



ISAKOS

NEWSLETTER

SUMMER 2000

Volume 4, Issue 1

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Editor's Note

Stephen S. Burkhart, M.D., ISAKOS Newsletter Editor

It is a great honor and privilege to serve as editor of the ISAKOS Newsletter. I appreciate the opportunity that Dr. Roland Jakob has given me by this appointment. My goal will be to provide ISAKOS members with an expanded publication, addressing timely topics in a "current concepts" format and providing information on

upcoming meetings, membership activities and committee progress.

As arthroscopy and sports medicine continue to mature as disciplines, I see incredible opportunities for ISAKOS members to contribute to the growth process through shared information.

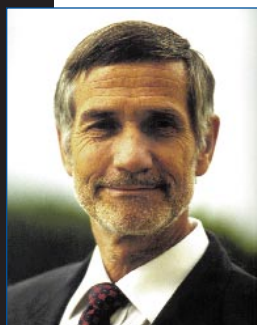
I recently collaborated with Dr. Joe DeBeer of CapeTown, South Africa, in a clinical study of arthroscopic instability repairs. By sharing information with the other side of the world and analyzing injuries of our different types of contact athletes (South African rugby players and American football players), we reached conclusions that would never have been apparent had we studied only our own patients.

Today, with instantaneous Internet communication, international studies are not only feasible but also practical and essential. Distance is not the problem it once was.

We are living and practicing our professions in a very exciting time. Arthroscopy continues to be a rapidly evolving discipline, and we have an incredible opportunity to contribute to that evolution. Not many professions have such an opportunity. Let's make the most of it.

President's Message

Roland P. Jakob, M.D., 1999-2001 ISAKOS President



There I had the best of both worlds, education and research with wine and cheese.

As an EFORT delegate, I had the great pleasure to have been involved with the formal launch of the Bone and Joint Decade at the headquarters of the World Health Organization in Geneva, Switzerland, on January 13, 2000. I can recall

sitting in the President Wilson hotel conference hall surrounded by more than 100 participants from all over the world, listening to incredible musculoskeletal material ranging from the war stories of a JRA survivor to astounding musculoskeletal epidemiologic data.

The number of individuals older than age 50 is expected to double between 1990 and 2020. Fifty percent of all American women older than 50 years are expected to sustain at least one fracture in their lifetime secondary to osteoporosis. By 2010, there is expected to be more

people older than 60 years than people younger than 20 in Europe. By 2030, it is expected that the majority of orthopaedic surgeons will primarily be treating fractures secondary to osteoporosis. Musculoskeletal conditions were estimated to account for approximately \$215 billion per year in 1995, and this number is increasing. The sad story is that only an estimated \$92 million per year are used for orthopaedic research.

The aim of the Bone and Joint Decade campaign is to globally raise awareness and understanding of musculoskeletal injuries and disorders, to increase the patient's involvement in his or her own care and ultimately to improve the lives of those stricken with musculoskeletal problems now and in the future. Such advances can only be achieved through research, education and prevention. Yet for all of this to occur, funding is absolutely necessary. The Bone and Joint Decade is endorsed by more than 15 nations and over 650 organizations worldwide. ISAKOS is one of them. But

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ISAKOS Welcomes New Members

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Upcoming ISAKOS-Approved Meetings

The First Latin American Meeting in Orthopaedic Sports Medicine 2000 and XIV Chilean Congress on Sports Medicine July 26-29, 2000

Sheraton Santiago Hotel & Convention Center
Santiago, CHILE

Hosted by the Chilean Society of Sports Medicine and SLARD. For further information, please contact Fernando Radice at fnradice@bellsouth.cl.

9th Congress of the European Society of Sports Traumatology, Knee Surgery and Arthroscopy (ESSKA)

September 16-20, 2000

Queen Elizabeth II Conference Centre
London, UNITED KINGDOM

For further information, please contact: Anneli Backman, Project Assistant, Concorde Services, Ltd., 42 Canham Road, London, United Kingdom W3 7SR; telephone: +44(0) 2 87433106; fax: +44(0) 2 87431010; e-mail: esska@concorde-uk.com; Web site: www.esska.org

5th Turkish Sports Traumatology, Arthroscopy, and Knee Surgery Congress October 24-27, 2000

Istanbul, TURKEY

For further information, please contact: Prof. Dr. Omer Taser, Istanbul University, Istanbul School of Medicine, P.K. 65, 34390 Capa, Istanbul, Turkey; fax: 90-212-296-9266; e-mail: info@arthroscopy2000.com; Web site: www.arthroscopy2000.com

International Symposium on Bone & Joint Surgery in the Current Decade October 28 - November 1, 2000

Security Forces Hospital
Riyadh, SAUDI ARABIA

Registration fees are US \$300 (1,000 Saudi Riyals) per person. Recent advancements and exchange of knowledge in research, prevention and treatment in the field of musculoskeletal disorders will be a focus among distinguished international guest speakers. A cadaveric workshop conducted by eminent international tutors will promote skills, dexterity and theoretical knowledge.

For further information, please contact: Mohammed H. Mufti, M.D., Director, Security Forces Hospital, P.O. Box 3643, Riyadh 11481 SAUDI ARABIA; telephone: +966 1 477 6448; fax: +966 1 479 2451; e-mail: mufti_mh@compuserve.com

17th International Jerusalem Symposium March 28- 29, 2001

Shoresh Hotel
Jerusalem, ISRAEL

This symposium is a traditional event held annually in Israel, and all presentations will be given in English. It is a purely academic, non-profit event aimed at providing theoretical and practical education to young doctors and surgeons.

For further information, please contact: Dr. Gideon Mann, fax: +972 2.652.8231; e-mail: howrob@gezernet.co.il

Keep Your Member Information Current!

ISAKOS Members: Help us keep your information current! Please visit the ISAKOS Web site at www.isakos.com and check your listing in the online Membership Directory to verify that we have your correct address, telephone numbers and e-mail address. Please notify the ISAKOS office if any of your information is missing or incorrect.

ISAKOS in Switzerland: Highlights of the 2001 Congress

Plans for the 2001 ISAKOS Congress in Montreux, Switzerland, are under way at the ISAKOS Office.

Symposia, Live Surgical Demonstrations and Hands-On Workshops Distinguish the Scientific Program

More than 25,000 "Call for Abstracts" booklets have been distributed through mailing campaigns and at meetings around the world. Program Chairman Per Renström, M.D., Ph.D., has spent six months developing proposed speaker topics and presentation forums. Highlights include:

Special Presentations

- Presidential Guest Lecturer – Wahid Al Kharusi, M.D., Oman
- Presidential Guest Lecturer – Joseph Buckwalter, M.D., USA
- Special Symposium: Legends in Sports Medicine

Symposia Sponsored by Neighboring Societies

- Injury Problems in Modern Sports – Snowboards, In-Line Skating and Ski Carving (Sponsored by GOTS)
- Arthroscopic Spine Surgery (Sponsored by the AGA)
- Cartilage Repair (Sponsored by the Italian Arthroscopy Association, Italian Sports Medicine Society, and Italian Knee Society)
- Symposium, Topic To Be Announced (Sponsored by The French Arthroscopic and French Orthopaedic Sports Medicine Society)

Symposia

- Meniscus Repair
- The Postmeniscotomy Knee
- ACL Reconstruction
- PCL Reconstruction
- Cartilage Repair
- Osteochondritis Dissecans in the Knee
- Osteotomy About the Knee for Instability and Degenerative Problems
- Primary Total Knee Replacement
- Knee Replacement in the Young and Active Patients
- Outcome Evaluation of ACL Surgery
- Fixation of ACL-Hamstring Grafts



Overlooking Lake Geneva, the legendary Chillon Castle will be the site for the Farewell Banquet at the 2001 ISAKOS Congress.

- Osteochondritis Dissecans in the Ankle
- Anterior Shoulder Instability
- Rotator Cuff Disease
- Early Osteoarthritis in the Young Active Population
- Complex Tendonopathies
- Computer-Assisted Surgery and Navigation

Instructional Courses

- Posterolateral Instability
- Patello-Femoral Pain
- ACL Rehabilitation
- Examination of the Knee
- Arthroscopic Assistance in the Treatment of Fractures
- Elbow, Wrist, Hip and Ankle Arthroscopy
- Examination of the Shoulder
- Biomechanics of Shoulder Surgery
- Gender Issues in Sports Medicine
- Groin Pain Surgery
- Criteria for Safe Return to Sport
- Foot Injuries
- Soccer Injuries
- Important Biomechanics of Knee Ligament Surgery
- Biology and Biomechanical Ligament Healing
- How to Carry Out a Perfect Clinical Study

- in Sports Medicine
- Computers in Orthopaedics

Lectures

- Gene Therapy and Tissue Engineering in Sports Medicine
- Treatments of the Knee Ligament: From Microbiological to Surgical
- The Effect of Physical Stimuli on Connective Tissue
- Endoscopy of Ankle Ligaments
- Impingement of the Ankle
- Internal Impingement
- Long-Term Sequelae After Sport
- The Science Behind Overuse Injuries

"How I Manage..." Presentations

- Hamstring Syndrome
- Anterior Tibial Stress Fractures
- Runner's Knee
- SLAP Lesions
- Sports Injuries: Carving Skies, The Serve in Tennis, Sumo Wrestling, etc.

Hands-On Workshops (Proposed)

- Meniscal Repair
- ACL Repair

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- PCL Repair
- Knot-Tying
- Articular Cartilage Repair
- Shoulder Repair
- Total Joint Arthroplasty

Innovations Will Make 2001 a Stand-Out

The ISAKOS Board of Directors has agreed to provide simultaneous interpretation to Spanish, French and Italian in the congress general sessions. Attendees who do not speak English will be able to participate in almost every large educational event, including podium presentations, live surgical demonstrations and symposia. Multilingual staff will be available on-site to further assist attendees as needed.

For the first time in 2001, all attendees and technical exhibitors will be able to register for the congress online. Visit the ISAKOS Web site for more detailed meeting information as it becomes available.

Spouse Program and Specially-Designed Tours Will Allow Participants to Experience the Best of Switzerland

Many half-day and full-day tours will allow all attendees to experience the culture of Switzerland, and a full spouse program will be available for all accompanying guests. Highlights of the region include:

The Chillon Castle

Enjoy a guided tour of the castle that was described in Lord Byron's poem "The Prisoner of Chillon."

Rochers-de-Naye

Take a half-day excursion to the top of a 2045-meter (6,700-foot) mountain via a cog-wheel train to admire a panoramic view of the Savoyard and Swiss Alps. Enjoy lunch at the restaurant at the top.

Gruyères

Visit this ninth-century village with a castle and cobblestone streets lined with small shops. Tour the cheese factory, where Gruyères cheese is produced, and taste the local specialty, double cream with raspberries.

Les Diablerets

Year-round skiing with a view of the Mont-Blanc and Matterhorn.



Top: The Montreux Convention Center and the Montreux Palace overlook Lake Geneva. Left: The towering Matterhorn. Right: The village of Gruyères, where Gruyères cheese is made.

Lausanne and the Olympic Museum

World headquarters of the Olympics. Tour the museum that traces the history of the games and view an array of artifacts.

Rhône Valley and Lake Geneva Vineyards

Visit the winegrowers of the villages and enjoy local food specialties with a taste of local wines.

Zermatt and the Matterhorn

Take the mountain train to the cozy village of Zermatt, then continue on a cog-wheel train to the Gornergrat, or "Little Matterhorn," for lunch.

Shopping

Stop in the charming small shops that sell Swiss souvenirs, including Swiss knives, watches, chocolate, cheese, wine, embroideries, crafts and antiques.

Other Recreation

Mountain biking, horseback riding, tennis, paragliding, spa treatments and 18 golf courses surrounding Lake Geneva are all available.

Special Spouse Tour!

Tour to the Audrey Hepburn Pavilion in Tolochenaz, where Audrey Hepburn lived. The pavilion opened by her son presents various photographs, prizes and clothing from her life as an actress, along with a short documentary detailing her work with UNICEF.

A Full Array of Social Events for Congress Attendees at the End of the Day

A variety of events will entertain and educate after meeting hours, and almost all of them will be included in the congress registration fee. Planned social events include:

The ISAKOS Welcome Reception

The Welcome Reception in 2001 will be held at the Montreux "Petit Palais," an elegant restaurant with an outdoor patio overlooking Lake Geneva.

Attendees will enjoy an open bar, heavy hors d'oeuvres and live music just several meters from the lakeshore, while the fresh mountain air of the French Alps and twinkling lights of Evian, France, add to the festive atmosphere of a stunning spring in

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ISAKOS Committees Prepare for Congress, Promote Membership

Arthroscopy Committee

Chairman: *Andre Frank, M.D.*

The Arthroscopy Committee will initiate a multi-center study and is considering topics such as jumper's knee, soft tissue endoscopy, knee arthroscopy in elderly patients, arthroscopic treatment of hip osteochondromatosis, arthroscopic treatment of deep infection after ACL reconstruction, arthroscopic treatment of Kienbock Disease, cystic degeneration of the meniscus, OCD of the condyles, epicondylitis of the elbow, meniscal transplantation and shoulder instability – arthroscopic shrinkage. Other suggestions are welcome. If any ISAKOS member would like to be considered to be a part of this study, please e-mail the chairman of the Arthroscopy Committee at arthroscopy.committee@sofarthro.com.

A subcommittee to review the John Joyce Award abstracts submitted for the 2001 Congress was appointed and includes A.

Panni (Italy), R. Carpignano (Argentina), A. Finsterbush (Israel), N. Doral (Turkey), D. Ruch (USA) and M. Ochi (Japan).

Subcommittees will work on standardized definitions, terminology and classifications concerning arthroscopic findings. They will give an ISAKOS label to those classifications that are accepted and used by the majority of the authors in the literature. These subcommittees include knee, shoulder, elbow, wrist, hip, ankle and cartilage.

The Arthroscopy Committee is also developing topics for consideration in the 2001 Congress for symposia and instructional courses.

Communications Committee

Chairman: *Don Johnson, M.D.*

The committee has been active in improving both the Web site and the newsletter. The ISAKOS Web site has a message board titled E-SAKOS, where members can submit

a problem case and ask for comments from others around the world. The redesigned newsletter will provide up-to-date society information with expanded educational content. We encourage you to submit current concepts articles for both the newsletter and the Web site.

The ISAKOS Office will routinely send "broadcast e-mails" to the membership. Please make sure your e-mail address is correct by checking the membership directory on the ISAKOS Web site.

Education Committee

Chairman: *W. Jaap Willems, M.D.*

A review of the ISAKOS-approved teaching centers will now include a "Participant Evaluation Form." This form will be given to all past and future participants of the teaching centers to collect feedback on the experiences offered at each center.

ISAKOS-approved teaching centers

Spotlight on Teaching Centers: Massachusetts General Hospital, Boston, Massachusetts, USA

The Massachusetts General Hospital has a long history of teaching fellows, residents, students and nurses in arthroscopic surgery. The philosophy of Dr. Dinesh Patel, who started this training program, is to train the bright of the brightest, the future generation.

Dr. Patel's educational activities take place in the theatre and in his Arthroscopy Psychomotor Lab, where knee, shoulder, ankle and elbow models give residents, fellows and visitors from abroad ample opportunities for training. This lab fulfills the ideals of ISAKOS in training young professionals in an important area of orthopaedic surgery.

The center's home-grown faculty includes Dr. Bertram Zarins, Dr. Arthur Boland, Dr. Jon Warner, Dr. Scott Martin, Dr. Tammy Martin, Dr. Charles Brown, Dr. Thomas Gill, Dr. George Theodore and a host of other esteemed physicians.

For further information, contact: Dinesh Patel, M.D., Chief of Arthroscopic Surgery, telephone: +1 (617) 726-5349, fax: +1 (617) 726-3555, e-mail: patel.dinesh@mgh.harvard.edu.



Left: The Arthroscopy Psychomotor Lab provides hands-on training on knee, shoulder, ankle and elbow models. Right: Dr. Patel performs a demonstration for the training group.

should advise the ISAKOS Office of their training specialties, i.e., arthroscopy, knee surgery, sports medicine and upper extremity. This information will be added to the teaching center listings currently on our Web site.

The Education Committee is continuing to designate ISAKOS-approved courses. Approved courses are advertised in the ISAKOS Newsletter and on the ISAKOS Web site, and the application form for course approval is available on the Web site.

Knee Committee

Chairman: Paolo Aglietti, M.D.

In preparation for the ISAKOS Congress in Montreux, the Knee Committee is organizing a Knee Committee interim meeting titled "Knee Replacement for the Young and Active Patients" in Florence, Italy, on January 11-13, 2001. The goal of this meeting is to come to a consensus on the various aspects of knee replacement and draw possible guidelines for future research. The results will be presented in Montreux.

The meeting is open to invited guests including members of the Knee Committee, selected scientists with well-known reputations in knee replacement and industry experts.

Grants to assist with this project will be provided by Zimmer, Biomet, DePuy-Johnson & Johnson, and Howmedica.

Membership Committee

Chairman: Moises Cohen, M.D.

ISAKOS is the only society linking international surgeons who share an interest in arthroscopy, knee and orthopaedic sports medicine, and ISAKOS membership continues to grow.

Please promote the benefits of ISAKOS membership to your colleagues and peers. Membership applications in both English and Spanish are available at the ISAKOS Web site. Applicants receive immediate consideration for Associate Membership within six weeks of receipt of their application, and ISAKOS Membership includes subscription to the journal *Arthroscopy*.

Orthopaedic Sports Medicine Committee

Chairman: Gideon Mann, M.D.

The Orthopaedic Sports Medicine Committee is setting up a subcommittee to review the papers submitted for consider-

ation of the Achilles Orthopaedic Sports Medicine Research Award at the 2001 ISAKOS Congress.

The committee also has submitted suggestions for symposia and instructional courses for the 2001 ISAKOS Congress to the Program Committee.

We are also composing a list of sport and musculoskeletal societies and teaching hospitals to help promote ISAKOS membership and activities.

Site Selection Committee

Chairman: Gary G. Poehling, M.D.

Auckland, New Zealand, has been chosen as the location for the 2003 ISAKOS Congress. The committee is currently reviewing Miami, Florida, and San Francisco, California, as potential sites for the 2005 ISAKOS Congress.

Scientific Committee

Chairman: Hans-Ulrich Staebli, M.D.

At its most recent meeting, the Scientific Committee discussed the following:

Dr. Alexandra Kirkley (Canada) presented a proposal for a prospective international multi-center trial. A questionnaire will be submitted to the membership to elicit ideas for multi-centers trials.

Dr. Kazunori Yasuda (Japan) presented summaries of several research projects evaluating graft healing in bone tunnels.

Dr. Stephen Howell (USA) presented a summary of research evaluating tunnel placement and pre-tensioning in ACL reconstruction.

Dr. Dil Cannon (USA) presented data on virtual reality arthroscopic surgery models.

Dr. Nicola Maffulli (Scotland) presented a summary of his research on Achilles tendinosis and rupture.

Dr. Allen Anderson (USA) presented on the new IKDC subjective evaluation.

Upper Extremity Committee

Chairman: Stephen S. Burkhart, M.D.

The Committee is initiating a Complications Registry to be managed by Dr. Bob Arciero (USA). Further information will be provided on the ISAKOS Web site and in the next newsletter.

The committee's recommendations for symposia at the 2001 ISAKOS Congress are "Rotator Cuff Tear" and "Instability"

A combined multi-center study is also under consideration by the committee.

ISAKOS in Switzerland

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Montreux.

The Welcome Reception will be held on the evening of the first day of the congress, Monday, May 14, from 5:30 to 7:30 p.m., and is open to all attendees.

Poster and New Member Reception

This is a relaxed event where poster authors are asked to attend their exhibits and visit with meeting attendees. Many of ISAKOS' poster authors are young researchers – this is a terrific time to meet the younger meeting attendees and new members.

The Poster and New Member Reception will be held on the evening of the second day of the congress, Tuesday, May 15.

ISAKOS Morning "Fun Run"

The Program Committee would like to provide a free morning "Fun Run" to all meeting attendees. This run will extend along the shores of Lake Geneva, and the ISAKOS Office and Program Committee encourage all meeting attendees to participate. Prizes will be awarded to the winners! This event will be free to all congress attendees.

Farewell Banquet at Chillon Castle

This elaborate event, commemorating the successful run of the congress, will be held on Thursday evening, May 17, at the legendary Chillon Castle. The "Château Chillon" was immortalized in Lord Byron's poem "The Prisoner of Chillon," and is now a national landmark in Switzerland.

The evening will commence with a boat ride from the dock in Montreux, along the shores of Lake Geneva, docking at the medieval castle. Attendees will stroll across the moat along a cobblestone path to an inner courtyard for cocktails and music. Once inside the castle, attendees will enjoy a traditional medieval dinner at long tables with a roaring fire nearby. An elaborate dessert buffet will be presented in the next room, allowing guests to mingle and enjoy the flavor of the castle.

Attendance at this event is limited to 200. Corporate sponsorship will allow attendees to register for this dinner at a discounted price.

Graft Choice for ACL Reconstruction

Don Johnson, M.D., Ottawa, Canada

History of Grafts

The type of graft that the surgeon chooses for anterior cruciate ligament (ACL) reconstruction has evolved over the past few decades. Erickson popularized the patellar tendon graft autograft that Jones had originally described in 1960. This became the popular graft choice in the late 70s.

In the light of harvest site morbidity and postoperative stiffness associated with the patellar tendon graft, many surgeons began to look at other choices, semi-tendinosis, allograft and synthetics. Fowler and then Rosenberg popularized the use of the semitendinosus; however, even Fowler was not convinced of strength of the graft as he used the LAD (ligament augmentation device) to supplement the semitendinosus. Gore-Tex, Leeds-Keio and Dacron were choices as an alternative synthetic graft. The initial experience was usually satisfactory; however, with the longer follow-up, the results gradually deteriorated.

Allograft was another choice that avoided the problem of harvest site morbidity. The initial allograft sterilized with ethylene oxide had very poor results. Freeze-dried, fresh frozen and cryopreserved are the most popular methods of preservation of allografts today. This has become a popular alternative to the autograft to reduce the harvest site morbidity as well as the operative time. The aggressive postoperative rehabilitation program advocated by Shelbourne in the 1990s greatly diminished the problems associated with the patellar tendon graft. Prior to this change, one had to be an athlete just to survive the rehab program.

There was renewed interest in the semitendinosis during the mid-90s. Biomechanical testing on the multiple bundle semitendinosus and gracilis grafts demonstrated it to be stronger and stiffer. This knowledge, combined with improved fixation with devices such as the endobutton, gave surgeons more confidence with no-bone soft tissue grafts. The endobutton made the procedure endoscopic and eliminated the need for a second incision.

Fulkerson and others popularized the use of the quadriceps tendon graft. This again reduced harvest morbidity, especially when

only the tendon portion was harvested.

Shelbourne has described the use of the patellar tendon autograft from the opposite knee. With both the patellar tendon and the semitendinosus added to the list of graft choices, the need for the use of an allograft is minimized.

The latest twist in fixation is to use an interference fit screw to fixate the graft at the tunnel entrance. This produces a graft construct that is strong, short and stiff. It means that now the surgeon need only learn one technique for drilling the tunnels and can chose whichever graft is desired – hamstring, patellar tendon, quadriceps tendon or allograft.

Successful ACL reconstruction is dependent on a number of factors, including patient selection, surgical technique, postoperative rehabilitation and associated secondary restraint ligamentous instability. Errors in graft selection, tunnel placement, tensioning or fixation methods chosen may also lead to graft failure. Comparison studies in the literature show that the outcome is almost the same regardless of the graft choice. The most important aspect of the operation is to place the tunnels in the correct position. The choice of graft is really incidental.

Patellar Tendon

The patellar tendon graft was originally described as the gold standard graft. It is still the most widely used ACL replacement graft but is not without its problems.

Shelbourne has pushed the envelope further with the patellar tendon graft. He recently reported on the use of the patellar tendon graft from the opposite knee, with an average return to play of four months postoperatively.

The advantages of the patellar tendon graft are early bone-to-bone healing at six weeks, consistent size and shape of the graft, and ease of harvest.

The disadvantages are the harvest site morbidity of patellar tendonitis and anterior knee pain, patellofemoral joint tightness with late chondromalacia, late patella fracture, late patellar tendon rupture, loss of range of motion and injury to the infra-patellar branch of the saphenous nerve. As is apparent in the reference list, most of the complications are due to the harvest of the

patellar tendon. This is still the main drawback to the use of the graft.

Semi-Tendinosus

With the improved technique for preparing the multiple bundle graft, this graft choice has become more popular.

The advantage of the multiple bundle graft is that it is now stronger and stiffer. Howell and Brown have shown that the four-bundle graft is twice as strong as the native ACL.

The disadvantages of the graft are the various methods used to fix the graft to bone – staples, endobutton, interference fit screws – the graft harvest can be difficult, the tendons can be cut off short and there is a longer time for graft healing to bone, approximately 10 to 12 weeks.

There are several issues with hamstring grafts that must be dealt with, such as graft strength, fixation to bone, donor site morbidity and length of time to heal to the bone tunnel.

Graft Strength

Noyes originally reported that one strand is only 70 percent of the strength of the ACL. Sepaga subsequently reported that the semi-t and gracilis composite graft is equal to an 11-mm patellar tendon graft. Marder and Larson felt that the four-bundle composite graft that is tensioned equally is 250 percent the strength of the normal ACL. Howell demonstrated that four bundles of composite graft has 4,300 N to failure compared to 1,750 N to failure for the native ACL.

Graft Stiffness

Brown has shown that a four-bundle semi-t and gracilis composite graft is 2x the patellar tendon stiffness and 3x normal ACL stiffness.

Graft Fixation

The fixation has evolved from staples to endobutton to interference screws and ultimately to cross pins. Both the endobutton and tying sutures over periosteal buttons may be too weak and elastic, producing the bungee effect in the graft. This leads to a layer of fibrous tissue around the graft, giving the tunnel enlargement appearance.

This is a weak fixation. Isabashi and Fu showed that moving the fixation closer to the tunnel entrance shortened the graft and improved the results. Pinczewski showed no difference in outcome with interference screw fixation in semi-t and patellar tendon, except for harvest site morbidity (difficulty in kneeling). Pull-out strength studies by several authors – Caborn, Weiler and Paulos – showed adequate pull-out strength for the interference screw soft tissue fixation. (all above 400 N).

Donor Site Morbidity

In follow-up, the semitendinosus reconstruction has 3 percent to 21 percent of anterior knee pain compared to 12 percent to 40 percent for the patellar tendon reconstruction. Lipsome found there was no demonstrable weakness of knee flexion after hamstring harvest. Injury to the saphenous nerve is an uncommon complication of the tendon stripping.

Graft Healing

Semitendinosus takes 10 to 12 weeks to heal to bone. During this period of time, the graft must be protected if the fixation is not strong.

Early Aggressive Rehabilitation

Aligetti and Marder showed there was no difference in outcome with early aggressive rehabilitation; therefore, the semitendinosus graft has been shown to withstand aggressive rehabilitation and early return to sports. Howell has also reported early return to sports without a brace at six months using cross pin femoral fixation.

Allograft

The main allure of the allograft is the absence of harvest site morbidity; however, the allograft initially did not have good reviews due to the ethylene oxide sterilization process. This caused the graft to be weak and fail easily. With the advent of the freeze-dried and cryopreserved process, there is minimal risk of disease transmission or graft weakness.

The advantages of the allograft are no harvest site morbidity and its availability off the shelf.

The disadvantages of the allograft are the risk of disease transmission, weakness of the graft if radiated or from an older patient, a longer time to incorporate into the bone tunnels, lack of universal availability and increased cost.

Quadriceps Tendon

The quadriceps tendon has gained popularity in the late 90s due to the ease of harvest and the large cross-sectional size. Fulkerson has popularized this graft source. Day, Morgan and others have advocated the use of the graft harvested without a bone block from the patella. This further reduces the morbidity of the harvest.

The advantages of the quads tendon graft are less harvest site morbidity and a larger cross-sectional area of graft

The disadvantages are harvest site morbidity and the bone block on only one end of graft.

Synthetic

The initial allure of the synthetic was as an alternative to the patellar tendon graft harvest problems; however, with long-term follow-up, the failures became unacceptable.

The advantages of synthetic grafts are no harvest site morbidity and no disease transmission.

The disadvantages are a higher rate of late graft failure, an increased risk of late infection and increased cost.

President's Message

(continued from page 1)

where is the funding and support for research and education to help prevent and treat these disabling musculoskeletal conditions? Don't you think it's time we act now?

The promotion of education, research and preventative care sounds exciting; however, as ISAKOS members, our support and devotion to such ventures has been dwindling. Many have been spending more time drinking wine and eating cheese than investing in academia. OK, the French were found to have one of the lowest incidences of atherosclerosis and heart disease, which potentially could be attributed to their Chateau Margot. And the Swiss have one of the lowest incidences of developing osteoporosis, perhaps due to the alpine gruyere. But, be that as it may, we still need to invest in our future, the future of ISAKOS.

We must nourish and cultivate research, for it is research that sets the stage for progress. At present, the Education Committee has established a list of more than 125 teaching centers to which we are planning to become

linked. We are focused on the development of cooperative relationships with other organizations (i.e., the ICRS), which is expected to provide increased prestige, membership growth and organizational awareness for both parties. Membership has grown by 20 percent over the past two years, but even more growth is necessary. We also have become involved in fostering communication and globally disseminating knowledge via our newsletter as well as the ISAKOS Web site, thanks to the excellent work of Dr. Don Johnson and the Communications Committee. Links with ESSKA, ICRS, and the Asian Pacific and Latin American societies are under way, and we are becoming more efficient. Over 40 percent of our members are involved with e-mail communication, and there is hope that this will increase.

Regarding the newsletter, I would first like to cordially welcome and thank Dr. Stephen Burkhart for becoming our new editor at the start of the millennium. The newsletter is meant to nurture a sense of family among interested ISAKOS members. It should be the forum for publication of ISAKOS activities. It should be a publication that offers added

value to its readers' professional lives by facilitating their interaction with the ISAKOS Board and committees. It should become a dialogue, a two-way flow of information including ideas on new techniques, warnings, help and support. ISAKOS and its newsletter should grow further as a forum of such exchange. So take it, it's your newsletter!

During the cocktail hour at the end of the conference, I remember standing, surrounded by over 100 Bone and Joint Decade participants with wine and cheese in hand, and smiling. The incorporation of sports medicine into the Bone and Joint Decade is real. By working together, the integration of the Bone and Joint Decade with the ISAKOS campaign can become a reality. It takes motivation, togetherness, support (emotional and economic), awareness, understanding and dedication. With a touch of each and a bit more money, advances can be made – through research, education and prevention.

We can all have the best of both worlds.

New and Exciting Information From Basic Science

Mitsuo Ochi, M.D., Izumo, Japan

We have recently had striking news of advanced cell technology, where the telomeres of cloned cells from calves were longer than normal (Lanza et al., 2000; Vogel, 2000).

When Dolly was cloned from an adult sheep, one of the most serious concerns was that her cell age was that of an adult, i.e., her cellular clock had not been reset to zero (Wilmut et al., 1997). Dolly's age was demonstrated not to be that of a newborn but of a more mature animal by the fact that her telomeres, the "caps" at the ends of her chromosomes, were shorter than normal. Since telomeres become shorter with cell division, and the telomeres of a newborn are the longest, Dolly's cellular clock had obviously not been reset to zero.

Our hope is that this cloning technique can be applied to the production of autogenous tissue or organs, and there is a possibility that an autogenous new heart can be produced by this technique for transplantation. However, if the cloning technique is unable to reset the telomere clock to zero, an autogenous new heart will be too old for transplantation.

Tissue engineering such as the transplantation of cultured chondrocytes has been employed in the orthopaedic field since the clinical reports of Brittberg and Peterson published in the *New England Journal of Medicine* (Brittberg et al., 1994). Their method and results has served as an academic stimulus to orthopaedic surgeons; however, there are aspects of their method which concern us:

1. Leakage of grafted chondrocytes from the grafted site after ROM exercise, since cells in suspension are injected beneath the periosteal flap over the cartilage defect.
2. Unequal distribution of grafted chondrocytes in the three-dimensional space of the cartilage defect, since there is a possibility that gravity causes all chondrocytes to go down to the base of the defect or the same portion of the defect.

We have introduced the use of an atelocollagen gel, which has been used widely for the treatment of facial wrinkles (Ochi et al.,

1998). Cultured chondrocytes embedded in atelocollagen were transplanted into a cartilage defect. Since 1996, 50 osteochondral defect cases have been treated with this procedure in our department. Apart from our and Brittberg's procedures, the most effective treatment requires the amount of cartilage resected from a non-weight-bearing site for cultivation to be as small as possible but the number of graft chondrocytes to be as large as possible. This means that the promotion of the cell division during cultivation is regarded as an ideal method.

Despite the development of this excellent way of increasing the original number of chondrocytes to, for example, one million times during two weeks of cultivation, we still have one major concern: The chondrocytes cultured by this method and then grafted may function in the grafted site as hyaline cartilage for a certain period, but the telomeres of the grafted chondrocytes are shorter than those of the original and normal chondrocytes, indicating that the grafted chondrocytes are older than the original cells. Thus, there is a possibility that the hyaline cartilage formed by the grafted chondrocytes will at some point in time suddenly degenerate or break.

Lanza and his colleagues demonstrated that cells from the calves they cloned have telomeres that are longer than normal. This indicates the use of cloned cells may enable us to produce new autogenous organs or tissue, the cells of which are younger than those of the original cells, although ethical problems remain to be solved. This can be applied to new chondrocytes or new hyaline cartilage.

The future of orthopaedic treatment is deeply related to the advancement of basic research. We orthopaedic surgeons should

have an astute awareness of information provided by other fields and carefully select relevant information that will lead to new avenues of ideal orthopaedic treatment.

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As a special feature, each ISAKOS Newsletter will highlight an "ISAKOS City." This will be a short description of your city or area, how many ISAKOS members live there, what the special features of your hospital and teaching facilities are, what the typical patient profile is, what type of surgical procedures you most often perform, etc. Submit your "ISAKOS City" to the ISAKOS Office for inclusion in future newsletters by fax at +1 (925) 314-7922 or by e-mail at isakos@isakos.com.

The Arthroscopic Treatment of Traumatic Anterior Instability

Stephen S. Burkhart, M.D., San Antonio, Texas, USA



With the transition away from transglenoid suture techniques and the implementation of suture anchor techniques, the results of arthroscopic Bankart repair have improved tremendously.

At its best, transglenoid repair had a 13-percent failure rate at long-term follow-up (McIntyre and Caspari), and the worst results had recurrence rates in the 40 percent to 60 percent range.

Suture anchor repairs are now routinely reporting recurrence rates of less than 10 percent, in line with the results of the "gold standard" open Bankart technique. Even so, there continues to be a great deal of research directed at improving these results further. Much of the effort is focused on adjunctive measures of capsular reduction, such as capsular plication, rotator interval closure and radiothermal capsular shrinkage. These are all strictly soft tissue techniques.

Dr. Joe DeBeer and I recently completed a study, soon to be published in *Arthroscopy*, examining the relationship of failure of arthroscopic Bankart repair to traumatic

glenohumeral bone defects. We reviewed 194 cases of arthroscopic Bankart repair by suture anchors and divided them into two groups as follows:

Group 1 (173 patients):

- No significant bone defect
- Recurrence rate 4 percent

Group 2 (21 patients):

- Significant bone defect
- Recurrence rate 67 percent

We defined and subdivided significant bone defects into two categories:

1. Glenoid "Inverted Pear"

- Inferior glenoid diameter less than superior glenoid diameter
- Greater than 25-percent loss of inferior glenoid articular arc

2. Humeral "Engaging Hill-Sachs Lesion"

- Hill-Sachs lesion that could be observed arthroscopically to engage the anterior glenoid rim in parallel fashion when the shoulder was brought into 90° abduction and 70° to 100° external rotation

The "non-engaging Hill-Sachs lesions" (i.e., those that passed diagonally across the

glenoid with the arm in abduction and external rotation) did not have an increased rate of recurrence.

In contact athletes (101 patients), if there was a significant bone defect, there was a recurrence rate of 87 percent. However, if there was not a significant bone defect, the recurrence rate was only 6.5 percent. This data would indicate that a contact athlete without a bone defect might reasonably be considered for an arthroscopic repair.

We concluded that arthroscopic Bankart results were equal to open Bankart results if there were no significant bone defects. We also concluded that the two patterns of bone deficiency that are contraindications to arthroscopic Bankart repair are the "inverted pear glenoid" and the "engaging Hill-Sachs lesion." For patients with severe glenoid deficiency, we recommend restoration of the glenoid articular arc with a large coracoid bone graft (Latarjet procedure).

The focus on bone loss is a departure from the current trend of addressing only the capsule, even to the point of overtightening or overconstraining the capsule. My concern with overtightening is that it will create stiff shoulders that, even though they may not sustain recurrent dislocations, will have sub-optimal and possibly unacceptable function. Our goal should be to produce stable shoulders, not stiff shoulders.

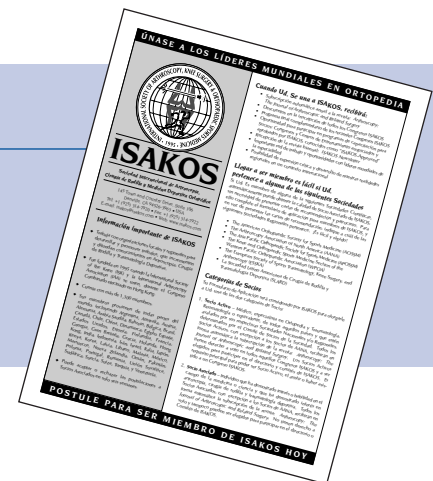
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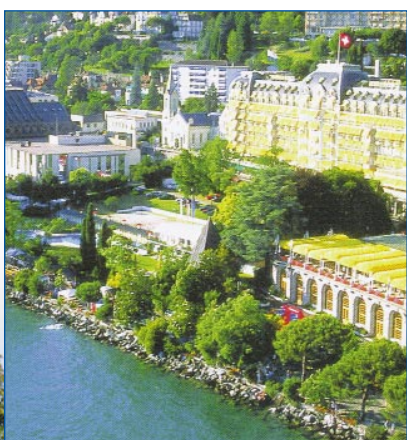
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