Complications in Hand Surgery and Rehabilitation

This issue’s theme is complications—certainly not a happy topic, but one that each of us will inevitably experience. How do we deal with complications? There are two aspects: the technical issue of fixing what administratively, anatomically or physiologically is not right, and the human one, which in turn has two parts—the part that affects our patient, and the part that affects us.

In some ways the biological part is the most straightforward to deal with. The bone has not healed, the anastomosis is not patent, the joint is stiff, the tendon ruptured—we can objectively analyze the causes and come up with solutions to try. Of course, some problems, and some solutions, are simpler than others. Sometimes, we need to decide whether it is worth doing anything at all—whether the risks so far outweigh the benefits that any further interventions are unwise. A multiply operated, failed, infected nonunion or arthroplasty may be better off with resection, even if that means amputation. It may be better to counsel a patient to live with a failed FDP tendon repair in a supple digit with an intact FDS, rather than to consider staged tendon grafting, with all the attendant morbidity that entails.

The importance of standardized processes in reducing the risk of complications such as wrong site surgery has also gotten considerable attention lately, as have the Medicare “nevers”—problems such as bedsores that should never occur, and for which Medicare will no longer pay. In an ideal world, drug dosing mistakes, misplacing decimal points, and administering drugs or blood to the wrong patient should also never occur. While we are still some way from this ideal, it is likely that improved, standardized processes will take us close to this goal in the future.

It is the social issues that to me are the most challenging to face. These come in many varieties: communicating the problem to the patient; assessing the impact of our decision on the patient’s life; and facing our own shortcomings. It is commonly said that medicine is both art and science; this is where the art comes in.

It is axiomatic that one must tell the patient that something went wrong. But when? And how? There is an old Bill Cosby skit called “oops.” The doctor is continued on page 2

The patient perks up at that, and wants to know what, exactly, the doctor meant when he said “oops.” After all, the patient knows what HE means when HE says ‘oops.’ Bill Cosby can be a pretty good teacher, and what I learned from that was, first, not to say ‘oops’ in the OR, but, also, that once an ‘oops’ has happened, the best thing to do is to say exactly what the ‘oops’ means. I usually do this as soon as possible, just as I will tell the patient when all went well (I often give the happy message first in the OR, even if the patient is drowsy, hoping that the power of suggestion will help with the postop recovery. Of course, I repeat it later!).

I think that it is important to acknowledge that things did not go well quickly, both for ourselves (more on that later) and for our patients. That way it is clear that we are not hiding anything; we can give some explanation (if we have one) as to why things did not go well, and engage the patient early on in the process of planning a response, together. In this litigious era I think that it is especially helpful to document that such a conversation took place, but I do not seek to create in my note a transcript of the conversation. If this conversation is particularly lengthy, though, it may be helpful to document the time spent as well.

Complications affect a patient’s life in many ways. The anticipated recovery time, and lost work time, may be increased. More procedures may be needed, with their associated pain and cost. Will the patient feel victimized by the complication? Let down by the doctor? These feelings can interfere with recovery. We must be vigilant to detect them, and address them. I have found that a therapeutic partnership, in which the patient and doctor (and/or therapist) make decisions jointly, is very helpful in defusing these potentially explosive situations. It’s hard to feel helpless or victimized if you are actively engaged in planning your care. More insidious is when the patient gets too engaged, when their life and the complication become one. To use an example noted above, I have seen patients spend literally years of their lives obsessing over a few degrees of DIP motion. Is it worth 6 months off the job to get 30 degrees more of active DIP motion? If you are a violinist, maybe. For most digits and most people, whether white collar or blue (or even surgeons) probably not. I still clearly recall one patient from my residency with what must have been a bad grade 3B tibia fracture. After several months in the hospital, the bone finally healed, but he was left with a stiff ankle and a painful, chronically swollen, dysvascular foot. I first encountered him several years later, to renew his handicapped parking permit. He walked with difficulty, was taking fairly large amounts of narcotic for pain in the foot, and had been
unemployed since the accident. And this is why I still remember him, 30 years later: As I was filling out the form, I asked him if, given his ongoing problems, he had ever been offered amputation. He told me that at the community hospital at which he had been seen initially, amputation had been recommended, but he had insisted on being transferred to the big medical center where I worked. There his foot had been “saved.” How dare I suggest that this triumph, achieved at such cost in time, pain and suffering, be ablated? I quickly apologized for my ignorance, completed the form, and sent him on his way. But consider: in dollars alone the cost of limb salvage had been immense; but even worse was the irreparable cost to him as a productive member of society. At the point when I saw him, he was far too invested in his foot to consider giving it up. I think about this patient often, especially before recommending to any patient of mine to embark on a long and arduous course of treatment. There had better be a pretty important goal at the end; more important, there had better be “stopping rules”, as are used in clinical trials to end the study early if the short term outcomes are not as expected.

The final impact of complications is on us, the surgeon and therapist. We can deal with these in many ways: by denial, anger, surrender, or acceptance. I know people who deny that they have failures at all - they choose not to recognize them. Is this because of some problem with self-esteem? I don’t know, but I do know that both the patient and doctor will suffer as a result. This is the stuff from which lawsuits are made. Anger is another poor response: assign blame. Not a way to win friends, or to arrive at a solution. Others will melt in the face of adversity, and not look for any solutions. This is the polar opposite of the situation for my patient with the swollen foot - it is possible to give up too soon as well as too late.

Knowing the difference is where wisdom comes in. Finally is acceptance of the problem, and the formulation of a practical plan of action, with plenty of stopping rules along the way. That is the choice that I think will serve us and our patients best.

One last point: we all learn from complications, but it is not necessary that the complications we learn from are our own. Look around more and do a little less. It’s safer. I have also found that the ‘leave no stone unturned’ philosophy in rooting out pathology is a riskier strategy than the Hippocratic ‘do not harm’ approach. Some of those ancient Greeks were pretty smart.

Let’s use the opportunity of this issue to think about our complications, how they happen, what they mean, and how we deal with them. We, and our patients, will all be better as a result.

Have a great spring (it IS coming!).

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I look forward to serving as President this upcoming year. I am honored by this position and open to any suggestion via telephone calls or email. The Board of Directors for the upcoming year is printed in the box below.

We have assigned many task forces to enhance the American Association for Hand Surgery. The following task forces have been organized including their respective Chairman:

No Margin, No Mission- Consider Ways to Increase AASH Assets
Chairman - Mark Baratz, MD

Assess Therapist Role in AAHS
Chairman - Chris Novak

Investigate Role of HAND: What is the next step?
Chairman - James Chang, MD

Explore AAHS as a vehicle for Education in Developing/ Emerging Countries or Developing/Emerging Hand Societies
Chairman - Nash Naam, MD

Work is well on the way for the 2009 Annual Meeting in Maui, Hawaii. The focus of the meeting will be volunteerism as it applies to hand surgery. The meeting will start with a pre-course organized by Randy Bindra and Chris Pederson. This will be the first pre-course at an Annual Meeting for the American Association for Hand Surgery.

Bill Swartz has assumed the leadership position of the Hand Surgery Endowment part. Bill is in the planning phase of ways to enhance the endowment to allow for research and education. As you heard from Brad Meland, the endowment can be increased via support from the membership. Only through increasing the Hand endowment can we provide substantial money to young investigators to enhance research, education, and patient care!

Under the direction of Nash Naam, MD, a group of members from the American Association for Hand Surgery went to Egypt in mid-March, with the goal of providing an educational course for the evolving Egyptian Hand Society. Nash has been instrumental in organizing this meeting in concert with the Egyptian Society for Surgery of the Hand. The dates of the meeting were March 25-27, 2008. Nash will provide a summary at the Mid-Year Board Meeting in July, and probably at the Annual Meeting in Hawaii.

I would also like to inform the membership of changes in the Central Office. Alice Romano is our current Executive Director and has worked extremely hard on behalf of the American Association for Hand Surgery. Alice and Miguel Cruz (Chairman – 2009 Meeting) will travel to Hawaii for a site visit. Their goal is to insure a smooth meeting that provides an excellent venue for camaraderie and education.
AAHS 2008 Award Winners

Best Resident/Fellow Papers

FIRST PLACE:
Mario G. Solari, MD; Kia M. McLean; Justin M. Sacks; Theresa Hautz; Jignesh V. Unadkat; Elaine K. Horibe; Vijay S. Gorantla; Stefan Schneeberger, Angus W. Thomson, W.P. Andrew Lee
Institution where the work was prepared: University of Pittsburgh, PA, USA
“Local Immunotherapy Inhibits Skin Rejection in Composite Tissue Allotransplantation”

SECOND PLACE:
Aaron Anderson, MD; S. Chase Donnelly; Richard Drake, PhD; Kathleen Derwin, PhD; Jeff Lawton, MD
Institution where the work was prepared: Cleveland Clinic, Cleveland, OH, USA
“Comparison of FiberLoop and Supramid in Zone II Flexor Tendon Repair Using a Cyclic Protocol”

Vargas International Hand Therapy Teaching Award

Mary R. Nordlie MS, OTR/L, CHT
Destination: Egypt, accompanied by Dr. Nash Naam

AAHS 2008 Research Grant Winners

Principle Investigator:
Xizfeng Jia MD, PhD
Johns Hopkins University School of Medicine
Baltimore, MD
“Detecting and differentiating sensory signal in peripheral nerve by intrafascicular electrodes with pressure manipulation in rats”

Principle Investigator:
Christine B. Novak PT, MS, PhD(c)
Toronto General Hospital
Toronto, Ontario
“Biomedical and psychosocial factors associated with pain and disability after peripheral nerve injury”

Principle Investigator:
Damon Cooney, MD
SIU School of Medicine—Div. of Plastic Surgery
Springfield, IL
“Induction of immune tolerance in rat hind limb allotransplantation by over expression of IL-10 TGF b within the transplant graft”
Hand Surgery Quarterly
Spring 2008

Daniel Nagel, MD (left) and A. Lee Osterman, MD (right) at the "Cubital Tunnel: Defend your Operation panel."

The Past Presidents’ Luncheon was an opportunity to renew old friendships. From L to R: Drs. Bob Russell, Allen Van Beek, Scott Kozin, Kim Lie, Joe Danyo, Brad Meland, Bill Swartz, Peter Amadio, Bob Brumfield, and Ron Palmer.

Keynote Speaker Ramez Naam

Dr. Allen Van Beek, Joseph Danyo Presidential Invited Lecturer

Welcome Reception at X Bar

Friday night Salsa Dinner/Dance
The AAHS Board of Directors and the 2008 Program Committee would like to thank the following companies for their support and participation:

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Have You Collected Data Today?

Rebecca von der Heyde, MS, OTR/L, CHT

Data. Articulation of this word makes students complain and many therapists run for cover. For those not participating in research, the collection of data would appear to be a foreign concept, irrelevant to daily practice, and the business of researchers as opposed to clinicians.

But is this truly the case? Who is responsible for the promotion of therapeutic intervention as a means to functional recovery and meaningful occupation? Who should collect and analyze outcomes of therapeutic interventions? Who will guard our profession? The answer is every therapist, every day, through every measurement that informs and establishes our ability to make a difference in the lives of our patients.

Comprehensive evaluations offer clinicians the opportunity to use objective data as a means to guide treatment. Despite the fact that many experienced clinicians can “see” and “feel” change subjectively, standardized and objective measurements provide the hard numbers with which we can request reimbursement and analyze outcomes, otherwise known as data. These data are essential to our practice, providing opportunities for continuous quality assessment as well as evidence suitable for dissemination.

In addition, therapy organizations have established evidence as a primary component of our collective futures. According to the Centennial Vision of the American Occupational Therapy Association (AOTA), “We envision that occupational therapy is a powerful, widely recognized, science-driven, and evidence-based profession with a globally connected and diverse workforce meeting society’s occupational needs.” The American Physical Therapy Association (APTA) concurs with the need for evidence in Vision 2020, stating, “…physical therapists… will render evidence-based services throughout the continuum of care and improve quality of life for society.”

To return to the original question, have you collected data today? To take it one step further… what are you planning to do with it?
HAND THERAPY PROFILE

LCDR Andra Battocchio PT, CHT

Personal: I was born in New York just outside of the city. I moved to Philadelphia for graduate school and then moved to the southwest where I have been for nearly 11 years. I met my spouse, Mike Powers (also a therapist) when he visited our medical facility as a student and we have been married for almost 7 years now. We have 2 fabulous dogs and cats that travel with us on weekends to our home in southwest Colorado. In my free time I enjoy mountain trail hiking, snowshoeing, snowboarding, reading, and exploring new outdoor areas.

Education: After first studying mechanical engineering as an undergraduate, then doing a few years of computer aided drafting/design in the aerospace industry, I somehow found my way to physical therapy and graduated from Thomas Jefferson University with BS &MS degrees in PT in 1998. During the therapy program I participated in the US Public Health Service (USPHS) COSTEP program (Commissioned Officer Student Training & Extern Program) which commissioned me as an officer for a summer and I spent the entire time working at the Alaska Native Medical Center in their Physical Therapy Department. I later completed a formal student affiliation with the USPHS/Indian Health Service at a site in New Mexico. I attained CHT certification in 2004 – the same year I also completed a hand therapy fellowship at the Philadelphia Hand Center. Currently I am enrolled in the DPT program at Thomas Jefferson University.

Employer: I am a Commissioned Officer in the US Public Health Service, Indian Health Service, currently stationed in Navajo Area at Chinle Comprehensive Health Care Facility (CCHCF) in Chinle, AZ. CCHCF is a rural isolated hospital that serves all Native Americans and is centrally located on the on the Navajo Indian Reservation. Our Rehab Department offers PT, OT, SLP, Audiology and numerous specialty clinics for services that are not available for several hundred miles. As the current Rehabilitation Director, my time is split between administrative work and direct patient care (all hands). I started here as a staff therapist with a varied caseload that included a lot of wound care. After a few years, my interest in hands grew from coordinating our volunteer hand surgery clinic and I have focused my energy on improving hand care on the reservation ever since.

AAHS Involvement: New affiliate member. I am also working with the Hand Surgery Endowment to coordinate outreach opportunities for volunteer hand surgery and therapy education with the Indian Health Service.

Best Part of My Job: The challenges and rewards in providing care and making a difference in an isolated area to an underserved population as a therapist and Commissioned Officer of the USPHS; working in a fantastic and fun working environment with an absolutely incredible and dedicated staff; and participating in numerous outdoor adventures in the four corners area.

Major Accomplishments: Coordination and expansion of a volunteer hand surgery clinic for over 10 years. This clinic brings volunteer surgeons to Chinle for a 2-3 day clinic every 3-4 weeks. Managing & planning all aspects of this clinic is what sparked my interest in hand therapy and specialization in hand rehab. I am excited about outreach efforts to bring volunteers to other parts of the reservation and IHS sites.

Clinical Specialties: None in particular….I enjoy seeing a little of everything!

Greatest Patient Challenge: Wow – where should I start! Access to care is the primary patient care challenge. It’s difficult to treat many types of injuries effectively (such as tendon repairs) when patients only make it into clinic once every 1-2 weeks. Much of my patient population does not have electricity, running water, or phones and/or travel great distances on dirt roads to get to the clinic. Therefore I have to adapt my treatment approach to provide care within this unique setting.

Three Words That Describe Me: I can’t be described in just 3 words!
Complications in Hand Surgery and Rehabilitation

The moderator for this discussion is Dan Nagle, MD, Professor of Clinical Orthopedics, Northwestern Feinberg School of Medicine, Chicago, IL. The panel is comprised of hand surgeons A. Lee Osterman, MD, Professor Orthopaedic & Hand Surgery, Thomas Jefferson University; President, The Philadelphia Hand Center, P.C.; William Swartz, MD, Professor of Plastic Surgery, University of Pittsburgh, Pittsburgh, PA; Nicholas Vedder, MD, Professor & Chief of Plastic Surgery, University of Washington, Seattle, WA; and hand therapist Christine Novak, MS, PT, Research Associate, University Health Network, Toronto, Ontario, CANADA.

Dr. Nagle: Dr. Osterman, the use of fixed angle plates for the treatment of distal radius fractures has become very popular during the past few years. I am sure our readers would like to hear your thoughts on the complications associated with the use of these plates.

Dr. Osterman: Well, as we all know, the last decade has seen a quantum increase in our technological ability to fix distal radial fractures. And so now the use of fixed angle plates has approached the standard of treatment for many distal radial fractures. As their use has increased and there are over 20 fixed angle and variable angle plates on the market, so have the complication rates increased with their use. The first complication is that physicians assume that a volar fixed angle plate will work for any fracture. There are certainly some complicated distal radial fractures, particularly intraarticular, and those with a very distal volar medial lunate fragment, that may not be as amenable to volar fixed angle plating. There’s nothing worse than plating a fracture in a position of a non-anatomic reduction or in having it fall apart. Then you have the worst of both worlds: an operative surgery with its attendant scar and a persistent unstable situation. So the first critical decision is to define the indications and make sure that the fracture you’re going to treat is amenable to plating.

Dr. Nagle: Dr. Osterman, what are your indications for using a fixed angle plate to treat a distal radius fracture?

Dr. Osterman: Well, comminuted, multi-part intraarticular fractures may need something that’s more akin to fragment-specific fixation than a fixed volar angle plate. If you have just a radial styloid fragment, this is amenable to a number of other techniques and a volar plate is overkill. There are some fractures which we plate for the patients’ early functional needs, so that they can use the wrist sooner. For example, many non-articular fractures can be treated by casting, pin fixation or even external fixation and thus avoid a major open operative procedure.

Dr. Nagle: Nick, do you have any thoughts on that?

Dr. Vedder: I agree with that. I think that it has dramatically improved our ability to treat complex distal radius fractures. I can remember a decade ago we were approaching most distal radius fractures dorsally, and that was a horrible way to get at most of them.

Dr. Nagle: Lee, have you encountered any significant complications such as tendon rupture while using these plates?

Dr. Osterman: As I said, as the volume of open reduction internal fixation using volar plates increases, so do the complications. In some situations, their ease of use is almost taken for granted. There are a number of pitfalls. One is that you want to make sure that the plate gets in the watershed area. If there is an incomplete reduction or the plate is not distal enough, it won’t support the subchondral bone with its pegs. Conversely if the plate is too far distal, the pegs may enter the radiocarpal joint.

A technical improvement in such situations is the ability to place screws at variable angles. A number of plates have incorporated that technique so that if you think your plate is in a position where the screws might violate the joint, you can either leave out the distal screws or alter the direction. Remember though you will still want to support that subchondral bone. Furthermore, in an attempt to get more distal support, care must be taken not to let the plate ride up or sit off the radius because then you subject the volar forearm compartment tendons and median nerve to pressure and plate contact irritations. Normally the concave flexor side of the radius is fairly forgiving. Furthermore, the mobilization of the pronator quadratus has created a very nice space where...
there is usually ample room for the flexor tendons, whereas as Nick pointed out, dorsally the extensor tendons lay directly on the plate. Having said that and having seen flexor tendon injury, particularly to the FPL and particularly the FDP to the index finger from a proud plate, we’re also now seeing as many extensor tendon injuries to pegs sticking out dorsally either at the shaft or in the hidden zone of the distal radius, which is the dorsal aspect of the lunate ulnar to Lister’s tubercle.

**2009 Application for Research Grants**

The AAHS Research Grant Awards were established to further the purpose of the Association as stated in its Bylaws and to foster creativity and innovation in basic and/or clinical research in all areas pertinent to hand surgery.

**Awards and Eligibility**

Grants will be made for a one year period to up to three investigators. Grants are available to all AAHS members. One of the investigators must be an active or affiliate member of the association.

**Grant Application**

Applications may be obtained from the AAHS website at www.handsurgery.org, or, you can call 312-236-3307 to request a copy. Applications (an original plus seven copies) must be received by the committee chair no later than Monday, November 3, 2008, in order for the judging to be completed in time and the recipients to be announced at the Annual Meeting.

The AAHS and the Research Committee are required by the IRS to document disbursement of grant funds. Award recipients will be required to sign a letter of acceptance and submit a progress report once each year. The AAHS must be acknowledged as the source of funding in any presentation or publication. A final report must be submitted at the completion of the study. It is expected that the results of the funded research be submitted for presentation at an Annual Meeting within two years of the receipt of the award.

Funds must be returned to the AAHS if the study is not undertaken within twelve months of the receipt of the award.

Failure to follow these guidelines will disqualify the recipient from any further grant opportunities and from presenting any papers at the AAHS Annual Meeting for a period of three years following such default.

**Mail Grant Proposals to**

Michael Neumeister, MD
American Association for Hand Surgery
20 North Michigan, Suite 700
Chicago, IL 60602

**Dr. Nagle:** Has anyone seen a loss of supination afterward repair of the pronator quadratus?

**Dr. Vedder:** No, I’ve not seen that. I have seen one FPL rupture and one extensor tendon rupture. But I think the most critical thing, as Lee pointed out, is to not do an “OIF” [Open Internal Fixation, without Reduction]. Unless you really get an accurate reduction, the plate is not going to fix the fracture. And the way to do that is to get adequate visualization, use traction and ligamentotaxis, which I think are key components, and release the brachioradialis insertion to get the styloid reduced. Those are all key parts of it. And then as Lee said, the plate placement is very critical. It’s got a narrow margin for error, and the best way to get that in proper position is with lateral fluoros so that you are seeing exactly where the pins are going to go and sometimes using K wires through small guide holes that some plates have, so that you can see where your pins or screws are ultimately going to be. Those are the key points. Also, if there is severe comminution you are not going to be able to capture all the fragments with the plate, and in those cases you should consider using some kind of additional support. I think the best way to do that is with the dorsal spanning plate that you just put under the ECRL and ECRB and go out to the index metacarpal. That gives you the support you need to prevent things from falling apart in the meantime. You take it out a couple of months later and you don’t have the problems of ex-fix pins. It’s also much more stable.

**Dr. Nagle:** Chris, what thoughts do you have regarding the post operative care of patients who have undergone an ORIF of a distal radius fracture with a fixed angle plate?

**Ms. Novak:** I think a key factor is good communication between the therapist and the surgeon regarding the fixation, the reduction and what
the expectations are regarding the range of motion after fixation and the stability. While the goal is to begin early range of motion, the stability will determine how aggressive the range of motion can be and when one might start strengthening exercises. Although I think that it is important to gain the range of motion quickly and it has to be done with consideration of the fixation, pain and patient tolerance. Once the patient has achieved good range of motion and the fracture will support any loading then strengthening exercises should begin. Continued communication with the surgeon is essential.

Dr. Osterman: One of the conceptional advantages of using plate fixation is immediate stability, so the patient could begin to use the hand and wrist sooner. I put such patients in a removable splint at two to three weeks. Some recent data suggests that even if you cast them for six weeks the long term effect is the same as with early mobilization. Most postoperative protocols regain equal motion and strength. But you certainly have this earlier return to function if you have stable plating and a splint. If for some reason a screw projects too long, particularly dorsally, and the therapists or patients start to see a tenosynovitis, then a concern of tenosynovitis, depending on if the fracture is displaced enough to warrant a plate, I agree, if you’re going to err, err on the side of releasing the nerve.

Dr. Nagle: Have any of you encountered aberrant branches of the superficial branch of the radial nerve or the palmar cutaneous nerve crossing the distal flexor carpi radialis?

Dr. Osterman: While many patients get transient median nerve symptoms, depending on if the fracture is displaced enough to warrant a plate, I agree, if you’re going to err, err on the side of releasing the nerve.

Dr. Nagle: I think that the palmar cutaneous nerve very frequently crosses the FCR. It is not always cut. It generally can be injured by traction as well, particularly when you’re trying to get more distal up towards the radial styloid to confirm your reduction.

Nobody answered your question about limited rotation post radial fracture plating, and I think it’s an important one. ORIF influences rotation in a number of ways. We do expose the pronator quadratus and strip it off usually from radial to the ulnar side. While some surgeons repair it, most data would suggest that there is no necessity to try to reattach it. Some surgeons have implicated such pronator scarring, whether attached or not, as possibly limiting rotation.

One trick, if you are concerned about rotation, is that it never hurts to immobilize the patient for two weeks in a supinated position, even if you have a volar plate on, because they can usually always regain pronation. Also, supination is the most stable position for the distal radioulnar joint and may protect the distal radioulnar joint if there is a subtle instability. This brings up another aspect of distal radial plating. It has changed our concepts of what we do with the distal radioulnar joint and particularly the ulnar styloid fracture. Traditional teaching suggests that the basi-ulnar styloid fracture reflects a potentially unstable disruption of the triangular fibrocartilage and the radioulnar ligaments. Thus, it raises a high suspicion that additional fixation of the ulnar styloid may be needed. Some newer data, particularly from Jorge Orbay, suggests that once you stabilize the distal radial fracture- and you should always do that first- it’s only after you’ve stabilized the distal radial fracture anatomically that you then assess the distal radioulnar joint stability. If questionable, you compare it to the uninjured opposite side. Many times you will find, regardless of what the morphology of the ulnar styloid fracture, that you may have a stable situation. Dr. Orbay believes, and has some data to support it, that 90% of ulnar sided injuries are going to be stable because of the intact portions of the distal interosseous membrane, so that once the radius is anatomically reduced and stable, it will hold your ulna against the sigmoid notch. Thus you are not relying on the pronator quadratus, but the distal aspect of the interosseous membrane.

Dr. Osterman: I don’t think there is more CRPS with ORIF, but one of the problems is the common extended FCR approach doesn’t provide easy access to the carpal tunnel. To extend that incision and cross the wrist crease radially, risks injury to the palmar cutaneous nerve. If a patient has a lot of numbness and tingling in the median distribution or if the fracture reduction has been difficult or lengthy, I think having a carpal tunnel release done through a small palmar incision as a separate incision is probably a reasonable thing to do.

Dr. Vedder: I’d even say if they have any symptoms at all, I have a very low threshold for releasing the carpal tunnel.

Dr. Osterman: Has anyone encountered a postoperative carpal tunnel syndrome or complex regional pain syndrome?
On chronic regional pain syndrome, I don’t think it’s increased with the use of open reduction internal fixation, but still both the surgeon and therapist have to be vigilant. If a patient is not making essentially a near normal fist by two weeks or has significant numbness or excessive pain, a physician should have a high index of suspicion about CRPS. If they are not already engaged, I put such patients in a supervised therapy program. If immediate improvement is not forthcoming, I begin the gamut of CRPS treatment. Thus, ORIF does not enhance CRPS but it certainly doesn’t eliminate it.

Dr. Swartz: But while I don’t treat radius fractures, I had an orthopedic colleague consult me the next morning after he did a severe radius fracture with external fixation, common in the situation. It looked like he had a really good reduction, but he didn’t recognize the architecture of the carpal bones. The next morning when we got a better set of x-rays that the architecture of the navicular was okay, but there was evidence of carpal instability. So we’re still vigilant about scapholunate ligament injuries and other internal injuries that aren’t always quite evident immediately after distal radius fracture.

Dr. Nagle: With that as a segue, let’s move on to the second topic. Nick what is your current approach to the patient with scapholunate instability?

Dr. Vedder: I think the most important thing is determining what stage of the injury you’re picking it up. Certainly the treatment for an acute scapholunate injury is going to be different than a chronic one and to the extent that you can be vigilant and recognize these early, you are going to be better off and your results will be better. So with the acute ones that you pick up generally within the first month - hopefully at the time of the initial injury, you want to treat it at the time you’re treating the initial injury. I approach these dorsally, getting direct reduction with K-wires in the scaphoid and lunate as joy-sticks, rotating the scaphoid dorsally and the lunate palmarly, pinning the scapho-lunate, luno-triquetrum, and scapho-capitate, then doing a primary repair of the ligament with bone anchors. You are usually able to reattach the dorsal ligament back over with bone anchors in the acute phase.

Dr. Nagle: Do you do some sort of capsulodesis?

Dr. Vedder: No, I usually don’t. I do pin them, though, and leave the pins in for six weeks. Usually a combination of direct repair and pinning is sufficient. You get enough scarring after that that I don’t find late instability. The biggest problem, though, is really getting it completely reduced, and that usually requires using a bone reduction clamp directly in combination with your joy sticks to get it anatomically reduced. It’s often very difficult to get the scapholunate gap closed down, but once you do I think getting it fixed is fairly straightforward with bone anchors and K wires. If they present late, you are obviously not likely going to be able to do that and so you go in with the plan of probably being able to do some kind of bone-ligament-bone reconstruction, which is my favorite approach.

Dr. Nagle: Which bone-ligament-bone technique are you using?

Dr. Vedder: I use the Lister’s tubercle procedure that Peter Weiss described, taking that and making a little bridge between it, making two little troughs for it and fixing it with two small screws in combination first reducing it and pinning it. If you go in and you do find a ligament that you can repair, well, I’ll do that first and pin it, but if you don’t find a ligament to repair then I’ll generally do a bone-ligament-bone reconstruction.

Dr. Nagle: Do you have any tricks you can share with the readers regarding how to make the holes in the scaphoid and lunate for the bone segment of your bone-ligament-bone construct?

Dr. Vedder: With just a small rongeur. It’s usually pretty simple to do, I think.

Dr. Nagle: Why don’t you use an osteotome?

Dr. Vedder: I’d be afraid of injuring the ligament.

Dr. Nagle: Lee, how do you handle the patient with a scapholunate instability?

Dr. Osterman: The scapholunate injury, particularly in the chronic state, is one of the great unsolved problems that we deal with. We have such imperfect solutions to this problem that I think one of the major pitfalls in treating this, is subjecting a patient whose disability is mild to an open reconstruction which may have a greater morbidity than their preoperative status. Time and time again I see patients who are extremely angry at their first surgeon who took them through one of the many reconstructions, who now have loss of wrist flexion, loss of grip strength, and more pain than they had preoperatively. One rule, therefore, I have in the treatment of scapholunate instability is the so-called 80% rule. If they have grip strength of their injured side that’s 80% of their uninjured side and only intermittent symptoms, they are generally better off to live with the problem because 80% is about what our results are across the board, regardless of the surgeon’s favorite tech-
nique. A second problem in treating scapholunate injury is that our x-rays and MRIs very frequently underestimate the degree of pathology. It is not uncommon to prepare a patient for a reconstruction whether using bone-ligament-bone or a tri-spiral FCR tenodesis, only to find out the arthritis is much greater than anticipated.

Thus, I think it is critical to discuss with the patient both reconstructive and salvage operations.

In my practice, wrist arthroscopy has been very helpful in this situation, both in the diagnostic staging of the scapholunate problem and avoiding that patient who you think has a relatively acute injury, only to find it is an acute-on-chronic situation. Furthermore, there are some arthroscopic treatments, be it simple debridement or pinning, or even the more controversial role of capsular shrinkage, that are less morbid for many of these scapholunate injuries. This is particularly true in the dynamic or partial injuries, which I think can benefit from arthroscopic surgery.

Dr. Vedder: You’re not talking about the case where an acute fall on the wrist with wide scapholunate and a 90 degree scapholunate angle, are you? You’re not advocating arthroscopic treatment of that?

Dr. Osterman: No, I do not use arthroscopic surgery for the complete scapholunate lesion with a large static gap. In my opinion, it is contraindicated for this.

Dr. Nagle: Terry Whipple has suggested an acute scapholunate liga-ment injury can be treated arthroscopically if certain criteria are met.

Dr. Osterman: It was three months and three millimeters and that may be pushing the limit sometimes.

Dr. Nagle: Nick, what are some of the complications you’ve seen when treating acute scapholunate injuries?

Dr. Vedder: The complications that you can guarantee you’re going to get are pain and stiffness as Lee said. A stiff wrist is to a certain extent a success IF you can reduce the pain. The biggest problem of course is not being able to get adequate pain relief and that’s the big bugaboo.

Dr. Nagle: Infection and pin track problems really have not been an issue for you?

Dr. Vedder: I always bury my pins and so unless they wind up poking out, that’s not a problem.

Dr. Osterman: I’ve seen every complication that exists. Sometimes it seems I can’t put a pin in a wrist, whether I bury it or leave it exposed, that doesn’t get irritated or cause a problem. Every time I get away with pinning a carpal injury in a patient, the next two times I have problems. The dorsoradial sensory nerve is particularly vulnerable because of its location in your angle of pinning approach. We have seen erosion in two cases of the radial artery. In one patient a fistula was caused from an ill-placed pin. Pins can penetrate the carpus and cause more problems in the scaphocapitate area or even in the articular surface of the lunate. Occasionally a patient removes his cast, starts moving his wrist, only to break the pins and then you have a difficult removal situation.

Increasingly, therefore, people have started looking for other alternatives to try to stabilize the scapholunate interval and the hot new topic is the use of transaxial screws. So, if you talk to people who are doing a lot of scapholunate surgery, more of us are using such screws now. They are not the perfect answer, because it is very difficult to get the screw exactly in the axis. There are also great debates, at least in the long term, whether such screw fixations should come out or will eventually pull out.

Dr. Vedder: Lee, have you used the bio-absorbable screw for this indication?

Dr. Osterman: I haven’t used the bio-absorbable screw just because I think that such screws, to absorb, cause a lot of reaction. Earlier around the wrist, we did use bio-absorbable K wires, which seemed helpful. The problem was in drilling the wires because you had to first drill a hole and then feed the absorbable wire into the hole. Subsequently they were able to hook the absorbable wire to a metal pin that could be driven across the wrist, but that required drilling across the wrist and out the other side. Thus, the bio-absorbable pin did not pan out, though I think something bio-absorbable in the future may have a role. Hardware around moving parts like the wrist is always a problem.

Dr. Nagle: The passing of percutaneous pins through the snuff box, in my opinion, should be done carefully. I will make an incision over the snuff box, find the artery and superficial branch of the radial nerve and protect them. I use a large core needle as a tissue protector. How do the rest of you feel about protecting the neurovascular structures in the snuff box during pin placement?

Dr. Osterman: If I have an open incision, I don’t usually dissect over there, and, when I can, I use a 14 gauge needle that will allow my 0.45 K wire to pass through it as a cannula. The needle allows one to find the artery and superficial branch of the radial nerve and protect them. I use a large bore needle as a tissue protector. How do the rest of you feel about protecting the neurovascular structures in the snuff box during pin placement?

Ms. Novak: I think that one of the real challenges after the long period of immobilization after surgery is regaining range of motion, and then, once you start, instituting the strengthening exercises to maintain relatively pain free function. But I wouldn’t start any strengthening...
exercises until at least 12 weeks following surgery.

**Dr. Osterman:** I’ve got a question for Chris. Chris, you know that some of the newer data would suggest that the way to rehabilitate proximal row injuries is to use dart thrower’s motion.

**Ms. Novak:** Right.

**Dr. Osterman:** We’ve had some pretty good success using the dart thrower’s protocol and this has changed the way we rehabilitate proximal row injuries.

**Ms. Novak:** I think that it is very compelling.

**Dr. Osterman:** And have you felt that’s a reasonable approach from your analysis of it?

**Ms. Novak:** When you look at the biomechanics of that, it makes a lot of sense and I think it’s a good strategy to institute, particularly in the patients with those types of injuries and repairs.

**Dr. Nagle:** Chris, can you expand on what Lee is talking about?

**Ms. Novak:** The biomechanical data suggest that this type of dart throwing motion uses the midcarpal joint the most and stresses the proximal row the least and therefore you can still gain functional motion very quickly without stressing the repair. Although I wouldn’t start any strengthening exercises before three months and caution the patient against any physical activity that uses a forceful grasp after this type of repair.

**Dr. Vedder:** My view is that I don’t really push to get back their motion. If they are pain free and they have a slightly stiff wrist, I view that as a win.

**Dr. Osterman:** The key is “slightly”.

**Ms. Novak:** Just by the nature of the surgery, I think that there will be a loss of motion following surgery. So perhaps a stiffer wrist but without pain.

**Dr. Osterman:** I tell the patient if he gets about 75% of his arc of wrist motion and that motion is stable and pain-free, then that would be the expected goal.

**Dr. Nagle:** Before we move to the next topic, I think the readers would probably be interested to know what the panel members are currently doing for someone that has a large, reducible, chronic scapholunate diastasis.

**Dr. Osterman:** For a dynamic instability, as I said earlier, my treatment in general is an arthroscopic approach. For the static gap that is reducible and non-arthritis, without reconstructable ligament, I do one of two things, and it depends a little bit on the suppleness of the individual and somewhat on the size of the static gap. If the gap is greater than five or six millimeters, I tend to go with a bone-ligament-bone. Much to my chagrin as a hand surgeon, my favorite source for this comes from the first navicular-cuneiform joint in the foot. Such a construct is useful in correcting the diastasis and maintaining the scaphoid in a horizontal position. I will occasionally add some support for the distal scaphoid.

If it is a smaller scapholunate gap, I tend to use an FCR tri-spiral reconstruction as invented by Brunelli, and modified by Marc Garcia Elias.

**Dr. Vedder:** I think I pretty much described my approach for the chronic ones using the bone-ligament-bone reconstruction.

**Dr. Nagle:** Our final topic is Dupuytren’s disease.

**Dr. Swartz:** It’s a pleasure to contribute to this effort. I’ve just completed, along with Don Lalonde, an article which will be coming out shortly in PRS. It’s called the MOC Article on Dupuytren’s. And the whole purpose of the MOC project is to have papers in the literature which are up-to-date summaries with questions at the end which those questions become public domain questions and are going to be used in the MOC maintenance of certification for in this case the hand module for plastic surgery recertification. So it’s been a nice project to do and kind of sets me up to give this little presentation. But in talking about Dupuytren’s, the complications I think that most of us have trouble with are the recurrent contracture. And most of the time that’s in a more severe case, a patient who may have the diathesis, a young patient in particular, who comes on early with a contracture that you go ahead and get out an MP and PIP joint involvement. You get them out nice and straight and it comes back three or four months later with loss of some of that extension to PIP and six months later even some loss in the MP. And that’s the complication that the second time around is more and more difficult to take care of. The second complication of course is the iatrogenic complications of nerve injury, which is pretty rare, but still problematic. And in some cases, of course the usual complications of hematoma when one doesn’t judiciously consider the open approach or the McCash technique. So those would be the three complications that I would put up there as the most worrisome and troublesome.

**Dr. Nagle:** What is your usual approach for palmar fasciectomy?

**Dr. Swartz:** I think it’s a custom approach to the individual problem. Ninety percent of the time I will do one or two Z-plasties, one in the palm and one in the proximal phalanx. But frequently a Bruner incision is all you need if you’re going for a cord with a supple joint. So if it’s not a fixed contracture, you
can do a Bruner incision and that oftentimes will be just fine. The open McCash technique is reserved for that severe contracture where you may have two fingers, ring and little finger typically, and so it just works so nicely to leave it open and then not deal with the issues of the hematoma. The other issue about hematoma and a way to deal with preventing the hematoma. Most of the time I’ll use a distal forearm tourniquet or a Bier block with even a distal forearm tourniquet, and then supplement it with marcaine so that I can let the tourniquet down during the closure and let that period of hyperremia pass before you put the dressing on. The other issue of course is those patients in the older age group that may be on Plavix or may have been on other anti-coagulant medications that are the bane of all of our existence, not only in hand surgery, but in other surgeries. And there I think that’s a good indication for leaving the palm open.

Dr. Nagle: How do you avoid Z-plasty flap necrosis in a severely involved finger?

Dr. Swartz: I think there again it’s a question of picking the right patient. In the secondary case where the scarring is already a problem, I don’t think I would do a Z-plasty. And in the fresh case where the skin is still supple, then I don’t seem to have that problem, but it’s also a question of thinking about where you’re going to base those flaps. You’d like to base them more proximal than based distally and just think about the size of the flap. The bigger the flap, the healthier they are. So I don’t use little flaps usually.

Dr. Osterman: Another difficulty in flap design in the contracted finger, particularly if you have a significant 90/90 or 90/60 contracture MP-PIP, is that you need to design the flap incision when the finger is more extended. I thus do the palmar portion first, releasing the pre-tendinous cord. That brings the MP out and gives you a much better sense at arranging whatever flap, whether straight Z-plasties or V/Ys (my preferred technique). I always work palm out rather than finger in. And I think that’s been helpful.

Dr. Vedder: You never want to design your Z-plasties before you have it extended, so I think in most cases you’re doing a straight line incision to get the cord out and then you design your Z-plasty.

Dr. Osterman: That’s correct.

Dr. Vedder: The big issue is: how involved is the skin? If it’s fully involving the skin, you pretty much have to do the straight line approach and then convert it later. You can do a Bruner incision, but only if you have thick enough uninvolved skin that it’s going to survive as a flap after you’ve removed the cord.

Dr. Nagle: Are you at all tempted to do a dermofasciectomy in a 40 year-old patient with a strong family history and early severe disease?

Dr. Swartz: There you’ve committed to a skin graft in many of those patients. And, yes, I think that’s a reasonable thing to do. But also I think you have to realize that the data show that there’s at least a 30% failure of getting that MP and PIP joint out in the secondary cases. In the end result you’re still going to have a contracture. So you have to be pretty candid with your patient, to say we are going to put you through this with a likelihood that you’re still going to have a contracture. I usually use K wire fixation in those cases until I get healing of the flaps. And then, Chris, these are right off the bat good patients for the early involvement of hand therapists with nighttime splints and with dynamic extension splints across the PIP and MP joints. So in secondary cases, I think that’s a very important aspect of this.

Ms. Novak: I think it is important to start early range of motion in these patients postoperatively, including splinting programs to maintain or regain range of motion.

Dr. Nagle: How long do you like to splint the patients?
Ms. Novak: I like the idea of splinting at night, and it can be extremely useful in the postoperative patient with Dupuytren’s. In these cases, for splinting to be effective, it must be low force and long duration. Splints that place a high force on the tight tissue will be uncomfortable, will not be tolerated by the patient and will increase the inflammatory reaction in the region. Therefore the patient will not wear the splint long enough to be effective for stretching of the soft tissue and scar. I like the concept of splinting at night because it is not going to interfere with function. If the patient wears a splint during the day, it can interfere with hand function and then essentially the patient is using their hand less. I think that splinting at night is a good way to go and you need to maintain a splinting program for as long as the scar is maturing, so for at least six months.

Dr. Osterman: We have changed our therapy postoperative protocol in severe Dupuytren’s to use a technique described by Roslyn Evans. She has taught us that the key to avoiding the dystrophy-type of flare phenomenon, which is more common in women with severe contracture, is to avoid stressing the soft tissues in the immediate postoperative splint. Thus the immediate postoperative splinting in the O.R., rather than splint the finger fully straight at the MP and PIP joints, we splint the PIP’s as straight as we can get them and the MP’s flexed at 45 degrees. They start therapy within the first week working on edema techniques and gentle tendon gliding. The therapist gradually stretches out the MP joint when the tissues can tolerate it. In this regard, the MP joint is very forgiving and such a protocol has cut down the incidents of stiffness and flare in our Center.

Dr. Nagle: I was wondering if any of you are using an external fixator that John Agee created, called the Digit Widget, in which you place two pins in the middle phalanx and then you apply a low force to this external fixator? Over a period of time, it is extremely powerful and it will straighten out almost anything that walks, talks or crawls. We’ve been using it with some success. I just wondered if anyone else has tried this at all?

Dr. Osterman: I have and I use it in very rare instances. Sometimes I’ve used it on a severe recurrent contracture.

Dr. Nagle: That has been our indication, too.

Dr. Osterman: In my book, recurrence is not a complication. I think recurrence is a given, and I tell patients that they are going to get a recurrence 100% of the time, if they live long enough. If you have done a complete release, the MP contracture is almost never a problem. The MP joint is forgiving and regains a full range of motion. The most common missed area of dissection is not to get the vertical septa. If a surgeon leaves the septa, this provides a source of Dupuytren’s cells that may come back to haunt you, particularly in terms of a recurrent MP contracture. My biggest complication is stiffness. It sometimes seems that everybody I operate on is a pro golfer. When they come to
me initially, they can grip the golf club but have trouble with hands in pockets and getting gloves on. After a two finger Dupuytren’s release, they have a hard time fighting to get back their golf grip and that can be very frustrating. Thus I believe you have to be careful not to be too greedy and try to get that PIP joint all the way out, particularly if your goal is a functional range of motion so the patient can put his hand in his pocket or in a glove, but not sacrifice the flexor motion to get his hand around that golf club.

Getting a functional range of motion in both flexion and extension, will serve you better and you will have less angry patients.

Finally, if you want a point of controversy, I would absolutely disagree with Bill in that I think the use of pinning Dupuytren’s PIP joint is to ask for such stiffness, skin necrosis and a flare phenomenon. So I never say never, but I now never use a pin in the PIP released Dupuytren’s contracture and I’m an orthopedist that likes pins.

Dr. Swartz (laughs): You ignorant country bumpkin!

Dr. Nagle: So, Bill, obviously you do that and you have not had the same experience?

Dr. Swartz: No, I have not. And the pinning is only until we get that early, early flap healing, stitches out at two weeks and the pins out and motion started.

Dr. Nagle: I see, so it’s not a long term sort of thing at all.

Dr. Swartz: Correct.

Dr. Vedder: What do you think about partial fasciectomy in a patient with an isolated metacarpophalangeal contracture?

Dr. Vedder: I’ve done that several times. As you say, it has to be pretty much an MP-only contracture. Most importantly, it needs to be superficial. It needs to be limited and it needs to be central. If it isn’t all of those, then I wouldn’t do it. But if it is, just doing it in the clinic with a little 11 blade will often give them enough of a release that they have significantly improved function for about zero risk.

Dr. Osterman: I think in the right patient, like all techniques we do, there’s a time and place for every technique. I am certainly intrigued by the popularity of the percutaneous release that Charlie Eaton brought back from France. I think it has a definite role. The recurrence rates are fairly high as it is incisional not excisional. It looks like somewhere in the neighborhood of two to three years will pass before recurrent contracture occurs. But if you are doing something under local in the office and as a minor procedure, simply repeating the procedure may be preferable to a wide open dissection. Remember, when you code it, it’s an aponeurotomy, not an aponeurectomy.

Dr. Nagle: The CPT code for percutaneous fasciotomy is 26040. Currently the Center for Medicare and Medicaid Services (CMS) permits using this code once per hand regardless of the number of cords released.

Dr. Osterman: Right. But if you do that every two or three years and it keeps them in a functional range of motion, is that any worse than doing the full court press which takes six to eight weeks to three months to get back from? There are certainly patients coming in and asking for that now, having done their Internet research, and it’s something in the appropriate patient I will do. Charlie has refined it to the point of doing pretty much every Dupuytren’s that way. I tend, as Nick said, to keep it to people that have isolated cords and isolated contractures at the MP level and don’t tend to do a natalory or lateral digital cord.

Dr. Nagle: What has been the group’s experience with complex regional pain syndrome in patients who undergo palmar fasciectomy?

Dr. Swartz: It’s probably three or four percent.

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**Dr. Nagle:** When you see CRPS what do you do? Do you use steroids or do you prescribe more therapy? Do you send them to a pain clinic?

**Dr. Swartz:** They definitely go to therapy, but beyond that it’s just more aggressive therapy I think. That’s the only thing I can offer them of certainly controlling their pain. Not take the pins out as Lee might suggest.

**Dr. Osterman:** I take the pin out.

**Dr. Swartz:** No, but while you have aggressive therapy, it’s not aggressive in terms of trying to stretch them. It’s more edema control.

**Ms. Novak:** I think it depends on the degree of the pain syndrome. It is important to begin therapy early and begin early range of motion, edema control and wound management. However, I think that in some cases other interventions to control the pain such as pain management and/or neuropathic medications are necessary. It needs to be a multifaceted approach to be successful. In terms of therapy, I think that you need to be respectful of the pain and push to the limits of what the patient can tolerate without exacerbating the pain and increasing the inflammatory reaction.

**Dr. Osterman:** I think the flare reaction, as it’s called, is really due to a combination of ischemia and nerve stretch. If you’ve taken a finger that’s been three or four years in a flexed position and now stretch it out in one operative procedure, you might expect an angry response from the soft tissue. Other questions arise as to whether the flare is localized to a finger and if so, is that truly a flare? Does it have to involve the whole hand? Does it have to have some secondary carpal tunnel syndrome as part of it? Suffice it to say that I think it is a real phenomenon that occurs in about five percent of patients.

Women seem to be a little more prone to it than men from most of the studies. If you’re going to treat it, aside from the things that Bill and Chris have already said, we’ve done some unusual things, in that I think it is a condition where Indocin seems to work better than steroids. We also have a kind of pseudo-protocol where, particularly in males, we use Viagra, which is a vasodilator, to decrease hand ischemia. Anecdotally it has provided some interesting results.

**Dr. Swartz:** While we’re on fringe therapies, FDA trials now are in effect for injectable collagenase for the treatment of these contractures, and we may well have a conference a year from now where we’ll remember when we used to do Dupuytren’s surgery, because it could very well be a revolutionary therapy for this problem.

**Dr. Nagle:** I recently received a brochure about this which makes you believe that this is about ready to come to market.

**Dr. Osterman:** Well, it is. It’s not being used in protocol right now. It’s not a sliced bread. I’d put it in the same bag as percutaneous release and safer for use around the PIP joint.

**Dr. Nagle:** How long have you been on the protocol?

**Dr. Osterman:** The manufacturer had trouble with product stabilization, which they have solved. Auxillium, the company, has placed it in a select number of hand centers under protocol, looking obviously at side effects, which appear to be minimal. The appropriate candidate, I feel will be someone who falls between percutaneous release and the full aponeurectomy.

What will probably happen, is it will be picked up by rheumatologists. They are really marketing it to the wrong group when they have surgeons do it.

**Dr. Nagle:** Do you have any parting thoughts about any of these topics?

**Dr. Vedder:** Just one point on Dupuytren’s in terms of hematoma. I’ve not had any problems with hematomas since I’ve started doing three things. One is using thrombin-soaked gelfoam before releasing the tourniquet, then placing little pieces of vessel-loop as drains between the sutures, and finally using wet dressings and a splint. So those are the little set of tricks that have essentially eliminated hematomas for me.

**Dr. Osterman:** Don LaLonde’s study on wide awake anesthesia using local and epinephrine to do their Dupuytren’s surgery claimed that their complications in terms of hematoma and stiffness were lower than that with a general anesthetic. It still hasn’t caught on in this country for a bunch of reasons, but that technique may also have some potential in the future.
Below is a list of AAHS members who have generously offered to teach their expertise in specific areas, letting our members continue to learn the way we were taught, as residents and fellows, in the clinic and operating room with a surgical mentor. For more information, please contact the AAHS Central Office.

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<th>NAME</th>
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<tr>
<td>R. D. Beckenbaugh, MD</td>
<td><a href="mailto:beekenbaugh.robert@mayo.edu">beekenbaugh.robert@mayo.edu</a></td>
<td>Technique of pyrocarbon arthroplasty of the thumb carpometacarpal; and metacarpophalangeal and PIP joints of the digits</td>
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<td>Richard Berger, MD, PhD</td>
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<td>Kyle Bickel, MD</td>
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<td>Vascularized bone graft reconstruction for carpal pathology; complex fracture management in the hand and wrist; and arthroscopic wrist ganlion excision</td>
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<td>Allen Bishop, MD</td>
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<td>Brachial plexus reconstruction; carpal vascularized bone grafts; and microvascular free tissue transfers</td>
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<td>Pediatrics</td>
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<tr>
<td>Don Lalonde, MD</td>
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<td>Wide awake approach to hand surgery</td>
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<tr>
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<td><a href="mailto:dnaam@handdocs.com">dnaam@handdocs.com</a></td>
<td>SLAC wrist reconstruction; vascularized bone graft in treating scaphoid nonunions; ulnar shortening &amp; radial shortening; PIP &amp; MP joint arthroplasty; LRTI; arthroscopy of the CMC joint of the thumb</td>
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<td>Daniel J. Nagle, MD</td>
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<td>A. Lee Osterman, MD</td>
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<td>Advanced wrist arthroscopy and small joint arthroscopy. Can also mentor a topic such as DRUJ problems, or wrist fracture.</td>
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<tr>
<td>Julian J. Pribaz, MD</td>
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<td>Michael Raab, MD</td>
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<td>Jaiyoung Ryu</td>
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<td>David Slutsky, MD</td>
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<td>Use of volar wrist portals for wrist arthroscopy and arthroscopic repair of dorsal radiocarpal ligament tears; nonbridging external fixation of intra-articular distal radius fractures; nerve conduction studies for hand surgeons; and comparison of NCS and PSSD for the diagnosis of CTS</td>
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