

HAND SURGERY

QUARTERLY



Cross-Section of Hand Surgery to be Addressed at the Annual Meeting

The 31st Annual Meeting of the American Association for Hand Surgery will be held in sunny San Diego, at the exquisite Loews Coronado Bay Resort. Our goal in this meeting is to include a broad cross-section of the hand surgery community. The meeting format has been expanded to accommodate a greater number of both national and international speakers. There will be 65 scientific papers on significant

hand-related issues dealing with pediatric hand, nerve, tendon repair, and wrist arthritis, to name a few. We've arranged fourteen instructional course lectures and three panels on common hand disorders including problem hand fractures, flexor tendon injuries, and nerve injuries. We hope to encourage attendance by "hand surgeons in training" through a residents and fellow afternoon which will include paper presentations and a resident/fellow run panel. The afternoon will culminate in the "Finger Bowl", a raucous review of hand trivia. For the first time, the AAHS & ASRM have joined forces with the American Society for Peripheral Nerve. On the third day, there will be a combined session, which will include instructional course lectures, presentations, and a speech by the Presidential Invited Speaker, Joseph Buckwalter, MD. Come join us for a long weekend of science, clinical insights and fun.

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*Mark Baratz, MD
2001 Scientific Program
Chair*



Keeping Up the AMA 'Commons'

In June of this year AAHS joined the American Medical Association's Specialty and Service Society section. This is a prelude to eventual AMA membership for AAHS. Given that AMA membership has fallen in recent years to roughly 300,000 members, or just 30% of America's physicians, why is this important? Is AMA membership passé?

Far from it. AMA remains the only place where American physicians can speak for the profession as a whole, to advocate for patients in general, and to set policies generic to our field. In many ways, the AMA has suffered from many of the plagues of a 'commons'. In earlier times, the village commons was a field owned jointly by all, on which all animals of the villagers were entitled to graze. The problem of the commons is that it is free. Thus, each villager has an incentive to graze as many animals as possible upon it. Unfortunately, if everyone does that, the commons is soon depleted and no one can graze on it. This has happened in our own time with common fisheries such as the Grand Banks. The AMA is like a commons in that its benefits flow freely to all physicians, whether they are members or not. What are these benefits? Rules governing medical education, CME, hospital accreditation, procedure coding and professional ethics are just a few of the benefits that flow equally to all physicians, AMA member or not. Legal protections for professionals, resolution of scope of practice

issues, advocacy of legal protections to the doctor-patient relationship and many other safeguards we take for granted would not exist were it not for the AMA, and AMA advo-

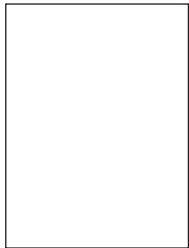
UNDER NEW RULES, SPECIALTY SOCIETIES AND STATE SOCIETIES WILL SHARE AUTHORITY EQUALLY, WITH EACH PHYSICIAN HAVING IN EFFECT TWO VOICES

cacy. When federal regulations jeopardize our ability to care for our patients, only AMA can ask "Yes, but is it good medicine?" and be heard in Washington. When patient access to medical care is jeopardized, an organization like AAHS can do little by itself. Leveraged with 300,000 other physicians, though, meaningful healthcare reforms stand a chance.

This is not to say that AMA is perfect. There have been missteps certainly. It is embarrassing to all professionals when their parent organization appears to be self-serving, or appears to pander to the pecuniary interests of its members or officials. But these transgressions have never obscured the overall mission. American physicians have a right to be proud of the AMA and what it has accomplished over the last 150 years. Moreover, it remains, by default if for no other reason, the sole voice able to speak for all American physicians on the issues of fundamental importance outlined above. It is appropriate that AAHS now take its place in the AMA House of Delegates. Under new rules, specialty societies and state societies will share authority equally, with each physician having

in effect two voices—one local and one by specialization.

It is wholly appropriate that AAHS now step forward and do its share to keep up the AMA 'commons'. You, too, can do your part. By becoming active in AMA through our society representation, or through your state medical society, you help secure the benefits of the commons for future physicians. As professionals, we have a duty to look beyond our own self-interest to that of our patients and of our vocation. The AMA remains the broadest expression of that duty and I encourage all AAHS members to strongly consider their responsibilities in this regard. If you are an AMA member, thank you. If you are not, seriously consider becoming a member. It will strengthen the AAHS voice at AMA and, more importantly, help assure that AMA remains a strong voice in defense of our patients, and our duties to them. **H**



PETER C. AMADIO, MD

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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Attentions Focus on the Annual Meeting

The fall months of 2000 allow us, as an organization, to focus on our primary mission. That mission is education in hand surgery and hand therapy for our membership. Recent member surveys and the development of mission statements within the strategic planning process have all restated and emphasized this direction. These educational efforts will culminate in the AAHS Annual Meeting in San Diego. The combination of AAHS/ASRM/ASPN Annual Meetings has required added planning and inter-organizational cooperation but promises to bring together an outstanding complement of international expertise.

Those of you who have carefully reviewed the Registration Brochure for the Annual Meeting which recently arrived in the mail, have already appreciated the tremendous program that will be available at the 2001 meeting. Mark Baratz and the Program Committee have my considerable appreciation for the innovation and dedication with which they have approached program scheduling. They have assembled a content-rich program with novel features. Once again, the hand therapy pre-conference and the inclusion of hand therapists in panels and in instructional courses will enhance the overall educational quality of this meeting.

Although our organization's emphasis is presently on the final phases of annual meeting planning, numerous administrative efforts

have continued in the Central Office. The Finance Committee and the Executive Committee have thoughtfully effected a financial policy to guide investment of our reserve funds. This is a critical step in responsibly managing our membership's assets. During the last few years the Central Office and our Board have also worked closely together to modify administrative procedures and to develop policies. The AAHS Policy and Procedure Manual, a valuable document that summarizes these efforts, is going through a comprehensive revision, to be completed in 2000.

Near the end of my term as your president, there is some comfort in reviewing the progress made in three of our important initiatives—Internet applications, international

**THERE IS SOME COMFORT
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REVIEW OF THE AAHS
COMMITTEE STRUCTURE.**

membership development, and an overall review of the AAHS committee structure. At the same time, I find myself looking forward to other important challenges. As we bring a web page and other Internet applications to our organization, so too will we be increasingly responsible for assessing the effectiveness of these efforts. Internet applications require expertise, are labor intensive, and have imposed addi-

tional expense on our organization. We will necessarily have to be fluid in our approach to this technology, adapting new features and abandoning those that are less effective. Because the Internet applications activities presently reside external to the Central Office, future boards will necessarily have to approach the budget and budgeting policies differently.

In respect to international membership development, I find myself more convinced of and committed to this direction for our organization. This belief is based upon our organization's demographics, the freedom of information exchange that the Internet is bringing throughout the world, and the continued evolution of English as an international language. I am also confident that our developing leadership is more committed to this direction than previously.

In closing, I would like to emphasize what is for me a final, very important issue. Cooperation among hand surgery organizations, both national and international, is not only vital to AAHS but to all of hand surgery. The leadership of our American organizations must increasingly look past our histories. A comparison of our missions, programs, and financial and political priorities, as well as our members in common, is increasingly striking. Our commodities, not our differences, should lead us into expanded cooperation, on both a national and international scale. Ultimately this evolution will improve the specialty of hand surgery and benefit those who matter most—our patients with injuries and disorders of the hand. **H**

**WILLIAM F. BLAIR,
MD**



AAHS 31ST ANNUAL MEETING

**JANUARY 10-13, 2001
LOEWS CORONADO BAY RESORT
SAN DIEGO, CA**

Program at a Glance

AAHS 31st Annual Meeting

Wednesday, January 10, 2001

6:30 am - 5:00 pm	Speaker Ready Room
7:00 am-8:00 am	Hand Therapy Pre-Conference Registration and Coffee
8:00 am-5:30 pm	Hand Therapy Pre-Conference Seminar
1:00 pm-5:00 pm	AAHS Board Meeting
1:00 pm-5:00 pm	Poster Set Up
12:00 pm- 1:20 pm	Hand Therapy Lunch
12:00 pm-5:00 pm	AAHS Annual Meeting Registration

Thursday, January 11, 2001

6:30 am-5:00 pm	Speaker Ready Room
6:30 am-4:30 pm	AAHS Registration
6:30 am-7:00 am	Coffee
7:00 am-5:00 pm	Posters Open
7:00 am-7:03 am	President's Welcome <i>William Blair, MD</i>
7:04 am-7:07 am	ASSH President <i>Peter Stern, MD</i>
7:08 am-7:10 am	Program Chair's Welcome <i>Mark Baratz, MD</i>
7:10 am-7:30 am	Report from the 2000 Vargas Award Winner
7:30 am-8:38 am	Scientific Paper Session A
8:38 am-8:53 am	Coffee Break
8:53 am-10:30 am	Concurrent Scientific Paper Session B-1
8:53 am-10:30 am	Concurrent Scientific Paper Session B-2
10:30 am-11:30 am	Panel I: <i>Simple Fractures That Aren't</i>
11:30 am-12:00 pm	Presidential Invited Lecture <i>Joseph Buckwalter, MD</i>

12:00 pm-1:00 pm	Lunch Break
1:00 pm-2:45 pm	Scientific Paper Session C
3:00 pm-4:00 pm	Panel II: <i>Flexor Tendon Injuries</i>
4:00 pm-5:00 pm	Instructional Courses 101-106
7:00 pm-9:00 pm	AAHS Welcome Reception

Friday, January 12, 2001

6:30 am-5:00 pm	Speaker Ready Room
6:30 am-12:00 pm	AAHS Registration
6:30 am-7:00 am	Coffee
7:00 am-5:00 pm	Posters Open
7:00 am-7:45 am	Instructional Courses 107-112
8:00 am-9:04 am	Scientific Paper Session D
8:30 am-2:00 pm	Exhibits Hall Open
9:04 am-9:39 am	Coffee/Exhibits Break
9:39 am-11:08 am	Concurrent Scientific Paper Session E-1
9:39 am-11:08 am	Concurrent Scientific Paper Session E-2
11:15 am-12:15 pm	Panel III: <i>The Cut Nerve</i>
12:15 pm-1:15 pm	Awards Luncheon/Presidential Address
1:15 pm-1:45 pm	AAHS Business Meeting
1:15 pm-6:15 pm	Resident Papers/Panel/Finger Bowl
1:45 pm-2:45 pm	AAHS Board Meeting
2:45 pm-6:15 pm	ASRM Council Meeting
5:00 pm-9:00 pm	ASPEN Poster Set Up
6:30 pm-9:30 pm	ASPEN Council Meeting

AAHS/ASPEN/ASRM Joint Day Program

Saturday, January 13, 2001

6:30 am-5:00 pm	Speaker Ready Room
6:30 am-7:00 am	Coffee
6:30 am-4:30 pm	AAHS/ASRM/ASPEN Registration
7:00 am-8:00 am	Instructional Courses 201-204
7:00 am-5:00 pm	Posters Open
8:05 am-8:15 am	Presidents' Welcome <i>William Blair, MD, AAHS President</i> <i>Saleh Shenaq, MD, ASRM President</i> <i>David T.W. Chiu, MD, ASPEN President</i>
8:15 am-9:15 am	Panel I: <i>Functional Free Tissue Transfers for Extremity Reconstruction</i>
9:00 am-2:00 pm	Exhibit Hall Open
9:15 am-9:45 am	Presidents' Lecturer <i>Michael Wood, MD</i>
9:45 am-10:30 am	Coffee/Exhibits Break
10:30 am-11:30 am	Joint Outstanding Nerve Paper Presentations
11:30 am	AAHS and ASRM Adjourn

11:30 am–12:30 pm	ASPEN Breaks
11:30 am	Golf Tournament–Hotel Departure
12:00 pm–5:00 pm	AAHS Poster Tear Down ASRM Poster Set Up
1:00 pm–5:00 pm	ASPEN Scientific Session
1:00 pm–2:00 pm	Guest Speaker <i>Richard Ambron, PhD</i> Professor
2:00 pm–3:30 pm	Scientific Session E
3:30 pm–4:00 pm	Coffee Break
4:00 pm–5:00 pm	Guest Speaker: <i>Wesley Thompson</i> Professor
6:30 pm–8:30 pm	AAHS/ASRM/ASPEN Reception

ASPEN Annual Meeting

Sunday January 14, 2001

6:30 am–2:00 pm	ASPEN Registration
6:30 am–7:00 am	Coffee
7:00 am–8:00 am	Instructional Courses 401-403
7:00 am–6:00 pm	Posters Open
8:00 am–8:15 am	Welcome <i>David T.W. Chiu, MD, President</i> <i>Rajiv Midha, MD, Chair</i>
8:15 am–9:00 am	Guest Speaker <i>Tessa Gordon, PhD</i> Professor
9:00 am–10:30 am	Scientific Session F
9:00 am–2:00 pm	Exhibit Hall Open
10:30 am–11:15 am	Coffee Break/Exhibits
11:15 am–12:30 pm	Scientific Session G
12:30 pm–1:15 pm	ASRM/ASPEN Nerve Panel: <i>Reflex Sympathetic Dystrophy</i>
1:15 pm–2:15 pm	Poster Exhibit Lunch
2:15 pm–3:45 pm	Symposium: <i>Conduits for Nerve Repair</i>
3:45 pm–5:15 pm	Scientific Session H
5:15 pm–6:00 pm	ASPEN Business Meeting
6:00 pm–8:00 pm	ASPEN Poster Teardown

ASRM 16th Annual Meeting

Sunday January 14, 2001

6:30 am–5:00 pm	Speaker Ready Room
6:30 am–7:00 am	Coffee
6:30 am–2:00 pm	ASRM Registration
7:00 am–6:00 pm	Posters Open
7:00 am–7:08 am	President's Welcome <i>Saleh Shenaq, MD</i>
7:08 am–7:15 am	Program Chair's Welcome <i>Julian Pribaz, MD</i>

7:15 am–8:00 am	Panel I: <i>Limb Salvage Interface Between New Techniques and Free Tissue Transfer</i>
8:00 am–10:00 am	Scientific Paper Session A
9:00 am–2:00 pm	Exhibit Hall Open
10:00 am–10:45 am	Refreshment Break/Exhibits
10:45 am–12:00 pm	Scientific Paper Session B
12:00 pm–12:30 pm	Presidential Address <i>Saleh Shenaq, MD</i>
12:30 pm–1:15 pm	ASRM/ASPEN Nerve Panel: <i>Reflex Sympathetic Dystrophy</i>
1:15 pm–5:45 pm	Resident/Fellows Symposium

Monday January 15, 2001

6:30 am–5:00 pm	Speaker Ready Room
6:30 am–2:30 pm	ASRM Registration
6:30 am–7:00 am	Coffee
7:00 am–8:00 am	Instructional Courses 301–306
7:00 am–1:00 pm	Posters Open
8:00 am–8:45 am	Panel II: <i>Gene Therapy and Tissue Engineering for the 21st Century</i>
8:30 am–2:00 pm	Exhibits
8:45 am–9:30 am	Godina Lecture
9:30 am–10:15 am	Refreshment Break/Exhibits
10:15 am–12:15 pm	Concurrent Scientific Paper Session C-1
10:15 am–12:15 pm	Concurrent Scientific Paper Session C-2
12:15 pm–1:00 pm	Panel III: <i>Surgical Engineered and Customized Free Flap Transfer</i>
1:00 pm–1:30 pm	Founders' Lecture
1:00 pm–5:00 pm	Audio Visual Theater
1:30 pm–2:15 pm	ASRM Business Meeting
6:00 pm–7:30 pm	ASRM Cocktail Reception

Tuesday, January 16, 2001

6:30 am–7:00 am	Coffee
6:30 am–12:00 pm	ASRM Registration
7:00 am–8:00 am	Instructional Courses 307–312
7:00 am–12:30 pm	Posters Open
8:00 am–8:45 am	Panel IV: <i>Perforator Flaps</i>
8:00 am–12:30 pm	Audio Visual Theater
8:45 am–10:36 am	Concurrent Scientific Session D-1
10:37 am–11:05 am	Refreshment Break
11:06 am–12:30 pm	Continuation of Concurrent Scientific Session D-1
8:45 am–10:45 am	Concurrent Scientific Session D-2
10:45 am–11:05 am	Refreshment Break
11:06 am–12:50 pm	Poster/Paper Presentations
12:50 pm	Adjourn
12:30 pm–2:30 pm	ASRM Poster Teardown
1:00 pm–3:30 pm	ASRM Council Meeting

Endowment Reflections— A Mirror for the Future

ROBERT R.
SCHENCK, JR., MD

In 1995 I was serving as Finance Chairman for the Association, which had just gone through a time of transition with change of administrative offices and personnel, coupled with a financial crunch with reserves actually decreasing. Hand surgeons and therapists were beginning to feel the pinch from reduced

reimbursement by payors, and I analyzed what steps could be taken to not only preserve the viability of the Association, but indeed to make it prosper and able to realize its full potential role for education of surgeons and therapists.

My conclusion was that an Endowment was not only needed, but vital for the long term viability and success of the Association. Dr. James May was President that year when the Board of Directors met in the midst of a 115 degree heat wave in Chicago, and it was due to his parliamentary skills that the vote to establish The Hand Surgery Endowment was positive. Upon his direction, I had already researched multiple other related surgical organizations' efforts, and discovered the reasons why some foundations had utterly failed and why some succeeded. With the guidance of legal counsel Michael Reed, Articles of Incorporation and Bylaws for The Hand Surgery Endowment were drawn up, and on December 15,

1995, the Endowment was chartered in the State of Illinois as a 501-c-3 corporation.

Several members put up the initial funds to get the Endowment started, and in the first year a letter campaign was instituted, but it was found to be an expensive method with only a few additional contributors being secured. Nevertheless, the Endowment was off and running. What has been most gratifying to me, was that those in leadership who had the most questions in the beginning, soon became the Endowment's ardent supporters. Notable in this vein, was Dr. Robert Russell, who during his year as President of the Association, suggested that the opportunity for giving to the Endowment be made simultaneously with the sending of the annual dues statement. This step alone now insures that the Endowment will not only exist, but thrive and grow. Each year approximately \$40,000 is received in this way.

And the membership of the Association has really gotten on board! Over 500 individuals have now given to the Endowment! The Endowment has been able to contribute in a very meaningful way to the expenses of the Annual Meeting with its myriad of educational opportunities. These contributions have in full or in part supported the Presidential Invited Speaker, the Research and Poster Awards, the Hand Therapy Pre-Conference Seminar, and the Vargas Award. Special funds contributed anonymously to the Endowment, have been used for their designated purposes of Spanish translation and this year's subsidy to the therapists' registration fees.

The Endowment Board of Governors already has had a number of dedicated supporters serve, notably Drs. Joe Danyo, Kim Lie, Forst Brown, Ron Palmer, and James Hoehn. Dr. Hoehn as recent Editor of

the AAHS newsletter had always welcomed the Endowment presenting its news and needs. That allowed the Endowment to keep its operating expenses to an almost unparalleled low level of 10% of money received, and now has total assets over \$260,000!

The goal of the Endowment is to reach 1 Million Dollars by 2005, and it can be done! But I am now passing the leadership torch as President of the Endowment to Dr. Miguel Saldana, and I am sure he, with the help of Administrator Reneta Webb, will keep the Endowment on course. Remember to support your Endowment! Thank you! **H**

OREF Contributors

The following members of the American Association for Hand Surgery recently are new contributors to the Orthopaedic Research and Education Foundation:

Tyrone D. Artz, MD
Edward A. Athanasian, MD
Mark S. Cohen, MD
Leslie P. Dean, MD
Blair C. Filler, MD
Alan E. Freeland, MD
Diane E. Gilles, MD
Richard J. Miller, MD
Kenneth L. Moore, MD
Frederick M. Thomson, Jr
Scott W. Wolfe, MD

Recommended Reading for Compression Neuropathy Topic

We have compiled a list of some readings related to the "Around the Hand Table" in this issue of the HSQ.

J Fedorczyk, MS, PT, CHT; P LaStayo, PT, PhD, CHT; S. Michlovitz, PT, PhD, CHT

Butler DS. Mobilisation of the Nervous System. Melbourne, Churchill Livingstone, 1991.

Dellon AL: "Evaluation of Sensibility and Re-education of Sensation in the Hand." Baltimore, MD: Williams & Wilkins Company, 1981.

Dellon AL, Mackinnon SE, Crosby PM: Reliability of two-point discrimination measurements. *J Hand Surg* 12A:693-696, 1987.

Gellman H: Tennis elbow (lateral epicondylitis). *Hand Clinics* 1992; 23(1): 75-82 .

Gelberman RH, Szabo RM, Williamson RV, Dimick MP: Sensibility testing in peripheral nerve compression syndromes. *J Bone Jt Surg (Brit)*. 1983;65A:632-638.

Grant R, Forrester C, Hides J. Screen based keyboard operation operation: The adverse effects on the neural system. *Australian Physiotherapy*. 1995;41:99-105.

Kenneally M, Rubenach H, Elvey R. The upper limb tension test: the SLR test of the arm. In: Grant R, ed. *Physical Therapy of the Cervical and Thoracic Spine*. Clinics in Physical Therapy 17. Churchill Livingstone, Edinburgh, 1988.

continued on page 8

AAHS Hand Therapy Sponsored Pre-Conference Seminar

AAHS Annual Meeting, January 10, 2001
Loews Coronado Bay Resort
Rheumatoid Arthritis and Osteoarthritis of the Hand and Wrist: An Update

7:15-8:00 am	Registration and Continental Breakfast
8:00 am	Introduction <i>Susan Michlovitz, PT, PhD, CHT</i>
8:10- 8:45 am	Rheumatoid Arthritis: Update on Pharmacologic Management
8:50- 9:30 am	Synovitis and Tenosynovitis in the Rheumatoid Hand and Wrist <i>Forst Brown, MD</i> <i>Jeanne Melvin, MS, OTR, FAOTA</i>
9:30- 10:00 am	MCP Soft Tissue Reconstruction for Rheumatoid Arthritis <i>William Blair, MD</i> <i>Gail Groth, MS, OTR/L, CHT</i>
10: 00- 10:15 am	Coffee Break
10:15-10:45 am	Managing the Rheumatoid Wrist <i>Leonard Bodell, MD</i> <i>Katherine Scofield, OTR/L, CHT</i>
10:45-11:15 am	Managing the Rheumatoid Thumb <i>Paul Brach, MS, PT, CHT</i> <i>Matthew Tomaino, MD</i>
11:15 am-12:00 pm	Panel Discussion: Managing the Complex Rheumatoid Hand and Wrist <i>Nash Naam, MD (Moderator)</i> <i>William Blair, MD</i> <i>Leonard Bodell, MD</i> <i>Jeanne Melvin, MS, OTR/L, FAOTA</i> <i>Katherine Scofield, OTR/L, CHT</i>
12:00-1:20 pm	Lunch 2000 Vargas trip to Lithuania
1:30-2:00 pm	Exercise and Arthritis <i>Scott Kozin, MD</i> <i>Margery Lockard, PT, PhD</i>
2:00-2:30 pm	Tissue Engineered Cartilage <i>W.P. Andrew Lee, MD</i>
2:30-3:10 pm	Panel Discussion: Basal Joint Osteoarthritis: Controversies in Splinting <i>Paul LaStayo, PT, PhD, CHT (Moderator)</i> <i>Paul Brach, MS, PT, CHT</i> <i>Jeanne Melvin, MS, OTR, FAOTA</i> <i>Matthew Tomaino, MD</i>
3:10-3:25 pm	Break
3:30-4:00 pm	Basal Joint Complex Reconstruction <i>Paul Brach, MS, PT, CHT</i> <i>Matthew Tomaino, MD</i>
4:00-4:30 pm	PIP Joint Osteoarthritis <i>Scott Kozin, MD</i> <i>Margery Lockard, PT, PhD</i>
4:45-5:30 pm	Wine and Cheese <i>Participants and faculty</i>

Dorit H. Aaron, MA, OTR, CHT, FAOTA

Personal: Born in Jerusalem, Israel, lived in Ethiopia then moved to the United States, where we made Texas our home. I now live in Houston with my husband Marty and my two daughters, Margo and Haley.



DORIT H. AARON, MA, OTR, CHT, FAOTA (AT RIGHT)

Education: My undergraduate education took me to four universities (two continents) with my BS being awarded by the University of Texas Medical Branch in Galveston Texas. My graduate degree is from Texas Woman's University where my research concentration was on dexterity and its relationship to functional use of the hand.

Practice: After 5 years in an acute care hospital in Houston, Texas, where I founded a hand clinic, I left the hospital system to start a private practice with two other OT's and one PT. We owned a large hand clinic (with four locations and 40 plus employees) for more than 11 years. We sold the practice about 5 years ago.

At present, I co-own a private consulting practice, through this practice I coordinate the Hand Therapy Fellowship in Houston Texas, a program supported by HealthSouth and Texas Woman's University designed to educate occupational and physical therapists in the art and science of hand therapy. I am involved in consultation to hand clinics in set up and operations, and I treat patients on a PRN basis at several local hand clinics. In addition, I am involved in a major research project examining the use of Telerehabilitation in hand therapy.

Clinical Specialties/Challenges: First, I am interested in clinical reasoning across the spectrum of treatment. I find that teaching clinical reasoning, as well as teaching the underpinnings of hand therapy is both a treat and a challenge.

Second, telerehabilitation: as technology (imaging and the Internet) progresses, I believe its role in hand therapy, both for outreach and as a tool to enhance present practice is within our grasp. My clinical interest (and challenge) is in researching the possibilities of what this field can offer.

Third, congenital differences; I believe that the role of hand therapy has been minimal vis à vis the needs and potential of this population. I have been involved in a voluntary basis with the Shrine Hospital for Children in this specialty area. **H**

continued from page 7

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Clin Biomech 2000; 15(1) 9-14.

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Thomas SJ, Yakin DE, Parry BR, Lubahn JD. The anatomical relationship between the posterior interosseus nerve and the supinator muscle. J Hand Surg 2000;25A:936-941.

Yackley GA, Jull GA. Adverse tension in the neural system. A preliminary study of tennis elbow. Australian Physiotherapy 1993;39(1): 15-22. **H**

Connectivity to the Internet

As we all transition to e-Medicine, office strategies for connectivity to the Internet become increasingly important. None of us could imagine running our practices with a single telephone line, and most of us could not handle typical patient scheduling and billing volumes with a single PC. The trend in the Internet is rapidly moving from a purely content media to a highly interactive hosting mechanism for business applications and transactions. This trend, in turn, is escalating demands for better, faster, cheaper ways to access the Net on a regular basis.

The Phone Company

Virtually everyone, at some point, has gotten onto the Internet with a computer connected to a modem. One computer “calls” another at the Internet Service Provider via a telephone line, and the Internet is accessed. (On a personal note, my college roommate from Duke became a millionaire with a “high speed” modem that he invented in the early 1980’s! We would all laugh at the speed of his device now, but he just continues to smile). Modem technology has reached the 56Kbps speed that is quite acceptable for non-graphical work across the Internet for a single PC. Add a second phone line and “stack” two modems together, and peak performance approaches 112Kbps—not bad at all for a very low cost.

The next step up in performance with dial-up connectivity to the

Internet is through an ISDN (Integrated Services Digital Network) line. Modems specific to this technology can boost performance speed to the 128Kbps level at a cost under \$100/month. This is probably the base-line bandwidth for satisfactory business application performance, especially if a Local Area Network (LAN) of computers in the office setting shares the connection. Other technologies, however, are rapidly eclipsing the desirability of ISDN technology.

Open Connections

One of the nastiest problems with dial-in connections is “timing out.” Just when you are getting where you need to be on the Net, the server “hangs up” and you begin the forced process to log-on once again. Most find this annoying at the personal level and totally unacceptable at the business transaction level. The following represents available technology for open Internet connectivity:

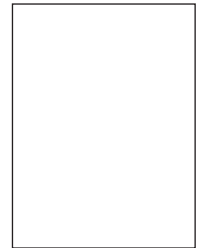
- DSL (Digital Subscriber Line)
- Cable
- Wireless
- Satellite
- Fractional T1
- T1

Cable connections are seriously affected by other users slowing performance, and satellite upload speeds are limited, so for business use, these two are “off the table” at present. DSL is “hot” promising voice and data transmissions faster and cheaper than ISDN technology and may represent the small office solution of choice when it is more universally available. Connection speeds can vary. Local hardware to manage the connection is required, but copper wire transmission (as opposed to newer fiber-optic lines) is up to 50X faster than modem technology.

Wireless technology is fairly inexpensive for 128Kbps open connectivity to the Internet. At \$200/month, we have successfully used this strategy in our office for the past 18 months. We have 15 PC’s in our LAN and the performance is consistent. Set up cost was lower than ISDN or DSL. This is a “cheap and easy” solution to consider for mid-range performance handling a small to medium sized office.

T1 connectivity remains the “gold standard” for high-speed business Internet access. The technology secures transmission speeds up to 1540Kbps at costs approaching \$800/month. Fractional lines are available for less. This is “heavy duty,” large practice scale technology that is widely available.

Electronic Medical Records, e-Commerce and e-Claims, Web-based scheduling, and down the road, image management all will place significant increases on our office Internet demands. As always, early adoption can be frustrating and costly, but this phase is rapidly passing. There are at least a couple of good ways to ensure Internet performance at the office without breaking the bank. The productivity of the staff will begin to depend on it over the next 12 to 18 months. **H**



J. DANIEL LABS, MD

Compression Neuropathies of the Forearm

Moderating this Around the Hand Table discussion is **Nash Naam, MD**, Clinical Professor, Plastic Surgery Department, Southern Illinois University and Director, Southern Illinois Hand Center, Effingham, Illinois. Dr. Naam is joined by panel members **A. Lee Dellon, MD**, Professor of Plastic Surgery, Neurosurgery, Johns Hopkins University, Maryland, **Paul LaStayo, PhD, PT, CHT**, Assistant Professor, Department of Physical Therapy, Northern Arizona University, Flagstaff, Arizona, **Robert Russell, MD**, Clinical Professor, Division of Plastic Surgery, Southern Illinois University and Heartland Plastic Surgery Center, Springfield, Illinois, and **Randy Sherman, MD**, Professor of Surgery, Orthopaedics and Neurosurgery, and Chief, Division of Plastic Surgery, University of Southern California School of Medicine, Los Angeles, California.



I FIND IT EASIER FOR ME TO FIND THAT PLANE BETWEEN THE EXTENSOR CARPI RADIALIS BREVIS AND THE EXTENSOR DIGITORUM COMMUNIS.

NASH NAAM, MD

Dr. Naam: Good evening. Thank you very much, all of you, for taking the time to participate in this panel discussion tonight about compression neuropathies around the elbow and forearms other than cubital tunnel syndrome.

We all know that cubital tunnel syndrome is the most common entrapment neuropathy around the elbow, but let's talk about the other nerves that are entrapped. What are the anatomic features

that make the median nerve vulnerable to compression around the elbow and forearm, Dr. Dellon?

Dr. Dellon: The median nerve travels through a series of arches, which are usually muscular but they can have fibrous bands to them. As the median nerve goes from the medial aspect of the upper arm across the elbow, it can be covered by a fibrous arch that Struther's described. It then goes beneath an area where there can be an anomalous head of the pronator teres that can arise higher up on the humerus (it's in about 20 percent of

people) which can compress the median nerve against the trochlear process. Then it goes under the lacertus fibrosis which, with different elbow flexion movements, can cause pressure. After that it winds its way through a series of muscular arches, like the deep head of the pronator teres and fibrous arches that can connect the superficialis muscles. Any of those muscles, if either the muscle is hypertrophied from overuse or there's a fibrous band at the edge, can serve as a site to compress the median nerve, especially during repetitive activity.

Dr. Naam: Dr. Russell, from a definition standpoint, how can we differentiate between pronator syndrome and anterior interosseous syndrome?

Dr. Russell: Most of the cases I've seen with anterior interosseous nerve syndrome are people who have had some kind of trauma to their forearm. When you have a complete anterior interosseous nerve syndrome, you get loss of function of the muscles supplied by the anterior interosseous nerve, specifically the profundus tendon to the index finger, the flexor pollicis longus, and the pronator quadratus muscles.

You can test the pronator quadratus by having the patient flex the elbow and try to pronate their forearm, and of course, the patient gets

a flat pinch because they can't bend the flexor pollicis longus and the profundus tendon to the index finger.

People with compression of the median nerve around the elbow can have symptoms that involve the anterior interosseous nerve, but most of them have pain in the proximal forearm to direct palpation and pain in the forearm when they try to pronate their forearm.

Dr. Naam: Dr. Sherman, as far as provocative tests, what are things that you can do clinically to establish a diagnosis, for example, of pronator syndrome?

Dr. Sherman: With pronator syndrome, there will be pain with compression of the median nerve at the entrance of the pronator muscle, and there may be paresthesias at that point when you perform that maneuver. There should also be some pain with resisted forearm pronation and also wrist flexion. So those two maneuvers would cause pain in the area of the nerve compression.

I think also that resisted forearm supination might cause pain if there is entrapment under the lacertus fibrosus. If you then perform a test where you ask the patient to flex the long finger and you perform resistance against that as a provocative maneuver, you might find a localization of entrapment at the

flexor digitorum superficialis arch. I think that would be the way I would differentiate the various sites of the pronator syndrome through provocative testing.

Dr. Naam: Dr. LaStayo, when you evaluate patients in your practice, patients coming in with numbness and tingling, and you would like to know whether these patients have only a carpal tunnel syndrome or a type of double crush or pronator syndrome, what are sort of the tricks of the trade that you can help us with to identify each entity?

Dr. LaStayo: Well, in addition to those provocative tests just noted, I like to use sensibility testing. Hand therapists have a bevy of threshold and density sensory tests to use in evaluating these patients. But if I had to throw out a pearl, I think it would be appreciating the anatomy and sensory function of the palmar cutaneous branch of the median nerve, which typically branches off the median nerve proximal to the carpal tunnel and provides sensation in the thenar aspect and central palmar area of the hand. If testing in that area is abnormal, in addition to the median nerve distribution into the fingers and thumb, I become very suspicious that a component of the nerve lesion is upstream of the carpal tunnel. If the PCBMN is abnormal I then continue to try and differentiate whether the lesion is in the forearm, at the elbow, or even higher up into the thoracic, shoulder or cervical region.

Dr. Naam: Dr. Dellon, you wrote extensively about quantitative sensory testing. Could that be helpful in establishing a diagnosis of pronator syndrome?

Dr. Dellon: Yes. What Dr. LaStayo just indicated is the critical factor, which is the recognition that the palmar cutaneous branch of the median nerve arises 5 to 7 cm proximal to the carpal tunnel. So,

assuming the patient has not had blunt trauma to the front of the wrist, and assuming in a previous carpal tunnel decompression the palmar cutaneous branch has not been divided or injured, then abnormal sensation over the thenar eminence makes you think that there's a higher irritation to the median nerve. The same way that abnormal sensation over the dorsal ulnar aspect of the hand, in conjunction with abnormal little finger pull, directs you to the cubital tunnel instead of Guyon's canal.

Dr. Naam: I see. Dr. Russell, what's the role of electrodiagnostic studies in establishing a diagnosis of pronator syndrome and anterior interosseous syndrome?

Dr. Russell: Well, in my experience it's been difficult for some of my electrophysiologists to look at that problem. You have to have a really good study to find a compression of that area. I rely more often on the clinical examination of the patient and try to treat them conservatively at first. I treat them surgically if that doesn't work. I have had less success with electrodiagnostic testing around the elbow for this problem.

Dr. Naam: Is that the experience of the other members of the panel?

Dr. Sherman: I think that if you can get isolated denervation potentials of the flexor pollicis longus, the flexor digitorum profundus or the pronator quadratus, then you've got it hooked. But that's a tough thing sometimes for your electrophysiologist to do.

If you are going to do electrodiagnostic testing you should probably start from the shoulder girdle on down, looking at your EMGs to exclude any kind of amyotrophic problem proximally. But I do agree with Dr. Russell, that it's not a pre-eminently sensitive test in this particular condition.

Dr. Naam: But do you send your patients for EMG or you would

depend mainly on the clinical evaluation?


Dr. Sherman: We mostly stick to our clinical examination and then follow the patient usually with conservative management and retest clinically. That really guides our diagnosis.

Dr. Naam: Dr. Dellon, what do you think about the EMG?

Dr. Dellon: If someone has an anterior interosseous syndrome, then by definition they're going to have motor problems. If the technician can get the EMG needle into those muscles it will document this for you, and that's very valuable. But most often patients have symptoms of sensory change and don't really have that weakness in those muscles.

In people with proximal median nerve compression, which is what I think we ought to call it, the degree of motor involvement has to do with whether the anterior interosseous nerve originates posterior or radial on the median nerve. If it originates radial and there's a fibrous arch to the deep head of the pronator, you're going to have a lot of muscle symptoms. If the anterior interosseous nerve originates on the posterior aspect of the median nerve, people will have almost all sensory symptoms.

The sensory changes that electrodiagnostic testing can pick up have to be very profoundly involving the nerve. Therefore, in the few pub-



**MOST OF THE TIME
I USE A MUSCLE
SPLITTING INCISION....
I CAN GET TO THE
SUPINATOR AND I CAN
ACTUALLY PUT MY
FINGER UP CLOSE TO
ABOVE THE ELBOW TO
MAKE SURE THAT THE
NERVE IS FREE.**

ROBERT RUSSELL, MD

continued on page 12

AROUND THE TABLE

continued from page 11

lished papers on pronator syndrome or proximal median nerve, perhaps less than 50 percent of the patients have abnormal nerve conduction studies. We're presenting at the hand meeting in two weeks 26 patients that had EMG studies. Only 3 had positive findings. That's

a sensitivity of only 12 percent. That means 88 percent false negatives with electrical testing for proximal median nerve compression. So I do not send patients for these studies. I think it's a very low pickup.

Dr. Russell: A lot of times these people complain of pain in their forearm and their hand, and they'll actually have loss of sensation in the median nerve distribution in the hand. So they mimic carpal tunnel patients in a lot of ways.

However, if you test them for carpal tunnel syndrome clinically with a Tinel's or a Phalen's test or a median nerve compression test at the wrist, they don't reproduce the symp-

toms. So that's another tip-off that there may be some lesion more proximal than at the wrist.

Dr. Naam: How about the conservative treatment? Dr. Sherman, you alluded to that and you said that you would treat the patients conservatively and then you follow them up. What are the details of the conservative treatment and how long do you continue treating the patients conservatively?

Dr. Sherman: Well, let's exclude

those individuals that would go directly to surgery, and to me those would be people with an open penetrating wound in the region of the proximal volar forearm that present with an acute deficit.

For those individuals who have repetitive trauma or job-related pathology, we will go through a very similar management protocol, which we might with any compressive neuropathy, that being rest, splinting, oral anti-inflammatory, at times injection of either a local anesthetic or a low-dose type of steroid. We might then send them to an occupational therapist to get them involved in a mild stretching and mobilization program, and then we'll reevaluate them sequentially on a two- or three-week basis.

But we won't trail that conservative management out more than eight to twelve weeks. If there is a failure of resolution by that time, or if there's worsening of symptoms during the conservative management period, then we're going to think more seriously about operative intervention.

Dr. Naam: Dr. LaStayo, do you have something to add to the conservative treatment with regard to the role of therapy?

Dr. LaStayo: Yes. As Dr. Sherman mentioned, I think it's important to try to globally characterize these patients because the conservative management approach is in large part predicated on identifying the patient type. In general, there are those patients that have either frank mechanical compression that is associated with some heavy stressors or high forces or high vibratory stimuli, or maybe their anatomy is such that they have small tunnels or narrow arcades or an aberrant anatomical situation. We characterize those patients differently than those who do office work, that is, really low force, low vibration work environments, but they're in static prolonged positioning. These folks tend to be characterized as having muscle imbalances (described nicely by Novak and Mackinnon as an elevated "neural tension", something that is not entirely clear to

me. David Butler from Australia's been talking about it a long time, perhaps a double crush phenomena, and associated medical and psychosocial issues. These patients typically have a multi-factorial problem that can often eat up large amounts of health care resources.

It's important to characterize these two patient types because we would tend to treat them differently in the clinic. Those with the mechanical compression we will rest, educate them as to their lesion and put them in a splint. In the case of compression of the median nerve under the pronator, conventional wisdom would suggest putting them in a long-arm splint with some slight supination. Certainly end-range supination should be avoided. Rather, a position of comfort where they are asymptomatic would be optimal. Those that have these postural, neural tension, multiple crush gray symptoms, however, are moved rather than rested. The focus here is on behavioral modifications at work, postural education, some stretching, and maybe even some very gentle neural type of mobilization.

Dr. Naam: Dr. Dellon, your patients who are diagnosed with pronator syndrome, how long do you treat them conservatively? And if you decide to operate on them, could you describe to us the surgical technique.

Dr. Dellon: Dr. LaStayo before said a very important thing, which is he makes measurements of their sensation. We like to measure the pressure threshold of the thenar eminence and the pressure required to discriminate 1 from 2-point static touch. In *The Annals of Plastic Surgery* in May of 1997, we showed that that's the first measurement to become abnormal with carpal tunnel syndrome or cubital tunnel syndrome, using the Pressure-Specified Sensory Device™.

At the start of these people's symptoms, if you make some sensory measurement over the thenar eminence and then you put them through your nonoperative management, yes, you can use their

THERE IS THIS RARE SYNDROME, BUT IT PRESENTS AS ANTERIOR INTEROSSEOUS NERVE SYNDROME. IT IS AN INFLAMMATION OF THE BRACHIAL PLEXUS, BRACHIAL PLEXITIS, AND IT IS CALLED PARSONAGE TURNER SYNDROME.

A. LEE DELLON, MD

Hand Surgery
Quarterly

.....
Winter
2001

12

symptomatic complaints as to whether they're getting better or not getting better. It's nice to repeat the measurements at six weeks or twelve weeks. If they show the nerve as coming around and improving, with improved thresholds and two-point discrimination, you feel good about continuing their nonoperative measures and returning them to some type of work activity.

In contrast, if you do not show improvement in measurable peripheral nerve function with quantitative sensory testing, then you have an appropriate basis to suggest the nerve be decompressed.

Dr. Naam: How about the surgical technique when you really decide to operate on those patients?

Dr. Dellon: Well, I think Dr. Sherman mentioned previously resistive middle or ring finger flexion of the PIP joint. I find that to be the most valuable help to me in someone who's either had a carpal tunnel procedure that has failed or that has

these forearm muscle complaints. Because when I have them flex the PIP joint and resist that, they often get referred pain right into the distal end of the forearm.

I have had only one patient in 22 years with a ligament of Struther's, and that was an incomplete ligament. I have a lot of people with thickened lacertus fibrosis, but I don't know how much that really does. I have maybe 20 percent or more have the high origin to the pronator teres. But almost all these people have some problem near the deep head of the pronator teres and the origins of the superficialis muscles.

Therefore, I've been designing my surgical technique to go in the more central part of the forearm. Incisions that cross the cubital fossa produce very unsightly scars. So if most of my patients respond to a provocative test to the forearm with discomfort and have resistive middle and ring finger discomfort or just a pronator, I'll make an incision about 6-7 cm long, maybe S

shaped, to go through the muscle plane between the brachioradialis and the pronator teres. I will be looking for those same structures that I mentioned. Through that incision I can lift the skin up and release the lacertus fibrosis back to the antecubital fossa.

Dr. Naam: I certainly agree with Dr. Dellon because I found that most of my patients have the strong aponeurotic arch of the superficialis. I used to make the incision coming from above the elbow flexion crease, but now I really limit myself to below the elbow flexion crease. I can really get even far proximal by just simple elevation of the skin in that area. Does anyone release the superficial head of the pronator teres after you finish exposing the nerve?

Dr. Sherman: I think it really depends on how the nerve lies, how the nerve looks. It isn't usually the culprit, as Dr. Dellon was saying, but a release especially with

continued on page 14

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Hand Surgery
Quarterly

.....

Winter
2001

13

AROUND THE TABLE

continued from page 13

the muscle belly remaining intact is not going to diminish function to any significant degree. If you're there and there's any question, I would do it, but I think you can make a fairly reasonable determination by just looking at the way the nerve lies once you've released your more distal structures.



THERE ARE A FEW PROVOCATIVE TESTS WHICH MAY SECURE THE DIAGNOSIS. IF ONE PRONATES AND ULNARLY FLEXES THE ARM WITH THE ELBOW EXTENDED, WE ARE PUTTING THE SUPERFICIAL RADIAL NERVE ON TRACTION AND WILL INTENSIFY THE SYMPTOMS.

RANDY SHERMAN, MD

Dr. Naam: Suppose you go in and you can't find a specific site of compression. Any suggestions, Dr. Dellon?

Dr. Dellon: One critical point that I would like to emphasize is that I potentially will do and teach that you should perform the same operation for so-called anterior interosseous nerve as you would for pronator. Just to say that every site that could compress the nerve within that 6 or 7 or 8 cm region should be looked at, evaluated and decompressed.

And I want to mention one other thing that I have been seeing so often. Many of these people with work problems have both ulnar nerve at the elbow and proximal median nerve problems. The same repetitive flexion pronation, elbow flexion extension, sets up both nerves. There is a really nice surgical approach.

If you make an incision in the post-condylar groove as if you are going to do an ulnar nerve transposition (and you may be doing an ulnar nerve transposition in these patients in addition), from that position you can release the lacertus fibrosus. Be sure there is no rare

proximal site for the median nerve compression, and have part of your incision be posterior instead of anterior where it crosses the antecubital fossa (which would be very unsightly). So if I have made my forearm incision and really didn't find anything at all suspicious, I would be thinking about making this incision to the post-condylar groove where from that aspect you can take down a high origin of the superficial head of the pronator teres and you can look to see if there is a fibrous arch and you can divide the lacertus fibrosus without giving the patient that extra very disturbing long scar.

Dr. Naam: Let's now talk about the radial tunnel syndrome. Dr. Russell, there is some confusion with regard to the definition of radial tunnel syndrome versus posterior interosseous nerve syndrome. Could you differentiate between the two syndromes?

Dr. Russell: I think it is all a matter of anatomy. When you follow the radial nerve as it courses around behind the humerus, it can actually be compressed as it courses in the spiral groove behind the humerus. After it comes to the lateral side of the arm, it heads into the forearm and it goes into the so-called radial tunnel. The brachioradialis and extensor carpi radialis longus muscles are innervated by a branch before it dives into the supinator muscle. When it goes into the supinator muscle, that is the beginning of the posterior interosseous nerve. So if you have a compression where the nerve goes behind the humerus or anywhere around the elbow, that is more of the radial tunnel type problem. That gives you a little higher area of tenderness in the forearm to palpation. Whereas compressing the nerve as it enters the supinator is more of the posterior interosseous nerve syndrome. That is how I would differentiate between the two.

Dr. Sherman: I would slightly dissent from Dr. Russell's point of view. I think most of us should con-

sider, as Dr. Dellon was saying about high median nerve compression, radial tunnel syndrome and posterior interosseous nerve syndrome as really one and the same. We can turn our attention towards anatomic specifics that may be found at the time of the standard surgical procedure used for decompression of the radial tunnel as opposed to using anatomic location to differentiate what we will do for that patient. I have spoken to and read of many colleagues who are changing their view towards that end to now consider both syndromes as being synonymous.

Dr. Naam: How about the clinical presentation. A patient presents with weakness or paralysis of the posterior interosseous nerve innervated muscles? Some authors think that this is the posterior interosseous syndrome, whereas when patients present with pain in the proximal forearm, this is more a radial tunnel syndrome. Dr. Dellon, do you have any opinion regarding that?

Dr. Dellon: There is a historical definition of what those two syndromes are, just the same as there is with the anterior interosseous nerve and the pronator syndrome. On physical examination certainly if there is weakness of the muscles that the posterior interosseous nerve innervates, we tend to give it more of that name. Technically in surgery I will do just what Dr. Sherman said. I will do the same operation for posterior interosseous nerve that I would do for radial tunnel syndrome. Within the same 6 or 7 cm, I will release every structure that can cross the radial nerve from just proximal to the lateral humeral epicondyle down through and past the supinator. Because you don't really know what contributes to the patient's symptoms. With the same incision and the same approach, you should look at every single thing that is there.

Perhaps more importantly, if you leave one part of the nerve unreleased, everything else you did is

going to fail because the nerve can't really glide. It is really incumbent upon us during surgery to inspect around the radial nerve any anomalous muscle bands that may cross from the brachioradialis to the biceps and then the known little group of things, the extensor brevis and the supinator that may give you further problems.

I think, if you don't mind, Dr. Naam, it would be good to ask Dr. LaStayo how he feels that the counter force tennis elbow brace contributes to radial nerve compressions in this area and how he treats or decides to vary his treatment so that he does not create radial nerve compressions in the effort of utilizing conservative splinting.

Dr. LaStayo: Yes, that is a big mistake that can occur. Care must be taken when considering a counterforce brace for patients with lateral elbow pain. Although effective in pure lateral epicondylitis, the results are disastrous when using a counter force brace when the PIN or radial tunnel are irritated. Granted, I do have a hard time discriminating the causes of lateral elbow pain if I put too much evaluative weight on pain and weakness. Because pain in these lateral elbow pain patients often gives you a false impression of weakness, except of course when a frank palsy is present. Great care must go into differentiating lateral epicondylitis from nerve compression so that we do not inadvertently end up putting a counterforce brace on a compressed nerve. Since the provocatives for tennis elbow PIN and RTS are so similar, I find the sensory test, and more importantly, differential tenderness, as two of the most important pieces of information. Sharp pain at the inferior aspect of the lateral epicondyle for tennis elbow versus a deeper pain in a muscle belly area in the proximal radial forearm for RTS or PIN is a helpful differential for me. The real problem, however, is when folks seem to have both a tendinous and neural irritation, an all too common sce-

nario in the hand therapy clinic.

Dr. Naam: Dr. Sherman, with regards to the radial tunnel, do you find that electrodiagnostic studies are helpful or do you depend entirely on the clinical evaluation?

Dr. Sherman: I think in this situation even more so than in pronator syndrome the EMGs really play little or no role in clarifying the clinical diagnosis. Truly it is a clinical differentiation among the three situations we have been talking about where the follow up care really rides on your clinical exam and not the EMGs. I have not included these studies in my diagnostic algorithm in the last several years.

Dr. Naam: Dr. Russell, when you operate on the posterior interosseous nerve do you approach it from the anterior approach or the dorsal approach?

Dr. Russell: Most of the time I use a muscle splitting incision. I don't do the anterior approach. I know that you can't really get above the elbow as well with that incision, but most of the time I find that I can get to the supinator and I can actually put my finger up close to above the elbow to make sure that the nerve is free through that approach. So I use the muscle splitting approach.

Dr. Naam: Which plane do you go through, between which groups of muscle?

Dr. Russell: I usually go between the extensor carpi radialis longus and brevis.

Dr. Naam: Dr. Dellon, you mentioned that you really would like to see the whole course of the radial nerve and the posterior interosseous nerve. Can you see that very clearly through a dorsal approach?

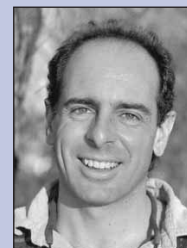
Dr. Dellon: Yes. In the textbook that Susan Mackinnon and I wrote, *Surgery of the Peripheral Nerve*, Thieme, NY, 1988, our drawing has an incision above the elbow and one over the muscles. I rarely make the upper incision anymore. I do

just what Dr. Russell said. You can usually with an Army/Navy retractor lift up enough skin to be able to separate these muscles slips that run between the brachioradialis and the bicep. So your finger reaches around the back of the humerus and if there is really something farther up than that, then you do need to make another incision. Or if you get bleeding or something that you are unhappy with happens, you have to make a more proximal incision. But otherwise you can see enough.

Also, Dr. Naam, if you don't mind my mentioning, this is something that if people look for it, I think they will find. Very often the pain we see in failed tennis elbow surgery, there is a small nerve right at that plane that was just mentioned between the different extensors. It is the posterior cutaneous nerve of the forearm. That small little nerve can get stuck or damaged in the so-called failed tennis elbow incision and the pain is due to a neuroma and not due either to really tennis elbow or radial tunnel. But the nerve is exactly over the radial tunnel and you need to examine for tenderness in the scar and distal sensory loss and then you just make the incision, look for the neuroma, resect it and then plant that nerve proximally into the brachioradialis. I don't know how many of you have seen that, but we probably have six or seven of these.

Dr. Naam: But doesn't that nerve go slightly distal to the lateral epicondyle?

Dr. Dellon: Well, it can have a bunch



IF THEY ARE STRAINED BY MORE THAN ABOUT 15 PERCENT, THERE IS A BLOCK IN NERVE CONDUCTION, VELOCITY AND BLOOD FLOW... ONLY EMPLOY THESE NERVE GLIDING TECHNIQUES WHEN YOU ARE SURE THAT THE NERVE WILL NOT BE STRAINED.

PAUL LASTAYO, PHD, PT, CHT

Hand Surgery
Quarterly

.....

Winter
2001

continued on page 16

AROUND THE TABLE

continued from page 15

of different branches and the patient who comes in with pain from failed tennis elbow or pain after one of your colleagues did their radial tunnel, it is really worth carefully just looking and touching everywhere along that incision and see if there is any skin with abnormal sensations. Because there may well be an unusual location for the sensory branch and it is right there in a lot of so-called perplexing patients.

Dr. Naam: Do you still go between the brachioradialis and the extensor carpi radialis longus, Dr. Dellon?

Dr. Dellon: Yes.

Dr. Naam: Dr. Russell, you mentioned that you go between the extensor carpi radialis longus and brevis. How about Dr. Sherman, which plane do you go through?

Dr. Sherman: I follow Dr. Dellon's approach usually at the edge between the brachioradialis and the extensor carpi radialis longus. But that is after you initially split the BR to get down to the supinator.

Dr. Naam: I find it easier for me to find that plane between the extensor carpi radialis brevis and the extensor digitorum communis. So you can see like a small raphe between the two muscles and it is easy to get to that. For some reason that approach has been much easier for me and it doesn't really take that long. I found that people who cannot go into the proper plane can have a difficult time finding the posterior interosseous nerve. And it is very important to identify the structures before you actually go through that plane.

Do you release the whole supinator or just part of it, Dr. Sherman?

Dr. Sherman: Well, again, I think that in line with what we have been talking about, you need to release

all of those specific structures which account for an overwhelming majority of the reported compression sites and those are the proximal fibrous bands, the vascular leash, of course, and the proximal edge of the supinator at the arcade of Frohse. I don't divide the entire supinator only because of the rarity of that being a component portion of the disease process. But certainly there are times when one might consider it. I don't do it routinely.

Dr. Naam: How about patients who have lateral epicondylitis with radial tunnel? Would you do the surgery combined at the same time, or do you prefer to do them individually? Dr. Russell?

Dr. Russell: I have done them both at the same time. I usually try to inject the lateral epicondyle first. If the patients get better from that, then at least I know they have epicondylitis. And if they have recurrent symptoms and they have pain distal to the epicondyle over the radial nerve, then I would do both at the same time.

Dr. Naam: Dr. LaStayo, how about postoperative rehabilitation. What are the important things for those patients in order to get them back to work as soon as possible?

Dr. LaStayo: Before sharing the top hit list of things to do postoperatively, I would ask the therapists who are reading this to first appreciate the amount of detail that goes into the diagnostics in these cases, and second, understand where these compressions are and the surgical skill necessary to release all of these various nerve compression areas in the elbow and the proximal forearm. In considering this I hope it amplifies what we do not want to occur postoperatively, which is a nerve becoming compressed or adhered back down again.

One of the things that I am a strong advocate of, more postoperatively than with conservative management, is nerve gliding. And for this radial and/or PIN nerve we

would like to see progressive isolated elbow and wrist active range of motion starting within the first week and then progressing to a combined, composite elbow/wrist range of motion. In addition, nerve gliding techniques for the radial nerve must be implemented. You can bias the radial nerve to glide by extending the elbow, pronating the forearm, flexing and ulnarly deviating the wrist. Reaching this composite posture should occur slowly over time so that the nerve glides easily and adherence is avoided.

Dr. Naam: All right. We will go to the third topic, which is the superficial radial nerve entrapment. By the way, before I get into that, does anyone have anything else to add regarding the PIN?

Dr. Dellon: Dr. Naam, can I add one thing? It's going back to the anterior interosseous nerve when you talked about electrical testing. There is this rare syndrome, but it presents as anterior interosseous nerve syndrome. It is an inflammation of the brachial plexus, brachial plexitis, and it is called Parsonage Turner Syndrome.

The main way they present different from the people we have all been talking about is they will have a sudden onset of weakness in their muscles and they will have pain associated with the onset. And they may have had a viral infection before then. I just saw one this past week and it can affect any groups of muscles innervated by the brachial plexus. But the most common group is that innervated by the anterior interosseous nerve.

In the history we all spoke about people where there was some gradual onset associated with their work or a traumatic event. But someone who comes in and says four months ago I had pain in my arm and now I have been weak in this way, those people definitely should have electrodiagnostic studies where the EMG person has to be directed to look at the proximal brachial plexus innervated muscles and they will often find very

unusual distributions, a non-peripheral nerve type of pattern and that is an acute brachioflexopathy inflation. 90 percent resolved within six to nine months.

Dr. Sherman: Dr. Naam, may I ask Dr. Dellon a question? How often in Parsonage Turner Syndrome can you elicit a discrete viral or flu-like illness at the time or just before the time of onset of the plexitis?

Dr. Dellon: I had a man this week who was sent to me as a suprascapular nerve entrapment and he also had deltoid weakness. He said, "Four months ago all of the sudden I could not lift up my arm and I had horrible pain." And he had no history of trauma. He came in with these electrical tests that looked like some upper trunk brachial plexus injury. He was sent to me by another member of our hand surgery association. On rounds, visiting professor type things, they will often come up to you with a patient

who has had two failed anterior interosseous nerve operations and they want to know what you should do next and what tendon transfer to do.

As for a few of these people I have had, we wrote a paper with one of our other colleagues (J Hand Surg 22A:536-539, 1997) on a case that presented just like this. The purpose of the paper was to say do not operate on these patients.

I think you have to question if there is not a history of trauma or cumulative kind of trauma and it just sort of happens, we really have to be circumspect and push them for the history and check proximal brachial plexus and in those cases try to obtain an EMG. Just have it cross your mind as an unusual presentation.

Dr. Naam: How often is this condition, Parsonage-Turner Syndrome, bilateral, Dr. Dellon?

continued on page 18

Membership Survey Drawing Winner!

The American Association for Hand Surgery sent out a membership needs survey last month and received a remarkable response. The first 100 respondents were entered into a drawing to win a complimentary registration to the 2001 AAHS Annual Meeting in San Diego, California.

We are pleased to announce Gregory Dowbak, MD, PA from Naples, Florida was the lucky winner of the free meeting registration. We would like to thank the members of the organization for taking time to respond to the survey. See you in San Diego!

ORTHOPAEDIC SURGEON

HAND / UPPER EXTREMITY

Fort Wayne Orthopaedics is seeking a board qualified (or board eligible) hand/upper extremity orthopaedic surgeon to join our practice.

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Hand Surgery
Quarterly

.....
Winter
2001

continued from page 17

5th Annual Day at the Links Golf Tournament

being held in conjunction with the AAHS, ASRM and ASPN Annual Meetings

Saturday, January 13, 2001

11:30 am Depart Hotel

12:30 pm Shotgun Start

Price: \$150.00

The shotgun start scramble will be held at Steele Canyon Golf Club. Awarded the prestigious Four Star rating by the readers of Golf Digest, Steele Canyon offers private club playing conditions in a naturally beautiful setting. Designed by Gary Player, the course features panoramic views from several tees, beautifully sculpted fairways and smooth, true greens.

Tournament fees include greens fee, cart rental, transportation, box lunch and two drink tickets.

Please note that the Club is a spikeless facility—no metal spikes are allowed. Proper golf attire (collared shirts, slacks or Bermuda length shorts of non-denim material) is required.

For more information, call 312-236-3307.
To sign up, just fill out and fax the form below.

5th Annual Day at the Links Registration Form

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PHONE _____ FAX _____

HANDICAP (if HC is not known, please indicate scores from the last three rounds of golf played)

Payment Method VISA MASTERCARD CHECK

CARD NUMBER _____ EXP. DATE _____

SIGNATURE _____

Please fax this back to the AAHS/ASRM Central Offices at 312-782-0553 or mail to, AAHS/ASRM, Golf Registration, 20 N. Michigan Avenue, Suite 700, Chicago, IL 60602.

Dr. Dellon: It's rarely bilateral. I don't know what percent, but it's rare.

Dr. Naam: All right, we we'll go now to the superficial radial nerve entrapment and I would like to ask Dr. Sherman, from your experience how do those patients present usually and how to make a diagnosis?

Dr. Sherman: These patients are extremely vociferous about their problem and will present with paresthesias, dysesthesias, numbness, and pain in the dorsal radial distal forearm, in the wrist and the hand. Remember, the sensory branch of the radial nerve is going to affect sensation over the thumb, proximal two-thirds of the index, and the first dorsal web space, but of course the most significantly compelling symptoms are the dysesthesias that present with this particular compression neuropathy. I think the findings can be specifically elicited by the presence of a Tinel's sign over the radial sensory nerve and sometimes even a positive Finklestein's test. Most importantly, of course, decreased sensibility on your testing of the radial nerve distribution.

There are a few provocative tests which may secure the diagnosis. If one pronates and ulnarly flexes the arm with the elbow extended, we are putting the superficial radial nerve on traction and will intensify the symptoms.

Dr. Naam: Dr. Dellon, I think you described that test, is that correct?

Dr. Dellon: Yes. The most honest historical answer is that in 1932 Wartenburg writing in German described pronating the forearm and extending the elbow and flexing the wrist and ulnarly deviating the wrist. That produced pain and numbness and he called it a stretch traction test. He thought he was describing inflammation of the

radial nerve. He was a neurologist. Of his five patients on that paper, one was a diabetic, one had been stabbed, one wore a tight wrist watch and I think one had been crushed. So he was dealing with prominent fibrosis, but he thought it was a medical problem. We translated this paper and it is published in the March issue of *The Hand Journal* of 1986.

Susan Mackinnon and I in our book, I think it is in there is a figure (10-4) of someone standing with her arm just as Dr. Sherman described, showing this provocative maneuver. But Wartenburg had described it associated with an inflammation of the nerve before that.

Dr. LaStayo: Dr. Naam, that test is well used in the hand therapy world. I would, however, like to offer one caveat. As we mentioned, you do need to differentiate between de Quervain's and this radial sensory neuritis. So as to avoid falsely accusing the EPB and APL in this situation, care must be taken to avoid stressing the first dorsal compartment tendons with a Finklestein-like posture while performing this Dellon, Mackinnon, Wartenburg maneuver. The posture response to this provocative is one of paresthesias or dysesthesias with a sharp pain up at the point of Wartenburg rather than the pain response at the first dorsal compartment with the Finklestein. This is important to determine, as treatment is very different for de Quervain's, a long thumb spica, versus the radial sensory neuritis, requiring a long-arm splint up above the elbow to rest the nerve.

Dr. Naam: Dr. Russell, we know that the superficial radial nerve goes between the brachioradialis and the extensor carpi radial longus as it pierces the deep fascia in that location. But I have seen lots of patients who have actually the positive Tinel's sign distal to that, almost at the level of the radial styloid or around that area. So can the nerve be entrapped at any location or are

continued on page 20



President-Elect Robert T. Buchanan

Dr. Robert T. Buchanan will assume the Presidency of the American Association for Hand Surgery at the annual meeting in January 2001. He says that he was originally attracted to the AAHS as an organization that strives for excellence in education and practice, but does so in a relaxed, friendly atmosphere. He hopes to help the association maintain that character.

Bob is a native of Atlanta where he attended Emory University. In 1969 he graduated from the Medical College of Georgia. Next was a surgical internship at Parkland Hospital in Dallas, TX. The trauma care he learned there earned him an expense paid trip to the jungles of Vietnam with the Marines, and a year at Jacksonville Naval Hospital.

The University of North Carolina was the next stop for a surgery residency. There he was introduced to hand surgery as well as the first organized hand therapy unit. His plastic surgery residency

with Drs. Paul Weeks and Chris Wray at Washington University in St Louis cemented his love of the hand.

Continuing west he spent the next 14 years on the faculty of the University of Oklahoma in Oklahoma City. There he developed a hand center and taught hand surgery to both plastic and orthopedic surgery residents. He left the university in 1992 at the invitation of a local hospital to set up a hand surgery and therapy program in the community.

In December of 1999, he and his wife Pat moved to Highlands, NC. This move allows them to enjoy the natural beauty of the area. He feels fortunate to practice in a magnificent mountain setting. They can also be close to their daughter (expecting their first grandchild) who now works and lives with her husband in Charlotte, NC. Their son is finishing his last year of college at Washington University.

While working for the AAHS, Dr. Buchanan has pushed to help organize the finances and committee structure of the organization. He applauds the recent efforts of Drs. Bill Blair and Bill Swartz and their predecessors in developing and implementing a strategic plan for the organization. He has stated that one of his goals as President is to continue to develop and implement this plan. He also wishes to help the AAHS further utilize the Internet for education, practice enhancement, and communication among members.

Dr. Buchanan says that his association with the AAHS has been greatly rewarding, both professionally and socially. He wishes for the AAHS to continue to provide this type of interaction for its members far into the future and to help enhance the qualities that have made the AAHS great. **H**

AROUND THE TABLE

continued from page 19

there specific sites for that nerve to be involved?

Dr. Russell: As you said, the most common site is where the nerve comes out between the muscles, but you can also have a split head of the brachioradialis and the nerve can come out between those muscle slips. So when you explore this nerve if you decide to operate on it surgically, you have to look and see where along the nerve it might be compressed and it can be compressed proximally or distally. So if I am going to release the dorsal sensory branch, I release it up underneath the brachioradialis and then come down all the way to the wrist to make sure that it is freed all the way along that area.

Dr. Naam: Do you still treat them conservatively first?

Dr. Russell: I treat most of them conservatively and most of them will get better. A lot of times these patients will come in and they will have done some activity over the weekend or two weeks ago and now they have pain. Most of these people can be treated with anti-inflammatory medication, sometimes vitamin B6, sometimes with a splint. Most of them will get better on their own.

The other important point is that you have to differentiate Wartenburg Syndrome from basilar joint arthritis, first dorsal compartment synovitis and more proximal intersection syndrome, which is inflammation in the area where the abductor pollicis longus and the extensor pollicis brevis cross over the radial wrist extensors. All of these things can occur within a small anatomical area on the forearm and you have to be careful in your physical examination to determine which one of these conditions is the real problem.

Dr. Sherman: In our experience, iatrogenic injuries leading to a sec-

ondary radial sensory nerve syndrome are much more common than cases of primary compression. I would like to hear my colleagues' experience, but in our setting, since we see quite a large volume of wrist trauma secondary to external fixators using Steinmann pins, de Quervain's releases and arthroscopies the etiologies of radial sensory nerve syndrome are somewhat different. I think this sets up a separate algorithm for treatment because of the penetrating injury causing perineural scarring or overt nerve laceration.

Dr. Naam: Dr. Dellon, would you like to address that?

Dr. Dellon: I agree with Dr. Sherman that you will certainly see these in a setting of iatrogenic problems. We see quite a few in the setting of failed carpal tunnel syndrome surgery where the patient will tell you the thumb and index finger are still numb. They have had their carpal tunnel done by one technique or another. Just as was pointed out, you have to remember this nerve goes to the back of the thumb and index finger. Also, many of the same repetitive activities or static positioning in terms of computer data entering that may lead to carpal tunnel can cause the radial sensory nerves to be compressed. We look for this, again, with the quantitative sensory testing unit (Sensory Management Services, LLC, Baltimore, MD). You will find normal measurements in the tip of the index finger and abnormal measurements over the dorsal radial aspect of the hand. This gives you a good way of measuring. Then you can proceed with your nonoperative measurements and show improvement or not improvement.

And another setting: I have four or five patients sent by rheumatologists with a diagnosis of fibromyalgia. If it is a real disease and if fibromyalgia includes some type of inflammation in the musculofascial structures, we have people now with both radial sensory and radial tunnel symptoms. The same group

of inflamed muscles seems to be tight across both the radial nerve in two different areas: if you will, a double crush regional concept for the radial nerve. That may be something you should look for if you have patients referred from a rheumatologist and they complain of these diffuse pains and trigger points on the dorsal radial forearm.

Dr. Naam: How about the patients who have, for example, external fixator injury or some compromise of the superficial radial nerve? Dr. Dellon has been teaching us about the overlap pattern of the lateral antebrachial cutaneous nerve and the superficial radial nerve. How can we differentiate between both conditions in order to provide an effective treatment for those patients?

Dr. Dellon: Well, first you should decide if you have a neuroma or don't have a neuroma. And if the sites where the scars are, if they really have sharp pain in those areas, you need to be thinking that it's more than nerve compression because chronic nerve compression in a sense is not painful. It's paresthesias and abnormal sensations, but pain that shoots from wherever those scars are, you have to be thinking that there is nerve injury in addition to compression. And the way to distinguish between the two nerves that you mentioned, Dr. Naam, is along the volar forearm to come down along the course of the lateral antebrachial cutaneous nerve and start palpating and you may get distally radiating signs and then you should block that nerve with Xylocaine alongside the vein in the forearm, well proximal to where the radial sensory nerve comes out and see what contributions to the patient's pain is diminished by blocking that one particular nerve. You can only separate those two nerves by doing differential nerve blocks.

Dr. Naam: Right. Dr. LaStayo, patients with superficial radial nerve entrapment, if they come to



ORTHOPEDIC / HAND SURGEON

BILLINGS, MONTANA: A busy six man orthopedic group is seeking a BE/BC orthopedic surgeon with hand/upper extremity fellowship training to replace hand surgeon.

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you to be treated conservatively, what are the strong important points the therapist should be aware of in treating those patients?

Dr. LaStayo: Well, sometimes it is as easy as looking and seeing if anything is compressing the RSN such as a constricting band from a watch or a piece of jewelry. In the area that I live in, we have a very avid boating community, so there are a lot of kayakers and rafters who come in with radial sensory nerve irritation often in combination with some intersection and/or de Quervain's syndrome. In these situations I will prevent wrist flexion and ulnar deviation with a splint. If I have to, I will go across the elbow with a long-arm splint to prevent terminal traction to the radial sensory nerve, but not unless it is absolutely necessary as patients do not care for splints which cross the elbow.

The hand therapy community has become very enamored with nerve gliding and I wanted to say one thing about that. Dr. Dellon

mentioned that if you don't get complete release of a nerve, it is not going to be able to glide. Many therapists would inappropriately suggest gliding this nerve if the nerve is stuck, I would warn therapists that nerves tend to strain very easily, a lot easier than scar. And nerves don't like to be strained. In fact if they are strained by more than about 15 percent, there is a block in nerve conduction, velocity and blood flow. So you really need to be careful and only employ these nerve gliding techniques when you are sure that the nerve will not be strained. It is actually a fairly easy thing to figure out clinically as patients will hurt if you strain their nerves and feel better if you are prompting mobile nerves to glide.

So I would say overall just check to make sure there is no external compression which has rendered the nerve "stuck". Splint it to rest it, allow it to heal, and then glide it if and when you can.

Dr. Naam: We will talk about the

exposure for the superficial radial nerve. Dr. Russell, would you like to help us as to where you make an incision for the superficial radial nerve?

Dr. Russell: I usually try to find the most explicitly tender point along the nerve from the dorsum of the hand to between the brachioradialis and the extensor carpi radialis longus. I usually make a longitudinal incision, as Dr. Dellon mentioned, and follow the nerve all the way from its exit point between those muscles down to the wrist so I make sure that I have covered all the points of possible compression.

Dr. Naam: You try to make the incision a little bit far away, more like volar in order to avoid adherent scar around the nerve?

Dr. Russell: More volar than radial so that you can see the nerve but not have the incision directly on top of the nerve.

continued on page 27

Few Codes Available for Forearm Nerve Decompression



STILES T. JEWETT, JR., MD, FACS

Probably reflecting the relative infrequency of nerve decompression procedures in the forearm, few codes, either CPT or ICD-9, exist to describe surgery for these conditions. Therefore, it is incumbent upon coders to provide additional text clarification when submitting billings for

64708	Neuroplasty, major peripheral nerve, arm or leg; other than specified
64718	Neuroplasty and /or transposition; ulnar nerve at wrist
64721	Neuroplasty and/or transposition; median nerve at carpal tunnel
64722	Decompression; unspecified nerve(s) (specify)
+64727	Internal neurolysis, requiring use of operating microscope (List separately in addition to code for neuroplasty) (Neuroplasty includes external neurolysis)
(Do not report code 69990 in addition to code 64727)	

these procedures.

Nerve decompression falls under the general CPT heading **Neuroplasty**. According to the CPT definition, "(n)europlasty is the decompression or freeing of intact nerve from scar tissue, including external neurolysis and/or transposition." These codes run in the **647XXs**. Code **64708** Neuroplasty, major peripheral nerve, arm or leg, other than specified... has applicability to the current topic. **64718** is used for the ulnar nerve at the

elbow and **64719** for the ulnar nerve at the wrist. **64722** Decompression; unspecified nerve(s) may be an even better choice. If used, specify the nerve and location after the CPT code, e.g., 64722 Decompression, median nerve, forearm. If an internal neurolysis is performed in conjunction with a decompression, the *add on* code **64727** is used. Like **69990**, the operating microscope *must* be used. Loupes do not count. If **64727** is used, do not report 69990 in addi-

ICD-9-CM	Code Common Name Description	Published Description
354	Mononeuritis of upper limb	Mononeuritis multiplex
354.0	Carpal tunnel syndrome	Carpal tunnel syndrome
354.0	Median nerve entrapment	Carpal tunnel syndrome
354.0	Partial thenar atrophy	Carpal tunnel syndrome
354.1	Anterior compartment syndrome	Mononeuritis, other lesion of median nerve
354.1	Anterior interosseous nerve compression	Mononeuritis, other lesion of median nerve
354.1	Pronator teres syndrome	Mononeuritis, other lesion of median nerve
354.1	Volar interosseous nerve compression	Mononeuritis, other lesion of median nerve
354.2	Cubital tunnel syndrome	Mononeuritis, lesion of ulnar nerve
354.2	Guyon's canal entrapment of ulnar motor br.	Mononeuritis, lesion of ulnar nerve
354.2	Mononeuritis of ulnar nerve	Mononeuritis, lesion of ulnar nerve
354.2	Tardy ulnar nerve palsy	Mononeuritis, lesion of ulnar nerve
354.2	Ulnar nerve palsy, not result of laceration	Mononeuritis, lesion of ulnar nerve
354.2	Ulnar tunnel syndrome	Mononeuritis, lesion of ulnar nerve
354.3	Dorsal interosseous nerve compression	Mononeuritis, lesion of radial nerve
354.3	Posterior compartment syndrome	Mononeuritis, lesion of radial nerve
354.3	Posterior interosseous nerve compression	Mononeuritis, lesion of radial nerve
354.3	Radial nerve palsy	Mononeuritis, lesion of radial nerve
354.3	Radial tunnel syndrome	Mononeuritis, lesion of radial nerve
354.3	Saturday night nerve palsy	Mononeuritis, lesion of radial nerve
354.4	Causalgia	Causalgia
354.5	Double crush syndrome	Mononeuritis multiplex (combination of single mononeuritides)
354.5	Mononeuritis multiplex	Mononeuritis multiplex (combination of single mononeuritides)
354.8	Mononeuritis of upper extremity	Other Mononeuritis of upper limb
354.9	Perineural fibrosis	Mononeuritis of upper limb, unspecified
354.9	Peripheral nerve degeneration	Mononeuritis of upper limb, unspecified

tion to 64727. See Table 1.

ICD-9 codes fall under the **354** heading - **Mononeuritis of upper limb**. Here, the ICD-9 descriptors lack the specificity of the common name description. See Table 2. Briefly summarized official ICD-9 describes any median nerve condition at the wrist as **354.0** Carpal Tunnel Syndrome. *Median nerve compression* in the forearm is described as **354.1** Mononeuritis, other lesion of median nerve. Conditions of the *ulnar nerve* from the wrist to the elbow are classified **354.2** Mononeuritis, lesion of ulnar nerve. *Radial nerve* problems are **354.3** Mononeuritis, lesion of radial nerve. *Causalgia* is **354.4**. *Mononeuritis multiplex* (combinations of single mononeuritides) are **354.5**. Other mononeuritis of the upper limb is **354.8**. Perineural fibrosis and peripheral nerve degeneration are classified as **354.9** Mononeuritis of upper limb, unspecified.

Coding Example:

A 48 year old mill worker undergoes release of the ligament of Struthers after nerve conduction studies show compression at this location. Because of considerable fibrosis of the nerve, an internal neurolysis utilizing the operating microscope is performed.

Solution:

64722 Decompression, median nerve, forearm

64727 Internal neurolysis, requiring use of operating microscope (note: the -51 modifier is *not* used as this is an *add on code*)

ICD-9-CM: 354.1

Good luck and good coding! **H**

2001 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:

American Association for Hand Surgery
20 N. Michigan Avenue, Suite 700
Chicago, Illinois 60602

Applications (**an original plus seven copies**) must be received by the committee chair no later than **Wednesday, November 1, 2000**, 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

Saleh M. Shenaq, MD
Baylor College of Medicine
6560 Fannin Street, Suite 800
Houston, TX 77030



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Proposed Bylaws Changes

Appendix A

Bylaws of the American Association for Hand Surgery

~~Strikethrough~~ denotes a deletion, underline denotes an addition

SECTION 3-DUTIES/TERMS OF OFFICE

The powers and duties of the officers shall be as follows:

A. President

1. Duties - The President shall preside at all meetings of the Association, appoint special committees not provided for in the Bylaws to meet the specific needs of the Association. The President will serve as an ex-officio member of all committees. Together with the Treasurer, the President shall be responsible for the supervision of the Central Office.

The President shall be empowered to disburse funds of the Association in the absence of the Treasurer within limitations of the duties of the Treasurer and shall have all other powers and duties common and incidental to the office of President, except as noted in this section.

2. Term of Office - The President's term of office is one (1) year.
3. The President may assign special duties, responsibilities and/or liaisons to the at-large members of the Board of Directors.

B. President-Elect

1. Duties - The President-Elect shall perform such duties as the President may assign. If the President requests, is absent, or is unable to act, the President-Elect shall perform all duties and exercise all powers of the President.
2. Term of Office - The President-Elect shall automatically succeed to the presidency upon expiration of the President's term. The President-Elect's term of office is one (1) year.

C. Vice-President

1. Duties - The Vice-President shall perform all duties incidental to the office and any other duties prescribed by the Board of Directors.
2. Term of Office - The Vice-President shall automatically succeed to the office of President-Elect upon expiration of the President-Elect's term. The Vice-President's term of office is one year.

D. Secretary

1. Duties - The Secretary shall be responsible for the minutes of the Membership, Board of Directors, and Executive Committee meetings. He/she shall give notice of such meetings in accordance with the provisions of the Bylaws make a report of such meetings to the Association, keep a record of the names of the members, notify applicants of their election to membership, and notify members of their appointments to committees. He/she shall perform such other duties as may be assigned him/her by the Board of Directors.
2. Term of Office - The Secretary's term of office is three (3) years.

E. Treasurer

1. Duties - The Treasurer shall have custody of all Association funds and shall collect all dues and monies due the Association from any source. He/she shall disburse all funds in accordance with budgets or as authorized by the Board of Directors. He/she shall be responsible for the safekeeping of all financial records, securities and other properties of the American Association for Hand Surgery, and shall deposit all such funds in the name of the Association in such bank or depository as shall be incurred in behalf of the Association without previous approval of the President and/or Secretary. The Treasurer shall be bonded in an amount determined by the Board of Directors. He/she shall perform such other duties as may be required by the Board of Directors. During his/her last year of office, the Treasurer will prepare the Treasurer-Elect to assume the office of Treasurer.
2. Term of Office - The Treasurer's term of office is three (3) years.

F. Treasurer-Elect

1. Duties - The Treasurer-Elect shall perform such duties as the Treasurer may assign. He/she shall attend all meetings of the Board of Directors, including meetings of the Executive Committee and shall be a member of the Finance Committee. The Treasurer-Elect may not vote at meetings of the Board of Directors in his/her role as Treasurer-Elect, but may exercise voting privileges concerning Finance Committee business. A current member of the Board of Directors or Chair of the Finance Committee may serve as Treasurer-Elect concurrently.
2. Term of Office - The Treasurer-Elect shall automatically succeed to the Treasurer upon expiration of the Treasurer's term. The Treasurer-Elect's term of office is one (1) year.

G. Historian

1. Duties - The Historian shall keep all records and information pertaining to the history of The American Association for Hand Surgery and shall prepare and preserve an historical account of the activities of the Association. The Historian will serve as Chairman of the Archives Committee. He/she will prepare and submit to the Board of Directors a written history of the Association covering his/her term in office. He/she shall perform such other duties as may be required by the President.
2. Term of Office - The Historian's term of office is one (1) year.

H. Parliamentarian

1. Duties - The Parliamentarian shall advise the President, the Board of Directors, the Executive Committee, and the membership on parliamentary procedure. The Parliamentarian shall chair the Bylaws Committee, rule on questions of parliamentary law, and perform all duties incident to the office of Parliamentarian.
2. Term of Office - The Parliamentarian's term of office is one (1) year.

I. Past President

The past president shall chair the Nominating committee

J. Penultimate Past President

Shall, with staff from the central office and input from the program committee, recommend the time and place of future annual meetings, with a goal of a five year planning horizon.

ARTICLE V—BOARD OF DIRECTORS

SECTION 1-COMPOSITION

The Board of Directors shall consist of the seven (7) officers (and the Treasurer-Elect during his/her year of tenure), the two (2) immediate Past Presidents, the four (4) Directors-at-Large, and ~~the Chair and Vice Chairs of the Committee for Hand Therapy, who will act as~~ two Affiliate Directors.

ARTICLE VIII-COMMITTEES

SECTION 1-STANDING COMMITTEES

There shall be the following Standing Committees of the Association:

- | | |
|---------------|--------------------|
| A. Membership | G. Hand Therapy |
| B. Nominating | H. Ethics |
| C. Program | I. Time & Place |
| D. Bylaws | J. Archives |
| E. Education | K. Marketing |
| F. Finance | L. Research Grants |

A. Membership Committee

1. Composition - The Membership Committee shall consist of two (2) subcommittees, an Active Subcommittee to review all active and non-therapist-affiliate applications and a ~~Therapist~~ Therapist affiliate Subcommittee to review all therapist applications. The Active Subcommittee shall consist of an appointed chair and at least three (3) appointed active members. The ~~Therapist~~ Therapist affiliate Subcommittee shall consist of three (3) appointed ~~Therapist~~ Therapist affiliate members. The person in the third year of their appointment shall serve as Chairperson of the ~~Therapist~~ Therapist affiliate Subcommittee.
2. Term of Membership - The Chairperson of the Active Subcommittee shall serve a three (3) year term. Each member of the Active Subcommittee shall serve a three (3) year term. Each member of the ~~Therapist~~ Therapist affiliate Subcommittee shall serve a three (3) year term. Terms shall be staggered, with the President appointing one (1) new active member and one (1) new ~~Therapist~~ Therapist affiliate member each year and a Chairperson of the Active Subcommittee every three (3) years.
3. Duties - The Membership Committee shall receive from the Secretary all applications, letters of recommendation, and other correspondence and information relating to applicants. The Membership Committee shall make inquiry and investigation concerning each applicant's professional, ethical, and moral character. Its recommendations will be forwarded to the Board of Directors for deliberation and determination of those to be included in or deleted from the membership ballot.

B. Nominating Committee

1. Composition - The Nominating Committee shall consist of the two (2) subcommittees, an Active Subcommittee and an Affiliate Subcommittee. The Active Subcommittee of the Nominating Committee shall consist of the Immediate Past President, who shall serve as Chair, two (2) active members nominated by the current year's Nominating Committee and elected at the Annual Business Meeting, and two (2) active members nominated from the floor and elected at the Annual Business Meeting. The Affiliate Subcommittee of the Nominating Committee shall consist of the President-Elect,

~~the Immediate Past Chair of the Committee for Hand Therapy~~ immediate past Affiliate Director and one (1) affiliate member nominated from the floor and elected at the Annual Business Meeting. Members of the Committee may be nominated for an elected position, but must then immediately resign from the Committee.

2. Term of Membership - The term of membership in this committee is one (1) year.
3. Duties - The Active Subcommittee of the Nominating Committee shall prepare and submit to the Secretary each year a slate of one nominee for each position (officer, Finance Committee Chair, nominating committee member, and director-at-large) to be filled by election that year. The Affiliate Subcommittee of the Nominating Committee shall prepare and submit to the Secretary each year a slate of one nominee for the position of ~~Vice Chair of the Committee for Hand Therapy~~ Affiliate Director.

C. Program Committee

1. Composition - The Program Committee shall consist of the Chair; the Immediate Past Program Chair, who shall serve in an ex-officio capacity; the First Assistant Chair; the Second Assistant Chair; at least two (2) appointed active members; an exhibitor liaison, and the Sr. Co-Chair of the Committee for Hand Therapy, senior Affiliate Director.
2. Term of Membership - The Program Committee Chair succeeds to the position from the position of First Assistant Chair, who succeeds to that position from the position of the Second Assistant Chair. The Second Assistant Chair shall be appointed by the Vice-President. The Second Assistant Chair shall rotate through the positions of First Assistant Chair, Chair, and Immediate Past Chair. The term for each of these positions is one (1) year. Each of the other ~~two (2)~~ active members shall serve a three (3) year term. These terms shall be staggered, with the President appointing one (1) new active member each year a slot is open. ~~The term for the Chair of the Committee for Hand Therapy will be one (1) year.~~
3. Duties - The Program Committee shall arrange the Scientific Program for the Annual Meeting. The Chairman shall also be in charge of coordinating with the Poster Committee, the Resident Essay Committee, ~~the Commercial Exhibits Committee, the Exhibitor Liaison, the Affiliate Pre-Conference Workshop~~ Therapy Committee, the Spouse Program/Local Arrangements Committee, the Headquarters Office, and any other committees or activities which are directly related to the Annual Meeting.

D. Bylaws Committee

1. Composition - The Bylaws Committee shall consist of the Parliamentarian who shall serve as chair, the Immediate Past Parliamentarian, and at least three (3) appointed active members.
2. Term of Membership - Each member shall serve a three (3) year term, except for the Parliamentarian, who shall serve a two (2) year term, the first year as Parliamentarian and Chair, and the second year as Immediate Past Parliamentarian. Terms shall be staggered, with the President appointing the Parliamentarian and one (1) new member each year.
3. Duties - The Bylaws Committee shall study the Association's Bylaws and policies and propose changes thereto; review proposed changes submitted by the membership; evaluate policies and actions of the Association to assure that they are not in conflict with the Bylaws; and present recommendations to the Board of Directors.

continued on page 26

AAHS Proposed Bylaws Changes

continued from page 25

E. Education Committee

1. Composition - The Education Committee shall consist of an appointed chair, at least three (3) appointed active members, and the Chair and Vice Chair of the Committee for Hand Therapy two Affiliate Directors.
2. Term of Membership - The Chairperson shall serve a three (3) year term. Each active member shall serve a three (3) year term. The active members' terms shall be staggered, with the President appointing one (1) active member each year and a Chairperson every three (3) years. ~~Each Therapist member shall serve a two (2) year term, the first year as Vice Chair and the Second Chair.~~
3. Duties - The Education Committee shall study and institute programs to further the education of the members of the Association and others interested in the study of hand surgery and care, including education of primary care providers and others who interact with hand surgeons and hand therapists.

F. Finance Committee

1. Composition - The Finance Committee shall consist of the elected chair, the Treasurer, the Treasurer-Elect, the President, the President-Elect, and the Immediate Past President.
2. Term of Membership - The Chairperson shall serve a three (3) year term. Each member shall serve a three (3) year term, with the President-Elect rotating through the Committee in the positions of President and Immediate Past President.
3. Duties - The Finance Committee shall serve as the Association's internal auditor, formulate financial policies for recommendation to the Board of Directors, and develop the annual budget for Board approval.

G. Committee for Hand Therapy

1. Composition - The Committee for Hand Therapy shall consist of an appointed chair and at least three (3) elected appointed therapist members. The chair and members shall be appointed by the President with the advice of the affiliate directors.
2. Term of Membership - Each member shall serve a three (3) year term. Terms shall be staggered so that at least one term is open for appointment each year. Members shall serve their first year in the position of Vice Chair, their second year in the position of Chair, and their third year in the position of Immediate Past Chair and The therapy committee chair shall serve as Liaison to Therapist Organizations. The Chair of the Committee for Hand Therapy succeeds to the position from the position of Vice-Chair who is elected annually.
3. Duties - The purpose of the Committee shall be to develop educational opportunities for the therapist and other members, disseminate information to the therapist members, represent the therapist membership's viewpoint to the Board of Directors, encourage continued growth of the therapist membership, foster the exchange of information between professional organizations, and evaluate questions of medical ethics and professional activities related to therapist members and brought to the Board of Directors at the request of a member, a committee chair, or a member of the Board.

~~H. Ethics Committee The Chair of Vice Chair of the committee for Hand Therapy will both be voting members of the Board of Directors as Affiliate Directors.~~

1. Composition - The Ethics Committee shall consist of the appointed chair and at least three (3) appointed active members.
2. Term of Membership - The Chairperson shall serve a three (3) year term. Each member shall serve a three (3) year term. Members' terms will be staggered, with the President appointing one (1) new member each year and a Chairperson every three (3) years..
3. Duties - The Ethics Committee shall review questions of medical ethics and professional activities brought to the Board of Directors at the request of a member, a committee chair, or a member of the Board. The Ethics committee will also serve as a resource to the Association and shall develop policies for the Association regarding ethical issues of importance and relevance to hand surgery.

I. Time and Place Committee

1. ~~Composition The Time and Place Committee shall consist of the elected chair and three (3) pointed active members.~~
2. ~~Term of Membership The Chairperson shall serve a three (3) year term. Each member shall serve a three (3) year term. Members' terms will be staggered, with the President appointing one (1) new member each year.~~
3. ~~Duties The Time and Place shall evaluate potential sites for the Annual Meeting and make recommendations to the Board of Directors regarding those sites.~~

J. Archives Committee

1. ~~Composition The Archives Committee shall consist of the Historian who will serve as the chair and any other additional members appointed by the President upon recommendation of the Historian.~~
2. ~~Term of Membership The Chairperson shall serve a one year term. Each appointed member shall serve a one (1) year term.~~
3. ~~Duties The Archive Committee Historian shall keep all records and information pertaining to the history of the American Association for Hand Surgery and shall prepare and preserve an historical account of the activities of the Association. Such account shall have currency to the conclusion of the last Annual Business Meeting of the elected term of the Historian. (this section should be moved to Section 3G)~~

K. Marketing and External Communications Committee

1. Composition - The Marketing and External Communications Committee shall consist of the appointed chair, at least three appointed active members and the chair of the Membership Committee who will function as an ex-officio member.
2. Term of Membership - The Chairperson of the Marketing and External Communications Committee shall serve a one (1) year term. Each member of the Marketing and External Communications Committee shall serve a three (3) year term with the terms staggered such that one new member and a Chairperson is appointed by the President each year.
3. Duties - The Marketing and External Communications Committee shall identify methods to increase membership of the American Association for Hand Surgery through coordination with the Membership Committee. The committee shall develop methods for improving public and professional awareness of the services that hand surgeons and hand therapists provide, and oversee external communications with members and the public, and industry, including the Newsletter and website. The Committee is in effect responsi-

ble for the means of communication whereby the Association's brand image, vision, and mission are conveyed to the profession, the public, and other constituencies. The Chair of the Marketing and External Communications Committee shall serve as an ex-officio member of the membership committee.

- L. Research Grants Committee
1. Composition - The Research Grants Committee shall consist of the appointed chair and six (6) appointed members.
 2. Term of Membership - The chairperson shall serve a two (2) year term. Each member shall serve a three (3) year term. Member terms will be staggered, with the President appointing two (2) new members each year.
 3. Duties - The Research Grants Committee shall evaluate the applications for research grants each year. It should select the one(s) they believe deserving of a grant and the amount of that grant. Its recommendations are to be presented to the Board of Directors for its approval.

SECTION 2 – SPECIAL COMMITTEES

Special Committees and Ad Hoc Committees: Special Committees and Ad Hoc Committees may be appointed and charged by the President with the approval of the Board of Directors, which will determine their powers, responsibilities, and terms of office.

SECTION 3 – COMMITTEE MEETINGS

All committees must meet at least once per year. Meetings may be in person, or by electronic means. Face to face meetings at times other than the Annual Meeting must be approved and budgeted for in advance by the Board of Directors.

H

AROUND THE TABLE

continued from page 21

Dr. Naam: How about internal neurolysis, Dr. Dellon, do you sometimes do that or do you think there is an indication for that?

Dr. Dellon: The radial sensory nerve at that point only has maybe two little fascicles. Unless there has been significant trauma where the nerve is truly stuck to everything or there is a pin next to it and it is swollen and you are just not sure what is going on inside the nerve, I would say I rarely do any type of opening of the epineurium on the radial sensory nerve. This usually doesn't require it.

Dr. Naam: How about postoperative? Do you splint those patients and for how long, Dr. Dellon?

Dr. Dellon: I do almost no splinting of any nerves. I let them start to move immediately after surgery. In fact, I tell the patients in their orders that they should pronate and supinate their hand or open and close their fingers once every hour while they are awake because it is just critical to get these things to start moving right away.

Dr. Naam: Yes. Dr. LaStayo, any caveats regarding postoperative rehabilitation of those patients?

Dr. LaStayo: I agree with just what Dr. Dellon has said and I would just warn therapists to look for clinical signs that your dosage of mobilization is non-therapeutic and the nerve is getting stuck. Or, you can move the nerve too much and overdose it, strain a nerve to the point where its function deteriorates. There will be sensory changes, some swelling, pain and the patient won't be happy.

Dr. Naam: Thank you. We have about two minutes remaining. Anyone have anything else to add, Dr. Russell or Dr. Dellon, anything else?

Dr. Russell: The only thing I would like to say is that the concept that nerves can be caught in scar is a really important concept. We all know how important it is to move flexor tendons after surgery to get them to glide and although nerves don't move as much as flexor tendons, they also have to glide during normal movements of the extremities. So if in your postoperative regime you splint the patient in one position too long the nerve may become bound in scar. We have seen several recurrent carpal tunnel syndrome patients who developed secondary symptoms probably because they were splinted too long and their nerves were caught in scar. I agree with Dr. Dellon that it is very important to move nerves after they are surgically released.

Dr. Naam: Dr. Dellon?

Dr. Dellon: I would just like to thank you for organizing the discussion and to leave by commenting that just as we measure range of motion for joints and flexor tendons, if we have a way to measure what peripheral nerves do, we should make those measurements and let those decide how our therapy is doing and when is the appropriate time to intervene surgically. Measurements, I think, are critical to understanding peripheral nerve function and dysfunction and if we have the ability to do that, we should make those measurements.

Dr. Naam: Thank you so much all of you, I really appreciate it. **H**

American Association for Hand Surgery Calendar

2001

January 10-13, 2001
31st Annual Meeting
Loews Coronado Bay Resort
San Diego, California

July 13-15, 2001
Mid-Year Board of Directors
Meeting
The Pines Lodge
Beaver Creek, Colorado

2002

January 9-12, 2002
32nd Annual Meeting
Westin Caesar Park
Cancun, Mexico

2003

January, 2003
33rd Annual Meeting
Hyatt Regency, Kauai
Kauai, Hawaii

2004

January, 2004
34th Annual Meeting
Palm Springs, California

2005

January, 2005
35th Annual Meeting
Sanibel Harbor Resort & Spa
Sanibel Island, Florida

2006

January, 2006
36th Annual Meeting
Tucson, Arizona

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Inside This Issue:

- 1 *From the Editor's Desk*
- 4 *Annual Meeting 2001 Program at a Glance*
- 6 *Association News: The Endowment*
- 7 *Hand Therapy & Affiliate Member Corner*
- 9 *The Digital Hand Surgeon*
- 10 *Around the Hand Table: Compression Neuropathies of the Forearm*
- 19 *Profile: President-Elect Buchanan*
- 22 *Coding Corner*
- 24 *Proposed Bylaws Changes*