

HAND SURGERY

Q U A R T E R L Y



MESSAGE FROM THE PROGRAM CHAIR

Meeting in Puerto Rico All Set to Go



SCOTT KOZIN, MD

This year's annual meeting of the American Association for Hand Surgery (AAHS) will take place at the beautiful Wyndham El Conquistador Resort & Golden Door Spa Fajardo, Puerto Rico. The meeting begins on Wednesday, January 12 and ends on Saturday, January 15, 2005. The theme of this year's meeting is "In Our Hands" and the agenda is full of information for physicians and therapists. For the first time, we are offering bioskill modules on trauma and reconstruction using cadaver dissections to illustrate surgical techniques. Register early, as space is limited to facilitate small group interaction. The Hand Therapy Specialty Day program is focusing on Outcomes in Our Hands. An array of accomplished clinical researchers have prepared a day of lectures and labs to assist attendees with measuring their clinical outcomes.

Recognized experts in their field will provide instructional course lectures throughout the meeting to enhance your knowledge. Computerized instructional courses will also be continued to foster independent learning. The



The scenery is stunning at nearby Las Cabezas de San Juan (above) and La Coca Falls at El Yunque.



program includes panels that cover "bridging the gap" in the acute and chronic setting of bone, nerve, and tendon injuries. A large number of abstracts have been received. The selected papers will encompass the gamut of hand surgery relating to arthritis, trauma, microsurgery, nerve, tendon and congenital problems. In addition to innovative information, a Comprehensive Review Course will be offered to update and refresh your knowledge.

On the final day, the AAHS will join forces with the American Society for Reconstructive Microsurgery and the American Society for Peripheral Nerve to include a panel on "Restoration of Motor Rehabilitation Due to Muscle Loss" with participating experts from all three societies. Five instructional courses will be

offered that discuss particular nerve related problems, including nerve compressions, nerve injuries, and nerve pain.

Daily afternoon or evening social activities have been planned to encourage camaraderie amongst the members and societies. An art auction will be held on Saturday evening with the proceeds donated to UNICEF.

I look forward to seeing you and your family for four days of sun, science, learning, and friendship in Puerto Rico!

Scott H. Kozin, MD
AAHS 2005 Program Chair **H**

Mentorship

For the past two years, I've had the privilege of being a mentor in the Leadership Fellows Program established by the American Academy of Orthopaedic Surgeons. This is a far-sighted program, designed to develop, as the result of a formal process, the future leaders in orthopaedics.



PETER C. AMADIO MD

Uniquely, the program deliberately reaches outside the usual channels to find the fellows (I like that term so much better than the made up word mentee, or student, which implies a more purely academic relationship, or protégé, which implies a protector/protected status). It recognizes that finding a good mentor is often more a matter of good luck than good design, and strives to level the playing field by linking people whose paths might otherwise never cross.

Consequently, our fellows come from all over. From private practice and from universities. From large cities and small towns. From famous and not so well known training programs. With fat CV's and skinny ones. From all sorts of family and ethnic backgrounds. Both male and female (this is harder in orthopaedics, a specialty with fewer than 10% women, but we are trying).

How are the fellows selected? They apply, write an essay, collect letters, have an interview. Again, the goal is to link those who have not had the good fortune to have a strong mentoring relationship with those with some record of mentorship, who are willing to put the effort into establishing a mentoring relationship at long distance.

How are the mentors selected? There are volunteers, of course, but it is important that the fellow make the selection of the mentor, and not vice versa. It need not be a match by subspecialty, or by race or gender. Indeed, some diversity within a relationship can be a strength, if managed correctly. The mentor's experience will often be telling in such cases.

Who was the first Mentor? Quite literally, Mentor was the name of a character in the Odyssey, a close friend of Odysseus renowned for his wisdom, and entrusted with educating Telemachus, the son of Odysseus, while Odysseus was off fighting the Trojan war (and then famously got lost on the way home. I wonder how those excuses would hold up nowadays? Dear, I won't be home tonight. I've been imprisoned by a Cyclops.)

So a mentor is a teacher. Yes, but also more than that. A mentor is a guide through life, a surrogate parent in a way, who wants what is best for their younger fellow (at least, I am unaware of situations where a younger person has mentored an older one). And, like any good parent, a good mentor wants what is best for their fellow, not what is best for the mentor, or that the younger person follow in the mentor's footsteps. A good mentor inspires; a good mentor supports; but most of all a good mentor invests time and energy into the relationship.

I look on my job as helping the fellows in my charge to find the right path for them, whether that be academics, professional society leadership, community involvement, family life or merely in developing a comfort with their own skin, so that each day can be rewarding in itself, and not seem like just one more day without purpose, or without direction. I try to teach my fellows the ropes, what it

takes to get ahead in the fields I know about: clinical practice, research, academic medicine, professional societies (for golf tips, seek elsewhere!).

How does that work? Well, ideally we talk some, and socialize some, and I try to figure out what makes my fellow tick. We visit each other's practices. If necessary, I connect my fellow with other mentors; there is no point being selfish about MY fellow, if the point is to truly help the fellow along life's path. There is no one way to mentor. It must be customized to the people involved. And each year the program is assessed independently by the fellows and mentors. Things that don't work (mostly lectures) are discarded; things that do (open ended group activities, social opportunities, journal clubs) are strengthened.

HAND SURGERY QUARTERLY

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Hand Surgery Quarterly is a publication of The American Association for Hand Surgery and is published strictly for the members of AAHS. This publication is designed as a forum for open discussion and debate among the AAHS membership. Opinions discussed are those of the authors or speakers and are not necessarily the position, posture or stance of the Association.

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How has the program done so far? It's too soon to say. Professionally speaking, the fellows are still quite young. It will take time to see how each makes his or her own way. If the program is a success, we will have bonded at least some of the fellows to the Academy. More importantly, the fellows will have a link to ideas and a view of life outside their own experience, which could develop into a lifelong relationship.

On an individual basis, I can say that the program has been very rewarding to me. I have been paired with interesting people, and I have learned a lot. I hope I have helped them. I think that the program has helped me to understand mentorship better, and to be a better mentor. I hope they ask me back.

I hope that you have gotten a bit of the mentorship bug as a result of this brief description of the AAOS program. Maybe it is something for AAHS to try formally, as AAOS has. But it works great as a spontaneous expression too. Try this- at our next meeting, this January, you older folks introduce yourself to some younger folks. Try to figure out what they consider a satisfying professional life, and think about ways to help them achieve it. Not because it helps you, but just because it feels good to help others. Our Association is justly famous for its sense of camaraderie. Let's kick it up a notch in Puerto Rico, and keep the spirit growing in another generation. Oh, and if you're out late as a result, try the one about the Cyclops. **H**

It's In Our Hands: Final Thoughts

As you can imagine, this is a busy time of year for the Board of Directors and the Central Office of the American Association for Hand Surgery. We are trying to wrap up an agenda—filled year, prepare for the annual meeting events, and make a smooth transition to our next President, Dr. Susan Mackinnon. The preparations for the annual meeting are in their final phase, and we will hopefully see each and everyone of you registering for this fantastic program. Scott Kozin, MD and the members of the Program Committee have put together a tremendous program, with something to offer for everyone. The Hand Surgery Review Course, chaired by Peter Murray, MD, is highlighted in this issue of *Hand Surgery Quarterly*, and was designed as an overview of hand

conditions commonly encountered, both in practice and in certification exams. Everyone can benefit from attending this course. In addition to a whole host of Instructional Course topics, we have added one specifically for residents and fellows about to enter into the practice arena on pitfalls to avoid when looking at practice opportunities. This is particularly salient when considering the tremendously high number of job changes that occur within the first four years of practice. The scientific program looks better than ever, thanks to the incredible number of high quality abstracts submitted and the diligent work of the Program Committee. Also, the combined aspects of our meeting with the American Society for Reconstructive Microsurgery and the American Society for Peripheral Nerve is going to be a highlight that you should plan on attending, just as in years past. The El Conquistador Resort is going to be a truly spectacular venue for this meeting. Bring your friends and family, bring your sun-

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RICHARD A. BERGER, MD, PhD

Candidates for AAHS 2005 Officers and Board



Officers

| | |
|-----------------------------|-------------------------------------|
| President (automatic) | Susan Mackinnon, MD |
| President-Elect (automatic) | Ronald Palmer, MD |
| Vice President | N. Bradly Meland, MD |
| Treasurer (3-year term) | Richard Brown, MD |
| Historian | Michael Neumeister, MD |
| Parliamentarian | Richard Brown, MD |
| Senior Director At Large | Nicholas Vedder, MD |
| Junior Director At Large | George Landis, MD |
| Junior Affiliate Director | Julianne Howell, PT, MS, CHT |

Elected Committee Positions

| | |
|----------------------|---|
| Nominating Committee | Mark Baratz, MD Robert Russell, MD |
|----------------------|---|

FROM THE PRESIDENT

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screen, and bring your energy. We are all going to have a great time and learn a lot while doing it.

This column marks the final installment for me as President of the American Association for Hand Surgery. It is hard to believe that the year is coming to a close. In the beginning, it seemed as though there was an infinite amount of time to get things done, and in the end it's a mad scramble to get as much done as possible. That is, until I remember that the transition to the next President and Board of Directors will make this an even better organization than it has been. I have such high confidence and hopes of this organization under the leadership of Dr. Susan Mackinnon and the next Board of Directors. It has been just great for me to work with such talented and dedicated friends and colleagues. I also want to express my sincerest thanks to Laura Downes Leeper,

CAE and her entire staff in the Central Office. This organization is blessed with truly dedicated, knowledgeable and supportive administrative staff, making it virtually impossible to not succeed. I also want to thank my wife, Evelyn, for her endless patience with me

**OF PARAMOUNT IMPORTANCE
IS OUR COORDINATED EFFORT TO
ATTRACT YOUNG PHYSICIANS
INTO THE REWARDING CAREER
OF SURGERY, ESPECIALLY
HAND SURGERY.**

over my years of involvement with the AAHS. Anything worthwhile like the AAHS takes time and concentrated effort, and my most ready reserve of both came from Evelyn. I apologize to her for the hours and days away from her while performing duties for the AAHS, but I

thank her for her endless support and love that allowed me to do it.

We are continuing our efforts to collaborate with other organizations when it meets our mutual needs. This includes the ASSH, AAOS, ASPS, ASRM, ASPN and IFSSH. Of paramount importance is our coordinated effort to attract young physicians into the rewarding career of surgery, especially hand surgery. We will continue to strive for excellence in clinical care and education, both for ourselves as professionals, and also for the public. We will continue to endorse efforts at advocacy, again for ourselves and for our patients. There are many things that are out of our realm of control, but it is not hopeless. We can make a difference, if we approach the problems in the right way and form a unified coalition with like-minded organizations. In short, many solutions remain "in our hands"—we merely have to take the first step. Thank you again for such a wonderful experience, and I'll see you in beautiful Puerto Rico! **H**

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AAHS 35th Annual Meeting Program at a Glance

January 12-15, 2005

Wyndham El Conquistador Resort & Golden Door Spa, Fajardo, Puerto Rico

AAHS

Wednesday, January 12, 2005

- 7:30–8:30am Continental Breakfast
- 8:00–2:40pm Hand Therapy Specialty Day
- 8:00–8:05am President's Welcome
Richard Berger, MD
- 8:05–8:15am This Morning in Our Hands
Gail Groth, MHS, OTR, CHT
- 8:15–8:45am "Two-Handed" Approach to Outcomes
Dorothy Edwards, PhD
- 8:45–9:15am Outcome Measures: Self-Report vs. Performance
Joy MacDermid, PhD, PT
- 9:15–9:45am Outcome Measures: Disease-Specific vs. Global
Peter Amadio, MD
- 9:45–10:45am Outcomes in Your Hands (Rotating Discussion Sessions with Measures)
Rebecca von der Heyde, MS, OTR/L, CHT, Coordinator
Aviva Wolff, OTR/L, CHT
Maureen Ashe, PT, CHT
- 10:45–11:00am Break
- 11:00–11:30am How to Know if your Patient is Better
Mary Watkins, DPT, MS
- 11:30–12:00am What About my Patients: Outcomes in Daily Practice
Sue Michlovitz, PhD, PT, CHT
- 12:00–12:05pm This Afternoon in Our Hands
Gail Groth, MHS, OTR, CHT
- 12:05–1:00pm Lunch
Oboe Music provided by Allen Bishop, MD
- 1:00–2:15pm Panel of Professors: Outcomes in Your Hands
Gail Groth, MHS, OTR, CHT, Moderator
Peter Amadio, MD
Kevin Chung, MD
Dorothy Edwards, PhD
Joy MacDermid, PhD, PT
Sue Michlovitz, PhD, PT, CHT
Mary Watkins, DPT, MS
- 2:15–2:25pm The Future in our Hands
Joy MacDermid, PhD, PT

- 2:25–2:30pm Closing Comments
Gail Groth, MHS, OTR, CHT
- 2:30–2:40pm Vargas Award Lecture
Sharon Durst, OTR
- 3:00–5:00pm Bioskills Workshops
- 3:00–4:00pm 1. Reconstruction
- BW101 Uncemented Pyrocarbon MCP/PIP Joint System
Faculty: Robert D. Beckenbaugh, MD
- BW102 Universal2 Total Wrist Implant Arthroplasty
Faculty: Brian D. Adam, MD
- BW103 Implant Arthroplasty of the Distal Ulnar Head
Faculty: Richard Berger, MD, PhD
- 4:00–5:00pm 2. Trauma
- BW104 "Fixed Angle Fixation" of Distal Radius Fractures Utilizing the Volar Approach
Faculty: Jorge L. Orbay, MD
- BW105 Scaphoid Fractures and Non-Unions in 2005
Faculty: Randy Bindra, MD and Joseph L. Slade, III, MD
- 6:00–7:00pm AAHS Welcome Reception

AAHS

Thursday, January 13, 2005

- 7:30–8:30am Continental Breakfast
- 8:00–9:00am Instructional Courses
- 101 Tendon Transfer
Reid Abrams, MD, Moderator
Richard Lieber, PhD
- 102 Diagnosis and Management of Hand Infections: Current Status
Stephen Schnall, MD, Moderator
Mark Gonzalez, MD
- 103 Money Management for Residents and Young Doctors: What Every Physician Should Know About Personal and Professional Financial Planning
Jeff Palmer, Smith Barney
Patrick Donnelly, Smith Barney

- 104 Fractures of the Proximal Phalanx
Alan Freeland, MD, Moderator
Maureen Hardy, PT, MS, CHT
- 105 Rheumatoid Hand—Reconstruction with Arthroplasties of the Wrist, Thumb, MCP and PIP
Robert Beckenbaugh, MD, Moderator
- 106 Getting Your Practice Started
Jeffrey King, MD
Jose Ortiz, MD
Steven D. Meletiou, MD
- 9:00–9:15am President/Program Chair Welcome
Richard Berger, MD, PhD, AAHS President
Scott Kozin, MD, AAHS Program Chair
- 9:15–10:15am Panel: Bridging the Gap: Nerve
Susan Mackinnon, MD, Moderator
Thomas Tung, MD
Linda Dvali, MD
Dean Sotereanos, MD
Allen Van Beek, MD
- 10:15–10:30am Break
- 10:30–11:15am Adrenaline in Hand and Finger Surgery: Problem or Solution
Donald Lalonde, MD
- 11:15–12:20pm Concurrent Scientific Paper Session
- 12:30–12:40pm Box Lunch
- 12:40–12:50pm Presidential Address
Richard Berger, MD, PhD
- 12:50–1:45pm Panel: Bridging the Gap—Scaphoid
Alexander Shin, MD, Moderator
Allen T. Bishop, MD
Andrew P. Gutow, MD
- 1:00–4:00pm Computerized Instructional Courses
- 1:00–5:45pm Comprehensive Hand Surgery Review Course
Peter Murray, MD
- 1:50–2:30pm Keynote Speaker: Terry L. Whipple, MD, FACS
"Courage, Wisdom & Risk"
- 2:00–4:00pm High Field Dedicated MRI: The New Practice Standard?
Faculty: Manish Patel, MD and Joel Newman, MD

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Winter
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AAHS 35th Annual Meeting Program at a Glance

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AAHS Friday, January 14, 2005

7:00–8:00am Annual Business Meeting Breakfast
Attendance is limited to members only

8:00–9:00am Instructional Courses

- 107 Arthritis of the Wrist
Günter Germann, MD, PhD, Moderator
- 108 Arthritis of the Basilar Joint of the Thumb—What's New?
Robert J. Strauch, MD, Moderator
Alejandro Badia, MD
Matt Tomaino, MD
- 109 Complications and Their Management
A. Lee Osterman, MD, FACS, Moderator
John Taras, MD
- 110 Pediatric Hand Trauma
Michael Bednar, MD, Moderator
Terry Light, MD
Scott Kozin, MD
- 111 Reconstruction of the Burned Hand in Adults and Children
Roger Simpson, MD, Moderator
Bruce Brewer, MD
- 112 Update on Thumb Reconstruction
Neil Ford Jones, MD, Moderator

8:00a–4:00pm Computerized Instructional Courses

9:00–10:30am Joseph Danyo Presidential Lecturer: Gavin Menzies
"1421: A Historical Detective Story"

9:00–11:00am ASPN Council Meeting

10:30–10:40am Vargas Award Lecture
Sharon Dest, PT, CHT

10:40–10:50am ASSH Presidential Address
Terry Light, MD

10:50–10:55am ASHT Presidential Address
Donna Breger-Stanton, MA, OTR/L, CHT

10:55–11:05am IFSSH Presentation
MANUS Canada

11:05–11:30am Break With Exhibitors

11:30–12:30pm Panel: Bridging the Gap: Tendon
John Taras, MD, Moderator
Milan Stevanovic, MD
Pam Steelman, CRNP, PT, CHT

12:00–2:00pm ASRM Strategic Planning

2:00–4:00pm ASRM Council Meeting

12:30–2:25pm Concurrent Scientific Paper Session

6:30–10:30pm AAHS Art Explosion Dinner Dance

AAHS/ASRM/ASPN Combined Day Program Saturday, January 15, 2005

6:30–7:30 am Instructional Courses

- 201 Nerve Transfers
Thomas Tung, MD
Christine Novak, PT/MS
- 202 RSD
Keith Bengtson, MD
Jose Monsivais, MD
- 203 Management of Brachial Plexus Lesions: The State of the Art and a Glimpse of the Future
Rajiv Midha, MD, MSc, FRCS(C)
Robert Spinner, MD
- 204 Nerve Compression Injuries of the Upper Extremity
A. Lee Dellon, MD
Christopher T. Maloney Jr., MD
Ramon A. DeJesus, MD
- 205 Neurotized Free Flaps
Allen Bishop, MD
Allen Van Beek, MD
David Chwei-Chin Chaung, MD
- 206 The Most Common Investment Mistakes Physicians Make and How to Avoid Them (AAHS optional course)
Jeff Palmer, Smith Barney
Patrick Donnelly, Smith Barney

7:00–8:30am Continental Breakfast

7:00–12:30pm Exhibits Open

7:30–7:40am Presidents' Welcome
Richard Berger, MD, PhD, AAHS President

Robert L. Walton, Jr., MD, FACS, ASRM President
Steven McCabe, MD, ASPN President

7:40–7:50am ASPS Presidential Remarks
Scott L. Spear, MD

7:50–9:00am Panel: Restoration of Motor Function Following Muscle Loss
Robert Walton, MD, Moderator

Milan Stevanovic, MD
William Kuzon, Jr., MD, PhD
Dimitri Anastakis, MD

9:05–9:50am Presidents' Invited Lecturer: Marcial E. Ocasio-Meléndez, MD

An overview of Puerto Rico's history, geography, economy and people

9:50–10:15am Break with Exhibitors

10:15–11:15am Outstanding Nerve Paper Presentations
Scott Kozin, MD, AAHS Moderator

12:00–4:30pm ASRM Master Series in Microsurgery

- 12:15–12:30 Introduction
Greg Evans, MD
- 12:30–1:00 S-GAP/Inferior Gludial Flap
Philip Blondeel, MD
- 1:00–1:15 Discussion
- 1:15–1:45 DIEP/SIEP
Robert Allen, MD
- 1:45–2:00 Discussion
- 2:00–2:30 Fibula
Fu Chan Wei, MD
- 2:30–2:45 Discussion
- 2:45–3:15 ALT
Robert Walton, MD
- 3:15–3:30 Discussion
- 3:30–4:00 Gracilis Flap
Milomir Ninkovic, MD
- 4:00–4:15 Discussion
- 4:15–4:30 Conclusion
Greg Evans, MD

12:30–4:30pm 9th Annual Day at the Links

12:45–4:30pm ASPN Meeting Resumes

6:30–8:30pm AAHS/ASRM/ASPN Art Auction & Exhibit Reception

Recurrent Nerve Compression

The moderator for this discussion is Allen Van Beek, MD, in private practice in Minneapolis, MN, and a professor for the Plastic Surgery training program at the University of Minnesota. He is joined by: **Richard Brown, MD, FACS**, Springfield Clinic, Clinical Professor, Division of Plastic Surgery, Southern Illinois University, Springfield, IL; **Joan Collins, OTR/L, CHT**, Collins Hand Therapy, Minneapolis, MN; **Neil Ford Jones, MD, FRCS**, Professor and Chief of Hand Surgery, Department of Orthopedic Surgery and Division of Plastic and Reconstructive Surgery, UCLA Medical Center, Los Angeles, CA; **Susan Mackinnon, MD**, Shoenberg Professor of Surgery, Chief, Division of Plastic and Reconstructive Surgery, Washington University in St. Louis, School of Medicine, St. Louis, MO; and **Steven McCabe, MD, MSc**, University of Louisville, Louisville, KY.

Dr. Van Beek: Before we talk about recurrent carpal tunnel, we ought to talk a little bit about how we establish the diagnosis of carpal tunnel. Dr. McCabe, let's start with you. What are the clinical parameters that you ask people about to establish or to begin to suspect that they have carpal tunnel?

Dr. McCabe: I think the history is the number one way that we can get information to find out the diagnosis. The things that I'm looking for are a history of gradual onset or gradually worsening symptoms over time. Then I'm very interested in what makes those symptoms worse. For example, I'd like to hear that they're intermittent and they might become more prominent and more frequent. I like to hear that they're coming on in the night and that they wake the patient up. If they say they shake their hands, that points to carpal tunnel syndrome. And then I go secondarily into some issues about the distribution of the symptoms. I inquire if they're somewhat in the region of the median nerve distribution. The distribution does not have to be exact, obviously, but more importantly, not up the arm. I am interested in whether it occurs in both hands and any other symptoms that might suggest some other condition, like numbness in the feet. I think the history is very important and it's a very sensitive way to look at the diagnosis.

Dr. Van Beek: Dr. Jones, what things do you look for during the clinical examination to confirm your suspicions of median neuropathy?

Dr. Jones: I look for a Tinel sign over the ulnar nerve at the elbow, then over the median nerve in the proximal third of the forearm to exclude any possibility of pronator syndrome and then just proximal to the carpal tunnel over the palmar aspect of the wrist. I try and elicit a Durkan sign or median nerve compression sign and a Phalen sign. I test the strength of the abductor pollicis brevis muscle and compare it with the opposite side. You can pick up very subtle weaknesses of the abductor pollicis brevis this way. Then I test sensation not only in the thenar eminence to evaluate the palmar cutaneous branch of the median nerve, but also in the thumb, the index, middle and radial half of the ring finger. I try to see if patients will "split the ring finger" if they can tell the difference between the radial side of the ring finger within the median nerve distribution compared with the ulnar side of the ring finger within the ulnar nerve distribution.

Dr. Van Beek: Ms. Collins, when patients are referred with the diagnosis of carpal tunnel, how do you manage them in a non-operative way? What things do you recommend for them, before surgery?

Ms. Collins: We always do nighttime splinting—that's always a must—and we look at how they're using their hands during the day. We evaluate how they're using their hands and see if we can intervene at the workplace to cut down on repetitions. I also instruct them in stretching and nerve gliding exercises.

Dr. Mackinnon: I have my patients draw the distribution of their symptoms on a body diagram. I'd like to echo Dr. McCabe's comment that the history is really useful in determining whether or not there's been an additional injury during the time of the previous surgery.

Dr. Van Beek: Dr. Mackinnon, does that help you identify symptom amplification?

Dr. Mackinnon: My pain questionnaire definitely helps me determine if the patient has symptom amplification. It lists a number of adjectives. We ask the patient to circle words to describe their pain. If they need more than four adjectives it suggests they're embellishing their symptoms. Patients with a referral diagnosis of just carpal tunnel syndrome may draw pain throughout their entire body. Those are not necessarily good patients to consider as surgical candidates. It also includes a number of questions that are things that you want to know but don't want to take the time to really delve into, whether they've had suicidal thoughts, are seeing a psychiatrist, if they have a lawsuit. Those are points of information that you want to have and it's a quick way of getting it.

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IF I SEE BOTH CARPAL TUNNEL SYNDROME AND PRONATOR SYNDROME WITH EVIDENCE OF AXONOTEMESIS, I DON'T LIKE TO WAIT TO OPERATE.

ALLEN VAN BEEK, MD

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AROUND THE TABLE

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Dr. Van Beek: Dr. McCabe, when are nerve conduction studies used in the establishing a diagnosis of median neuropathy?

Dr. McCabe: Thanks for asking, Dr. Van Beek. I think the issue about severity has been very well laid out by Dr. Mackinnon and some others. What we do not look at carefully is the issue of the probability of the diagnosis being present. With a clear history and physical examination, a nerve conduction study really adds very little to the probability that the diagnosis is carpal tunnel syndrome.

However, I would still do electro diagnostic tests before I perform surgery. First, in setting myself up for the occasional failure, I like to have that information in the eventuality that there is a failure. Second, if

I'm not sure of the diagnosis, EMG nerve conduction studies give you information about whether a person leans towards having carpal tunnel syndrome. So that's my general tactic for those studies.

Dr. Van Beek: Dr. Mackinnon, do nerve conduction studies help you sort out the diagnosis with a patient that has a lot of scores on the body form compared to the patient who's just straight forward?

Dr. Mackinnon: A good physical examination will predict what the electro diagnostic studies are going to show. However, I like to have in the record an opinion as to the severity of the patient's electro diagnostic studies. If things go well, you don't need the studies. But if

things don't go well, then it's nice to know the patient's preoperative electrical studies. It also helps to guide the patient through the recovery period. When I can put the electric diagnostic studies from an independent person, a neurologist, on the table and it showed severe carpal tunnel syndrome, then they feel more comfortable in waiting out 6 months to a year to get their ultimate best sensibility.

Dr. Van Beek: Ms. Collins, you use Neurometer screening both for initial assessment and for follow up assessment, has that been a helpful adjunct in advising patients? How do you use those screening Neurometers in the management of the median neuropathies?

Ms. Collins: I was actually just going to interject because I think it's been a very helpful tool for us to have in the clinic. These tests are non-invasive and are very convenient to use. They're relatively comfortable for the patient and you get objective information that you can use to evaluate the patient's status. We use it prior to surgery and for follow-ups. I think it is particularly helpful for showing the patient how he's doing during the post-surgery, healing/rehab period.

Dr. Van Beek: Dr. Jones, I wanted to run one more question by you on the nerve conduction study. One of the things that I think is frustrating is differentiating between pronator syndrome, isolated pronator, isolated carpal tunnel compared to the presence of a double crush syndrome. Can electrical studies help solve that problem of the double crush or what we suspect is a double level compression?

Dr. Jones: I think it would be very unusual to pick up pronator syndrome electrically. Potentially if you had the patient exercise or do some repetitive maneuvers immediately before they had a nerve conduction study, very occasionally with a very good electro physiologist we've been able to demonstrate a drop in conduction velocity of the median nerve in the proximal forearm. But most times I would say pronator syndrome is not diagnosed by

nerve conduction studies. In fact going back to your original question, the use of nerve conduction studies in carpal tunnel syndrome is very confusing. I'd always been taught that carpal tunnel syndrome is a clinical diagnosis and I still tend to teach that to the residents and in my legal depositions to lawyers I still argue that it's a clinical diagnosis. Many times you see patients sent to you with a nerve conduction study already and now insurance companies are complicating the situation by insisting you have a nerve conduction study before you operate on a patient. So either a patient comes in with a nerve conduction study already or the insurance company forces you to obtain a nerve conduction study. Nerve conduction studies are useful in determining whether there's carpal tunnel or some other underlying systemic problem such as diabetic neuropathy. They are also very important in elderly patients, because if the patient has a very prolonged distal motor or sensory latency, you can tell them right up front that they're not going to get better immediately and it may take them several months, up to 6 months or so before they get normal sensation back.

Dr. Van Beek: I think that we have a consensus: what we're saying is that carpal tunnel or median neuropathy is, in fact, a clinical diagnosis that we quantify the severity with in nerve conduction studies. Does everyone agree with that?

Dr. McCabe: Yes.

Dr. Mackinnon: Yes.

Dr. Jones: Yes.

Ms. Collins: Yes.

Dr. Van Beek: Well, once we've established the diagnosis, I just want to know what determines when you would do an endoscopic versus when you would do an open carpal tunnel. How many of you do endoscopic carpal tunnels?

Dr. Jones: I do.

Dr. Brown: I do.



I THINK THE HISTORY IS THE NUMBER ONE WAY THAT WE CAN GET INFORMATION TO FIND OUT THE DIAGNOSIS.

STEVEN MCCABE, MD

Dr. Van Beek: How many of you always do opens?

Dr. Mackinnon: I do.

Dr. McCabe: I do.

Dr. Jones: I do both open and endoscopic.

Dr. Van Beek: So we have two people that only do opens, we have one person who does either endoscopic or open. In what circumstance will you do an open, versus an endoscopic, release?

Dr. Jones: I started doing endoscopic releases probably 15 years or so ago. You have to tell the patient very carefully that there are two ways of doing a carpal tunnel release but it's the same operation, just a variation on the theme. In an open carpal tunnel release, you can see the nerve and any other pathology in the carpal tunnel, but those patients may have some tenderness around the incision afterwards and they may take a longer time to get back to work. Definitely in my own experience, the endoscopic carpal tunnel patients have less pain and I think they also go back to work faster. But I do not do an endoscopic carpal tunnel release in a diabetic, I don't do it in a rheumatoid, I don't do it in somebody who's had a previous wrist fracture, and I usually don't do it in somebody who's insured under workers compensation.

Dr. Brown: My protocol is very similar. I routinely do endoscopic carpal tunnel releases in all patients, except rheumatoid patients, patients with recurrent carpal tunnel syndrome, and those few patients who for some reason request an open release. I do not hesitate to do endoscopic releases in worker's compensation cases.

Dr. Van Beek: Dr. McCabe, I think I heard you say you just do opens. Why do you not like to do endoscopic?

Dr. McCabe: I see a large proportion of worker's comp, and the patient population we see has very little resilience in dealing with symptoms. So when I have a patient who has symptoms after surgery, I don't

want to have any doubt about what I've seen and what I've done. My approach is to be sure in every case that I see the nerve carefully and that I know exactly what I've done in the region of the nerve. Then, when patients have symptoms after surgery, I know that it has nothing to do with the median nerve in the carpal tunnel with regards to injury. I'll accept that short period of time with post operative symptoms to have that comfort zone and know what's happened in the carpal tunnel.

Dr. Van Beek: Dr. Mackinnon, how do you explain that there's very little difference between the incidence of complication between open carpal tunnel release and endoscopic tunnel release?

Dr. Mackinnon: You know, Dr. Van Beek, I think that is an amazing question. I don't think we actually do know that what you said is true because we don't have either the numerator or the denominator for the open versus the endoscopic. It is startling to me the number of the injuries to the median nerve that I have seen with open carpal tunnels. I have seen many, many with an endoscopic but, as you say, I've also seen many with an open. And I remember one of my teachers saying that if you don't know what you're doing, at least see what you're doing. I think that the safest and prudent thing is to do the open release, taking whatever length of incision you need. As we see the American population becoming more and more obese, I think we should be seeing the incisions getting longer and longer, not shorter and shorter. One of the problems is that carpal tunnel surgery doesn't have enough respect. Sometimes I ask myself why am I still doing carpal tunnel releases and I know the answer is because I see so many people that have had major injuries, even minor injuries to their median nerve and it's irreparably changed their life. So I have a very high level of regard for a carpal tunnel procedure and maybe some of the reasons we see these injuries is just surgical sloppiness. But obesity is another issue. With a big arm you

may not have good exsanguination. A standard incision is probably a little short for some of these overweight people. I don't think we really know the incidents of injuries with the open and the endoscopic yet because the results really aren't there. The people that publish the results are the people in academics. We simply don't know the whole denominator and numerator of this problem.

Dr. Jones: I would agree totally with Dr. Mackinnon. These studies don't compare the numerator and the denominator. Maybe we'll get valid studies out of places like Canada or Finland, where there's excellent follow-up. But if you have just a few patients who are unhappy with their surgery, in the United States they will go off and see another surgeon and therefore that complication will never be reported as a problem.

Dr. Mackinnon's point about obesity is also very interesting. I personally use a very short incision, but it requires very precise retraction by residents or fellows, and if you don't have that, if you're a single surgeon out in practice with just a nurse, you may not be able to get that level of retraction and therefore the nerve is susceptible to injury.

Dr. Van Beek: Ms. Collins, you manage both endoscopic releases and open releases. Do you see a difference in the return to work time, generally speaking? I know you haven't looked at that in a scientific way, but, generally, do you see a difference between the endoscopic versus the open repairs as far as their recovery is concerned?

Ms. Collins: I do think the endoscopic repair recovers more quickly.

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I THINK THAT THE SAFEST AND PRUDENT THING TO DO IS THE OPEN RELEASE, TAKING WHATEVER LENGTH INCISION YOU NEED.

SUSAN MACKINNON, MD

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Range of motion is better quicker and there is less tenderness in the palm. As far as keeping them out of work though, it seems like we send people back to work at about the same time, 6 weeks post-op for regular work without restrictions.

Maybe the people with endoscopic can go back to do light duty a little quicker,

Dr. Van Beek: Okay, so we do a successful carpal tunnel release and the patient just keeps coming back, saying, my hand is numb, my hand is numb. Dr. McCabe what do you do in that circumstance? They haven't gotten better after you've done the carpal tunnel. Tell me why you think they're not getting better, and what do you do at that point in time?

Dr. McCabe: Now you have to start all over again, Dr. Van Beek. And where the history was important before, now it's even

more important. You actually have to spend a lot more time with them and find out the exact nature of their symptoms, exactly what symptoms they're having, and when they occurred. If it's your patient, hopefully, you'll have well-documented information before surgery. If a patient comes from another surgeon, then you have to go back before the surgery and start again with the history. You have to find out if they ever had carpal tunnel before, and then, as Dr. Mackinnon mentioned, you look at a lot of factors. For example, are there extraneous factors that could make it so this person has no possibility of getting better, even if they actually had carpal tunnel syndrome? And then you go

through the nature of the current symptoms. Did the symptoms start immediately after the surgery? That could be the sign of an injury at a time of surgery. Was this something that gradually came on after surgery? Could this be another source of nerve compression or another completely independent neurological problem? That would be my initial approach.

Dr. Van Beek: Dr. Mackinnon, how do you deal with the patient that doesn't get better after your open carpal tunnel release?

Dr. Mackinnon: Well first of all I'd like to emphasize again that the single most important message I could give to a young hand surgeon starting out is to have the patient fill in what I call the front page of my pain evaluation. Each patient fills it in every time I see them. It asks patients to score their pain from 0 to 10 and to draw their pain on a body diagram. If patients come back and have complaints the first thing I do is compare their pre-operative drawing. I had a woman this week who said, I'm really still numb in my long finger, and when I looked at her preoperative drawing she had a big circle around her long finger with an arrow that said numb. When she looked at that it was like she was looking at something she had never seen before. So it really saved me a lot of time and it helps the patient to get on the same page as me. It is important to really listen to what the patient is saying. It can be something as simple as another problem going on. If you have a patient with persistent symptoms after carpal tunnel release, that means look for something else. Did you make a wrong diagnosis or was there something else going on? I may do the whole physical examination over again and look for something else.

Ms. Collins: I would like to say, that that is where the nerve conduction tests we do in the clinic are useful. If you have a baseline done before surgery and it shows a very severe carpal tunnel, like 6 milliseconds across the carpal tunnel and the patient is still complaining two months later that he still has this

numbness, you can do another test which might show that it's down to 5 milliseconds. It shows that he still has carpal tunnel and it explains the symptoms and it also shows that he is actually making improvement.

Dr. Mackinnon: Ms. Collins's made a really good point. Sometimes I will say to the patient, you think you're already 3 weeks post op and should be better and I'm thinking you're only 3 weeks post op. I think they don't have the same idea we do about nerve regeneration and wound healing and sometimes it's just a level of their expectations.

Ms. Collins: Yes, sometimes they're just talking about their palmar pain from surgery that can linger on for 6 months or more.

Dr. Van Beek: Let us suppose we're 6 months, we've done all the things you suggest and the patient is still complaining of pain. Dr. Jones, when would you re-operate on your carpal tunnel, given the patient hasn't recovered from the symptoms that you've seen and hasn't actually recovered based on the nerve conduction study. Would you ever re-operate on that patient?

Dr. Jones: Well, there are two general issues that I'd like to address. First, it depends on whether you operated on the patient for their first carpal tunnel or whether this is a patient coming to you after a carpal tunnel release by another surgeon.

Dr. Van Beek: Dr. Jones, it's your patient.

Dr. Jones: If it's my patient, then it makes the decision-making a little bit easier.

Dr. Van Beek: Why does it make it easier if it's your patient?

Dr. Jones: It's certainly easier if it's my patient because, hopefully, if I've done an open carpal tunnel release, I've done a reasonably good operation. If I've done an endoscopic release, I have completely released the transverse carpal ligament. But you've got to think what is causing this patient's persistent numbness and it could



**NEUROMETER
SCREENING IS USED
PRIOR TO SURGERY...
IT IS PARTICULARLY
HELPFUL FOR PATIENTS
TO SEE HOW THEY ARE
DOING IN THE
HEALING/REHAB
PERIOD.**

JOAN COLLINS, OTR/L, CHT

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be that you've made the incorrect diagnosis. So if I've made the diagnosis of carpal tunnel syndrome and they really have pronator syndrome or thoracic outlet syndrome or cervical radiculopathy, I have misdiagnosed them and mistakenly operated on their carpal tunnel. If they continue to have persistent symptoms, it's due to a different diagnosis. The second cause is I may have incompletely released the transverse carpal ligament. Hopefully with my patients, I don't do that. The third cause is that potentially I might have damaged the median nerve. And the fourth cause is that this patient is in fact getting better but is embellishing their symptoms for financial gain or insurance gain. So you have to think of all four possibilities and try and exclude some of them. Obviously you can exclude the wrong diagnosis by re-examining them and taking another history to ensure that you didn't miss pronator syndrome or cervical radiculopathy.

Dr. Van Beek: So, high on your list in your own patient that doesn't get better is a potential diagnosis of a double crush injury with the median nerve being compressed at another level?

Dr. Jones: I didn't quite hear the start of your question, but if the question was, do you occasionally see patients with double crush with carpal tunnel syndrome and pronator syndrome I would say in my practice yes, maybe three or four patients a year.

Dr. Van Beek: So in what I'm going to call a persistent carpal tunnel syndrome following an open carpal tunnel release, where you're assured that there's no injury, it's your feeling that you should look at a more proximal level or for an unusual median nerve entrapment at another site?

Dr. Jones: No, as I said in the previous answer, you must think of all those four scenarios: a wrong diagnosis, an incomplete release, an injury to the nerve, or a patient who's not telling you the truth. I would only explore someone who had definite tenderness in the proxi-

mal forearm or a Tinel sign, or some diminished sensation in the thenar eminence area.

Dr. Van Beek: I want to focus on this what I call persistent carpal tunnel. Let's just call it persistent median neuropathy after a carpal tunnel release. Dr. Mackinnon, how would you handle that in your own patient? You have a patient that you've done the carpal tunnel release on and the patient has persistent symptoms after surgery despite you doing all the things you do, and the patient just keeps coming back having symptoms. How do you deal with that patient in your practice?

Dr. Mackinnon: When I first see the patient I examine both of their upper extremities, neck and shoulders. My evaluation includes Tinel's signs and pressure provocative signs at all levels in the upper extremity. On the first evaluation I may find a positive Spurling's test for cervical disk disease, or a little bit of TOS. They may have some median nerve compression in the forearm, some ulnar nerve compression at the elbow. Those pre-operative findings are extremely important in the post-operative management because if patients still have persistent symptoms then I know that I need to address options, for example at the pronator level or the thoracic outlet. It's amazing the number of people that have something not just at the wrist. So the pre-operative evaluation for someone with carpal tunnel in my office includes everything from Phalen's test to looking for scapular mobility problems. Often I will say well let's just do your carpal tunnel. If all your symptoms get better fine, if not we're going to have to address more proximal symptoms. I think the pre-operative examination is really important because you'll pick up things that may present themselves post-operatively and you can also give the patient pre-operatively a heads up that they may still have some symptoms post-op. I will tell them that if you lift your arms above your head and your hand goes

numb, overhead symptoms likely will persist.

Dr. Van Beek: Dr. Mackinnon, with your list you're sort of saying some patients do have what appears to be a double crush. Then how do you establish which level is the more severe level?

Dr. Mackinnon: I will ask the patient what symptoms they have at rest now. Then I will try to provoke their symptoms at various levels. For example, if I bring their arms up in the air they may rapidly get a sudden onset of a lot of numbness in their hand. I bring them back to baseline with their arms down and then retest them at the pronator by bringing their hand into a palm up position, and putting a little pressure on the forearm. They may get a little bit of symptoms there. That would let me know that their major symptomatology is coming from the thoracic outlet and not from the forearm. You can work with the patient to provoke their symptoms at various levels and then have them tell you how rapidly and how significant they reproduce those symptoms. That helps to determine what level is producing the greatest symptoms.

Dr. Van Beek: Is there any circumstance, Dr. Brown, where the findings would be severe enough that you would decompress at two levels simultaneously?

Dr. Brown: Generally, the only time I will do that is if I have documented nerve conduction studies verifying two levels. My general approach on median nerve compression is to release the distal component first. And in my experience the majority of the more proximal symptoms



IN PERSISTENT CARPAL TUNNEL SYNDROME, YOU MUST THINK OF FOUR SCENARIOS: A WRONG DIAGNOSIS, AN INCOMPLETE RELEASE, AN INJURY TO THE NERVE, OR A PATIENT WHO IS NOT TELLING YOU THE TRUTH.

NEIL FORD JONES, MD, FRCS

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Research Grants and Awards

The Orthopaedic Research and Education Foundation Announces Available Funding for 2005 – Applications are due in 2004

Applications for grants and awards that advance musculoskeletal research are available to individuals working at institutions in the United States, orthopaedic organizations, and orthopaedic societies.

Available grants and awards include:

For individuals:

- Research Grants
- Career Development Awards
- Prospective Clinical Research Grants
- Zimmer Orthopaedic Career Development Awards
- Resident Research Awards
- OREF Fellowship in Health Services Research

For Institutions and Organizational Departments:

- Educational Awards
- The Fred W. Hark, M.D. and William A. Hark, M.D. Lectureships
- The State Orthopaedic Society Lectureships

Individuals and Orthopaedic organizations interested in obtaining funding for 2005 may download applications and find deadline information and grant and award descriptions at www.oref.org.

Please direct any questions to Carmen Metoyer, Grants Secretary, at metoyer@oref.org or (847) 384-4351.



Orthopaedic Research
and Education Foundation

DISCOVERING THE *FUTURE* of ORTHOPAEDICS

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have abated. So it's unusual in my practice that I will release both of them simultaneously although I'm not opposed to it.

Dr. Van Beek: How about the rest of the panel? What circumstances would have to occur that would motivate you to release multiple levels, simultaneously? What circumstances would have to persist? Why don't I go to you, Dr. McCabe?

Dr. McCabe: I would say it would be very, very rare. Maybe in someone who was completely anesthetic and had some provocative symptoms at both the pronator and carpal tunnel, I might consider that. It would be very unusual for me to release more than the carpal tunnel at the first sitting.

Dr. Van Beek: Okay. Anyone else want to comment on that?

Dr. Jones: I don't think I would ever operate on the pronator and the carpal tunnel at the same time at the first go around unless there was some very strange anatomical situation such as a patient on anticoagulation.

Dr. Van Beek: Let me propose to you that you had a fibrillation potentials in the abductor pollicis brevis, that you had a latency of 7 milliseconds across the wrist, and at the same time you had fibrillation potentials in the pronator quadratus reported on your nerve conduction studies, would that motivate you?

Dr. Jones: That is not a diagnosis of pronator syndrome. This means that you have anterior interosseous syndrome and carpal tunnel syndrome. You should be able to diagnose that clinically by weakness in the flexor pollicis longus and the flexor digitorum profundus to the index finger or possibly in the pronator quadratus. I don't think that ever happens.

Dr. Van Beek: But would those criteria motivate you to do simultaneous decompressions at two levels? I'm trying to push you to see if there's

ever a circumstance where you'd do two levels simultaneously.

Dr. Jones: I was going to say there are some very rare circumstances such as a patient on anticoagulants who bleeds into their forearm and may also get a bleed or may get secondary compression down at the carpal tunnel. In those patients I would decompress the median nerve in the forearm and also at the wrist. But for the general run of the mill patient I would not do the carpal tunnel and the pronator at the same time.

Dr. Mackinnon: Nor would I. I would not do that.

Dr. McCabe: Nor would I, no.

Dr. Mackinnon: I think the patients appreciate a conservative management. Even if you diagnose an associated pronator you can give some stretching exercises and you can say, let's work on this because the scar for the pronator release is significant and the scar for the carpal tunnel is not. Let's do the carpal tunnel surgery, work on your therapy, see what response you get and then if you need to do the pronator, do it as a second surgery. If I've had a patient and I worked through that and we've ended up eventually doing both the carpal tunnel and the pronator, then I would do carpal tunnel and pronator on the other arm together a later date if they were symptomatic on the other extremity. But I would never as a first go do both together.

Dr. Van Beek: Ms. Collins, what do you think of hand therapy for a pronator syndrome? Do you think you can be successful in treating that?

Ms. Collins: No, it's difficult to treat conservatively. But I've seen excellent results after surgery.

Dr. Van Beek: I disagree with some of the panelists on this, but basically if I have nerve conduction studies that demonstrate an axonotmesis that the level of the carpal tunnel and axonotmesis the level of the elbow on nerve conduction studies I will decompress both simultaneously because I'm dealing

with an axonotmesis I don't like to wait, we know axonotmesis has a different implication than a conduction blocked neurapraxia. So I probably differ with the panel somewhat

Dr. McCabe: Dr. Van Beek, as I said, if you have documented nerve conduction studies, I have no problem doing them at the same time. But in my experience that's been very unusual.

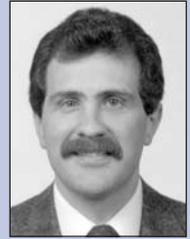
Dr. Van Beek: I think that if I see both of them and I have evidence of axonotmesis, I don't like to wait because I don't think they're going to get better. So it's interesting that we have a different choice on the panel. Let's go on to what I would consider, rather than persistent carpal tunnel, what I would call recurrent carpal tunnel. How do you define recurrent carpal tunnel? Let's go with Dr. Brown.

Dr. Brown: What I like to see in somebody with recurrent carpal tunnel is a period of being totally asymptomatic.

Dr. Van Beek: Well, define that period; what are you talking about?

Dr. Brown: It can be as short as maybe a few months, but I want them to be totally asymptomatic during that time, meaning their numbness and tingling that was waking them up at night has gone away and they're not having symptoms of any numbness or tingling during the day. So if I'm going to call somebody a recurrent carpal tunnel I like to have at least some period, and it can be several months up to a few years of no symptoms. Additionally, if they start having recurrent symptoms, I like to hear them say these are very similar to the symptoms I had

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I GENERALLY FIND THAT INCISIONS ARE PLACED MUCH TOO RADIALLY, GIVING ME ROOM IN A RECURRENT CARPAL TUNNEL TO MAKE THE INCISION OVERLYING THE FOURTH RAY.

RICHARD BROWN, MD, FACS

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before and I think I'm getting the carpal tunnel syndrome back. But again, in someone like that, I think you do need to look at a more proximal level to make sure that it's not a more proximal compression that's giving them their symptoms.

Dr. Van Beek: Dr. Jones, would you agree with those criteria of establishing the recurrent carpal tunnel?

Dr. Jones: Yes I would. I don't think there are really good definitions for either persistent or recurrent carpal tunnel syndrome.

Dr. Van Beek: Well we're going to define them, so how would you define them?

Dr. Jones: When we had the panel at the ASPS meeting last week, I defined persistent carpal tunnel syndrome as a patient who has a carpal tunnel release and continues to have symptoms immediately after the surgery, either the same or sometimes different or even worse than before the surgery. Recurrent carpal tunnel syndrome means that you do a carpal tunnel release on a patient and their symptoms of pain and numbness and paresthesias resolve for a period of time and then return. But what that period of time is, I don't know. It could be 3 months, it could be 6 months, it could be a year, and no one has ever defined it. I think recurrent carpal tunnel syndrome is much rarer than persistent carpal tunnel syndrome.

Dr. Van Beek: Dr. Mackinnon, would you agree with those definitions?

Dr. Mackinnon: Well, many years ago I wrote a book chapter on recurrent, or on redo carpal tunnel and I said there were 3 ways to look at it. You have persistent symptoms of carpal tunnel that's pretty much incomplete release or wrong diagnosis. You have recurrent symptoms and that's a 6 month interval with no symptoms, at least minimum 6 months and then it recurs, and that's usually traction neuritis, the incision is right over the median nerve, it sticks to it and that scar builds up. And in the metabolism of collagen, as we all know, it takes a while for that to occur and then they get the same symptoms back greater than 6 months or more. And then there are new symptoms, and those are the patients who are worse afterwards and they have different symptoms and the symptoms are usually pain and that usually is nerve injury. That's the way I like to look at it.

Dr. Van Beek: Consider this patient history, an open carpal tunnel was performed, there was a symptom free interval of 3 or 4 months, the patient is returned to work, and now the patient is coming back to your office with night time numbness and so forth. How do we go about doing, other than our clinical assessment because we'd redo the same clinical assessment, what other assessments do we have to do to differentiate whether this is recurrent carpal tunnel. Or, do we or don't we need to operate? What tests are we going to do to establish the next step in management? Dr. Jones, what would you do; you've got a person who now has had a symptom free interval and now comes back to your office. What things are you going to do to assess what your treatment plan should be?

Dr. Jones: Well, apart from a new history and examination, I would probably check to see if they had a nerve conduction study before their first surgery. Then I would arrange a repeat nerve conduction study and compare the two.

9th Annual Day at the Links Golf Tournament

being held in conjunction with
the AAHS and ASRM Annual Meetings

The 9th Annual Day at the Links will be held at the El Conquistador Resort on a beautiful and challenging 18-hole course designed by Arthur Hill playable for all skill levels.

Prizes will be awarded to the team with the lowest gross score in addition to the longest drive, longest putt and closest to the pin. Tournament registration will officially close on Friday, January 14, 2005 at 12:00 noon. If you have a person or foursome you prefer to play with, we encourage you to submit a completed foursome to the Registration Desk by Friday, January 14, 2005 at noon. Once your foursome has been submitted it can only be changed at the pro shop.

Tickets are non-refundable. Tournament fees include green fees, cart and range balls. Please note the club is a spike less facility and metal spikes are not allowed.

To sign up or for more information, call 312-456-9579.

Saturday, January 15, 2005
12:30 pm Departure
Cost: \$165.00 per player

Recurrent Nerve Compression

The topic for this issue's Coding Corner is Recurrent Nerve Compression, which parallels the topic for the "Around the Hand Table" topic in this issue of *Hand Surgery Quarterly*. From a coding perspective, however, the codes discussed in last quarter's Coding Corner ("Nerve Repair") are very similar. Operating to perform a neurolysis or nerve transposition, whether it the first time or second time, corresponds to the same basic code set. And remember, that if a synthetic nerve tube is used, there are still no specific codes for it yet. As noted before, use of the "neurorrhaphy with nerve graft" family of codes most closely approximates the procedure when a nerve tube is used and consequently is the best way to

code for such work.

The code family that applies to recurrent nerve decompression surgery is that which references neurolysis, decompression, or transposition. This is the code set from 64702 through 64727. The major distinction between most of the codes in this family is which specific nerve (or part of the body) is undergoing the procedure. As of now,

there is no coding distinction between a first time decompression versus a procedure being done for recurrent compression, even though the work involved in the latter can be much greater. Use of a -22 modifier may be tempting to represent this extra work, but be advised that extra documentation clearly spelling out the special nature of the procedure will be a minimum

| Neuroplasty (Exploration, Neurolysis, or Nerve Decompression) | |
|---|---|
| 64702 | Neuroplasty, digital, one or both, same digit |
| 64704 | Neuroplasty, nerve of hand or foot |
| 64708 | Neuroplasty, major peripheral nerve, arm or leg, other than specified |
| 64712 | Neuroplasty, sciatic nerve |
| 64713 | Neuroplasty, brachial plexus |
| 64714 | Neuroplasty, lumbar plexus |
| 64716 | Neuroplasty and/or transposition; cranial nerve (specify) |
| 64718 | Neuroplasty, ulnar nerve at elbow |
| 64719 | Neuroplasty, ulnar nerve at wrist |
| 64721 | Neuroplasty, median nerve at carpal tunnel (open, not endoscopic) |
| 64722 | Decompression, unspecified nerve(s); specify |
| 64726 | Decompression, plantar digital nerve |
| 64727 | Internal neurolysis, requiring operating microscope; list in addition to code for neuroplasty; includes 69990 code for microscope |



LEON S. BENSON, MD

| Neurorrhaphy Using Nerve Grafts | |
|---------------------------------|--|
| 64885 | Nerve graft (includes obtaining graft); head or neck; up to 4 cm in length |
| 64886 | Same as above (64885) except graft is more than 4 cm in length |
| 64890 | Nerve graft (includes obtaining graft); single strand, hand or foot; up to 4 cm in length |
| 64891 | Same as above (64890) except graft is more than 4 cm in length |
| 64892 | Nerve graft (includes obtaining graft); single strand; arm or leg; up to 4 cm in length |
| 64893 | Same as above (64892) except graft is more than 4 cm in length |
| 64895 | Nerve graft (includes obtaining graft), multiple strands (cable), hand or foot, up to 4 cm in length |
| 64896 | Same as above (64895) except graft is more than 4 cm in length |
| 64897 | Nerve graft (includes obtaining graft), multiple strands (cable), arm or leg, up to 4 cm in length |
| 64898 | Same as above (64897) except graft is more than 4 cm in length |
| 64901 | Nerve graft, each additional nerve; single strand; list in addition to code for primary procedure |
| 64902 | Nerve graft, each additional nerve; multiple strands; list in addition to code for primary procedure |
| 64905 | Nerve pedicle transfer; first stage |
| 64907 | Nerve pedicle transfer; second stage |

requirement for extra reimbursement. In some cases, if unusual incisions are necessary (such as "Z" or "W" plasties), or if muscle transfers or lengthenings are required (as might be the case for a repeat ulnar nerve transposition), the codes for these extra procedures can be legitimately added on to the nerve decompression codes. These extra procedure codes are not listed in the table below because they vary greatly based upon surgeon preference and the individual clinical situation.

Don't forget that code 69990 can be added to any procedure in which the operating microscope is used. This code applies specifically to use of the microscope and is not appropriate if only loupe magnification is

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CODING CORNER

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employed. It should not be listed with a -51 modifier and it can be listed as an additional code for every distinct procedure that requires its usage.

One additional note: although most nerves in the body are covered in the 647xx family of codes, for some reason, decompression of the tibial nerve in the tarsal tunnel is listed among the codes for foot surgery (not nerve surgery). The specific code for tarsal tunnel release is 28035.

You Code It

A 45 year old laborer undergoes surgery for recurrent nerve compression at the tarsal tunnel. Although he had a tarsal tunnel release performed at the time of his operative calcaneal fracture fixation, he has sustained persistent symptoms related to scarring around the tibial nerve. The operating microscope is used to peel away scar around the nerve and a synthetic nerve tube, 2 cm long, is used as a "wrap" around the nerve at the point of greatest scarring.

Solution:

| | |
|----------|---|
| 28035 | Release, tarsal tunnel (posterior tibial nerve) |
| 69990 | Use of operating microscope for median nerve |
| 64890-51 | Use of nerve graft, single strand, hand or foot, up to 4 cm in length  |

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Dr. Van Beek: So this is one of those where you really wished you had a nerve conduction study prior to the first surgery, or at least maybe even after the first surgery to compare it?

Dr. Jones: It may help in trying to sort out what to do because if, let's say, the patient had a nerve conduction study before and the postoperative nerve conduction study has deteriorated, then that's a fairly clear cut indication that you need to re-explore the patient. Obviously, the other two circumstances are that the second nerve conduction study is exactly the same as the first one, or it's improved. If it's improved then you're in a quandary because you have a patient with symptoms but the nerve conduction studies have improved.

Dr. Van Beek: Dr. Mackinnon is there any role for imaging in recurrent carpal tunnel?

Dr. Mackinnon: I absolutely think no. There's just not enough information and I've seen a lot of false negative and false positive MRI's. I think that your best bet is with a very good history and then a good clinical examination. When you examine the patient you're going to find out where their symptoms are occurring, whether it's the wrist, the carpal tunnel, whether it's the median nerve in the forearm, whether it's a radial sensory overlap that you've missed before, whether it's cervical disk, thoracic outlet, or some systemic type of neuropathy. But a good physical examination, including tendon reflexes can help you figure out what's going on. I don't think imaging helps at all; I think it confuses things because they're going to see something there, maybe scar, and I don't see how that helps with patient management.

Dr. Van Beek: Dr. Brown, what do you do in this circumstance?

Dr. Brown: Well, I would agree with Dr. Mackinnon. I think the clinical

exam is probably the most important. The other thing I think is to try, if you can, to get a copy of the operative note, especially if it's not your own patient, to see exactly how the procedure was done.

Dr. Van Beek: Okay, it was Dr. Jones's patient that moved to Springfield.

Dr. Brown: I think if you know the individual who did it and you know what kind of work they do that's a different story. But in central Illinois we often get patients that have been done by various individuals whom I don't know and then I think it's important to try to get the operative note. With regard to the nerve conduction study, I think it's important to try to make sure that it's done by the same individual, assuming that individual is a credible individual, so they can really get a good comparison of the two studies. But otherwise I agree that imaging studies are not that useful unless your clinical exam suggests something else, such as a triscape arthritis or some other problem in the wrist, which could lead to a more early return of symptoms.

Dr. Van Beek: Let's say we have a reliable patient where post-operative nerve conduction studies were returning to normal. You now get repeat conduction studies and there's a 2 millisecond increase in latency across his carpal tunnel which is an isolated finding so it looks like true recurrent carpal tunnel syndrome. What do you do when you establish the diagnosis of a true recurrent carpal tunnel syndrome? Let's start with you, Dr. Jones.

Dr. Jones: On those grounds, I would feel fairly comfortable recommending that he consider undergoing a re-do carpal tunnel release.

Dr. Van Beek: Are you just going to do a re-release? What is going to determine the procedure you do and how you do it?

Dr. Jones: Again it depends on whether it's my patient or somebody else's patient. If it's my inci-

sion, I will extend it both proximally and distally and find the median nerve about 4 to 5 centimeters proximal to the wrist crease. I'd then trace the nerve in a proximal to distal direction. I'd make the same extension of the incision distally and work in a distal to proximal direction into the area where there is potential scarring around the median nerve or where the scarring has reformed across the transverse carpal ligament. If you work from normal nerve to abnormal nerve, you can usually perform an external neurolysis and not damage the nerve with your second dissection.

Dr. Van Beek: Do you think it's necessary to go proximal and distal to find the normal nerve and then track back into the carpal tunnel?

Dr. Brown: I think it's obviously the safest way to proceed if you start in from a normal tissue. The nerve in the carpal tunnel may be very adherent to the underneath surface of the transverse carpal ligament and if you start cutting through that whether you go through the old scar or not you may cut down onto the nerve. So I would agree that it's

probably the safest way. If the incision was a little radial to begin with, I will usually make a separate incision ulnarly and in that case I will frequently go straight down through the transverse carpal ligament. Usually in those cases I find the nerve stuck to the underneath side more radially.

Dr. Van Beek: You're going to make a whole new incision?

Dr. Brown: Yes. Frequently I will make a separate incision.

Dr. Van Beek: Why do you do that?

Dr. Brown: Generally, if it's not one I've done, I still find that incisions are placed much too radially. In that case, as long as I can put about one to one and a half centimeters between them, I will make my standard incision overlying the fourth ray, which is generally ulnar to the palmaris longus. I find that I can come down into fresh tissue and find the nerve underneath the transverse carpal ligament.

Dr. Van Beek: Dr. Mackinnon, when, let's say it's your patient and you have to re-explore the nerve, do

you do anything different the second time around than from the first carpal tunnel release?

Dr. Mackinnon: I've never re-explored one of my carpal tunnels.

Dr. Van Beek: Make it my failed carpal tunnel. You're re-exploring one that I sent down to you because I was so frustrated.

Dr. Mackinnon: Well, I think the reason I haven't explored one of mine is that I make my incision 6 or 7 millimeters ulnar to the thenar crease so I'm on the very ulnar edge of the ligament when I release it and I make a nice long incision so I can see what I'm doing. I'm right to the fat distally, proximally I get the ante-brachial fascial released and if I'm one bit concerned about my exposure I extend the incision across the wrist. I have my patients moving their wrist 2 days post operatively. The scar they form is long and it's ulnar to where the median nerve is. When I re-do a previous surgery, I completely ignore the original incision. I make a brand new incision, exactly where I make my primary incision. I typically find that the median nerve is stuck up to the under surface of the flexor retinaculum directly below the incision. One of the things I don't like about endoscopic release is that the incision goes over the median nerve at the proximal wrist area and the nerve gets stuck up under that. Patients develop traction neuritis over time with scars sticking and getting shorter and shorter and pulling on the nerve. I do a neurolysis until I see fascicles and the bands of Fontana. When I see the bands of Fontana I know I have redundancy in the nerve because the bands of Fontana represent the redundancy of the nerve fibers. I do a neurolysis longitudinally and then I do a neurotomy transversely because the external epineurium tightens around the nerve in both directions, circumferentially and longitudinally.

Dr. Van Beek: Let me go on and ask if there is a role for vein wraps or if there is a role for using the palmaris

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World Congress on External Fixation 2005



This is a notice on behalf of the Organizing Committee of the **World Congress on External Fixation 2005**, which will take place in the city of **Lima, Peru, from May 26-28, 2005**. The event is being organized under the

auspices and recognition of The International Society of Orthopaedic Surgery and Traumatology (SICOT), the Latin American Society of Orthopaedic and Traumatology (SLAOT), the San Marcos National University (UNMSM), The International Society for Fracture Repair (ISFR) and the Spanish Society on External Fixation (SEFEX).

Further information can be found on our Website:

www.externalfixation2005.com, or
alternatively send an email to the following address:
info@externalfixationcycexpoeventos.com.

The local Organizing committee of the WCEF thanks you for your support in helping make our world congress a successful event.

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brevis? What is the role of using a vascular leash to protect the nerves from subsequent fibrosis in recurrent carpal tunnel? Dr. Jones, when do you use these adjunctive procedures?

Dr. Jones: If I can back up, I think the discussion over the last few minutes confuses the issue because recurrent carpal tunnel syndrome is a totally separate condition from traction neuritis and traction neuritis is a totally separate condition from persistent carpal tunnel syndrome, although persistent carpal tunnel syndrome and traction neuritis may present with similar symptoms. If you're talking about vein wrapping and flap coverage of the median nerve, you don't need to do this for recurrent carpal tunnel, you do it for traction neuritis or for patients who've had multiple operations. True recurrent carpal tunnel syndrome is due to a recurrence of swelling in the carpal tunnel or regrowth of the scar tissue across the defect you created in the transverse carpal ligament. These patients do extremely well with a fairly simple re-release of the transverse carpal ligament and I incise it on the ulnar side. The nerve may be adherent to the radial leaf of the transverse carpal ligament or the undersurface of the transverse carpal ligament, but you don't need to do any of these adjunctive procedures for true recurrent carpal tunnel syndrome. For traction neuritis and multiple re-operations you do need to use adjunctive techniques. In terms of vein wrapping, you're putting a dead piece of tissue around an already devascularized nerve. It makes no sense.

Dr. Brown: I have used the palmaris brevis turnover flap on several occasions although I would say it's not the most common procedure that I do with recurrent carpal tunnel cases. I normally only do it if the nerve is markedly encased in scar or if it is stuck underneath the ligament. I will then do a neurolysis

to the point where I can see the fascicles and then flip the palmaris brevis turnover flap over the nerve, suturing it to the underneath side of the transverse carpal ligament radially.

Dr. Mackinnon: If a patient has pain, then I will think of flaps and fat flaps and muscle flaps, but if a patient just has persistent carpal tunnel and numbness, I don't.

Dr. Jones: If I may, I'd like to talk about the flaps. If you are dealing with a patient with traction neuritis, the hypothenar fat flap is a very useful little flap of fat tissue that you can flip over from the base of the hypothenar eminence. The median nerve may be actually subluxed anteriorly away from the flexor tendons and there can be a separate synovial layer between the median nerve and the flexor tendons. You can dissect this synovial flap, bring the wrist into slight extension and use the flap to cover the median nerve. For multiply-operated patients with severe pain, I'll occasionally use a reverse radial forearm adipo-fascial flap. You can wrap the nerve with well vascularized tissue and potentially revascularize the nerve and hopefully improve their pain.

Dr. Van Beek: Ms. Collins, is there anything that you do for the patient who has a lot of pain that people should hear about? What specific things can you do for the patient who has a lot of pain?

Ms. Collins: Pain. I always think about looking at how they're using their hands. I think it's a matter of educating them that they can expect to have some discomfort. I don't see pain as a huge problem with your typical carpal tunnel release.

Dr. Mackinnon: Dr. Van Beek, could I say something about the patient with pain after carpal tunnel? I think the important thing is to evaluate each portion of the median nerve independently and figure out what's going on inside that median nerve with respect to the radial digital nerve to the long finger, the ulnar digital nerve to the index finger. You have to pre-operatively break down

each part of that nerve. You may find the thumb and index finger is fine but they have the worst pain in their long finger. You know that you need to take that part of that nerve out and replace it with a good healthy piece of nerve or conduit or flip that portion of the nerve back. But to just take a painful median nerve and wrap it up with something its like that nursery rhyme where you have the princess with the pea, you cannot cover up the pea with a bunch of mattresses. I think that patients with severe pain are really a topic for another day.

Dr. Van Beek: Dr. Mackinnon, you just hit on a controversial area. One of the areas where I've seen imaging helpful is in recurrent carpal tunnel. I'll use imaging because I think sometimes there are carpal tumors that occur that you can't detect, particularly ganglions within the carpal tunnel. Number two, I also think imaging is helpful in detecting people who are herniating the nerve through the flexor mechanism. These patients have the nerve popping outside of the carpal tunnel, particularly if they've had their transverse carpal ligament excised at some point in time. There are some people in my community that excise the entire transverse carpal ligament, and their patients will herniate out of the carpal tunnel with resultant fibrosis on the dorsal side. I've seen that twice. So those might be places where imaging might be helpful.

Dr. Mackinnon: Ms. Collins, what do you think of all these scar compression pads and things that people are now touting?

Ms. Collins: I don't use them in my practice for carpal tunnel releases. I instruct them in scar massage, desensitization, that sort of thing, rather than relying on the pads. And they do just fine.

Dr. Van Beek: Thank you all for your thoughts on this subject. You came up with a lot of good points that perplex a lot of good hand surgeons, not just GP's and people that don't do hand surgery. **H**

Teamwork Conquers the Curse of the Bambino

Aviva Wolff, OT, CHT
Junior Affiliate Director

As the spouse of a Boston Red Sox fan, this has been a particularly uplifting season for me. The Red Sox seem to have accomplished what was unachievable by believing in themselves and each other. In the end so much is achieved through teamwork.

I just participated in a productive board conference call. I was struck by the ability of the board to communicate, coordinate, and cooperate in order to act on a shared vision. In a brief period of time, decisions were made, tasks were delegated, and new ideas were put forward. We are blessed with unique, gifted and talented individuals in leadership and as members.

It made me reflect how we are a part of an exceptional and wonderful organization. Dick Berger ran the meeting as he runs all the events in the organization, with his usual grace and style. Scott Kozin has put together an extensive program for the annual meeting. Gail Groth has organized a comprehensive hands-on session on outcome measures.

We need to get the word out among our colleagues to join and be active in an organization that is collegial, inclusive, academic, and at the same time relaxed. Meetings are held at beautiful resorts, are family oriented, and are surprisingly casual. For hand therapists this is the only physician-based organiza-

tion, which allows opportunities for membership, presentation of scientific papers, participation in committees and election to board of director positions.

Participation in the organization is an opportunity for therapists and surgeons to interact academically and socially, just as they interact clinically on a day-to-day basis.

Speak with your colleagues. Encourage them to join. The appli-

cation process is painless and simple. Forms can be downloaded off the web site: www.handsurgery.org

I am confident that the emphasis of teamwork in this organization will attract many therapists as new members.

After all, if the curse of the Bambino can be overcome who knows what else can be accomplished. **H**

HAND THERAPY PROFILE



Joy C. MacDermid, PhD

Joy C. MacDermid, PhD

Personal: I have six children.

Education: Bachelor of Science (Major in Biology; Minor in Chemistry), St. Mary's University, Halifax, Nova Scotia (1981); Bachelor of Applied Health Science, University of Western Ontario, London, Ontario (1987); Masters of Science, Dept. of Physical Therapy, University of Western Ontario, London, Ontario (1992); PhD, Dept. of Epidemiology/Biostatistics, University of Western Ontario, London, Ontario (1999)

Employer: Co-director of the Hand and Upper Limb Centre, London, Ontario, and assistant professor of rehab science at McMaster University, Hamilton, Ontario, where I teach upper extremity clinical skills and evidence-based practice. I am a member of the *Journal of Hand Therapy* editorial board, the Division Director of Research for the American Society of Hand Therapists (ASHT), and the Secretary for the American Hand Therapy Foundation (AHTF).

AAHS Involvement: New Affiliate member, 2004.

Best Part of My Job: Learning from my own research, the work of others and my students and patients.

Major Accomplishments: Development, evaluation and transfer into practice outcome measures to allow patients to self-report upper extremity pain and disability related to elbow, wrist or hand problems (PRWE and PRWHE). These measures are used in patient care and clinical research. I also have received the Best Scientific Paper award at the annual meeting of the ASHT on several occasions.

Clinical Specialties: Outcome measures, distal radius fracture, work-related upper extremity disorders, pain syndromes.

Greatest Challenge: Balance.

Three Words That Describe Me: Positive, dedicated, flexible. **H**

American Association for Hand Surgery Calendar

2005

January 12–15, 2005
35th Annual Meeting
Wyndham El Conquistador
Resort & Golden Door Spa
Fajardo, Puerto Rico

February 26, 2005
AAHS/ASSH Surgical
Procedures: How and Why I
Do It This Way, Pearls from
Clinical Experience
Washington, DC

July 8–10, 2005
Mid-Year Board of Directors'
Meeting
The Lodge & Spa at Cordillera
Edwards, CO

September 22–24, 2005
American Society for Surgery
of the Hand – 60th Annual
Meeting
San Antonio, TX

2006

January 11–14, 2006
36th Annual Meeting
Loews Ventana Canyon Resort
Tucson, AZ

April 28–30, 2006
Brachial Plexus Course, hosted by
AAHS
Mayo Clinic
Rochester, MN

July 14–16, 2006
Mid-Year Board of Directors'
Meeting
The Broadmoor Hotel
Colorado Springs, CO

September 7–9, 2006
American Society for Surgery of the
Hand – 61st Annual Meeting
Washington, DC

2007

January 10–13, 2007
37th Annual Meeting
The Westin Rio Mar Beach Resort
Rio Grande, Puerto Rico

2008

January 9–12, 2008
38th Annual Meeting
The Westin Century Plaza
Hotel & Spa
Beverly Hills, CA

For information contact:
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