPCs exert their effect to promote bone formation? Are EPCs transformed in to angioblasts to increase neo-vascularization and in turn bone formation, or there is a proportion of these cells that become osteoblasts when implanted locally in to the fracture site?" A possible explanation could be the plasticity among cells of the myeloid lineage and under specific growth conditions these cells may possibly be differentiating into cells of another lineage with distinct functional and phenotypic properties.

Endothelial progenitor cells, with their unique features of such as ability to differentiate into endothelial cells and participate in the establishment of neovasculature, and high plasticity; may offer therapeutic alternatives for repair of cartilage tissue, treatment of avascular necrosis, meniscal tears and osteochondral defects, augmentation of tendon-to-bone healing, and ligament repair. As more data accumulates in the literature, probably more investigators will be attracted to explore the potential of these cells in the discipline of orthopaedic surgery.

Full article and references also available online at www.isakos.com.

THE ISAKOS CLASSIFICATION OF MENISCAL TEARS

***Allen F Anderson* MD**
ISAKOS *Knee Committee*

INTRODUCTION

The methodologic standards for publication in the orthopaedic literature have become increasing more rigorous. Large sample sizes, now used to adequately power statistical analysis, have necessitated pooling of resources between the investigators who practice at different institutions, and even in different countries. Consistency of arthroscopic evaluation and documentation of meniscal tears between surgeons is essential to valid assessment of treatment for meniscal tears. Poor agreement between surgeons on meniscal tear grading may invalidate the findings of even the most rigorously conducted clinical trial.

Sensitive to these issues, the ISAKOS Knee Committee formed a meniscal documentation subcommittee in 2006 with the objective of developing a reliable, international meniscal evaluation and documentation system to facilitate outcomes assessment.

METHODS

The members of the ISAKOS Meniscal Documentation Committee were selected by the leadership of AOSSM, APOSSM, ESSKA, and SLARD. The members of the committee included Chairman, Allen F. Anderson; Brian Cole and Kurt Spindler representing the AOSSM; Kazunori Yasuda, representing the APOSSM; Philippe Beaufils, Philippe Neyret, and Rene Verdonk representing ESSKA; Jay Irrgang, Robert Johnson, and Warren Dunn representing ISAKOS and Moises Cohen representing SLARD.

At the initial meeting the committee discussed the three types of forms that may be used to evaluate and document meniscal tears: A patient-reported (subjective) outcomes form, knee examination form, and surgical documentation form. The consensus of the committee was the development of a patient-reported outcomes form was not feasible or necessary. The development of such a form would be prohibitively expensive and take five years to develop. The committee agreed to adopt the IKDC Subjective Knee Form, which has been shown to be valid and responsive for evaluation of meniscal treatment outcomes.

The committee placed a low priority on development of a knee examination form. Interobserver differences, including how tests were performed and interpreted, makes it impossible to validate the objective metrics of meniscal examination. The primary objective of the initial meeting was to develop a surgical documentation form. The first step was to agree on standard terminology for the following: Tear length indicates the length of a meniscal tear that reaches the surface of the meniscus. Intrameniscal degeneration or contained tears, i.e. those that do not reach the surface of the meniscus, are not included in the definition of tear length.

Tear depth mirrors the MRI classification scheme of 0 to 3. A 3A tear is a partial tear of either the superior or surface of the meniscus. A horizontal tear may also be a partial tear. A 3B tear is a tear that extends through both the superior and inferior surfaces of the meniscus.

Radial location was divided into anterior, mid and posterior classification, which divides the meniscus into thirds. Rim width locations include: Zone 1 (tears of the meniscosynovial junction or a tear with a rim of less than 3 mm), Zone 2 (tears with a rim of 3 to < 5 mm), and Zone 3 (tears with a rim width of 5 mm or more). The committee discourages the use of the terms red-red, red-white, white-white, because of the vascular supply of the menisci varies and cannot be precisely determined by rim width alone.

The committee agreed to the following terms for tear patterns:

Longitudinal-vertical (an extension of this is a bucket handle tear), horizontal, radial, vertical flap, horizontal flap, and complex. The quality of the tissue may be non-degenerative, degenerative or undetermined. The committee also discourages the use of the terms acute, subacute, and chronic in preference to the time since onset of symptoms.

PILOT STUDY

The next step in developing the meniscal documentation form was to perform a pilot study to quantify interobserver agreement for tear length, tear depth, location, pattern, quality of the tissue and the amount of meniscus excised. Eight members of the committee independently evaluated ten 45-second arthroscopic videos of meniscal tears. The instruction sheet was changed based on the responses.

THE ISAKOS CLASSIFICATION OF MENISCAL TEARS *(cont.)*

INTEROBSERVER RELIABILITY STUDY

International interobserver reliability was determined by eight experienced orthopaedic surgeons who were not members of the committee. These surgeons practice in eight countries (Australia, Belgium, Brazil, France, Italy, Japan, and the United States) and they were members of the four continental sports medicine societies: AOSSM, APOSSM, ESSKA and SLARD.

Thirty-seven arthroscopic videos, 45-seconds in length, were graded by the surgeons. Interobserver reliability was determined by calculating the observed agreement and multi-rater Kappa statistics. The observed agreement was 88% (Kappa 0.52, moderate) for tear depth; 54% (Kappa 0.25, slight) for rim width; 68% (Kappa 0.46, moderate) for anterior-middle-posterior location; 67% (Kappa 0.36, slight) for central to the popliteal hiatus: Kappa 0.83, excellent for tear length; 72% (Kappa 0.47, moderate), for quality of the tissue; and Kappa 0.63, substantial, for percent of the meniscus excised.

CONCLUSION

The interobserver reliability was acceptable for tear depth, location, tear pattern, length, quality of tissue and percent of the meniscus excised. Caution should be used when interpreting the results based on rim width and if the tear is central to the popliteal hiatus. The ISAKOS classification of meniscal tears provides sufficient interobserver reliability for pooling of data from international clinical trials designed to evaluate the outcomes of treatment for meniscal tears.

ISAKOS CLASSIFICATION OF MENISCAL TEARS

Instructions

Evaluate tears based on the following criteria:

1. Tear depth – the partial tear extends through either the superior or inferior surface of the meniscus. A horizontal tear may also be a partial tear. The complete tear extends through both the superior and inferior surfaces of the meniscus.
2. Rim Width
   a. In the zone classification tears may involve more than one zone. The tears should be graded based on how far the tear extends into the meniscus. For example, a complete radial tear that extends through zones 3, 2, and 1 should be graded as a zone 1 tear.
      - Zone 1 tears are tears with a rim of less than 3 mm
      - Zone 2 tears have a rim width of 3 to <5 mm
      - Zone 3 tears have a rim width of 5 mm or >
3. Radial Location –
   a. Indicate whether the tear is posterior, mid body or anterior in location. Tears should be graded according to all the zones in which they are located. For example, a complete bucket handle medial meniscus tear would be in the posterior, mid body and anterior zones.
4. A tear of the lateral meniscus that extends partially or completely in front of the popliteal hiatus should be graded as central to the popliteal hiatus.
5. Tear pattern – the tear should be graded according to the patterns that are demonstrated in the drawing. Tears should be graded on the predominant tear pattern. Complex tears include 2 or more tear patterns.
6. Quality of the tissue – degenerative characteristics include cavitations, multiple tear patterns, softened meniscal tissue, fibrillation or other degenerative changes.
7. Length of tear – should be measured from the arthroscopic ruler in millimeters. The length of a radial tear is the distance the tear extends into the meniscus.
8. Please indicate the amount of meniscal tissue that has been excised by drawing on the diagram and crosshatching the part of the meniscus that was removed.
9. Indicate the percentage of meniscus (surface area) that was excised.

1. TEAR DEPTH

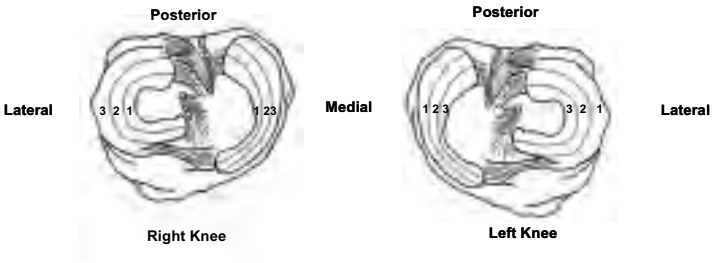
☐ Partial

☐ Complete

2. LOCATION *(refer to diagram for description)*

Rim Width (circumferential location):

☐ Zone 1 ☐ Zone 2 ☐ Zone 3



3. RADIAL LOCATION

Posterior – Mid body – Anterior Location:

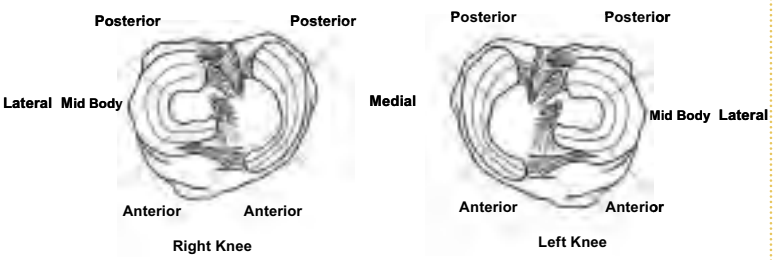
☐ Posterior

☐ Mid Body

☐ Anterior

4. CENTRAL TO THE POPLITEAL HIATUS

☐ YES ☐ NO



5. TEAR PATTERN *(refer to diagram for description)*

☐ Longitudinal-vertical: extension is a bucket handle tear

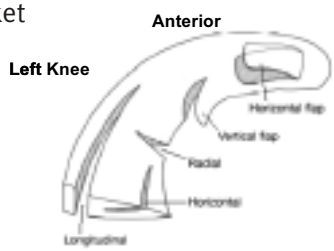
☐ Horizontal

☐ Radial

☐ Vertical flap

☐ Horizontal flap

☐ Complex



6. QUALITY OF TISSUE

☐ Non-degenerative

☐ Degenerative

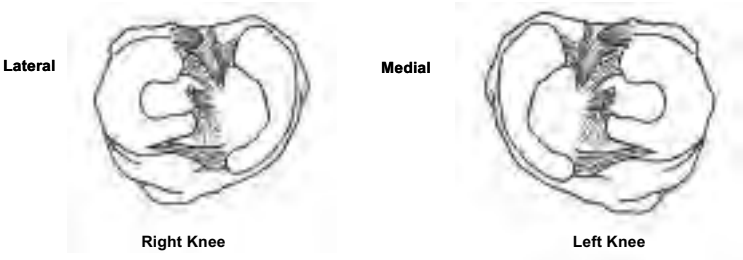
☐ Undetermined

7. LENGTH OF TEAR IN MM

☐☐☐

8. INDICATE THE AMOUNT OF

meniscus that was excised by drawing on the diagram and crosshatching the part that was



removed.

9. WHAT PERCENT OF THE MEDIAL MENISCUS WAS EXCISED?

☐☐☐ %

Full article and references also available online at www.isakos.com.

RELATIONSHIP BETWEEN FEMORAL OFFSET AND HIP LABRAL AND CHONDRAL INJURY IN PAINFUL NON ARTHRITIC HIP

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A multitude of factors may contribute to osteoarthritis of the hip. Although the pathomechanism of the degenerative process affecting the dysplastic hip is well understood, the exact pathogenesis for idiopathic osteoarthritis was not established. Significant recent advances in our understanding of hip pathology have led to the hypothesis that small alterations in hip morphology can cause motion-induced mechanical damage over time. The term femoroacetabular impingement (FAI) has been coined to describe these morphologic alterations, which have been implicated as a potential cause of primary hip osteoarthritis. The concept focuses more on motion than on axial loading of the hip.

There are two described subtypes of hip impingement: cam and pincer. Radiographic methods for defining cam impingement have advanced in the last few years. Cam lesion is well quantified by the alpha angle measurement, and flattening of the normal anterior offset by the head-neck anterior offset measurement. Pincer lesions can be detected on AP radiographs by crossover and posterior wall signs for acetabular retroversion.

Contrast-enhanced computed tomography (CT) is recognized to be an excellent tool for the diagnosis of acetabular labral and chondral injury. It is useful in the offset angle alpha and the head-neck anterior offset measurement. The purpose of this study was to evaluate the relationship between cam lesion, acetabular retroversion and acetabular labral and/or chondral damage highlighted in CT arthrography for the diagnosis of FAI.

PATIENTS AND METHODS

50 CT arthrographies were performed for FAI assessment. Patients typically complained of anterior or trochanteric hip pain that limited activity. Pain in flexion-adduction-internal rotation was the major examination symptom (positive anterior impingement test). Basic radiographic assessment showed classic evidence for FAI in the form of cam or pincer or a combination of the two lesions.

CT was conducted via a 16-slice multi-detector CT system after injection of 15 cc of HEXABRIX 320 (iodine contrast) into the hip. Images were reconstructed by computer software in 4 planes: coronal plane, axial transversal plane, axial plane along femoral neck axis, and sagital plane. Superior labral and chondral lesions are best seen in coronal plane (Fig.1). Anterior and posterior injuries are visible in axial transversal plane. In this plane, the acetabular version can be searched (Fig.2): on each slice the line from the anterior to the posterior acetabular edge is drawn. The perpendicular to this line shows acetabular version. It should be directed lateral and forward. In acetabular retroversion, this line will be directed lateral and backward in the upper slices (Fig.2a-b). Axial plane along femoral neck axis is useful to measure cam lesion by the offset alpha angle and the head-neck anterior offset (Fig.3):

- Offset angle alpha is the angle between two lines: the first from the midpoint of the femoral neck to the center of the femoral head; and the second from the center of the femoral head to the area where the bone first begins to deviate from the spherical shape of the head (Fig.3a).
- Head-neck anterior offset1 is defined by the ratio between the perpendicular distance of the anterior femoral neck cortex to the most anterior point of the femoral head and the maximal antero-posterior diameter of the femoral head (Fig. 3b). It is considered normal when superior to 0.15.

The sagital plane is useful to define acetabular chondral lesions from anterior to posterior according to a time dial (Fig.4): anterior lesions are between 9 to 11, superior lesions between 11 to 1 and posterior lesions between 1 to 4 o'clock. Cam and acetabular retroversion were measured by one investigator. To ensure measurements independency, localization, dimensions and depth of labral and chondral lesions were evaluated by a second operator. Each observer was blinded to the other informations.

Statistical analysis was performed using StatEl software (ad Science Society, Paris).

RESULTS

The average offset angle alpha was 65° (range, 40° to 100°) with only one patient having a normal alpha angle (40°). The average head-neck anterior offset was 0.09 (range, 0.22 to 0). Four patients had a normal anterior offset. Negative correlation was found between offset angle alpha and head neck anterior offset ($p<0.05$). Thus the more the angle alpha increases, the more the head neck anterior offset decreases. Offset angle alpha or head-neck anterior offset were not correlated with patients'age.

Acetabular retroversion was found in 24 cases (48%). Thus there were an isolated cam impingement in 26 patients and a mixed impingement (cam and pincer) in 24 patients. Labral lesions were present in 28 patients (56%). Labral injury occurred in patients who had a higher offset angle alpha (69° vs 60°; $p<0.01$), and in older patients (34 ys vs 28 ys; $p<0.05$). No correlation could be found between labral injury and head-neck anterior offset ($p=0.16$) nor acetabular retroversion ($p=0.8$).

Lesions were always found in acetabular cartilage. Superficial lesions were present in 32 patients (minimal abrasion (grade 1) in 22 patients and abrasion with chondral thinning (grade 2) in 10 patients). Major lesions were present in 18 patients (delamination or fissuration (grade 3) in 4 patients (fig.5a) and chondral defect (grade 4) in 14 patients (fig.1).

There was a significant relationship between acetabular chondral lesions and degree of alpha angle ($p=0.05$). Acetabular chondral lesions were also correlated to patient's age ($p<0.01$) and to labral injury ($p<0.001$). On the contrary, no correlation could be found between chondral lesions and head-neck anterior offset ($p=0.2$) nor acetabular retroversion ($p=0.56$).

DISCUSSION

According to Nötzli's study, magnetic resonance imaging scans of 39 patients with groin pain, decreased internal rotation and a positive impingement test averaged 74° (55 to 95°) offset angle alpha, whereas 35 asymptomatic control subjects averaged 42° (33 to 48°) ($p < 0.001$). Taking account inter and intra-observer measurements' variation, he considers abnormal alpha angle beyond 50°.

In Beaule et al study, average offset angle alpha of 36 painful non-dysplastic hips was 66°. Our study involving 50 FAI symptomatic hips found values close to Beaule's study. In these studies, alpha angle is lower, probably because of a better knowledge of the pathology (later studies): an assessment scanner or MRI is performed as soon as FAI is suspected.

In cam effect, the nonspherical portion of the femoral head increases pressure against the acetabular rim during hip flexion leading to chondral abrasion and labral detachment. In a recent arthroscopy study, Johnston et al found out that patients with a higher offset angle alpha would have greater chondral and labral injuries compared to patients with lower angles. Our study confirms this relationship between the importance of cam effect (measured with offset alpha angle), and labral and cartilage damage visible on CT arthrography. Head-neck anterior offset seems to be a good diagnostic measure since it is correlated to alpha angle. Nevertheless, this measurement was not predictive of chondral or labral lesions.

In pincer impingement, the femoral neck abuts against retroverted acetabula. Lesions are limited to the rim with deep chondral lesions being rarely encountered. In our study, no correlation could be found between the presence of acetabular retroversion and labral or chondral injury. We hypothesize that this may be related to an insufficient statistical power for the presence of retroversion in this study, with interference of cam effect. Furthermore, no measurement technique of acetabular retroversion has been used to date.

CONCLUSION

This study confirms the close relationship between cam-type FAI, as measured by an increased offset angle alpha, and acetabular labral and chondral injuries. Hip arthroscopy can find a place in labral and chondral treatment associated with femoro-acetabular impingment.

Figures

Fig.1 : Coronal plane
Superior chondral lesions

RELATIONSHIP BETWEEN FEMORAL OFFSET AND HIP LABRAL AND CHONDRAL INJURY IN PAINFUL NON ARTHRITIC HIP *(cont.)*

Figures

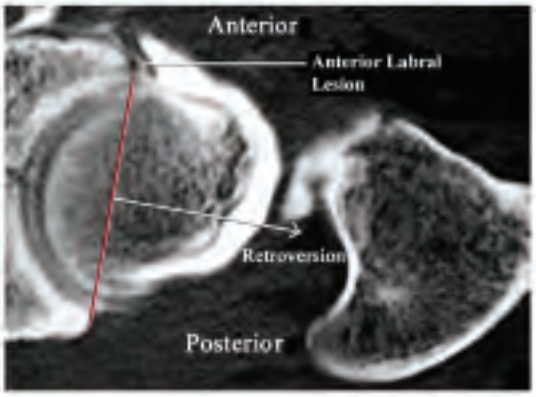

Fig.2 : Axial transversal plane
2a - Anterior labral injury – acétabular retroversion

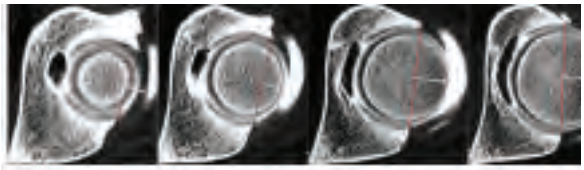

Fig.2 : Axial transversal plane
2b - Superior acetabulum retroversion

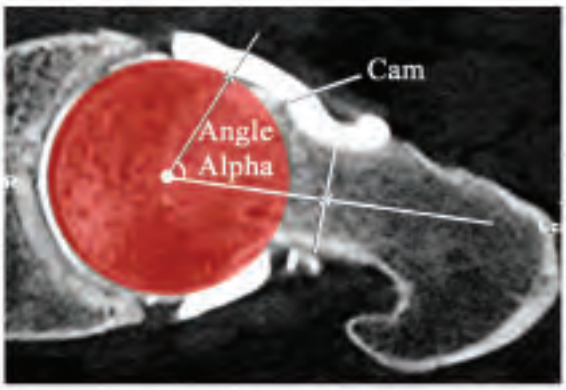

Fig.3 : Axial plane along femoral neck axis
3b – Head-neck anterior offset measurement

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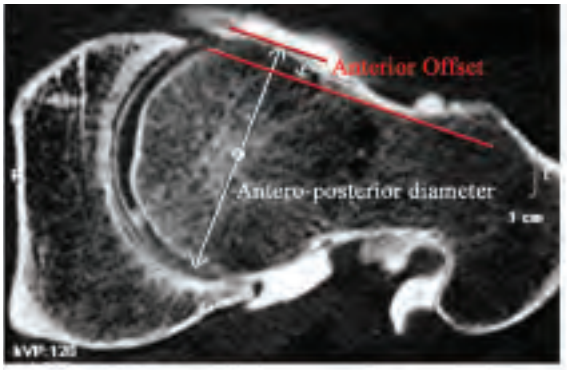

Fig.4 : Sagital Plane
2a - Anterior labral injury – acétabular retroversion

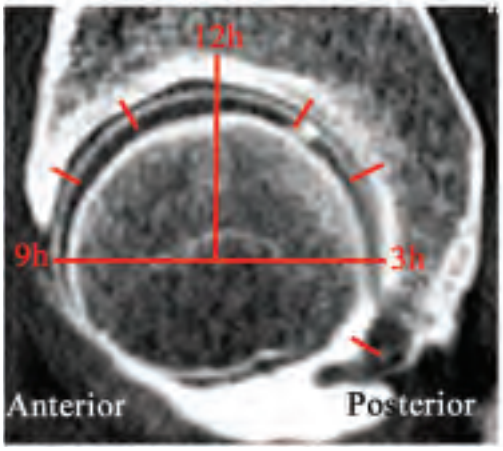

Fig.4 : Sagital Plane
Acetabular chondral lesions according to a time dial

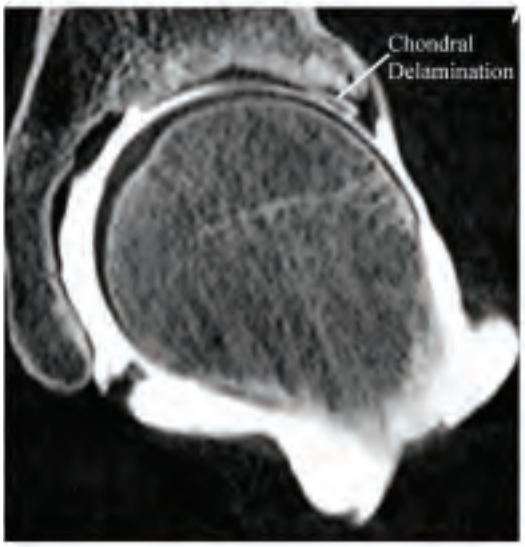

Fig.5 : Coronal plane
Superior chondral delamination (Grade 3)

SHOCK WAVE THERAPY: A *New Treatment for Chronic Greater Trochanteric Pain Syndrome*

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INTRODUCTION:

Lateral hip pain, often termed "greater trochanteric bursitis," is a frustrating condition encountered regularly by primary care physicians and orthopedists. Recent studies utilizing advanced imaging modalities, and other studies involving surgical treatment of chronic cases, suggest that, in many cases, the primary pathology is not the trochanteric bursa, but rather, involves injury, degeneration, and/or tearing of the gluteal tendons. For these reasons, most investigators now favor the term "greater trochanteric pain syndrome" (GTPS) to describe the clinical condition of greater trochanteric and peritrochanteric hip pain and tenderness.

Initial treatment of GTPS is nonoperative. Traditional methods include relative rest, anti-inflammatory medication, ice and heat, stretching and strengthening, physical therapy, ultrasound, and injection of a local corticosteroid with or without a local anesthetic. Symptom recurrence and incomplete symptom relief are common.

Patients with chronic recalcitrant GTPS may undergo surgery. Numerous procedures have been described, and there is no consensus as to the optimal surgical technique. Most investigators have reported favorable outcomes. However, most of these studies are retrospective, lack a control group, and use vague outcome criteria. Recovery from surgery can be lengthy. In several series, patients required prolonged reduction in weight bearing for up to 6-8 weeks.

Shock wave therapy (SWT) has been used successfully since the late 1980's for the management of various musculoskeletal disorders including plantar fasciopathy, Achilles tendinopathy, shoulder calcific tendinitis, and lateral epicondylitis. Although there are some negative trials, there are now many, randomized, double-blinded, clinical trials that support the use of SWT for the above conditions.

Acknowledging the unpredictable response and frequent recurrences associated with traditional nonoperative treatment, the risks and prolonged rehabilitation associated with surgery, the recognition of gluteal tendinopathy as a potential source of pain, and the favorable results from prior studies involving SWT as a treatment for other forms of tendinopathy, the aim of our study was to determine whether low-energy SWT is a safe and effective management modality for chronic GTPS.

MATERIALS AND METHODS:

Thirty-three patients with chronic GTPS received low-energy SWT (SWT Group; 2000 shocks; 4 bars of pressure which is equal to 0.18 mJ/mm^2, total energy flux density, 360 mJ/mm^2). Thirty-three patients with chronic GTPS were not treated with SWT, but received additional forms of non-operative therapy (control group). The inclusion criteria included patients with an established diagnosis of chronic GTPS for at least six months prior to treatment who had failed at least three forms of traditional nonoperative measures for a minimum of six months.

There were 22 females and 11 males in the SWT group, with a mean patient age of 51 years (range: 18 to 71 years, SD = 9.9) (Table 1). The average duration of the condition was 13.7 months (range: 8 to 23 months, SD =4.1) (Table 1). There were 22 females and 11 males in the control group, with a mean patient age of 50.2 years (range: 18-74, SD = 14) (Table 1). The average duration of the condition was 14 months (range: 8-22 months, SD=4.3) for the control group (Table 1). There was no difference in mean age (p=0.8) or duration of symptoms (p=0.4) between the SWT and control groups (Table 1).

All SWT procedures were performed without anesthesia. A radial shock wave device (Electro Medical Systems Swiss DolorClast, Munich, Germany) was used in all instances. Each patient received one low energy treatment. Two thousand shocks were applied with a pressure of 4.0 bars (equal to an energy flux density of approximately 0.18mJ/mm^2). The treatment frequency was ten shocks per second. The total energy flux density of the treatment session was approximately 360 mJ/mm^2.

Evaluation was by change in visual analog score (VAS), Harris Hip Score (HHS) and by Roles and Maudsley score.

RESULTS:

Mean pre-treatment VAS scores for the control and SWT groups were 8.5 and 8.5 respectively. One month, 3 months, and 12 months after treatment, the mean VAS for the control and SWT groups were 7.6 and 5.1 ($p<.001$), 7 and 3.7 ($p<.001$), and 6.3 and 2.7 ($p<.001$) respectively. One month, 3 months, and 12 months after treatment, the mean HHS for the control and SWT groups were 54.4 and 69.8 ($p<.001$), 56.9 and 74.8 ($p<.001$), and 57.6 and 79.9 ($p<.001$) respectively. At final follow-up, the number of excellent, good, fair, and poor results for the SWT and control groups were 10 and 0 ($p<.001$), 16 and 12.

SHOCK WAVE THERAPY: A *New Treatment for Chronic Greater Trochanteric Pain Syndrome* (cont.)

(p<.001), 4 and 13 (p<.001), and 3 and 8 (p<.001) respectively. Chi Square analysis showed that the percentage of patients with excellent ("1") or good ("2") Roles and Maudsley scores (i.e. successful results) 12 months after treatment was statistically greater in the SWT group compared to the control group (p<.001).

DISCUSSION:

The optimal management for GTPS remains unclear. Traditional conservative therapies such as stretching and strengthening, physical therapy modalities, steroid injections, and surgical debridement are generally helpful. However, symptom recurrence and incomplete symptom relief are common. In one trial, 33% of patients treated with a minimum of 2 corticosteroid injections experienced improvement, but not resolution of symptoms. Of those patients who did improve, 25% reported a recurrence.

The present study evaluated the effects of SWT on a consecutive series of patients with GTPS who had not responded to nonoperative management. The outcome for the entire population was evaluated and compared to a well matched control group. The mean VAS and HHS for the SWT group were statistically improved at 1, 3, and 12 months after treatment compared with the control group. The percentages of excellent or good results 12 months post-treatment for the SWT and control groups were 79% and 36% respectively. There were no significant complications, and no patient required additional shock wave therapy.

Traditional treatment of GTPS is generally lengthy, associated with frequent recurrences, and in many cases, an unacceptable degree of improvement. Our study demonstrates that low energy SWT is safe and effective, that it can be used to treat patients with chronic GTPS, and that satisfactory improvement is maintained for at least one year. The results from this study add to the growing number of favorable reports that substantiate the efficacy of SWT as an effective treatment for chronic tendinopathies.

Table 1

Mean Age and Mean Duration of Symptoms

	Age (years)	Symptoms (months)
SWT Group	51.0 (range: 18 to 71, SD = 9.9)	13.7 (range:8 to 23, SD = 4.1)
Control Group	50.2 (range: 18-74, SD=14.0) p = 0.8	4.0 (range: 8-22, SD=4.3) p = 0.4

Table 2

Sporting Activities of SWT Group and Control Group

	SWT Group (n=17)	Control Group (n=15)
Basketball	1	0
Jogging	4	3
Running	4	3
Volleyball	0	1
Racquetball	1	0
Tennis	2	2
Soccer	0	2
Cycling	1	2
Golf	4	2

Table 3

Patient Occupations

	SWT Group (n=33)	Control Group (n=33)
Heavy factor worker	1	0
Manual laborer	1	2
Nursing	3	2
Restaurant server	3	2
Manager	5	3
Insurance agent	2	0
Teacher	3	4
Real estate broker	3	1
Flight attendant	0	1
Home maker	5	6
Office work	5	8
Student	2	3

Table 4

Mean VAS, HHS, and Roles and Maudsley Scores

	VAS				HHS				ROLES/MAUDSLEY			
Group	Pre	1	3	12	Pre	1	3	12	Pre	1	3	12
SWT	8.5	7.6	3.7	2.7	49.6	69.8	74.8	79.9	4	2.5	2	2
Control	8.5	7.6	7	6.3	50.4	54.4	56.9	57.6	4	3	2.9	2.9

VAS, P<.001 for each time point for shock wave therapy and control group.
HHS, P<.001 for each time point for shock wave therapy group.

Table 5

Summary of Roles and Maudsley Scores for SWT and Control Groups

	ONE MONTH				THREE MONTHS				TWELVE MONTHS			
	SWT (n=33)		Control (n=33)		SWT (n=33)		Control (n=33)		SWT (n=33)		Control (n=33)	
	n	%	n	%	n	%	n	%	n	%	n	%
1 (excellent)	3	9	0	0	8	24	0	0	10	30	0	0
2 (good)	14	42	8	24	18	55	9	27	16	49	12	36
3 (fair)	13	40	16	49	4	12	19	58	4	12	13	40
4 (poor)	3	9	9	27	3	9	5	15	3	9	8	24

SWT, Shock wave therapy group

THE USE OF COMPUTER NAVIGATION FOR KNEE SURGERY BY ISAKOS MEMBERS

Rene Verdonk, MD, *Belgium*
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Navigation and CAS: is D-Day approaching? This question was posed by Johan Bellemans in a recent editorial in the Knee Surgery Sports Traumatology Arthroscopy journal. His point was that despite the initial enthusiasm for computer-assisted surgery (CAS) in knee arthroplasty, there has been little, if any, evidence to show that improved accuracy of component alignment and implantation has resulted in improved clinical outcomes. Bellemans goes on to suggest that many navigation appliances now sit dormant "in corridors covered by blankets". This implies a lack of usage by orthopaedic surgeons in general, but is the case within the ISAKOS membership?

In 2008 ISAKOS sponsored a survey of its members to find out who was using CAS, how frequently they were using it for total knee arthroplasty (TKA), and their reasons for their decisions regarding CAS. The findings of the survey were presented by Rene Verdonk at the Masters Precourse on Knee Arthroplasty and Navigation in Knee Surgery in Osaka, Japan in April 2009. Just as with a similar survey conducted by ESSKA and SGO-SSO, the answers to the questions are not clear cut. In the ESSKA survey half of the respondents considered CAS a real innovation, but only a quarter used it for most of their TKAs. Perhaps the explanation for this disparity is that 50% of respondents wanted to see more evidence that CAS improves outcomes.

Although open to all members, one quarter of the respondents to the ISAKOS survey were from Australia and the USA, with 15% coming from Brazil and Japan. Overall there were 157 responses from 2173 invitations (7.2%). In general, one would like to see at least a 10% response rate to such a survey. Does the low response rate to the ISAKOS survey simply reflect a lack of interest in CAS for knee arthroplasty? Not necessarily, as many ISAKOS members have primarily sports practices. Nonetheless, even sports surgeons are confronted with degenerative knees that warrant replacement arthroplasty. Interestingly, the very similar ESSKA survey in 2006 also resulted in a modest 10% response rate, with most respondents also coming from only two countries, Switzerland and Belgium. Both countries are well provided for in terms of the availability of CAS.

Respondents to the ISAKOS survey were generally established in their orthopaedic practice. 46% had been in practice between 6 and 20 years and 36% for between 21 and 30 years. Most were working in academic centers or private hospitals and with an even distribution between the two. Thirty-five per cent of respondents were performing in excess of 100 TKAs per year and 60% between 10 and 100 TKAs per year.

More than half of all the centres in which respondents worked were equipped with CAS facilities. The remainder had access on request, reflecting the recent reduction in size and improved transportability of most systems. Almost all surgeons used image free systems.

The most common use for CAS was for TKA (78%). 35% of respondents indicated that they use CAS for major axial deviations compared to only 11% who used for minimally invasive surgery. Whether CAS solves the potential problems of limited access surgery remains to be seen, as limited access may also compromise registration of landmarks. When asked about using CAS only when there was ample surgery time available i.e. on "quiet" days, 36% of surgeons definitely disagreed with an even spread of responses for the remainder of options between strongly agree and more or less disagree. Overall, almost 50% used CAS for less than 25% of TKAs and only 30% used it for more than 75% of their cases.

The majority of respondents who were using CAS felt that it improves prosthetic alignment and is a useful educational tool. (Fig. 1) Many also felt it improves clinical outcomes and a substantial number of surgeons had got into the habit of using CAS. Only a few surgeons used CAS at the request of an individual patient.

For those surgeons not using CAS the main concerns were the increased operating time and the potential for infection, and the uncertainty about whether CAS does improve clinical outcomes. (Fig. 2)

Although virtually no-one thought that CAS usage was due to clever marketing, 25% still wanted scientific evidence for its use. 35% felt it was a nice tool but nothing more, but a similar percentage considered CAS a real innovation. (Fig. 3)

CONCLUSIONS:

10% of respondents did not use CAS at all for TKA and 50% used it for 25% or less of their cases. Only 25% use it for most of their cases. There are clearly many surgeons waiting for the potential value of CAS in TKR to be proven. Unless the proponents of CAS can produce evidence that it improves clinical outcome, it would appear that it is unlikely that there will be a significant increase in its use.

THE USE OF COMPUTER NAVIGATION FOR KNEE SURGERY BY ISAKOS MEMBERS *(cont.)*

Many surgeons are concerned about longer operating times, not only because of the use of their time, but also because they feel it may increase the rate of complications, particularly infection.

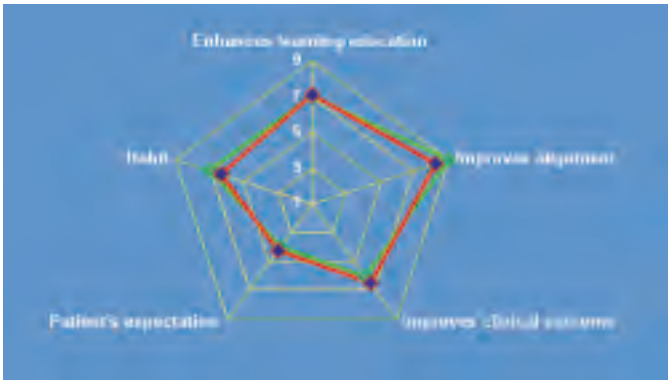

Figure 1. Summary of Likert scores of reasons why surgeons like using CAS

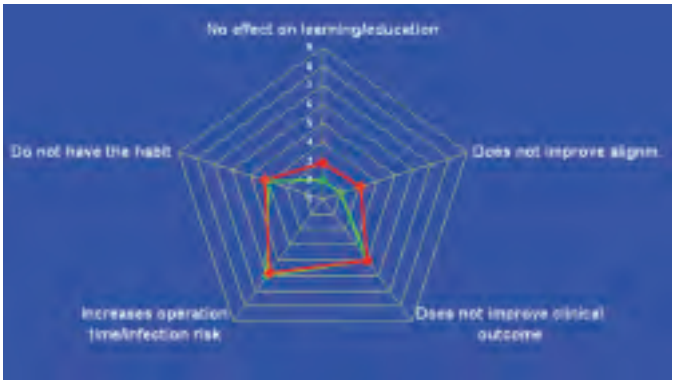

Figure 2. Summary of Likert scores of reasons why surgeons don't like using CAS

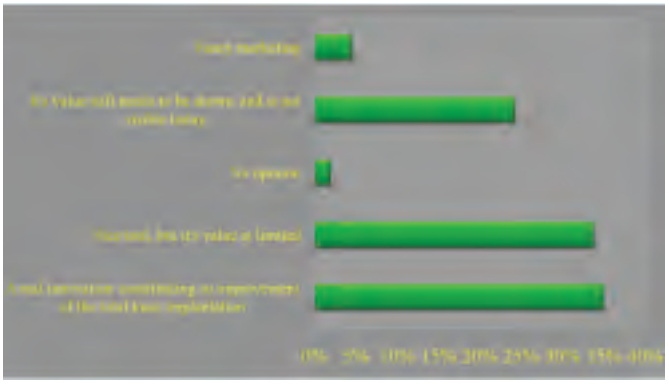

Figure 3. Summary of surgeons' views of CAS

Full article and references also available online at www.isakos.com.

THE MULTILIGAMENT INJURED KNEE: *Evidence Based Treatment Strategies*

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INTRODUCTION

Treatment of knee dislocations remains controversial. There is a paucity of outcome data in the literature which would suggest optimal strategies with regards to timing of fixation, methods of fixation, types of reconstruction, and postoperative rehabilitation. In fact it is not even clear which injury variants should be operated on in the acute setting. Many authors have reported improved outcomes with early surgical repair/reconstruction of all ligamentous structures.

INITIAL EVALUATION

Neurovascular assessment

It is important to recognize that high-energy knee dislocations are limb threatening injuries with a high risk of popliteal artery injury in approximately 40%, with some reports as high as 59% incidence. Initial assessment when the patients' present to the Emergency Room is a thorough neurovascular exam. From a vascular standpoint, if the patient presents with hard signs of ischemia (pulseless limb, expanding hematoma, audible bruit), for example a cold, pulseless limb, the vascular surgeon will typically either proceed with angiogram if there is some question of the level of the injury or perform immediate exploration and repair versus bypass graft. The authors have previously described treatment algorithms for vascular assessment of such injuries, which includes the use of an ABI (Ankle Brachial Indices) (See figure 1). If the ABI is greater than 0.9, it has been shown that the risk of major arterial lesion approaches 0%. If the ABI's are less than 0.9, then patients are at risk for vascular injury and require subsequent vascular assessment with either Duplex ultrasound, conventional or Computer Tomography (CT)-angiogram It is the patients with the subtle or so-called soft signs of ischemia, with either cool limbs or faint pulses, that require such a thorough vascular assessment.

Stannard et al. have contended that physical exam alone can be used as a reliable predictor of vascular injury. However, others have shown that physical exam alone is unreliable. Therefore, the author performs an ABI on all knee dislocations, pre- and post-reduction, and follow the treatment algorithm proposed. (see figure 2).

Figure 1.

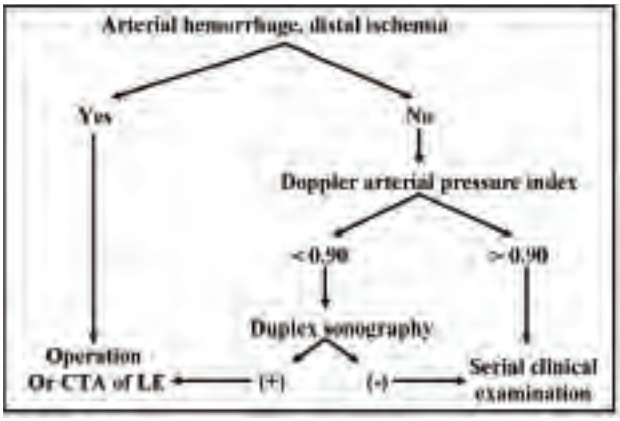

Figure 2.

STAGED PROTOCOL

For complex periarticular knee fractures, several authors have noted the benefits of "staged protocols" for fracture management. The first stage is the application of a joint spanning external fixator. The second stage is definitive fixation of the fracture when the soft tissues' swelling has resolved and are felt to be amenable to surgical intervention.

It is now recognized that a significant amount of these complex periarticular fractures are most likely fracture dislocations with both bony and ligamentous disruptions. Gardner et al, found 68% of tibial plateau fractures sustained pathology to the posterolateral corner.

It has also been recognized that some knee dislocations present with associated rim and/or avulsion fractures. Moore, added fracture dislocations as part of a knee dislocation classification.

The same principles of treatment management for complex tibial plateau fractures may have a role in pure knee dislocations. This was the genesis for considering "staged protocols" for knee dislocations.

THE MULTILIGAMENT INJURED KNEE: *Evidence Based Treatment Strategies (cont.)*

STAGE 1

After a knee dislocation is reduced, either spontaneously or by manual closed reduction, a thorough neurovascular assessment is performed based on the guidelines above. An exam under anesthesia within the first 24–48 hours after injury should be undertaken, along with fluoroscopic stress x-rays with comparison stress X-rays and clinical exam of the contralateral knee to determine the extent of ligamentous injury. If indicated, MRI compatible spanning joint external fixator is placed at that time. Postoperatively a MRI of the knee is performed. At this juncture, anticoagulation treatment should include low molecular weight heparin beginning 12 hours after surgery and continued until definitive fixation.

Indications for initial spanning external fixation

1. Vascular injury.
2. Gross instability in the anteroposterior (coronal) plane.

STAGE 2

Definitive fixation is based on ligamentous involvement and timing of fixation is based on the status of the soft tissues. Our current protocol entails definitive repair/reconstruction of all ligamentous structures typically at 3–4 weeks post injury. This allows a time for soft tissue and inflammatory recovery; however is a short enough interval before extensive fibrosis begins. An example of an acute knee dislocation treated with multiligament knee reconstruction is depicted in figures 3a-e.

SURGICAL INDICATIONS

Operative versus Nonoperative Management

Treatment of knee dislocations in the literature remains controversial. In the last two decades several authors have noted improved outcomes with operative management. Richter et al evaluated the outcomes of 63 surgically treated traumatic knee dislocations compared to 26 treated nonsurgically. The average follow-up in their series was 8.2 years. Lysholm and Tegner scores were significantly improved in the surgical group which led the authors to recommend early surgical management. Dedmond and Almenkinders performed a meta-analysis compared outcomes of operative versus nonoperative treatment of knee dislocations. They concluded that there was no statistically significant difference in either treatment arm with regards to patients' ability to return to pre-injury employment, athletic activity, or degree of instability. They did note, however, that the surgical group had statistically better results with regards to final range of motion and Lysholm score. Wong et al concluded that surgical treatment of knee dislocations showed improved overall knee function, stability, and patient satisfaction.

Figure 3a.

Figure 3b.

Figure 3c.

Figure 3d.

Figure 3e.

Current evidence-based medicine (EBM), although limited to a few level III studies, does support operative management.

SURGICAL TIMING

Early Versus Delayed Repair/Reconstruction

With regards to timing of the surgery several authors have shown improved outcomes with early versus late surgical repair. Liow et al reported improved outcomes in patients treated with early reconstructions (less than two weeks after injury) as it relates to overall knee function, activity levels, and anterior tibial translation. Wang et al evaluated the outcomes of delayed surgical reconstruction (greater than ten months from injury) for combined posterior cruciate ligament and posterolateral corner injuries and found 32% unsatisfactory results. He recommended early surgical reconstruction for this particular injury pattern. Ibrahim conversely reported 87% good and excellent results in a series of 41 traumatic knee dislocations treated acutely with primary reconstruction of the cruciate ligaments and repair of the collateral ligaments. Chhabra et al reported their clinical series of 31 patients, 19 of which were reconstructed acutely (less than three weeks after injury) and 12 patients treated with delayed reconstructions. They found no difference in final knee range of motion between the two groups; however, the group treated acutely had significantly better results with regards to knee stability and subjective scores.

Current evidence-based medicine (EBM), although limited to a few level III studies, does support early semi-acute surgical management of all damaged ligamentous structures.

SURGICAL TECHNIQUE

Repair versus reconstruct

A hot topic in the treatment of knee dislocations, several authors have shown improved outcomes with acute reconstructions as opposed to ligament repairs. Stannard et al, reported on 57 knee dislocations followed for 2 years and found significantly better results with acute posterolateral corner (PLC) reconstruction (9% failure) as opposed to repair (37% failure). In our own series of repair versus reconstruction of the fibular collateral ligament (FCL)/PLC in the multiligament injured knee, at minimum 2 years follow up, we observed a 40% failure rate with repair alone compared to a 6% failure rate with reconstruction.

Current evidence-based medicine (EBM), although limited to these two level III studies, does support posterolateral corner (PLC) reconstruction, as opposed to repair alone, in the setting of multiligament knee surgery.

GRAFT SELECTION

Allograft Versus Autograft Reconstruction

Stannard et al reported on 15 multiligament knee reconstructions utilizing soft tissue allografts. Fanelli et al reported on a two- to ten-year follow-up of 41 patients utilizing a combination of various allografts and autografts for multiligament knee reconstruction. Talbot et al reported on 21 knee dislocations utilizing all soft tissue allografts.

Satisfactory results have been shown with either allograft and/or autograft reconstructions in this patient population. In an effort to minimize patient morbidity, it is the authors' preference to utilize soft tissue allografts for ACL/PCL/PLC reconstructions and semitendinosus gracilis autograft for MCL reconstruction.

Current evidence-based medicine (EBM), although limited to level IV studies, supports the use of allograft and/or autograft reconstruction, in the setting of multiligament knee surgery.

POSTOPERATIVE REHABILITATION

Standard rehabilitation protocol/role of external fixation

The postoperative management of knee dislocations remains controversial. Noyes et al, in their prospective study, reported a 0% incidence of permanent arthrofibrosis and a 0.7% incidence of manipulation under anesthesia to regain knee motion after anterior cruciate ligament reconstructions alone (219 knees) or combined with other procedures (224 knees).

The senior author currently follows the rehabilitation protocols used by Edson et al, Giannoulias et al, and Fanelli et al. This rehab protocol recommends maintaining the knee in full extension for three weeks after multi-ligament knee reconstructions and then beginning progressive knee range of motion. Weight bearing typically begins at six weeks postoperatively with return to sports and heavy labor after nine months. The authors recommend hinged knee brace for up to one year after surgery.

There are currently no reports on the use of postoperative non articulating spanning external fixation after multiligament knee reconstruction, nor are there any reports on the use of preoperative spanning external fixation in the setting of acute high energy knee dislocation.

TAKE HOME POINTS

At the present time, there is a paucity of evidence-based medicine, and for the most part, treatment of knee dislocations remains controversial. From initial vascular assessment, to surgical indications, surgical timing, surgical technique, graft selection, and postoperative rehabilitation.

It is important to recognize that high-energy knee dislocations are limb threatening injuries with a high risk of popliteal artery injury.

We currently use a "staged protocol" to manage high energy knee dislocations. Stage 1 consists of initial vascular assessment, examination under anesthesia, and the application of either a spanning joint external fixator or hinged knee brace locked in full extension. Patients are treated with concurrent low molecular weight heparin while awaiting definitive fixation. Stage 2 consists of definitive ligament reconstructions usually at three to four weeks post injury if the soft tissues allow. All patients then follow a standard postoperative rehabilitation protocol.

Prospective studies are needed to elucidate whether or not the staged protocols are clearly of merit, and what risks exist with this approach.

Full article and references also available online at www.isakos.com.

POST-ARTHROSCOPIC GLENOHUMERAL CHONDROLYSIS: *How did we get here and how do we stop it?*

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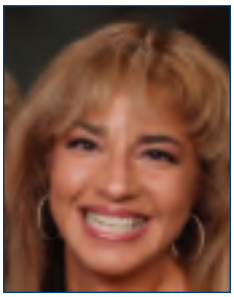

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Disclaimer: The views expressed in this article are those of the authors and do not reflect the official policy or position of the Department of the Navy, Department of Defense, or the United States Government.

INTRODUCTION

Chondrolysis is the rapid degeneration and cell death of chondrocytes. Post-arthroscopic glenohumeral chondrolysis (PAGCL) is a condition in which destructive chondral changes develop, typically within months of the procedure. The outcome can potentially devastate affected patients, as those who undergo arthroscopic procedures in the shoulder are typically young and active. The etiology of PAGCL has yet to be fully elucidated, but important trends are emerging in the literature. Potential contributors to this condition can be grouped into patient factors, surgical factors, and post-operative factors. These may be additive within the glenohumeral joint leading to damage and ultimately chondrocyte death. Although the precise etiology of PAGCL is not fully understood, surgeons must take appropriate preventative steps to avoid certain interventions, medications and techniques that may contribute to PAGCL. In this report, the findings of a recent systematic review[1] will be highlighted to provide an overview of the potential contributors and hypothesized pathways related to PAGCL.

POTENTIAL CONTRIBUTORS TO PAGCL

As depicted in Figure 1, the development of PAGCL is multi-factorial. To date, published patient studies have been limited to descriptive case reports. Most chondrolysis research has been performed in a laboratory setting, using animal articular cartilage, examining the effects of commonly used local anesthetics on cell viability, varying dosage and duration of exposure. However, multiple or cumulative factors may lead to a similar PAGCL outcome among patients. The factors most frequently cited in the literature are direct surgical insults to cartilage, thermal injury of chondrocytes from radiofrequency and similar devices, prominent suture anchors and suture knots on the articular surface resulting in mechanical damage, and exposure to harmful irrigation solutions or high concentrations of local anesthetics.

Patient Factors

Recurrent glenohumeral dislocations and other traumatic shoulder injuries have been shown to cause cartilage damage. Treatment of shoulder stiffness and adhesive capsulitis also have been associated with PAGCL. Increased patient age and a longer time from initial instability episode to surgery have been shown to increase the probability of the patient having chondral damage at the time of arthroscopic stabilization. Other relevant patient factors include age-related chondral matrix changes that may shift the balance between anabolic and catabolic cascades in the shoulder joint. Pre-existing chondral damage, present from prior instability or osteoarthritis, has not been directly examined in relation to PAGCL but it may play a role in the susceptibility of the shoulder to chondrolysis.

Surgical Factors

Pre-Operative and Intra-Operative Factors

Surgeons must avoid direct damage to the articular surface during arthroscopic procedures. Specifically, trocar and cannula trajectory must be optimized to avoid chondral injury. When performing labral repairs with suture anchors, proper positioning of the anchor is critical to avoid repetitive damage to the opposing cartilage surface from a proud anchor. Even bioabsorbable anchors, if prominent, have been shown to cause cartilage damage.

Numerous studies and reports describe thermal injury from radiofrequency probes or electrocautery devices leading to irreversible chondral damage. Other studies suggest that chondrocyte viability is affected by arthroscopic fluid. Specifically, hyperosmolal solutions seem to provide a protective response, whereas hypoosmolal solutions, such as lactated ringers and normal saline, can lead to decreased chondrocyte viability. Gentian violet and chlorhexidine used intra-articularly also have been shown to cause chondrocyte death.

Local Anesthetics

Use of intra-articular local anesthetics to provide short-term pain analgesia is common. While initially thought to be well tolerated, adverse effects related to bupivacaine showing histopathologic changes to *in vitro* rabbit articular cartilage have been identified. Several more *in vitro* studies conducted on both animal and human articular cartilage have demonstrated that 0.25% and 0.5% bupivacaine solutions are chondrotoxic even following brief exposures.

It should be noted, however, that local anesthetics alone may not cause chondrolysis. One recent study showed no impairment of chondrocytes in *in vivo* rabbit glenohumeral joints three months following a 48-hour infusion of 0.25% bupivacaine and 0.25% bupivacaine with epinephrine. Additionally, cartilage has an ability to recover from the apparent chondrotoxic effects of bupivacaine. Results from the literature suggest that lidocaine also significantly decreases chondrocyte viability in a short exposure time, and that 2% lidocaine is more chondrotoxic than 1% lidocaine.

Another agent, epinephrine, also has been shown to potentiate chondrocyte damage by local anesthetics but evidence in the literature is inconsistent. While some *in vitro* studies attempting to mock clinical applications of bupivacaine on articular cartilage have shown that more chondrocyte necrosis occurs at all time points with cultures containing epinephrine, other studies have found no additive affect caused by epinephrine.

Post-Operative Factors

The correlation between the development of PAGCL in conjunction with the use of post-operative intra-articular pumps has been of keen and growing interest in recent literature.

Six studies, either singular cases or series of case reports suggest an association between pain pumps containing bupivacaine or lidocaine and the development of PAGCL. To date, a relatively consistent correlation has been reported between PAGCL and increased duration of exposure to high concentrations of bupivacaine and lidocaine administered in the glenohumeral joint through continuous infusion by pain pumps. However, correlation does not equate to causation as evidenced by the many patients exposed to continuous infusions of post-operative anesthetics who never develop chondrolysis. This serves to highlight the complex pathways, numerous contributing factors, and still unclear causal etiology of PAGCL.

The potential causal pathways to PAGCL are likely to involve initiating and secondary cartilage injury that typically ensue due to mechanical, thermal, or chemical events.[1] The result is a cascade of interactive cellular responses that may include inflammation and chondrocyte apoptosis causing disturbance of cellular metabolism with subsequent loss of gliding surface, congruity, and synovial fluid leading to increased friction and accelerated wear that result in PAGCL.

PRACTICE IMPLICATIONS

Because many potential factors associated with PAGCL can be surgeon-mediated, altering practices and techniques becomes crucial. Surgeons must better understand the implications of recent and emerging literature on this subject. From a practice perspective, notable topics that warrant attention include a deleterious effect of bupivacaine and lidocaine when an anesthetic dose (e.g., 0.5% bupivacaine or 2% lidocaine) is administered instead of a lesser analgesic dose. In addition, surgeons must be aware of the effect of degradation products of bioabsorbable implants and may consider using inert implants, such as metal or PEEK implants in patients thought to be at risk. Moreover, until future research provides the requisite clarity about the individual or additive effects of continuous infusions of high doses of anesthetics in the intra-articular joint, surgeons may wish to adopt alternative pain management options among their patients.

Treatment

In considering treatment for PAGCL, non-operative options including alteration of shoulder mobility, injecting intra-articular steroids, or intra-articular hyaluronic acid injections may be attempted early to decrease inflammation, improve range-of-motion, and decrease friction across the articular surfaces with the intent to halt or slow chondral destruction. However, to date, there have been no published studies showing the potential benefit of these interventions in PAGCL. Despite the advances in surgical intervention, such as shoulder resurfacing arthroplasty or hemiarthroplasty, with or without glenoid biologic resurfacing, or total shoulder arthroplasty, as

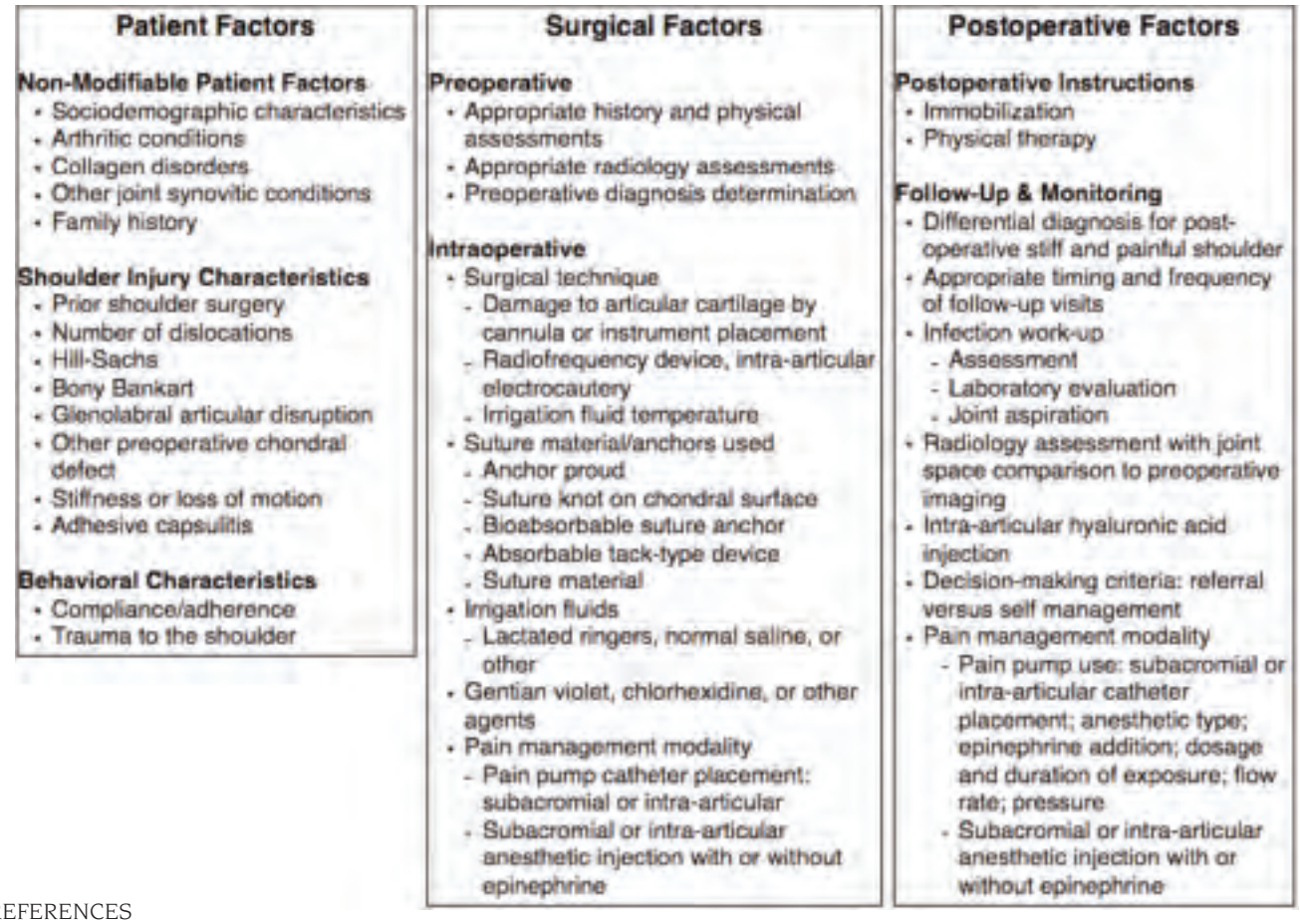
POST-ARTHROSCOPIC GLENOHUMERAL CHONDROLYSIS: *How did we get here and how do we stop it?* (cont.)

discussed by several authors, the long-term prognosis for shoulder function in young patients with PAGCL remains largely unknown, with early reports suggesting only modest improvements.

CONCLUSIONS

Clearly, more robust and carefully designed clinical and epidemiologic studies are needed to better understand the multi-factorial contributors to PAGCL in order to facilitate the ability of surgeons to effectively prevent and treat this adverse outcome.

Figure 1. Potential Contributing Factors to Cartilage Damage (reprinted with permission from Solomon et al., 2009)



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Full article and references also available online at www.isakos.com.

ISAKOS Mission Statement

ISAKOS ***advances the worldwide exchange and dissemination of education, research and patient care in arthroscopy, knee surgery and orthopaedic sports medicine.***

Editor's Note *(continued from page 3)*

What first comes to mind when thinking of Freddie Fu is energy. Freddie has boundless energy and enthusiasm for arthroscopy, knee surgery and orthopaedic sports medicine. Others may wake up early, or stay up late. Freddie seems to do both, nonstop, and with a high mental acuity and curiosity which motivates and stimulates all around him to achieve their best as clinicians, researchers, students and educators.

But, it is more than just energy that is Freddie Fu's great gift. Freddie's passion for what he does is marked by enormous sincerity. He remembers our names, and our spouse's or significant other's name, and our children's names. He remembers our presentations, our publications, our questions, our answers, and our ideas. Freddie is sincerely and energetically committed to make friends with all. As such, our President is a model for the Fellowship which we all seek as ISAKOS members.

Be aware that when you first meet Freddie Fu, he may seem single-minded. His passion for his work is such that it is often the first thing about which he speaks. Of course, it is through his work that we know him. However, as you befriend Freddie, and during longer or repeated conversations, it will quickly become clear that Freddie Fu is a Renaissance man. He appreciates art, sports (as both an observer and as an athlete), food, wine, fashion, business, culture and, by both necessity and choice, travel.

Many ISAKOS members are great friends and Freddie is modest. I did not tell him of this editorial in advance, for he would have discouraged such notice. In fact, Freddie Fu spends great energy to promote the ideas and success of his peers and mentees. He is a model friend.

***Join me at* ISAKOS, *at the next biennial Congress, in* Rio de Janeiro, *and you will definitely have a chance to join* FFF.**

President's Message *(continued from page 3)*

This valuable educational event will include lectures by some of the leading physicians in the field, as well as a surgical skills lab and surgical demonstration videos.

Finally, ISAKOS is pleased to welcome Hilary Matthews to the ISAKOS Office. Hilary will be responsible for Member Services for the ISAKOS Office.

Again, we thank you for your membership with ISAKOS.

Best Regards,
Freddie H. Fu, MD
ISAKOS *President* 2009-2011

and

The* ISAKOS *Executive Committee

SEVERANCE ARTHROSCOPY FRESH CADAVER WORKSHOPS

September 2009

The 41st (Shoulder) and 42nd (Knee) Severance Arthroscopy fresh cadaver workshops were held on September 12th and 19th, 2009.

The workshop is a traditional arthroscopy cadaver workshops, and has been held at Yonsei University Health System in Seoul, Korea 40 times since July 7th, 2001. More than 30 of these courses have been ISAKOS Approved, beginning with the 11th workshop held on November 1st, 2003.

In these workshops, one instructor from China and two participants from Hong Kong attended in addition to local participants from Korea.

The lecture for anatomic structures and portals in classroom preceded the demonstration and practice. During the workshop, many participants observed demonstrations by Prof. Sung-Jae Kim and other instructors, and then went into training by themselves under the guidance of professor and instructors. Because the fresh cadaver offered participants operating field like a live man, Participants were able to train themselves for various operative techniques. And they had opportunities to discuss with the instructor about his technical tips. Additionally elbow and ankle arthroscopy were also demonstrated by Prof. Sung-Jae Kim.

After practice, they dissected the cadavers to get more information about surgical anatomy of the joint.

The workshops were very useful educational programs for the participants interested in the shoulder and knee arthroscopy. Each participant would get the one step forward in arthroscopic experience and capacity through these workshops.

Prof. Kim plans to hold the next workshop as more advanced course with a new laboratory and equipments on Yonsei University Surgical Anatomy Center.

Course Chairman:
Prof. Sung-Jae Kim M.D., PhD

Lab Instructors

41st Shoulder Workshop
Young-Lae Moon M.D.
Yon-Sik Yoo M.D.
Yong-Min Chun M.D.
Dae-Heup Song M.D.
Tae-Eun Kim M.D.
Tai-Won Kim M.D.
Sul-Gee Kim M.D.
Sung-Hwan Kim M.D.
Dae-Young Lee M.D.
In-Kee Cho M.D.

42nd Knee Workshop
Sun Kang M.D.
Jae-Hun Jeong M.D.
Jong-Min Kim M.D.
Yong-Min Chun M.D.
Yung-Hoon Kang M.D.
Sul-Gee Kim M.D.
Sung-Hwan Kim M.D.
Dae-Young Lee M.D.
In-Kee Cho M.D.

41st Fresh Cadaver Shoulder Arthroscopy Workshop

42nd Fresh Cadaver Knee Arthroscopy Workshop

PRE MEETING:
OSAKA AND KOBE ORTHOPÆDIC SEMINAR

Immediately prior to the Seventh Biennial the ISAKOS Congress recently held in Osaka, Japan, **Drs. Masahiro Kurosaka** and **Konsei Shino** of the Orthopaedic Departments from Osaka and Kobe jointly hosted a seminar focusing on Current Topics of interest ACL Reconstruction.

The first part of the seminar included a study of diversity in manual knee instability assessment by the Orthopaedics Department of Kobe University. ACL deficient patients were prepared at the Kobe University Kaisei Operating Theater. Six designated examiners independently assessed the stability of each knee of the prepared patients with an examination under anesthesia. Each examiner was blinded to the exams of all of the other examiners and of the results of their exams to the baseline standard. The exams were broadcast live by remote video to the seminar participants in the beautiful Osaka International Convention Center twelfth floor "Convention Hall." The session was moderated by **Drs. John Bartlett (Australia), John Bergfeld (United States),** and **Masahiro Kurosaka (Osaka, Japan)**. Enthusiastic audience participation was evident by questions and comments directed from the participants at the seminar to the featured examiners. The moderators also posed questions and offered observations to highlight key portions of the exams. The examiners were able to demonstrate and explain pearls in their examination techniques. The participating examiners included **Drs. Annunziato Amendola (United States), Ramon Cugat (Spain), M. Nedim Dural (Turkey), Per Renstrom (Sweden),** and **Ryosuke Kuroda (Japan)**. Each examiner graded the instability with the Lachman test and the pivot shift test. The examiner's techniques were demonstrated and described. As a standard baseline for comparison each of the patients had been pre-assessed by fluoroscopy and electromagnetic devices. The moderators then facilitated a discussion critiquing each examiners techniques, their comparison with each other and with the baseline tests.

The second part of the program highlighted six recognized authorities with each presenting their current ACL reconstruction technique including a five minute video. The speakers were **Drs. Julian Feller (Australia), Freddy Fu (United States), James Lubowitz (United States), Philippe Neyret (France), Mitsuo Ochi (Japan),** and **Konsei Shino (Japan)**. The different techniques included single bundle, double bundle, triple bundle, anatomic, all-inside and extra-articular reconstruction. This session was moderated by **Drs. Gary Poehling (United States)** and **Konsei Shino (Japan)** and focused on the technical aspects of ACL reconstruction, pitfalls, and advantages and disadvantages of the different procedures presented. This concept complemented the theoretical issues of the ACL reconstruction that would be discussed later in the main body of the ISAKOS Congress.

The Overall the seminar was well presented and very well received by an enthusiastic audience. Contrast and comparison of the various examiners techniques in part one as well as the different techniques for ACL reconstructive surgery in part two of the seminar stimulated lively debate and encouraged critical thinking and analysis for everyone involved. The camaraderie, congeniality, and excellent didactic presentations left everyone with the proper mindset of academic inquiry ideal for the Biennial Congress that would follow. The participants unanimously expressed their appreciation. The local hosts, **Drs. Masahiro Kurosaka** and **Konsei Shino**, should be congratulated for orchestrating a superb and stimulating seminar!

Ronald M. Selby, MD

UPCOMING ISAKOS APPROVED COURSES

1ST INTERNATIONAL CONGRESS OF IRANIAN SOCIETY OF KNEE, ARTHROSCOPY& SPORTS TRAUMATOLOGY (ISKAST)

Kish Island Convention Center
Kish Island, IRAN
January 19–22, 2010

For further information, please contact:

SOHEIL MEHDIPOOR
soheil_mehdipoor@hotmail.com
Tel: 0098-912-3161260
Fax: 0098-21-88777139
www.iskast.ir/Congress/Partners.aspx?Congress=1

26TH INTERNATIONAL JERUSALEM SYMPOSIUM ON SPORTS MEDICINE

Kibbutz Ma'ale Hachamishah Resort
Jerusalem, ISRAEL
January 20, 2010

For further information, please contact:

Gideon Mann
drmann@regin-med.co.il
Tel: 972-52-2514608
Fax: 972-2-6510122
www.sportsmedicine.co.il

ARTHROSCOPY 2010 – METCALF MEMORIAL MEETING

January 30 – February 2, 2010
Sun Valley, Idaho
Sun Valley, Idaho USA

For further information, please contact:

Sue Duncan
sue.duncan@hsc.utah.edu
Tel: 1-801-587-5457
Fax: 1-801-587-7149
www.metcalfmeeting.org

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Maastricht Exhibition & Conference Centre (MECC)
Maastricht, NETHERLANDS
February 3–5, 2010

For further information, please contact:

Nanne P. Kort
n.kort@imuka.eu
Tel: 31-6-51209221
Fax: 31-43-711 43 70
www.imuka.eu

COMPREHENSIVE REVIEW MEETING: THE MENISCUS: FROM CRADLE TO ROCKER

Handelsbeurs
Ghent, BELGIUM
February 4–6, 2010

For further information, please contact:

René Vedonk
Rene.verdonk@ugent.be
Tel: 32-9-332 22 48
Fax: 32-9-332 49 75
www.meniscus2010.be

43TH KNEE/LOWER EXTREMITY SEVERANCE ARTHROSCOPY FRESH CADAVER WORKSHOP

Yonsei University Surgical Anatomy Center
Seoul, KOREA
March 27, 2010

For further information, please contact:

In-Kee Cho M.D.
Severanscopy@yuhs.ac
Tel: 82-2-2228-5679
Fax: 82-2-363-6248
www.severanscopy.com

44TH SHOULDER/UPPER EXTREMITY SEVERANCE ARTHROSCOPY FRESH CADAVER WORKSHOP

Yonsei University Surgical Anatomy Center
Seoul, KOREA
April 3, 2010

For further information, please contact:

In-Kee Cho M.D.
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Tel: 82-2-2228-5679
Fax: 82-2-363-6248
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MINI INVASIVE FOOT AND ANKLE CADAVER COURSE AND LIVE SURGERY

Five Hotel
Paris, FRANCE
May 6–8, 2010

For further information, please contact:

Stephane Guillo
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Fax: 33-60-3513122
Grecmip.com

2010 SHANGHAI INTERNATIONAL SUMMIT FORUM ON ORTHOPEDICS SPORTS MEDICINE AND ARTHROSCOPY SURGERY

Plaza Royale Hotel, 2288# Pudong Avenue
Shanghai, CHINA
May 12, 2010

For further information, please contact:

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www.ISAKOS-Shanghai.com

10TH AMSTERDAM FOOT AND ANKLE COURSE

University Hospital AMC
Amsterdam, NETHERLANDS
June 24–25, 2010

For further information, please contact:

Reilingh
M.L.Reilingh@amc.nl
Tel: +31-20-5662474
Fax: +31-20-5669117
www.ankleplatform.com

INDIAN ARTHROSCOPY SOCIETY ANNUAL CONFERENCE 2010

GRT Bay Hotel
Chennai, INDIA
September 24–27, 2010

For further information, please contact:

Dr. Leonard Ponraj
glp22@hotmail.com
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Fax: 0091-44-26422223
www.IAS.com

14TH ADVANCED COURSE ON KNEE ARTHROPLASTY – 14ÈMES JOURNÉES LYONNAISES DE CHIRURGIE DU GENOU

Centre de Congrès
Lyon, FRANCE
October 7–9, 2010

For further information, please contact:

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8TH BIENNIAL

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RIO DE JANEIRO, BRAZIL

MAY 15 – 19, 2011

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