



# Sports Medicine

CONMED LINVATEC SPORTS MEDICINE NEWS AND PRODUCT INFORMATION



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We look forward to your feedback  
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MEDICINE NEWSLETTER.  
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## True HD is Here

ConMed Linvatec is pleased to announce the release of True HD. The IM4000 HD Camera System is truly revolutionary in both its performance and its benefits.

This True HD System provides increased resolution, greater clarity and enhanced three-dimensional perception. When used with a 4mm scope a standard definition system has a typical pixel density of 166,250 pixels, (475 x 350). The ConMed Linvatec True HD system has 3x the number of pixels, 490,000 pixels, (700 x 700), and when talking resolution, more is better. This is the first HD camera console on the market that is selectable between 720p, 1080i and 1080p. That means that you determine which HD standard is optimal for your needs, not the manufacturer.

The new IM4120 HD Camera Head delivers those great features that you've come to expect from ConMed Linvatec, like autoclavability and the ShockFlex™ prism mounting. Autoclavable HD camera heads mean money saved in expensive gas sterilization equipment and their chemicals. ShockFlex prism mounting means that this HD camera head can better withstand bumps and drops that might send other cameras home for repair.

You have HD at home. Isn't it time you get that same HD standard at work? Truly.



## Bio-Anchor® Technique

Richard Holby M.D., Orthopaedic and Arthritic Institute,  
Toronto, Ontario, Canada

The Bio-Anchor is an easy to use bioabsorbable suture anchor used for both Bankart and SLAP repairs, allowing fixation of a displaced labrum without presenting the risks that having a metal implant near the articular surface would present. I will present a few helpful tips regarding Bio-Anchor techniques which will help avoid potential problems with its use.

I find the drill guide helpful during arthroscopic procedures. When using this drill guide, an 8.4mm operative cannula is required. The guide provides a secure grip on the edge of the glenoid and contains a slot for visualization of the insertion site. I suggest insertion of the guide over a large switching stick to prevent damage to the dam of the cannula during the absence of a trocar. This step will also minimize fluid loss through the guide. Once in place, the guide must be kept at the same angle and securely held to prevent displacement. If the guide moves, the anchor will be off center and may break off the inserter when tapped into place. The drill has a mark on the shaft which, when the hole is drilled deep enough, meets the external end of the guide. The last mm of drilling is difficult as it requires firm pressure. However, this additional mm is imperative to proper anchor placement and seating. It is important to ensure that the mark on the shaft is easily visible as to allow easy depth reading and that your assistant drills straight down the guide without angulation. The drill should be removed only when the anchor is ready to insert. It is best to have the Bio-Anchor package open and the anchor ready for insertion before you drill the hole. Taking care to ensure the angle of the guide has not changed, the anchor is ready to be inserted.

It is best to rotate the anchor so that the suture runs not vertical or horizontal to the articular surface, but at a 45-degree angle. In the case that it is too vertical, the implant may jam against the wall of the bone tunnel, especially when at the 5 o'clock glenoid position. Once engaged in the hole, the anchor cannot be rotated. The inserter has a mark that is visible through the slot in the guide. The anchor should be inserted with hammer taps until this mark is just past the articular margin. In a case where the Bio-Anchor is inserted too deeply into the glenoid, the sutures may not run well.



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# A Short Essay on Arthroscopy and RF Tools

Hugh West, M.D., The Orthopedic Specialty Hospital, Salt Lake City, UT

## Introduction

In the mid 1990s, enhanced electrosurgical tools that greatly facilitated arthroscopic shoulder surgery became available to us. They were introduced as radiofrequency, or 'RF', instruments. It seems it was calculated on the part of the early makers of these products to label them thus to sell the perception that a safer new technology was being introduced. Almost universally, surgeons were unaware that RF was identical to the 'Bovie' tools they had been using in open surgery for the past 80 years.

In 2005, RF probes were used in over 800,000 arthroscopic surgical cases (Millenium Report 2006). Early on, because surgeons had very little understanding of the basic workings of these devices, they were vulnerable to misconceptions and spurious claims by vendors particularly regarding issues of safety. Misunderstandings still persist. The purpose of this short essay is to address some of the common misconceptions regarding RF and some of the more common myths that still circulate regarding this technology.

## Ablation Basics:

RF (High Frequency Electricity) is just a different form of electricity than that which we use in the home. Some major differences are listed below:

|                               | Low Frequency Electricity       | High Frequency Electricity  |
|-------------------------------|---------------------------------|---|
| <b>Location:</b>              | In the home                     | In RF Tools- to safely and conveniently deliver focused heat to tissue to create specific surgical effect |
| <b>Use:</b>                   | Home appliances, lighting, etc. | Ablating (vaporizing) tissue or coagulate bleeding vessels  |
| <b>Frequency:</b>             | 60 cycles/second                | 500,000 cycles/second   |
| <b>Risks (in human body):</b> | Electrocution                   | None- Passes harmlessly through body  |

The mechanism of coagulation is reasonably intuitive to the surgeon in that the RF probe is simply a heat source that cauterizes the open blood vessel by heat denaturing the collagenous tissue. Tissue ablation is different than coagulation in that tissue is actually vaporized and removed from the surgical site. Very simply, ablation occurs when electricity is conducted to the tip of the RF probe immersed in saline. The electricity travels into the saline and quickly heats the saline fluid right at the tip of the probe to the point where it boils creating a small bubble of water vapor at the tip. The vapor, however, now becomes a barrier to the continued passage of the electricity into the saline. A sort of electrical pressure immediately builds up (voltage) and the electricity then arcs from the tip of the probe, across the vapor gap, to the target tissue. These arcs are extremely intense but very localized heat energy and when they contact tissue, instantaneously vaporize the tissue to a depth of about a half a millimeter. These arcs are created several hundred thousand times per second and thus a volume of tissue can be removed relatively efficiently.

**"The function and feel of these tools may differ due to various design configurations, however, it must be understood that advantages or disadvantages, whether attributed to safety or function, have nothing to do with bipolar vs. monopolar."**

Dr. Hugh West

## RF Myth #1: Arthroscopic ablation of tissue can be a "cold" process

One of the great marketing success stories in the art of arthroscopy built around false principles of basic physics is that of the Arthrocare product line that claims a proprietary patented technology called 'Coblation' which purportedly ablates tissue at very low temperatures as opposed to their competitors. They achieved great success early on while teaching that their version of electrosurgery, being 'cold', was safer. It helps to clarify this misunderstanding if one considers that during active use of an Arthrocare probe, and most RF probes, there is as much heat energy delivered to the tip of the probe as that generated by a household toaster. To put this in better perspective, a surgeon doing open surgery will typically use 30-40 watts of power on CUT and COAG whereas with these arthroscopic tools 200-300 watts are most commonly used. Power = Heat. The reason these power levels are not frightening in arthroscopy as it would be in open surgery is the constant exchange of fluid absorbs the heat very efficiently. Despite this, many surgeons have been persuaded by their sales pitch and to this day it remains a challenge to capture the attention of the surgeon to clarify their understanding. Nevertheless, the market seems to have matured to a point now that all vendors of these products can claim a substantial safety track record and the Arthrocare claims have accordingly become less relevant.

## RF Myth #2: Bipolar probes are safer than monopolar probes

Like any electricity, RF electricity must have a path into and then away from the body to work. In other words, it must form a 'closed circuit' in which it leaves the electrosurgical generator and then after passing into the surgical site, returns again to the generator. With monopolar probes, the electricity enters the body at the tip of the probe and returns through the 'grounding pad'. In contrast, the bipolar design applies the electricity to tissue at the tip of the probe but the electricity returns from the body through an exit conducting pathway on the probe itself thus removing the need for a grounding pad. To argue that bipolar is somehow safer because the electricity does not have to travel through the body to get to the grounding pad is ludicrous given the fact that monopolar probes have been used safely since the 1920's in open surgery. Nevertheless, many surgeons will profess a preference for bipolar probes based on their perceptions of safety taught to them by sales representatives.

Industry sponsored studies have been conducted trying to show significant functional differences between bipolar and monopolar devices. However, these studies used different power levels, tip configurations, and distances from tissue thus providing no baseline or common-ground on which to compare the two therefore making it impossible to objectively differentiate the functional differences.

## Conclusion:

These arthroscopic tools, now having been used in millions of cases, have been established to have an excellent safety profile. Perhaps this is now easier to understand given that this is not new technology so much as it is an old, reliable, safe technology adapted to a new surgical environment. These products will increasingly compete on the basis of cost, aesthetics, and function as the perceived differences in safety fade with appropriate education of both sales reps and surgeons.





# Pinn-ACL® CrossPin Technique

Arturo Almazan, M.D.  
Clemente Ibarra, M.D.  
National Institute of Rehabilitation  
Mexico City

The ConMed Linvatec CrossPin System consists of a bioabsorbable Graft Harness implant, a Self-Reinforced CrossPin implant, as well as a family of innovative instruments with a built in three-point precision reference system. The implants provide an excellent form of transverse femoral fixation for soft tissue grafts in ACL reconstruction and when implanted, provide a pullout strength of over 1700 Newtons, ensuring a rigid fixation and allowing for an accelerated recovery and rehabilitation.

The main advantage of this system is the ability to visualize the exact point of fixation of the graft in the femoral tunnel through the drilled transverse tunnel (**Figure 1**). The instrumentation included in the CrossPin System allows for reproducible procedures and clinical results.

Graft preparation prior to using this implant is very simple and is completed by mounting the graft onto a CrossPin Harness of the same size as the drilled femoral tunnel.

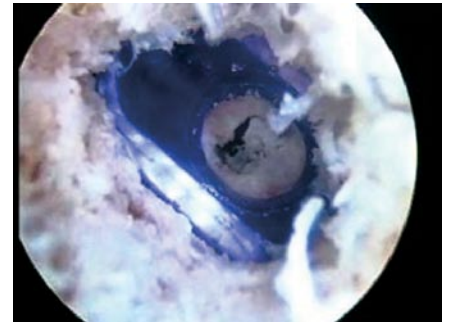
The placement of the tibial and femoral tunnels is done in a regular arthroscopic fashion using the GraFix® Cruciate Reconstruction System. When drilling the femoral tunnel, a depth of 35mm is recommended to ensure ample graft/tunnel contact. Once both tibial and femoral tunnels are drilled, a special CrossPin U-Guide is inserted through the tibial tunnel and into the femoral tunnel. The U-Guide allows us to drill the transverse tunnel in the appropriate location. Prior to transverse drilling, sizing of the CrossPin implant is completed simply by reading the marks on the transverse drill bit.

Drilling the transverse tunnel is a step that has caused some frustrations amongst surgeons in the past. Prior to CrossPin drill bit redesign, the drill bit would sometimes get entangled in the transverse cannula. The transverse cannula is used to spread soft tissue in order to keep the transverse tunnel visible on the lateral side of the knee. Recently, the CrossPin drill bit was redesigned as to alleviate surgeons of this problem. Here, at our facility, we often use a Steinmann pin as a switching stick in the transverse tunnel instead of the cannula provided with the CrossPin. This allows for easy relocation of the scope in the transverse tunnel (**Figure 2**).

Once the transverse tunnel is drilled, a guide pin is inserted into the tibial and femoral tunnels for graft passing. It is suggested that the scope be inside the joint to visualize when the harness and graft enter the articular space and the femoral tunnel (**Figure 3**), however, we put the scope in the transverse tunnel during this entire step so that we can visualize the harness entering the femoral tunnel in the proper position. If the harness' leading sutures are parallel (the surgeon just observes one suture through the transverse tunnel) the harness is in the correct position (**Figure 4**). If the sutures are not parallel and two sutures are seen (**Figure 5**), the harness is not properly oriented. Once the harness is properly placed in the femoral tunnel, the scope is removed from the transverse tunnel, leaving its sheath. This will serve as a guide to easily introduce a guide pin into the transverse tunnel. The guide pin should exit the medial side of the knee once drilled through. The leading sutures of the CrossPin implant are inserted into the guide pin and pulled through the transverse tunnel until they exit the medial side of the knee.

To ensure that the sutures are correctly threaded through the harness, the scope can be placed in the transverse tunnel (**Figure 6**). Once checked for correct placement, the sutures are pulled until the implant fits into the transverse tunnel and the graft harness opening. The CrossPin Driver is then inserted into the proximal end of the implant and tapped with a mallet to move the implant through the Transverse Cannula and into the transverse tunnel. This allows you to ensure that the CrossPin implant lies flat on the lateral femoral cortex.

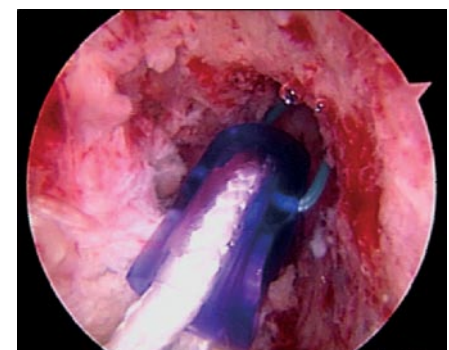
Tibial fixation can be achieved by several means according to surgeons' preference. Tensioning can be performed both easily and repeatedly using the SE™ Graft Tensioner System which allows for central screw placement. The BioScrew® Xtralok® is an excellent form of tibial fixation and can be used as well as regular BioScrew interference screws, staples, posts, or a combination of.



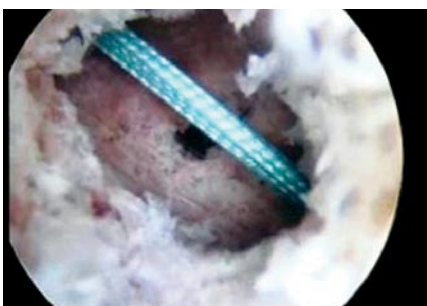
**Figure 1** View of the transverse tunnel. The harness is sitting in the femoral tunnel in a satisfactory position.



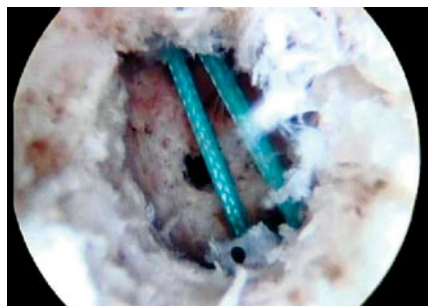
**Figure 2** A Steinmann pin is used as a switching stick to simplify relocation of the scope in the transverse tunnel.



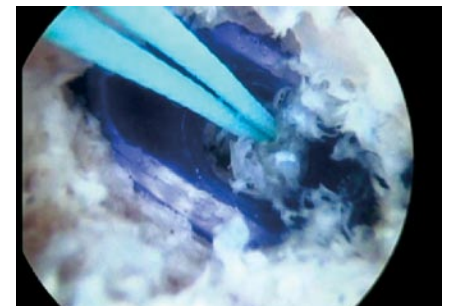
**Figure 3** Arthroscopic view of the harness as it enters the femoral tunnel.



**Figure 4** View through the transverse tunnel. If harness' leading sutures are parallel, the harness is in a satisfactory position.



**Figure 5** View through the transverse tunnel. If harness' leading sutures are not parallel, the harness is not in a satisfactory position.



**Figure 6** Transverse tunnel view of CrossPin leading sutures through the harness.

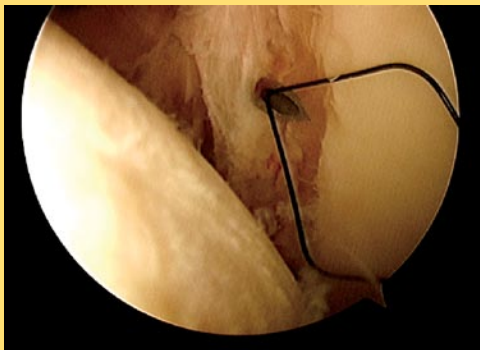
# The “Song” Modification of Soft Tissue Repair using the Bio-Mini Revo™ and the Blitz® Suture Passer

John Song, M.D., FRCSC  
Welland Hospital Site,  
Niagara Health System  
Ontario, Canada

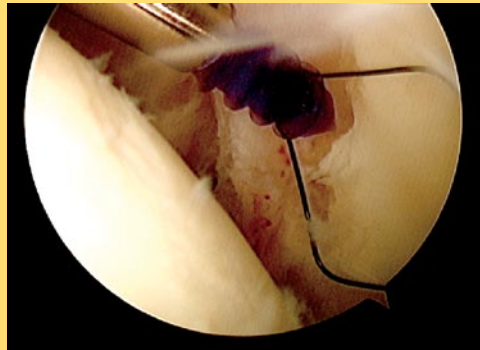
During a labral repair, I use a combination of Labral Nails and Bio Mini Revo suture anchors. Traditionally, suture anchor use consists of three parts: **1)** Insertion of the suture anchor; **2)** Suture passing through soft tissue; and **3)** Tying a knot to secure the repair. Suture passage through the labrum is accomplished using one of many available suture retrieval devices which are designed to penetrate the labrum.

When using a suture-passing device such as the Spectrum, the process of labral repair can seem time consuming in the event that technical difficulties arise. Open/Shut devices can leave large holes through the tissue, compromising the “bite” and the quality of repair. Closed-loop devices, such as the Blitz, require a second instrument to insert the suture into the loop. However, with a fairly simple modification, this procedure is reliably simplified and shortened.

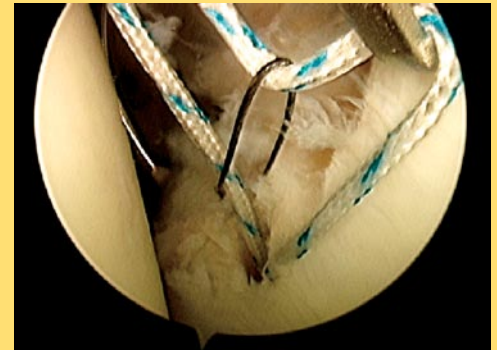
The suture anchor site is prepared with a burr to decorticate and expose the anterior glenoid rim. A straight Blitz suture passer is then inserted through an anterior cannula and is used to pick up a portion of the capsule and the labrum. This “bite” can then be reduced to the anterior glenoid where the tip is delivered and the loop opened (**Figure 1**). Using the standard technique, a Bio-Mini Revo suture anchor is then inserted through a superior cannula and through the opened loop, into the glenoid (**Figure 2**). A suture retriever or crochet hook can then be used to retrieve one suture out of the loop and back out through the superior portal (**Figure 3**). The loop is closed over the remaining suture and the Blitz suture passer is retracted out of the anterior portal. The second suture is then retrieved through the anterior portal (**Figure 4**) where a knot can be tied and slid down over the repair (**Figure 5**). Using a snap on alternating sutures helps to keep them sorted out and identified while visualization of the anchor while retrieving the sutures helps to prevent emptying the anchor.



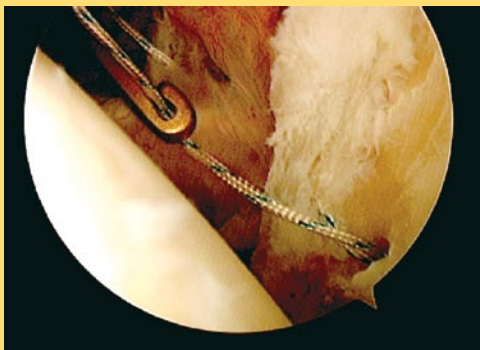
**Figure 1:** Blitz loop is opened on anterior glenoid



**Figure 2:** Bio-Mini Revo suture anchor is inserted through opened loop.



**Figure 3:** A suture retriever is used to retrieve one suture out of the loop.



**Figure 4:** The second suture is retrieved through anterior portal.



**Figure 5:** A knot is tied and slid down over the repair.



**Bio-Mini Revo**

# ConMed Linvatec SE™ Graft Tensioner and XtraLok® BioScrew®

Submitted by Laurie Hiemstra, M.D.

I have been using the Linvatec SE Tensioner and the XtraLok BioScrew exclusively for over a year, in approximately 250 ACL reconstruction procedures. Below I outline the reasons that I prefer this form of tensioning and tibial fixation as well as give some tips and pearls that I've learned over the past year.

## SE Graft Tensioner:

### Major Benefits:

- 1. Reproducible** – You know exactly how much tension you are placing on the graft each time you use the Tensioning Device.
- 2. Consistent** – Each case is consistent and not dependent on your assistant or whoever is applying tension on the graft. This reduces the variance in the amount of tension on each ACL reconstruction that you do.
- 3. Easily Adjustable** – I can adjust the tension on each tendon dependent on the size of the tendon. For smaller tendons, less tension. For larger tendons, more tension. If the tendons are unequal in relative size, for example a large Semi-Tendinosis and a small Gracilis, I can adjust the tension individually to account for this. This equalizes the stress in each tendon independently.
- 4. Tibial Fixation can be performed by a single surgeon** – You do not need an assistant to apply tension on the graft while you place the screw. This can be difficult if you don't have a reliable assistant.
- 5. Can be used for both hamstring and patellar tendon graft** – Although designed to provide tension for a double stranded graft, one wheel can be used if a patellar graft is used or if there was difficulty harvesting one of the hamstring tendons.
- 6. Allows you to choose your femoral fixation.** The Tensioner works with any type of femoral fixation.
- 7. Allows for in-situ tensioning to minimize creep after screw insertion** – Tension is applied in situ rather than on the Graft Master where the benefit is lost once the tendon is removed from the Graft Master to be placed in the knee. Creep occurs in situ and the graft is fixed immediately therefore minimizing creep after interference screw insertion.
- 8. Allows for hands free tensioning** – There is no need for your assistant to hold tension on the graft in situ during cycling and scoping; you can let the Tensioner do the work while you scope the knee for final pictures.
- 9. Posterior Tibial Loading** – The Tensioner reduces the tibia against the counter-tensioned PCL.



## Clinical Tips and Pearls:

- 1.** A small incision can still be made by using a Hemostat to stretch skin around the Tensioner, inserting it inline with your incision and then twisting it to the desired orientation.
- 2.** Make sure you mark sutures to be able to determine which tendon is which. I use a single knot on the gracilis and no knots on the semitendinosus. Pick a system that works for you and stick with it.
- 3.** Separate sutures prior to placing Tensioner – this is a very effective time saver.
- 4.** Tie square knots and use a Hemostat if knot slips.
- 5.** Tension, cycle the knee through flexion and extension 10-20 times and re-tension. Repeat this until the tension no longer drops, usually two or three times. Then scope the knee, check graft position, take pictures, and clean up any Hematoma or bone chips. This gives the graft 3-5 minutes to creep in situ prior to fixation. Then check the tension again and adjust prior to screw insertion.

## XtraLok Tibial Fixation Interference Screw:

### Major Benefits:

- 1. XtraLok Screw allows for circumferential compression of all four tendons against bone** – Maximizing bone/tendon interface for maximum healing potential.
- 2. No need for back up fixation** – The XtraLok screw provides firm enough fixation (1400N+) so that no back up Post or staples are required. Cortical fixation increases pullout strength even for softer bone.
- 3. Bevelled screw means no prominent fixation** – There is no need for removal of hardware in the future.

## Clinical Tips and Pearls:

- 1.** The XtraLok screw size is same as tunnel size. There is no need to put in a screw bigger than drilled tunnel size because of the taper on the screw. Only twice have I not been happy with the bite of the screw. As a result, I took it out and put in one mm larger screw with good results.
- 2.** Thirteen turns to proper insertion of screw. It can be hard to see through the Tensioner to see if your screw is flush with the tibial cortex.



## surgeon testimonials:

"I now have been using the SE Graft tensioner for a few years. After my initial skepticism of the increased operating time that the procedure would take, I have become a firm believer that this has improved my stability results. In our initial review of the KT results (Recent Clinical Study), the 3-5mm side to side results have reduced from 40% to 20% with the use of the tensioner."

Donald H Johnson M.D., FRCS



**14<sup>TH</sup>**  
**ANNUAL RESIDENTS & FELLOWS**  
**ARTHROSCOPY AND**  
**SPORTS MEDICINE CONFERENCE**  
**MAY 10–12, 2007**  
**USEPPA ISLAND,**  
**FLORIDA**

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**RESIDENTSANDFELLOWS.ORG**  
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## My excellent experience at last year's Residents/Fellows conference

**Eric A. Khetia, M.D.,**  
**Summit Orthopedics, Ltd.,**  
**St. Paul, Minnesota**

In May of 2006, I had the opportunity to attend the Residents & Fellows Conference during my sports fellowship year at New England Baptist Hospital. I had the privilege of meeting Drs. Johnson, Hiemstra, and Mehalik who were more than willing to share their wealth of orthopedic knowledge, teach surgical techniques, and provide valuable insights in regards to beginning a career in orthopedic surgery. The fellows and residents at the course represented several countries from around the world. It was a wonderful experience to share orthopedic techniques, learn from excellent research presentations, and forge professional relationships and personal friendships with the other residents and fellows. The unique opportunity to closely interact with esteemed faculty and peers in an intimate, collegial environment, made this the most enjoyable and meaningful course I have attended.



## Up Coming Events (Domestic and International)

- |                  |  |                     |  |
|------------------|--|---------------------|--|
| <b>Apr 13–14</b> | OLC - ASSH course — Rosemont, IL   | <b>Jun 7–9</b>      | Sixth Symposium on Joint Preserving and Minimally Invasive Surgery of the Hip — Marina Del Rey, CA |
| <b>Apr 18–21</b> | FASA/SAMBA Federated Ambulatory Surgery Assn./Society for Ambulatory Anesthesia — New Orleans, LA              | <b>Jun 8–10</b>     | OLC - AAOS Cartilage Restoration of the Knee — Rosemont, IL  |
| <b>Apr 19–22</b> | SAGES — Paris Las Vegas Hotel, Las Vegas, NV   |                     | Allegheny Temporal Bone Lab  |
| <b>Apr 20–22</b> | OLC - AAOS Shoulder Course — Rosemont, IL  | <b>Jun 20–23</b>    | San Diego Shoulder Arthroscopy: 23rd Annual Meeting aka ESCH — San Diego, CA                       |
| <b>Apr 26–29</b> | Spring AANA — San Francisco, CA  | <b>Jun 22–23</b>    | OLC - AAOS MIS Hip & Knee — Rosemont, IL   |
| <b>May 4–6</b>   | OLC - AAOS Fractures of the Pelvis & Acetabulum — Rosemont, IL   | <b>Jun 29–30</b>    | New England Fellow's Conference — Nantucket, MA  |
| <b>May 10–12</b> | Residents & Fellows Arthroscopy Conference — Useppa, FL  | <b>Jul 7–8</b>      | OLC - AANA Hip Course — Rosemont, IL   |
| <b>May 11–12</b> | OLC - AAOS Hand & Wrist Course — Rosemont, IL  | <b>Jul 12–15</b>    | AOSSM - American Orthopaedic Society for Sports Medicine — Calgary, Canada                         |
| <b>May 16–19</b> | AAASC (American Association of Ambulatory Surgery Centers) annual meeting — Denver, CO                         | <b>Jul 13–15</b>    | OLC - AANA Shoulder Course — Rosemont, IL  |
| <b>May 19–20</b> | OLC - AANA Knee 'Ligament' Course — Rosemont, IL   | <b>Jul 27–28</b>    | OLC - AAOS Shoulder Course — Rosemont, IL  |
| <b>May 27–31</b> | International Society of Arthroscopy, Knee & Sports Medicine: 6th Biennial Congress (ISAKOS) — Florence, Italy | <b>Jul 30–Aug 3</b> | Boston University School of Medicine Sports Medicine Update 2007 — Martha's Vineyard, MA           |
| <b>Jun 1–3</b>   | Canadian Ortho Assoc. Annual Meeting — Halifax, Canada   |                     |  |
| <b>Jun 2–3</b>   | OLC - AANA Wrist&Elbow Course — Rosemont, IL   |                     |  |

**1-800-237-0169 Karen Sousa, ext. 5349,**  
**Terry Michaels, ext. 5233,**  
**Melissa Pritz, ext. 5327**