Postgraduate Seminar at Red Rock Resort Offers Diverse Agenda

- Cadaver Skills Labs
- Concurrent Sessions
- Expert Speakers
- Meet the Mentors’ Reception
As I continue to transition into my role as executive director of the AOAO, I want to take this time to thank some people who have provided me with such pivotal assistance. All the board and academy members have been wonderfully supportive, but I want to specifically thank Dr. Dean Nachtigall for his leadership as president and Dr. Phil Schmitt, who’s done a great job of chairing the CME Planning Committee by coordinating the programs, sending out emails, and working closely with the academy’s executive office in Davie, Florida. I also want to extend my sincere appreciation to the academy office for making the transition from Dr. Morris’ administration to mine so smooth and seamless for myself and the members.

I’m happy to report that the academy continues to thrive, especially as it relates to residency programs. We’ve approved three new residencies for the next several years in Grand Rapids, Michigan, Corvallis, Oregon, and Richmond Heights, Ohio. Not all of them will accept residents this summer, but they are approved and ready to go, which is good news. As far as residencies are concerned, the American Osteopathic Association has mandated a complete revision of the basic standards for residency training. As a result, our executive office will be working hard over the next year to get those standards revised.

We had a very successful meeting in Boca Raton, Florida, last September based on the number of attendees as well as the positive comments we received. And I’m looking forward to seeing many of you at the 49th Annual Postgraduate Seminar, which will be held May 1-3, 2009 at the Red Rock Resort in Las Vegas, Nevada. For the first time in my memory, we will be coordinating a cadaver skills lab for foot and ankle and adult reconstructive hip procedures that will be in addition to the traditional didactic lectures. I would like to request that everybody register early since room space is rapidly filling up.

Because of the ongoing economic crisis, one of the academy’s chief concerns is finances. Fortunately, I’m happy to report we are on great financial footing at the present time thanks to the investment policies we have followed in the past under Dr. Morton Morris’ leadership. Unfortunately, many of our brethren are suffering because of the protracted stock market collapse. The AOAO was not invested in stocks but rather in low-risk, low-yield funds that ensured we would never lose any money.

However, while we absolutely did not take any sort of monetary hit during this financial crisis, we are concerned about grants and aid for continuing medical education that come from implant companies. Currently, the large implant manufacturers are funneling their funds through an independent organization that will then, without strings attached, disperse the funds to the various specialties, schools, and residencies. Unfortunately, the group that is responsible for doing this is not really osteopathic friendly. As a result, our academy is dealing directly with the American Osteopathic Association to try setting up a fund or clearinghouse that’s separate from the implant manufacturers—a third party affiliation—that will distribute the funds to the osteopathic profession.

The best way for our members to approach this issue is to discuss the fact that osteopathic medical education is separate and distinct from the M.D. educational aspect, and that we would encourage these implant companies to funnel some funds to osteopathic orthopedic education through whatever method we can devise. The best thing for our members to do is let their device manufacturers and their sales representatives know we’re concerned about this and encourage them to filter this feedback up the corporate ladder of the manufacturers.

As executive director, I will be making several trips to Washington, D.C., to lobby for legislation that would be beneficial to orthopedic surgeons. Some of the hot topics are the medical home concept as well as decreasing reimbursement for ambulatory surgery centers. I will be in the nation’s capitol with all the M.D. and D.O. surgical specialties at a joint surgical advocacy meeting called the JSAC conference, where the AOAO will meet with all the surgical specialties to discuss a strategy and lobby our various senators and representatives on the hill in a united effort. With a new administration now in place in Washington, we want to make sure that surgical views are heard and understood.

Over the next several months, one of the primary projects the academy office will be working on is revising our bylaws and procedures manual. One other issue we’d like to get involved in is more evidenced-based orthopedic lectures at our conferences. Consequently, I am sending out a plea to our members who have experience in evidence-based medicine, or those who would like to establish a working group to explore how our academy might further enhance its conference programming, to please contact the AOAO executive office.
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When Edward A. Loniewski was a baby, his father peeked into the
crib and told his newborn son, “You’re going to be my doctor when
you grow up.” Although Dr. Loniewski understandably has no
recollection of this incident, which his father recounted to him many
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The Orthopod is published three times a year in March, July, and November. Please direct all
editorial inquiries to Marie Morris at mariem@nova.edu. Visit our website at www.aoao.org.
The issue of specialization and subspecialization within orthopedics has been a reasonably hot topic in recent years. At times, the level of specialization may even seem extreme. While touring a large university hospital on a recent trip to Beijing, I met an orthopedic faculty member who was introduced as the hospital’s C1-C2 specialist. Apparently the subaxial cervical spine was territory reserved for others. The value of such specialization would seem to be directly proportional to the case volume that supports it. Most mere mortal orthopods have to rely upon the depth, breadth, and scope of their training in their more comprehensive practice of orthopedic surgery.

The thought that strikes me is that all too often a paradox exists in the operating room. This paradox occurs when highly specialized and highly trained orthopedic surgeons’ efforts are “supported” by hospital operating room staff members who simply are not familiar with the procedure being performed. This is all too common and does not only occur on call. It does not result in ideal patient care and is not on the radar screen of most institutions. Most of us have also seen or experienced the beauty of the opposite scenario—attentive staff members who keep up with you, demonstrating valuable insight and anticipation relative to the procedure being performed. This should be the norm.

As orthopedists, we often perform labor- and instrumentation-intensive procedures. By definition, we also have a strong desire for the best possible care for our patients, which includes but is not limited to elimination of errors and optimization of OR efficiency. Opportunities would seem to exist in many institutions for improvement in the delivery of intra-operative orthopedic care. An orthopedic standard of care needs to be enunciated and adhered to.

Appropriate specialization of operating room support staff needs to be expanded and perhaps a credentials process developed. There is little question there is great value of such specialization for patients. Now it’s time we started acknowledging and developing it universally.

**Eponymous Elucidation**

**Dupuytren’s Contracture**
Contracture of palmar fascia causing the ring and little finger to flex permanently into the palm

**Baron Guillaume Dupuytren**
Disliked by his peers with epithets like “The beast of the Seine” and others, Guillaume Dupuytren was a French anatomist and surgeon. Born in 1777, he was so poor that he attended college through charity. He eventually became one of the richest physicians of his time. In 1815, he became professor of clinical surgery at Ecole de Medecine. He was known as an excellent observer, utilizing others’ ideas—not as an original investigator. His most important writing was on artificial anus, although his name is also attached to abscess, bandaging, phlegmon, and splint. He died in 1835.

**Charcot’s Joint**
Degeneration of ligaments and joint surfaces due to lack of use or control

**Jean-Martin Charcot**
Sometimes called the father of neurology, he established a neurology clinic—the first of its kind in Europe. His most enduring work was with hysteria and hypnosis.

Charcot was born in 1825 and was a professor at the University of Paris for 33 years. His name also is attached to Charcot-Marie Tooth Syndrome and at least six other syndromes. His research included discovering the importance of small arteries in cerebral hemorrhage. Among his students were Alfred Binet, Pierre Janet, and Sigmund Freud. He died in 1893.

**Morton Morris, D.O., J.D., FAOAO, FACOS, of Florida, who passed away in 2008, and his wife, Marie, were honored by the Broward County Osteopathic Medical Association in December 2008 for their numerous contributions to the osteopathic profession both locally and nationally. In January, Dr. Morris was posthumously honored by the AOA’s Council on Continuing Medical Education “for his unwavering dedication to the osteopathic profession” at the 19th Annual Osteopathic Medical Education Leadership Conference and CME Sponsors Conference held in Fort Lauderdale, Florida. In addition to the aforementioned accolades, Dr. Morris was named to the AOA Mentor Hall of Fame, which is “dedicated to recognizing excellence in mentoring by those who serve or have served as trusted advisors to members of the osteopathic profession in the tradition established by A.T. Still, M.D., D.O.”**

*By Charles T. Mehlman, D.O., M.P.H., FAOAO, Contributing Editor*

*By Arnold Melnick, D.O., M.Sc., FACOP, Executive Editor*
Correction

In the fall 2008 issue of *The Orthopod*, we neglected to mention two other esteemed individuals affiliated with the AOAO who were named as Great Pioneers in Osteopathic Medicine by the AOA's Bureau of Osteopathic History and Identity—Peter B. Ajluni, D.O., FAOAO, FACOS, and Edward A. Loniewski, D.O., FAOAO, FACOS. In addition to honoring a select group of osteopathic physicians, all living former AOA presidents were inducted into this prestigious group, including Drs. Ajluni and Loniewski.

In Memoriam

Robert M. Chouteau, D.O., of Texas passed away on May 22, 2008. Dr. Chouteau graduated from Kansas City University of Medicine and Biosciences College of Osteopathic Medicine in 1976 and went on to complete his residency training at Des Moines General Hospital and an orthopedic surgery fellowship at Michigan Capital Medical Center.

Jeffrey Stern, D.O., of New Jersey, who was only 40 years old, passed away at South Jersey Regional Medical Center in August 2008.

J. Brendan Wynne, D.O., FAOAO, FACOS, of Florida passed away on January 14, 2009 at the age of 78. During his illustrious career, Dr. Wynne served as chairman of the orthopedic surgery residency training program at Philadelphia College of Osteopathic Medicine and as president of the Rhode Island Society of Osteopathic Physicians and Surgeons.

Members in the News

Peter B. Ajluni, D.O., FAOAO, FACOS, of Michigan, immediate past president of the American Osteopathic Association (AOA), represented the osteopathic medical profession in Chicago last December at a meeting of the U.S. Bone and Joint Decade (USBJD) Board of Directors, on which he serves. The AOA and AOAO are supporting organizations of the USBJD, which is a global, multidisciplinary initiative to draw attention to musculoskeletal conditions. At the meeting, Dr. Ajluni and the other medical professionals in attendance reviewed successes and publicity from the October 2008 USBJD National Action Week and planned future activities to help raise awareness of the importance of bone health and care.

Michael Fugle, D.O., FAOAO, of Michigan was one of five finalists nominated for the 2008 Mentor of the Year honor from the American Osteopathic Association at its 113th Annual Convention and Scientific Seminar last October in Las Vegas, Nevada. This distinguished honor recognizes the invaluable contribution of mentors to the osteopathic medical education continuum. Over 200 nominations were received for the 2008 award.

David Smith, D.O., FAOAO, of Ohio received emeritus recognition at Kent State University, where he served on the board of directors for 12 years and as president for about 9 years. Dr. Smith currently serves on the AOAO Historical Committee and is in the midst of completing a comprehensive history of the organization with John Drabing, D.O., FAOAO, that will be published sometime within the next year.

James St. Louis, D.O., FAOAO, of Florida was appointed by Governor Charlie Crist to the Florida Board of Osteopathic Medicine in October 2008. Dr. St. Louis, who is the founder and chief spine surgeon of the Laser Spine Institute of Tampa, was appointed for a term that began November 1, 2008 and concludes October 31, 2012.

Correction

In the fall 2008 issue of *The Orthopod*, we neglected to mention two other esteemed individuals affiliated with the AOAO who were named as Great Pioneers in Osteopathic Medicine by the AOA’s Bureau of Osteopathic History and Identity—Peter B. Ajluni, D.O., FAOAO, FACOS, and Edward A. Loniewski, D.O., FAOAO, FACOS. In addition to honoring a select group of osteopathic physicians, all living former AOA presidents were inducted into this prestigious group, including Drs. Ajluni and Loniewski.
The surgical community stands united in the effort to bring fundamental and long-term change to the Medicare physician payment system. The House of Surgery has three top priorities for this effort:

- **Repealing** the current sustainable growth rate (SGR) and establishing a new baseline for the physician payment system
- **Replacing** the current SGR with a system of multiple conversion factors
- **Ensuring** that any additional payments made to primary care physicians are not budget neutral within the physician payment pool

In addition to the above priorities, the surgical community has developed common positions on a number of key issues.

**Primary Care and the Medical Home**
The surgical community supports the medical home demonstration project. However, it is important to wait to see the results from the demonstration project before supporting continued expansion. If the medical home model shows cost savings and value, these savings should stay within the medical home. The surgical community also
believes that medical homes can be led by non-primary care physicians. The medical home should always ensure that patients have continued access to high-quality surgical care. Finally, any additional payments to primary care physicians to fund the medical home or for any other reason should not be budget neutral within the physician payment pool.

**Quality Improvement Initiatives**

Surgery understands that all segments of the health care population find a great deal of value in the collection and analysis of physician quality data and that it is important to provide patients, the public, and physicians with accurate information on physician quality. The surgical community believes strongly, however, that the current Physician Quality Reporting Initiative (PQRI) is not working and therefore needs to be drastically reworked. The program needs to provide physicians with access to their data in a timely manner, and it must have a reasonable appeals process. Both the timely access and the reasonable appeals process are missing from the current program.

Due to the significant problems with the current PQRI program, public reports using this information should be delayed until further evaluation and improvements occur. The surgical community also believes that physicians participating in clinical database and registry programs should continue to be eligible for PQRI bonus payments. Additionally, further federal funding to develop clinical data registries and other quality improvement tools is necessary. Finally, in addition to moving to a program that is based on clinical outcomes, the program needs to continue to be voluntary and provide positive incentives for participation.

**Performance Measurement and Transparency**

The surgical community believes performance measurement should be non-punitive and transparent. There needs to be meaningful and accurate clinical outcomes and processes of care data generated by physicians before performance measurement can be successful. In addition, any performance measurement system must provide data to providers on how it compares with its peers and should be done in a confidential and non-punitive manner. Payer data should also be transparent. Finally, there should be no government mandates until a system is appropriately tested.

**Comparative Effectiveness**

The surgical community embraces the need for comparative effectiveness research. Any comparative effectiveness research should be a tool to improve care on a per-patient basis by providing information on clinical value of varying treatments and interventions. Finally, comparative effectiveness research should focus on communicating research results to patients, providers, and other decision makers and should not be used for determining medical necessity or making coverage and payment decisions or recommendations.

**Innovative Payment Options**

Surgery supports the development of new innovative payment models that involve the patient, physicians, and payers. Surgeons support the concept of incentive payment or shared savings programs between hospitals and physicians and encourage the removal of any legal barriers that may restrict these types of arrangements. In addition, the surgical community is supportive of pilots and demonstration projects to determine if bundling payments is an appropriate mechanism to improve the Medicare payment system. Physician payment mechanisms that move beyond the current system of payment for more services or more complex services should be explored.

**Physician Ownership**

Physicians should have the ability to responsibly and professionally own, either individually or through a joint venture (with hospitals and/or other physicians), facilities, equipment, and services that appropriately provide high-quality care for patients. Physicians should be obligated, however, to disclose this ownership information to the public.

**Cooperating Organizations**

*American Academy of Facial Plastic and Reconstructive Surgery*
*American Academy of Ophthalmology*
*American Academy of Otolaryngology – Head/Neck Surgery*
*American Association of Neurological Surgeons*
*American Association of Orthopaedic Surgeons*
*American College of Osteopathic Surgeons*
*American College of Surgeons*
*American Osteopathic Academy of Orthopedics*
*American Society of Cataract and Refractive Surgery*
*American Society of Plastic Surgeons*
*American Urological Association*
*Congress of Neurological Surgeons*
*Society for Vascular Surgery*
*Society of Gynecologic Oncologists*
*The Society of Thoracic Surgeons*
Logic is not the science of belief, but the science of proof or evidence. – John Stuart Mill

Consciously or unconsciously, clinicians constantly use a mixture of deductive and inductive reasoning in their work. However, an often-quoted description of orthopedic decision making is “often wrong, never in doubt.” This speaks to the psychological certainty of surgeons. We are comfortable (at times perhaps too comfortable) making decisions. Problems arise when surgical certainty is based on flawed assertions and leads to incorrect recommendations. Strategies for avoiding this are necessary.

Psychologists consider it common knowledge that “context influences perception.” Leaders in the business world are also well aware of such hidden traps in decision making and actively campaign to avoid them. Surgeons need to be aware of this phenomenon as well. Croskerry has addressed the importance of such “cognitive errors” in medical decision making and identified a broad spectrum of biases that can negatively influence clinical outcome.

Here are five that orthopods may recognize:

- **Availability bias** – because you tend to remember it more easily, you tend to think it is “more true” (remembering your recent good surgical results and tending to forget the old bad ones)

- **Framing effect** – how you see things is influenced by how it is presented (applies to both diagnostic possibilities and potential outcomes of treatment, including bad outcomes)

- **Overconfidence bias** – too much faith is placed on opinion rather than evidence (orthopedics may claim ownership of this one and rent its use out to other specialties)

- **Sutton’s slip** – when possibilities other than the obvious one are not given proper attention (“going where the money is” too quickly can lead to problems)

- **Triage cueing** – geography is destiny or excessive faith in proper triage/referral (if you’re in a hand surgeon’s office, you need hand surgery—if you’re in an arthroscopist’s office, you need arthroscopy)

Being self aware and properly reflective with respect to one’s own decision making is an admirable goal. Such awareness should allow a significant percentage of cognitive errors to be recognized and dealt with. Through proper deductive methods, incorporation of evidence, and avoidance of cognitive errors, we may get better results.

Instead of “often wrong, never in doubt,” we might achieve “often doubt, almost never wrong.”

**References**


**Newly Certified Members**

Jeffrey K. Anhalt, D.O. – Spring Lake, MI
Bryce I. Benbow, D.O. – Dallas, TX
Michael B. Boyd, D.O. – Newburgh, IN
Jeffrey J. Carroll, D.O. – Harper Woods, MI
Christina Cawley, D.O. – Sicklerville, NJ
Sepein Chiang, D.O. – Phoenix, AZ
Tony L. Chien, D.O. – Chesterfield, MO
Matthew J. Crawford, D.O., Ph.D. – Austin, TX
Juan S. Dinks, D.O. – Franklin, TN
Lawrence E. Donato, Jr., D.O. – Virginia Beach, VA
Robert Drazic, D.O. – Hewlett, NY
Michael S. Helvey, D.O. – Ronceverte, WV
Wendy Heusch, D.O. – Puyallup, WA
Michael W. Higgins, D.O. – Spring Hill, FL
Ronald V. Hudanich, D.O. – Oviedo, FL
Jeffrey M. Jones, D.O. – Osage Beach, MO
Eric M. Kutz, D.O. – Hummelstown, PA
Michael S. Levy, D.O. – Levittown, PA
Xin Liu, D.O. – Henderson, NV
Timothy R. Lynch, D.O. – Norwalk, OH
Ali Mortazavi, D.O. – Marietta, GA
Ahmadreza Nematbakhsh, D.O. – St. Petersburg, FL
Jason E. Reiss, D.O. – Port Charlotte, FL
Jared P. Salinsky, D.O. – Trinity, FL
Donald M. Sandercock II, D.O. – Mattoon, IL
Damion J. Valletta, D.O. – San Diego, CA
Derek L. West, D.O. – Oklahoma City, OK
Gregory J. Zeiders, D.O. – Oklahoma City, OK
Orthopedic Instruments

- **Sidhu Tibia Clamp**
  - Designed to be used to securely grasp and remove an entire tibial wedge
  - Designed by Kuldeep Sidhu, MD
  - Overall Length: 10.25"
  - Pad: 60mm x 30mm
  - Spike Length: 7.5mm

- **Lotke Double Action Cartilage Graspers**
  - Double action strength helps securely hold soft tissues
  - Designed by Paul Lotke, MD
  - Overall Length: 10" (Standard)
  - Overall Length: 10" (Ratcheted)

- **Rosen Double Ended Army Navy/"Z" Retractor**
  - Designed by Adam Rosen, DO
  - Overall Length: 10"
  - 2 End: 70mm Deep, 11mm Wide
  - Army Navy End: 40mm Deep, 15mm Wide

- **Rosen Double Ended Richardson/"Z" Retractor**
  - Designed by Adam Rosen, DO
  - Overall Length: 10"
  - 2 End: 70mm Deep, 11mm Wide
  - Richardson End: 40mm Deep, 37mm Wide

- **Lachiewicz-Hoover Patella Retractor**
  - Helps to retract and prevent harm to the polyethylene implant
  - Designed by Paul Lachiewicz, MD & Steve Hoover, MD
  - Overall Length: 6.5"
  - Patella Pad Diameter: 1.5"
  - Patella Pad Thickness: .25"

- **Meniscal Clamp**
  - Redesigned clamp is curved for easier use, visualization, and tissue holding
  - Product No: 1883

- **Sure Grip Soft Tissue Grasper**
  - Enables the surgeon to securely grasp soft tissue structures within the knee
  - Incorporates a spike into its upper jaw with a matching recess in the lower jaw
  - Now available with a locking ratchet!
  - (7" size only)

- **Mazarra Rongeur with Pistol Grip Handle**
  - Pistol Grip handle lessens hand fatigue and slippage, and allows for better visualization
  - Designed by James T. Mazzara, MD
  - Available in three jaw bite sizes.

- **Femoral Trial Extraction Hook**
  - Designed to help remove a trial femoral component during knee arthroplasty
  - Product No’s:
    - 3635-01 [5 x 14mm] (Hook Only)
    - 3635-02 [7 x 14mm] (Hook with Slap Hammer)
    - 3635-03 [10 x 16mm] (Hook with Slap Hammer)

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ORTHOPEDIC INSTRUMENTS
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When attendees of the AOAO’s 49th Annual Postgraduate Seminar descend on the Red Rock Resort and Spa in Las Vegas, Nevada May 1-3, 2009, they will be treated to a jam-packed agenda that promises to augment their knowledge base and enhance their clinical skills.

In addition to the usual array of expert speakers and concurrent sessions, this year’s symposium is offering two exciting cadaver skills labs, which require separate registration from the Postgraduate Seminar, on “Advanced Reconstruction in Foot and Ankle” and “A Simple Method for Tissue Preservation THA Using the Posterior Approach.” Wright Medical Technology will be providing the simulated cadavers; however, due to space limitations, attendees may only register for one of the sessions since participation is limited to 20 per lab.

The weekend event also will feature various luncheons and evening events, including a Meet the Mentors’ cocktail reception on Saturday evening. The AOAO also is pleased to announce an enhanced way for members to access speaker handouts. At registration, attendees will be given a CD-ROM that will have speaker handouts submitted for each session. This will provide each participant with a convenient method for viewing session handouts. In addition, a program book with lined pages will be provided for note taking during the presentations. Lectures with handouts included on the CD-ROM will be in bold for easy reference.

For attendees who prefer printed copies of their session handouts, two options will be available. Participants will be able to access the AOAO website at www.aoao.org up to a few weeks prior to the meeting, print the handouts, and bring them to the meeting. The other option will be to print the handouts (all of them or only pertinent ones) at the meeting from a computer and a printer available near the AOAO registration desk.

If you have any additional questions, please call the AOAO executive office at 1-800-741-2626.
Overview of the Orthopedic Surgery Residency at St. Joseph Health Center

By Michael Jurenovich, D.O., Program Director

The long and storied history of the orthopedic surgery residency program at St. Joseph Health Center in Warren, Ohio, had its inception under the late William Elston, D.O., at what was then known as Warren General Hospital. Dr. Elston served his internship at Doctors Hospital in Columbus and completed his orthopedic surgery residency at Grandview Hospital in Dayton, Ohio. An AOA life member, he practiced in the Warren area for over 34 years and was a fellow in both the AOAO and the ACOS.

Our first resident to complete the program was James A. Lazor, D.O., in 1978. Shortly after joining Dr. Elston in practice, Dr. Lazor became the program director. Under his dynamic and gifted leadership, the residency program continued to grow and eventually included training at both Youngstown Osteopathic Hospital and Shenango Valley Osteopathic Hospital in nearby Farrell, Pennsylvania. Dr. Lazor, who went on to achieve FAOAO status, retired from active practice in 1993.

Jerome Bonier, D.O., became the third program director and served in that capacity until 2001. Through his thoughtful guidance and talent, the program underwent a number of enhancements and grew in program participation. The acquisition of Warren General Hospital by St. Joseph in 1996 offered an expansion of our internships and residencies. Presently, we offer residencies in emergency medicine, family practice, internal medicine, and orthopedic surgery.

St. Joseph earned level III trauma designation in 2002, giving our students, interns, and residents a much broader exposure to trauma. In 2005, the program entered into an affiliation with St. Elizabeth’s Hospital in nearby Youngstown—the region’s only level I trauma center. The association with St. Elizabeth’s Hospital helped to facilitate a more complete educational subspecialty base for the residents by allowing them to rotate within nine different orthopedic subspecialties on a regular basis. Prior to that, the majority of subspecialty exposure occurred only during a resident’s fourth-year-out rotations. These nine orthopedic subspecialties include regular assignments in all areas including, joint replacements, sports medicine, ankle and foot, spine, and hand surgery.

The educational opportunities at St. Joseph Health Center continued to increase with the construction of a new outpatient surgery center and pain clinic in 1996. In addition, a new six-room state-of-the-art surgery suite was completed two years ago at the main hospital. In 2008, a multimillion-dollar simulation lab was built thanks to a generous donation by the Warren General Hospital Foundation. This project came to fruition under the outstanding direction of Paul Sebest, D.O., who has served as director of medical education for many years.

Our teaching programs also have been involved with the Ohio University CORE (Centers for Osteopathic Research and Education). Through this partnership, the interns and residents travel monthly to Columbus, sharing educational experiences with other osteopathic teaching hospitals from around the state.

Over 30 residents have graduated from the St. Joseph Health Center Orthopedic Surgery Residency Program, and many have gone on to serve fellowships in prestigious medical centers such as:

- Allegheny General Hospital
- University of Pittsburgh Medical Center
- DuPont Pediatric Hospital
- Texas Spine Institute
- UNLV
- Cleveland Clinic

Some of the residents have chosen to share their orthopedic knowledge through national and international presentations. In 2005, one of our residents, Richard Hartman, D.O., spoke by invitation at two separate universities in Shanghai, China. We are also quite proud that George Zimmerman, D.O., serves as a member of the AOAO Board of Directors.
AOBOS Examination Dates

The American Osteopathic Board of Orthopedic Surgery (AOBOS) will be holding a Part III - Clinical Examiner Training/Orientation Meeting during the AOAO’s 49th Annual Postgraduate Seminar, which will be held March 1-3, 2009 in Las Vegas, Nevada.

Save the Dates

Part II – Oral Examination Application Deadline
Saturday, August 15, 2009

Part II – Oral Examination, Boston, MA
Sunday, October 11, 2009

Part III – Clinical Examination
2010 Winter Cycle Application Deadline
Saturday, August 15, 2009

Part III – Clinical Examination
2010 Winter Cycle
November 2009 – February 2010

Western University
College of Osteopathic Medicine Seeks
Orthopedic Residency Program Director

Western University of Health Sciences, College of Osteopathic Medicine of the Pacific (OR2CA project) is seeking a D.O. Program Director for its newly developed orthopedic residency program. Successful candidate qualifications include:

Degree: Doctor of Osteopathic Medicine

Certification: Orthopedic Surgery by the American Osteopathic Association (AOA) through the American Osteopathic Board of Orthopedic Surgery (AOBOS) for a minimum of two years

Professional Membership: Member in good standing of the AOA and AOAO

Educational and administrative experience: Three or more years of experience in residency administration or directorship is highly desired. Experience as a clinical instructor with inpatient and ambulatory settings also highly desired.

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Legendary Life: Dr. Edward Loniewski Still Going Strong at 77

By Scott Colton
Editor, The Orthopod

When Edward A. Loniewski, D.O., FACOS, FAOAO, was a baby, his father peeked into the crib and told his newborn son, “You’re going to be my doctor when you grow up.” Although Dr. Loniewski understandably has no recollection of this incident, which his father recounted to him many times over the years, the prediction proved prophetic.

However, while it’s possible Dr. Loniewski’s father may have planted a subconscious seed in his son’s head regarding his future career choice, what’s even clearer is how high the odds were stacked against this ever happening. Born in 1932 in Jersey City, New Jersey, during the midst of the Great Depression, Dr. Loniewski seemed an unlikely candidate to scale the heights of osteopathic accomplishment for several sobering reasons. “I was raised in a poor Polish neighborhood and lived in a coldwater flat with my parents and two brothers,” said Dr. Loniewski, who actually slept in the same bed with his brothers until the day he left to attend medical school in Kansas City, Missouri.

Although neither of his parents had attained even a grade-school education, his mother was adamant that all three of her children would have the opportunities she and her husband had lacked. “My mom was an orphan by the time she was 11, and she had to live with
an aunt who put her to work instead of sending her to school,” he explained. “Her big thing was education, and she wanted each of her children to pursue that, so she pushed us to succeed.” Her wishes were obviously rewarded because all three sons went on to become respected pioneers in their individual professions.

Creature comforts may have been in short supply throughout his childhood, but his desire to become a physician flowed freely—and never diminished. “I spent a lot of my free time playing various sports in my neighborhood,” he said. “But I always had in the back of my mind the idea of becoming a doctor because I felt that the best way to help people was by being a physician.”

After graduating from a Jesuit high school, Dr. Loniewski formulated a plan he felt would lead him to his ultimate goal of attending medical school, which began by pursuing his undergraduate degree at St. Peter’s College in Jersey City and taking premed courses. “I figured I would get drafted in the service, and after serving my time I would get a G.I. Bill and be able to go to medical school for free,” said Dr. Loniewski, who earned his bachelor of science degree in 1953. “I attended college during the Korean conflict and was in the first class that took the Army Aptitude Test. And if you scored in the top 50 percent of the country, you were guaranteed not to be drafted into service until after you completed your studies.”

His plan quickly went awry, however, once he revealed his intentions to his mother. “When I told her I was hoping to get drafted and get the G.I. Bill, she said, ‘Oh no, you need to go to work and then get into medical school.’ So I earned extra money by spending my summers working on the docks at New York Harbor.”

His route to medical school took a propitious turn when his college advisor at St. Peter’s told him about an option he’d never even heard of—osteopathy. “It turned out my mom and dad had gone to a D.O., who they loved, so that’s when I decided to pursue the osteopathic route,” said Dr. Loniewski, who was accepted into the University of Health Sciences College of Osteopathic Medicine in Kansas City, Missouri. “It was also during this time that I decided I wanted to be an orthopedic surgeon. I had always loved playing various sports, so I knew dealing with sports-related injuries and the relationship between osteopathy and orthopedics would make a good combination.”

After earning his D.O. degree in 1957, Dr. Loniewski did his internship at Detroit Osteopathic Hospital and then went on to do his orthopedic surgical residency training at Philadelphia College of Osteopathic Medicine in 1958-59 and Detroit Osteopathic Hospital from 1959 through 1962. As luck would have it, his postgraduate training also provided him with unexpected personal fulfillment. “I met my wife, Joanne, who was a surgical scrub nurse, during my residency training,” said Dr. Loniewski, who is the proud father of 5 children and 14 grandchildren. “We got married when I was in the second year of my residency, and she brought home the bacon during those years because I was only making $150 a month.”

Following his residency training, Dr. Loniewski decided to remain in Michigan with his wife and work in an orthopedic surgery practice in Detroit with several other D.O.s before branching off into his own practice. “Michigan was a much better state for me to practice in than New Jersey because the practice rights and visibility of osteopathic physicians were much better,” he explained.

Dr. Loniewski would remain in active practice from 1962 until the early 1990s, treating countless patients. He also established an orthopedic surgery residency program at Botsford General Hospital in Farmington Hills, Michigan, in 1966 that still exists today, chaired the hospital’s Department of Orthopedic Surgery, and served as the residency’s founding program director.

In addition to these praiseworthy achievements, Dr. Loniewski would go on to become one of the osteopathic profession’s most ubiquitous and respected

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After five decades in the profession, Dr. Loniewski is still an active force.
leaders by serving as president of all the major local, state, and national associations. “I always felt privileged to be an osteopathic physician, and it afforded me a lifestyle I had always dreamt about,” he admitted. “Therefore, I felt I should give something back to the profession by becoming a leader who could help advance osteopathic medicine in the state of Michigan and eventually nationally as well.”

He began his political activism by serving as a member of the Wayne County Osteopathic Association, becoming its president in 1971-72. That led to stints as president of the American Osteopathic Academy of Orthopedics in 1977-78, the Michigan Osteopathic Association in 1978-79, the Michigan Osteopathic Foundation in 1985-88, the American College of Osteopathic Surgeons in 1987-88, the American Osteopathic Association in 1992-93, and the American Osteopathic Foundation in 2007-08. In the midst of all this activity, he somehow found the time to establish the Michigan Osteopathic Academy of Orthopedic Surgeons in 1978 and serve as its founding president. In fact, over three decades later, he still serves as the organization’s executive director.

As the 1990s commenced, Dr. Loniewski was enjoying all aspects of his life, both personally and professionally. Then a major health scare intervened that would alter the course of his career in ways even he couldn’t have foreseen. “In 1990, after returning from a ski trip, I suddenly had some health problems,” he explained. “While I was undergoing a heart catheterization, I flatlined and ended up having quadruple bypass surgery. Once I recovered, I wanted to go back to my practice, but I was advised not to.”

After he “retired,” Dr. Loniewski was offered the opportunity to become president of the American Osteopathic Association, which proved to be a very challenging and fulfilling assignment. “I loved practicing orthopedics and still miss it to this day,” he said. “But I truly enjoyed my time as AOA president. My theme was unity because there was a lot of disparity between the three segments of the profession: the colleges, the hospitals, and the physicians. Because I felt so strongly about unity, I utilized the three-legged stool as a symbol of what osteopathic medicine should be like, with each leg representing the three segments. In fact, I actually carried one around with me when I traveled the country and gave speeches.

“One of the other things I helped accomplish that was very satisfying was the renegotiation of the mortgage of the AOA building in Chicago,” he added. “The association was deep in debt at the time, but we were able to renegotiate it down from $15 million at a 10.5 percent interest rate to $7.5 million at a much lower rate. When I took over as president, the AOA only had a positive cash flow of $140,000. But by the end of my year as president, our cash flow was up to $1.5 million.”

In addition to the aforementioned accomplishments, he established the Dear Student Doctor newsletter that is still in existence today, which informs students about matters involving the AOA and osteopathic profession and how they relate to them. “I realized how important it was to get the physicians in training involved politically in osteopathic medicine during their college years because it helps set the stage for them to remain involved after they graduate,” he said.

When Dr. Loniewski, who continues to remain active in the profession politically, was asked to name his proudest achievement, his response was immediate. “My proudest accomplishment is having all five of my children become happy and successful, including having two of them follow me into osteopathic medicine,” he stated. “My oldest son is an orthopedic surgeon, and my youngest daughter is an ER physician. Being one of the individuals who helped build this great profession into what it is today is also something I treasure deeply. There are so many great people who have preceded me, and I’m incredibly proud to be a part of this amazing profession.”

**Awards and Honors Summary**

**2008** – Great Pioneers in Osteopathic Medicine, AOA

**2007** – Honorary Lifetime Membership, AOA Congress of Interns/Residents

**2006** – Distinguished Service Certificate, AOA

**2000** – Honorary Alumnus, St. Mary’s Orchard Lake Schools

**1993** – Honorary Cherokee Chief, Oklahoma Osteopathic Association

**1993** – Honorary Life Membership, AOA

**1993** – Alumnus of the Year, University of Health Sciences COM

**1993** – Honorary Doctorate of Science Degree, New York COM

**1993** – Appreciative Award, AOAO

**1992** – Orel F. Martin Medal for Distinguished Service, ACOS

**1990** – Distinguished Service Award, Botsford General Hospital

**1981** – Distinguished Service Award, Michigan Osteopathic Association

**1979** – Knotty Cane Award, AOAO
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Diabetic Muscle Infarction: A Case Report and Review of the Literature

By Jeffrey R. Wahl, D.O., and David H. Krahe, D.O.
Department of Orthopedic Surgery
South Pointe Hospital, Warrensville Heights, Ohio

It is estimated that 20.5 million children and adults in the United States, or 7 percent of the population, have diabetes mellitus. In the year 2005, 1.5 million new cases of diabetes mellitus were diagnosed in the United States in people aged 20 years or older. It is also estimated that an additional 54 million people in the United States have “prediabetes.” The dangerous toll of diabetes cannot be overstated. It is the fifth-deadliest disease in the country and contributed to over 220,000 deaths in 2002. The total annual economic cost of diabetes in 2007 was estimated to be $174 billion. Diabetes mellitus has several well-reported serious and life-threatening complications, such as cardiovascular disease, renal disease, pregnancy complications, and sexual dysfunction.1

Diabetes is of particular importance to the practicing orthopedic surgeons who frequently must address impaired wound healing and the prevention and/or treatment of infection. In cases of infection that are refractory to conservative treatment, limb amputation is commonly needed. In 2002, it was estimated that 82,000 non-traumatic amputations were performed in the United States for patients with diabetes.1

Diabetic muscle infarction (DMI) is yet another in a long list of potential complications resulting from poorly controlled diabetes. It is a rare, although probably underreported, cause of lower extremity pain and disability in a diabetic patient. It refers to the condition of diabetic ischemic necrosis of skeletal muscle and when present, patients will have a painful mass in the thigh and/or calf with swelling and induration. This picture may be confused with an infection, neoplasm, or even localized compartment syndrome. Below, we report our experience with one such patient.

Case Report

A 47-year-old male was admitted by the medical department at this institution and evaluated by these authors for a chief complaint of right lower extremity pain of four weeks duration. He denied any preceding injury or trauma to the leg and complained of mostly lateral, distal thigh pain, both at rest and worse with movement. He noticed a small area of swelling in the region of pain and reported difficulty ambulating secondary to pain. He had had no complaints of fever, chills, or drainage from the leg. In addition, he denied any contralateral leg pain, swelling, or any of these symptoms in either upper extremity. His past medical history was significant for insulin-dependent diabetes mellitus, hypertension, congestive heart failure, and an unknown cardiac arrhythmia. He was not compliant with any of his usual home medications, including his insulin. In addition, he admitted to tobacco use of two to three cigarettes daily as well as a history of intravenous drug use and recent cocaine use. He denied any alcohol use.

His exam was remarkable for a 7 cm by 6 cm area of tenderness and tenseness to palpation along the anterolateral aspect of the distal portion of the right thigh, roughly correlating to the underlying vastus lateralis musculature. There was minimal overlying erythema and edema and no fluctuance on examination. The remainder of the vastus lateralis muscle was supple to palpation as was the remainder of his thigh compartments. He had full range of motion to his hip, knee, and ankle joints and no pain with passive stretch of the foot or knee. Sensory and motor exams revealed no areas of deficit and reflex testing was equal bilaterally. Distal pulses were difficult to palpate, but he had brisk capillary refill.

Pertinent laboratory data revealed a serum white blood cell count of 14.3 x 10,000 (nml: 3.6-10.5), a blood sugar of 365, an erythrocyte sedimentation rate of 58 (nml: 0-15) and a C-reactive protein level of 11.90 (nml: 0.00-0.50). Blood cultures were obtained by the primary service and ultimately would prove to be negative. A contrast-enhanced MRI of the right lower extremity was obtained and selected images are presented in figures 1.1 through 1.4.

The above images depict multifocal areas of increased signal intensity within the right vastus lateralis muscle that are high-signal intensity on T2-weighted images and relatively low-

Figure 1.1

T1-weighted contrast-enhanced axial image of the right and left mid-distal thighs, showing a heterogeneic increased signal intensity pattern of the right lateral thigh compartment.
signal intensity on T1-weighted images, consistent with, but not specific for diabetic muscle infarction. Of note, there is no evidence of focal abscess formation or bony involvement.

Prior to orthopedic evaluation, the patient had been seen and evaluated by the infectious disease service and was placed on intravenous vancomycin, both for the possibility of cellulitis/abscess/pyomyositis of the thigh and also for numerous small back abscesses, which were present on admission. In addition to antibiotics, the patient was placed on prn oral narcotics and intravenous morphine for pain control as well as a sliding scale dose of subcutaneous insulin.

The orthopedic service had discussed the possibility of doing a muscle biopsy of this region; however, given this patient’s history of cocaine use and cardiovascular risk factors as well as the findings on both clinical exam and of the MRI, we decided to treat the patient conservatively. A physical therapy evaluation was ordered, and the patient slowly progressed with protected weight bearing and gentle range of motion exercises to the right leg. The patient’s antibiotic regimen was ultimately changed from intravenous vancomycin to oral doxycycline, and he was discharged approximately 10 days after admission to home with doxycycline daily for 10 days. Follow up was arranged for both his internist and the orthopedic service within one week after discharge.

Unfortunately, the patient failed to follow up with the orthopedic service and was not compliant in follow up with his internist or with taking his medications, including his insulin. He continued to use cocaine and was ultimately discharged from the internal medicine service at this institution and thus, we have no long-term follow-up information on how this patient’s condition changed from our initial evaluation of him.

Discussion

Diabetic muscle infarction was originally described in the literature in 1965 by Angervall and Stener. They reported on their experience with two diabetic patients who had a painful thigh mass that was thought to be a neoplasm. Each patient had a longstanding history of diabetes, and each underwent excisional biopsy on the grounds of clinical suspicion of a tumor. The histological examination of each tissue showed areas of hemorrhagic necrosis surrounded by muscle that showed regressive changes and signs of regeneration. These authors also noted evidence of angiopathy of the vessels surrounding the muscle tissue. Vessel walls were thickened and showed atheromatosis, leading the authors to observe that perhaps muscular degeneration was caused from an ischemic event.

Diabetic muscle infarction is a rare and unusual complication of diabetes mellitus that should be considered in any diabetic patient that presents with a painful, swollen lower extremity muscle. Since Angervall’s and Stener’s original description in 1965, there have been a handful of other case reports and small series in the literature that describe similar painful lower extremity masses in diabetics. The pathogenesis is not completely understood at this time, but microangiopathy and resultant ischemia seem to play a major role. Banker and Chester proposed two theories for the etiology of diabetic muscular infarction. An early case revealed embolization from atherosclerotic plaques as the cause of muscle necrosis, which was confirmed with postmortem autopsy showing ulcerative abdominal aortic plaques. Later cases, however, did not reveal a potential embolic source. The authors did find evidence of extensive arterial occlusive disease (arteriosclerosis obliterans), and this led to speculation that hypoperfusion and resultant anoxia causes a mild compartment syndrome that worsens ischemia. Silberstein et al. proposed a hypoxia-reperfusion injury model in which tissue ischemia causes inflammation and oxygen-free radicals produced by reperfusion cause further tissue damage. Still other authors have proposed acquired hypercoagulability as a cause of diabetic muscle infarction.

**Figure 1.2**

T2-weighted axial image of the right and left mid-distal thighs, showing hyper-signal intensity of the right lateral thigh compartment.

**Figure 1.3**

T1-weighted coronal image of the right and left thighs, showing low signal enhancement of the right distal lateral thigh compartment.
The typical clinical presentation is that of abrupt onset of pain and localized swelling of an affected muscle. DMI most frequently affects the thigh (84 percent), and the vastus lateralis (24 percent) is the most frequently involved muscle. Bilateral affection can occur in 8 percent of cases, and there has been only one case report of upper extremity (forearm) involvement.

The diagnosis of diabetic muscle infarction is, of course, usually made by complementing the patient’s history and physical findings as well as their radiographic studies. There is no specific laboratory marker, although creatine kinase (CK) and erythrocyte sedimentation rates (ESR) can be elevated or normal, but do not correlate with the degree of muscle involvement. The most valuable diagnostic technique is MRI. The characteristic feature of DMI on MR imaging is that of hyperintense signal intensity on T2-weighted images. MRI also aids in excluding other potential conditions, such as infection or tumor. Tissue biopsy would give definitive diagnosis. The pattern typically seen is that of focal areas of necrosis with areas of regenerative muscle tissue. Open and excisional biopsy, though, has been discouraged by several authors due to postoperative complications including seroma, hematoma, infection, poor wound healing, delayed recovery, and recurrences. Damron et al., however, did not have any complications after incisional biopsy in two patients. At our institution, if the history and physical findings are supported by the MRI, we do not routinely perform tissue biopsy. However, if the diagnosis is in question, then biopsy would be definitive.

Treatment for DMI is largely supportive and is mostly aimed at strict glycemic control. There is a trend toward faster recovery in patients treated with antiplatelet and/or anti-inflammatory drugs compared to rest and analgesics or surgical excision. The average recovery times from treatment onset were 5.5 weeks for patients treated with antiplatelet and/or anti-inflammatory drugs, 8 weeks for those treated with bed rest and analgesics, and 13 weeks for those treated with surgical resection. Early, aggressive physical therapy seems to aggravate these patients’ symptoms and should be delayed until the acute phase of pain and swelling has resolved. Complete resolution is expected in most cases, although recurrence has been reported in 47 percent of cases. The long-term prognosis for these patients is poor, however. Most patients usually have end-organ microvascular complications when DMI is diagnosed.

The aim of this article was to provide the orthopedic surgeon with an introduction and overview of the pathology of DMI and to propose our treatment approach to these patients. In summary, diabetic muscle infarction is a rare complication of longstanding, poorly-controlled diabetes and should be considered in the differential diagnosis of any diabetic patient who presents for evaluation of a painful, swollen extremity. MRI is an invaluable tool to help aid in the diagnosis and potentially avoid the complications associated with tissue biopsy. However, when the diagnosis is in doubt, tissue biopsy should be performed. Treatment is largely symptomatic and aimed at better glycemic control. Antiplatelet and/or anti-inflammatory medications may be beneficial. Complete resolution is expected in most cases, but overall patient prognosis is poor secondary to end-organ microvascular disease.

References
Introduction

Septic arthritis is a common but potentially devastating and even life-threatening malady affecting patients in our communities. There are three primary etiologies: hematogenous spread, spread from a contiguous source, or direct joint inoculation. Despite the etiology, some joints have a greater propensity for developing bacterial colonization. One of the most rarely reported cases of septic joints is that of the acromioclavicular (AC) joint. This case will report on acute bilateral AC joint sepsis in a gentleman with none of the known predisposing factors.

The foremost risk factor for septic arthritis is preexisting joint disease, and up to 47 percent of patients have prior joint problems. Forty-five percent of septic arthritis cases in adults involve the knee. In general, there is a direct relationship between bacterial colonization and the inherent usage/trauma that our joints undergo on a daily basis, with our lower extremities being at greatest risk. Infection of the AC joint is uncommon even in patients with significant predisposing histories for unusual joint infections. These conditions include, but are not limited to, end-stage renal disease on renal dialysis, intravenous drug abuse, or immunodeficiency in which unusual joint infections are more likely to occur.

Case Report

A 48-year-old white male presented to the emergency department of his local community hospital with the chief complaint of progressive malaise, cough, upper respiratory symptoms, nausea, and vomiting over the past five days. The patient also noted a fever of 102 degrees Fahrenheit, chills, and loose stools. Upon admission, the patient did note some mild left shoulder pain. His past medical history is significant for diabetes mellitus, hypertension, hyperlipidemia, and depression. He denies tobacco, alcohol, or illicit drug use. The patient was admitted to the intensive care unit with a
diagnosis of diabetic ketoacidosis and acute renal failure. Orthopedics was consulted to evaluate the patient regarding gram positive bacteremia and left shoulder pain.

Upon orthopedic evaluation, the patient was noted to have significant pain with passive range of motion of not only his left shoulder but his right shoulder as well. He also had an ulceration on his right fifth toe, which was under the care of the podiatric team. There was no effusion noted of either glenohumeral joint, but there was fluctuance, erythema, and warmth overlying the left AC joint and severe tenderness to palpation of bilateral AC joints. Further pain localization in both AC joints was confirmed with cross-body adduction and further provocative impingement tests. After informed consent was obtained, the left AC joint was prepped with betadine, and a needle aspiration yielded approximately 1cc of purulent material. The patient denied any preexisting shoulder symptomatology of any kind, nor did he recall any trauma to either shoulder. He further denied any history of intravenous drug use, and his urine drug screen confirmed this.

The gram stain and cell count of the left AC joint aspirate yielded an 88,400 white blood cell count, but no organisms were seen. Gram + cocci did grow approximately 24 hours later. The decision was made by the attending surgeon to perform incisions and debridements of bilateral AC joints. An Indium-111 labeled white blood cell scan was subsequently performed that same day (Figure 1). The radiologist’s interpretation of this study indicated findings consistent with bilateral shoulder sepsis and bilateral knee sepsis, along with cellulitis of the left ankle region and right foot, as well as pneumonia. Clinically, there were no signs of septic arthritis of either the patient’s knees or his left ankle.

Later that day, the patient was administered general anesthesia in the operating theatre, placed supine in the beach chair position, and had both of his AC joints incised, debrided, and irrigated. The left AC joint did have purulent material without necrosis and the right had cloudy serous fluid to a lesser degree. Both surgical sites were closed over a penrose drain. Intraoperative aerobic and anaerobic culture swabs were obtained. Intraoperative cultures were positive for methicillin sensitive staphylococcus aureus (MSSA). Of note, this was the same bacteria isolated from the blood cultures prior to surgery, as well as the culture taken from the ulcer on his right fifth toe.

Over the course of the next week, the patient continued to have copious drainage from his left AC joint surgical site, and the decision was made to take the patient back to the operating room for a repeat incision and debridement of the left AC joint. Intraoperatively purulent material was found tracking into the subacromial space from the AC joint, and this was explored, debrided, and irrigated as well via an open procedure. The wound was packed with iodoform gauze and closed. Packing was removed on the second postoperative day.

Postoperatively, the patient continued to improve, and drainage from his bilateral surgical sites ceased. The patient was subsequently maintained on intravenous vancomycin from the time of admission and transferred, for medical reasons, to a regional level 1 trauma center. Upon follow-up, the patient was placed on intravenous daptomycin, and a subsequent I&D was performed of an abscess that developed on his left foot. Ultimately, the patient made a full medical recovery, but we were unable to reevaluate the functional outcome of his shoulders.

**Discussion**

Septic arthritis of the acromioclavicular joint is a rare but reported phenomenon. To our knowledge, and through literature search, bilateral AC joint sepsis has never been reported.

The AC joint is composed of hyaline-articular cartilage lined by synovium. It is a diarthrodial articulation as is the sternoclavicular joint. Their hyaline-articular cartilage surfaces are separated by intervening fibrocartilagenous discs. The stability of these joints is dependent on ligamentous support as they lack significant osseous stability. Very little motion, approximately 5-8 degrees of rotation, actually occurs through the acromioclavicular joint, yet osteoarthritis is a common symptomatic clinical finding.

Critically ill patients with positive blood cultures and joint pain should always be evaluated for the possibility of joint sepsis. Fortunately in this case, the patient was awake, alert,
and able to relay his subjective complaints. In many cases, critically ill patients are not able to relate their symptoms, and we must rely on other diagnostic modalities. In those cases, joint effusions and erythema may be the only clinical signs of an underlying joint infection. In these situations, the use of ultrasound, contrast enhanced CT scan, the gadolinium-enhanced MRI, and bone scintigraphy can be invaluable. However, the gold standard for diagnosing septic arthritis remains a positive culture from a joint aspirate. Unfortunately, an etiological agent is found in only about 60 percent of cases. Septic arthritis is most commonly a consequence of occult bacteremia. Synovium is highly vascular but lacks a protective basement membrane, making it vulnerable to bacteremic invasion, host inflammation, and tissue ischemia. As we know, cartilage is avascular and highly dependent on diffusion of oxygen and nutrients from the synovium.

As purulent exudate accumulates, joint pressure increases, and synovial blood flow is tamponaded, resulting in cartilage anoxia and damage within 48 hours. The mainstay of treatment is synovial blood flow is tamponaded, resulting in cartilage anoxia and damage within 48 hours.7,4,13 As purulent exudate accumulates, joint pressure increases, and synovial blood flow is tamponaded, resulting in cartilage anoxia and damage within 48 hours.7,4,13 The mainstay of treatment is copious surgical lavage and systemic antibiotics, although there is literature to support the use of serial aspirations as definitive treatment in the appropriate clinical milieu setting.14

The synovial fluid culture results take time to finalize, and we must analyze the fluid samples for signs of infection. In general, white cells >50,000 with >75% PMNs is a strong sign of pyogenic arthritis (Table 1). Serum laboratory values such as the C-reactive protein (CRP) and total white blood cell count (WBC) are extremely useful adjuncts in the clinical diagnosis of infection. Of note, our patient was admitted with a CRP of 42.6 mg/dL (normal = <0.5) that dropped significantly within 24 and then 48 hours of the initial surgical debridement on March 4 to 29.3 mg/dL and 18.2 mg/dL respectively. Close monitoring of the CRP showed a direct correlation with the clinical recurrence of the infections and subsequent repeat surgical debridement on March 14. The less specific WBC count did not show as direct of a correlation (Figures 2 and 3).

Despite this patient’s unassuming predisposition to acquiring suppurrative AC joint arthritis, it is not entirely unprecedented. A significant proportion of patients with septic arthritis of the appendicular skeleton—up to 22 percent in some studies—has no medical risk factors and no underlying joint disease.15 However, involvement of cartilaginous joints of the axial skeleton remains extremely uncommon, except in intravenous drug users.16

In summation, our patient, who denied any history of illicit drug use of any kind, had no preexisting joint disease nor any other predisposing factors to septic arthritis, presented not only with one septic joint but bilateral joints of the most rarely reported cartilage; joint infection in the human body—the acromioclavicular joint.
Introduction

The brachial plexus constitutes the complex network of nerves created by cervical roots five through eight and the first thoracic root (C5-8 and T1). Neonatal brachial plexus palsy represents the most common nerve injury in infants. It is often referred to as Erb’s palsy or Erb-Duchenne palsy. This problem can have devastating effects on both children and their families. In the past, evaluation and treatment of such plexus palsy patients consisted mainly of watchful waiting and surgical intervention was less likely. Today, evidence-based treatment protocols that include both surgical and nonsurgical methods are helping many children realize improved upper extremity function. The purpose of this article is to provide a brief overview of modern aspects of the early evaluation and treatment of these patients from birth to school age.

Epidemiology and Natural History

The incidence of neonatal brachial plexus palsy has been shown to be 1.5 per 1,000 live births in the United States. Risk factors associated with an increased risk include macrosomia, shoulder dystocia, and instrumented delivery. Factors associated with a decreased risk are multiple birth pregnancy and birth via Cesarean section. It should be noted, however, that when one analyzes a large group of children who have sustained neonatal brachial plexus palsy, a majority of patients (54 percent) have no identifiable risk factors. This speaks to the fact that there are many gaps in our etiologic understanding of this injury. We also know...
that among children with such plexus palsy noted at or near birth, some 60 percent will recover spontaneously to the point that they are considered normal, while the other 40 percent will have permanent impairment of their upper-extremity function.

Infants
Physical examination is arguably the most important component of assessing infants with brachial plexus palsy (Figure 1). The comprehensive evaluation of newborns and infants with neonatal brachial plexus palsy includes classifying children according to the four category Narakas scheme:

- I = predominant C5-C6 involvement
- II = C5-C6-C7 involvement
- III = total plexus involvement
- IV = total plexus involvement/Horner’s syndrome

This is accomplished via systematic physical examination. Patients in the Narakas I and II categories clearly have a better overall prognosis than those in the Narakas III and IV categories. The Toronto scale is a validated brachial plexus tool that is very valuable in the assessment of these young children (usually less than four months of age). This tool has largely replaced the previous unidimensional criterion of presence or absence of active elbow flexion by three months of age.

The Toronto scale takes key physical exam information regarding thumb extension, wrist extension, elbow extension, elbow flexion, and finger extension (TWEEF) and converts it to a numerical score between 0 and 10. Children scoring less than 3.5 on this scale have been shown to have a worse prognosis for recovery and thus early surgical reconstruction (typically by three to four months of age) of the injured nerves is undertaken much more frequently. In properly selected children, the long-term results of surgical nerve reconstruction have been shown to markedly improve functional outcomes, particularly hand function in children with total plexus palsies.

Toddlers and School-Age Children
Many children who undergo nerve reconstruction as infants and many others whose injuries were not sufficient to warrant primary nerve surgery will later demonstrate significant shoulder problems. These primarily manifest as decreased shoulder motion (particularly abduction and external rotation) and in extreme cases shoulder dysplasia and dislocation. The Mallet shoulder scale is the validated instrument used to assess these problems. In some cases, surgery may still be avoided through physical and occupational therapy efforts (at times augmented with selective use of botulinum toxin A injections). When motion and function are significantly limited despite nonoperative efforts, surgical intervention is seriously considered. The shoulder is thus the most common joint to require secondary reconstructive surgical procedures.
Shoulder dysplasia and shoulder function can be significantly improved with modern minimally invasive reconstructive procedures such as the arthroscopic Sever-L’Episcopo procedure. Tight anterior structures such as the subscapualis muscle may undergo partial or complete release (Figure 2). Powerful muscles such as the Latissimus Dorsi may also be transferred in order to begin to restore active muscle functions lost due to the original nerve injury. A series of publications has demonstrated that these types of procedures improve shoulder function and support more normal continued growth of the child’s shoulder (Figures 3A, 3B, 3C).

**Conclusions**

The treatment of neonatal brachial plexus palsy has changed significantly over the last several decades. Treatment recommendations that amounted to accepting the natural history have given way to aggressive protocol-driven treatment approaches that include early nerve surgery for severely affected infants and aggressive use of minimally invasive secondary reconstructive shoulder procedures in many toddlers and school-age children. A prospective brachial plexus study (sponsored by the Pediatric Orthopaedic Society of North America) aimed at evaluating long-term outcomes of these children is currently underway in the United States.

**References**


**Figure 3-A**

Preoperative image demonstrating a dislocated left shoulder.

**Figure 3-B**

One-year follow-up image demonstrating good shoulder alignment.

**Figure 3-C**

Two-year follow-up image demonstrating appropriate shoulder growth and development.
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Sciatic Nerve Palsy Due to Gluteal Hematoma After a Bone Marrow Biopsy: A Case Report

By Richard Crank, Jr., D.O., and Daniel Weber, M.D.
Ingalls Memorial Hospital
Gluteal compartment syndromes are rare. They have typically been diagnosed in the setting of trauma, drug overdoses, or infection, coinciding with prolonged unconsciousness, recumbency, or both. Individuals may present with altered mental status and metabolic abnormalities resulting in a delay of diagnosis and treatment. The sciatic nerve lies in close proximity and may develop compression-induced neuropathy. The importance of compartment pressures and muscle ischemia have been thoroughly explored in the literature.1-8

**Case Report**

A 57-year-old male was admitted through the emergency room for shortness of breath and diagnosed with congestive heart failure and chronic renal insufficiency. He had a complex medical history consisting of hepatitis C, non-Hodgkin’s lymphoma, hypertension, diabetes, and anemia. He was treated by the cardiology and nephrology teams for his CHF and renal failure and started on dialysis. He had apparently had a bone-marrow biopsy performed at another institution seven days prior. The site had been the left posterior superior iliac spine. He was admitted with a hemoglobin level of 8.5 and received two units of packed red blood cells. His INR on admission was 1.2 and his PTT was 46.8. He was given prophylactic dosing of Lovenox 40mg subcutaneous injection daily upon admission. He developed left lower extremity swelling and left thigh pain seven days after being admitted to the hospital. A venous Doppler was performed and found to be negative. A CT scan was performed and revealed a large gluteal hematoma deep to the gluteus maximus in the gluteus medius/minimus compartment of the left thigh (Figure 1).

At this point, the patient began to complain of numbness of the left lower extremity and orthopedics was consulted. The physical exam of the patient revealed palpable pulses, a tense and tender left thigh, inability to dorsiflex or plantar flex his toes or ankle, and significant numbness of the foot and posterior leg. His hemoglobin was 7.4 on the morning we were consulted. Compartment pressures were not measured because of the clinical evidence of compressive neuropathy of the sciatic nerve. He was taken to surgery for emergent exploration and decompression. He received two units of blood during surgery as well. Approximately 300cc of partially clotted hematoma was evacuated from the thigh deep to the gluteus maximus. There was no muscle necrosis. There was no purulence and cultures were negative. After surgery, the patient’s numbness began to improve but maintained paralysis of the foot and ankle. At the latest follow-up, the patient had regained most of the sensation of his leg and the ability to dorsiflex and plantarflex the foot and ankle. The patient has since been lost and has not returned to our clinic or the hospital.

**Discussion**

Gluteal compartment syndrome remains rarely diagnosed. A high index of suspicion must remain when a patient presents with severe pain and swelling of the thigh. Our patient had no prior history of trauma or falls. We believe the cause of this hematoma formation was due to the recently performed bone marrow biopsy and the effects of the Lovenox. As the patient became anticoagulated, bleeding from the biopsy site at the posterior ilium led to bleeding below the gluteus maximus muscle. The large nature of the compartment allowed for a very slow yet symptomatic development of his compartment syndrome.
The etiologies of gluteal compartment syndrome are mostly related to trauma or drug overdoses. A recent report by Hayden\(^9\) reported the most recent literature and causes of gluteal compartment syndrome. The causes included falls, surgical positioning, Ehlers-Danlos, injections, exercise, arterial rupture, trauma, and drug overdoses. The report of gluteal compartment syndrome after a bone-marrow biopsy was not discovered in our search of the literature.

In a cadaver study, Owen\(^10\) showed three compartments in the gluteal region: gluteus maximus, gluteus medius/minimus, and tensor fascia lata. The fascia of the gluteal region is the fascia lata of the thigh. The gluteus medius and minimus lie within an osteofibrous sheath consisting of the iliac bone on one side and the tough gluteal fascia on the other. This fascia splits into two layers that enclose the gluteus maximus posteriorly and the tensor fascia lata anteriorly. The gluteal fascia over the gluteus maximus is thin and blends with epimysium, entering the muscle between fiber bundles to form intramuscular septa. The short external rotator muscles of the hip joint can be responsible for posttraumatic, compression-induced damage to the sciatic nerve due to their proximity. The symptoms of ischemic damage to the sciatic nerve, which leaves the small pelvis beneath the lower border of the piriformis, are prominent among neuromuscular problems associated with compartment syndromes of the gluteal region.\(^9,10,11\)

The clinical features of gluteal compartment syndrome are similar to leg and forearm compartment syndromes.\(^12,13,14\) Whitesides et al. showed that a muscle can survive four hours of ischemia with only minor functional and histological damage; however, eight hours of ischemia is generally fatal.\(^1\) Neurons are more susceptible to hypoxia; the first sensory deficits can be seen within 33 minutes.\(^15\) Whitesides et al. also revealed that ischemic injury begins when tissue pressure is 10 to 20 mm Hg below diastolic pressure. The most current literature recommends performing fasciotomies when tissue pressure rises past 20 mm Hg below diastolic pressure.\(^8\)

In conclusion, this is a necessary case to report because this is the first case we have found in the literature that resulted in a sciatic nerve compression neuropathy after a bone marrow biopsy. Although compartment pressures were not performed on our patient, the clinical presentation of compressive neuropathy of the sciatic nerve supported emergent surgical intervention. A high index of suspicion must remain with sciatic nerve symptoms and thigh pain to diagnose a gluteal compartment syndrome. It also highlights that caution should be maintained with anticoagulation therapy and any insult to bone, as bleeding can be profound. This report illustrates the development of a compartment syndrome and secondary compressive neuropathy related to a very commonly performed procedure.
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