MESSAGE FROM THE PRESIDENT

In 1912 Dr. William Mayo said, “The best interest of the patient is the only interest to be considered, and in order that the sick may have the benefit of advancing knowledge, union of forces is necessary.” These words resonate with me as I reflect on the teamwork and dedication exhibited by our members and leadership throughout the past 6 months of my Presidency.

I have the honor of working with Dr. Marco Rizzo, Terri Wolfe OTR, CHT, and their program committees to organize the 2017 Annual Meeting for the AAHS to be held at the beautiful Hilton Waikoloa Village on Hawaii’s Big Island. Working in cooperation, Marco and Terri have done an excellent job to plan a meeting under the theme of Patient Safety, specifically incorporating instructional course lectures and symposia on patient safety issues. We are also pleased to welcome our friends and colleagues from the 2017 Guest Society, the Romanian Society for Surgery of the Hand (RSSH). Highlights of the meeting include guest speakers Dr. Stuart Weinstein, Dr. Peter Stern and Alex Parker Ph.D. And if the science isn’t enough to get you to Waikoloa, maybe the thought of Hawaiian breezes in January or the Mai Tais will get you there. In all seriousness, the Hilton Waikoloa Village was voted a Top 10 Hawaii family resort by Travel & Leisure Magazine, offers no shortage of family activities,

(continued on page 3)
With fall upon us, we look ahead to the Annual Meeting. This year, the meeting will be held in Waikoloa, Hawaii January 10 – January 14, 2017. I personally enjoy the AAHS Annual Meeting as it has the perfect blend of academic and social activities. I look forward to the opportunity to catch up with former fellows and classmates. I also look forward to seeing the “latest and greatest” through both instructional course lectures and scientific presentations. I hope to see you in Hawaii.

The Hand Surgery Endowment (HSE) has the mission of promoting global health. The HSE will be hosting a fundraising golf tournament at the Annual Meeting. The tournament will be Friday January 13, 2017 at the Francis Brown Golf Course. The course offers stunning views and a challenging round. Proceeds will be donated to the Hand Surgery Endowment. The HSE will again be presenting the Lean and Green Award. This award honors an AAHS member who has decreased the amount of waste generated by any activity related to hand surgery or therapy as well as decreased the total costs related to hand surgery or therapy, within their home institution or elsewhere. The award is made possible by a gift from Dr. Don LaLonde.

The Editorial team of the AAHS Newsletter is working to update our format. We are looking at options to increase the accessibility of the articles, particularly for those members who would like to access the Newsletter on mobile devices. We look forward to these changes as we adapt to the needs of our members.
and will be a beautiful setting for the meeting our team has planned.

Since January 2016, the AAHS committees have been working hard to establish new and build on existing activities to provide members with opportunities to get involved. The research, education and membership teams, in particular, have been very active.

The education committee lead by Dr. Josh Abzug organizes the AAHS international 1-day courses at our affiliate society meetings, coordinates the e-lecture series in Kumasi, Ghana which provides weekly lectures by AAHS members, and continues to develop innovative ways to involve team members across our membership. Please reach out to Josh if you are interested in these international opportunities.

The research committee lead by Dr. Jonathan Isaacs is currently offering a $10,000 research grant, works with the PSF to offer a $10,000 match grant, and also collaborates with AAOS on research education opportunities available to our members. The membership committee lead by Dr. Thomas Gillon and Kim McVeigh continues to recruit new members to our organization and will soon turn their focus to engaging members of our hand care teams that may not have considered AAHS membership yet, but would complement our existing membership and provide a true reflection of the hand care team.

Finally, the teamwork demonstrated by our Board of Directors this year has been phenomenal. Aside from the standard work done by meetings, email and phone, at our midyear meeting held in early August, the leadership participated in a strategic planning session to assess and strategize for the next three to five years. For those that have participated in such sessions, you know that as the day goes on focus drops or topics go stale and the session may not end as strong as it began. This was not the case with the AAHS Board of Directors. Your leadership team kept its focus and remained engaged throughout the session and was able to develop a solid plan for the future of the AAHS. While specific details of the strategic plan will be shared with the membership...

2. Deliver dynamic programs, resources and services that will increase member value and engagement
3. Enhance international outreach
4. Promote and communicate AAHS’ unique values

A big “thank you” to the Hand Association Board of Directors and committee chairs that have worked with me this year to build on the successes of the AAHS as we continue to strengthen the Association for the future. I look forward to sharing a Mai Tai with all our meeting attendees in Waikoloa, January 2017!

Peter M. Murray, MD
President, American Association for Hand Surgery
HAND THERAPISTS CORNER: *Relative Motion Orthosis*

Carol Recor, OTR/L, CHT
University of Washington Medical Center

**Introduction**

As a Hand Therapist who has been in practice for many years, few treatment innovations have altered my practice as much as the relative motion orthosis. Initially described by Dr. Merritt and Julianne Howell for Zone V extensor tendon injuries, the use of the relative motion orthosis has now been taken to new levels by many therapists.

The original concept for extensor tendons allowed the affected digit(s) to be positioned in relative hyperextension to the surrounding digits, allowing the extensor tendon to be protected and yet still allow active motion. A dynamic extension orthosis, which was both bulky and frequently difficult to don correctly, was no longer required. The beauty of the relative motion design is the combination of protecting the extensor tendons, while also allowing adequate glide to prevent dorsal adhesions and joint stiffness.

From the use of the orthosis for sagittal band ruptures, to use in chronic Boutonniere deformities and PIP joint flexion contractures, the orthosis serves as a method to provide either blocking or reverse blocking exercises with every active finger movement. This also allows active motion with a normal motor pattern, while correcting the limitations in motion of the affected joint.

I present a case study for the use of a relative motion orthosis for a patient with Zone V flexor tendon and median nerve laceration and repair. With the advent of stronger tendon repairs, early active motion protocols for flexor tendon injuries have come to the forefront of treatment. While the majority of the literature addresses Zone II flexor tendons, more proximal tendon repairs present their own set of potential problems.

**Case Study**

KR is a 49 year old right hand dominant female, who sustained multiple flexor tendon and partial median nerve laceration to left forearm Zone V in a longitudinal fashion on the volar radial forearm. She was treated with early active motion flexor tendon protocol, using 50% of active motion as our limit, as described by Dr. Jin Bo Tang. In spite of early active motion, including individual flexion of each digit, she did develop significant inter-tendinous adhesions. While she demonstrated improvement in composite digit flexion with all fingers congruently moving, she failed to make improvement with isolated digit flexion. Two relative motion orthoses were fabricated at 8 weeks post-op, when resisted digit flexion was no longer a precaution. Because the index and middle fingers were the most resistant to improvement, one relative motion was fabricated with the index finger in flexion, relative to the middle finger. The second relative motion orthosis was the exact opposite, with the middle finger in flexion, relative to the index finger. In this manner, the proximal flexor tendons were placed on stretch relative to one another, allowing shear forces to be applied to each tendon individually. Individual flexion of each digit improved by 40 degrees within 3 weeks. It should be noted that special care was taken with fabrication of the orthosis, due to sensory impairments with a partial median nerve injury/repair.

**Conclusion**

A relative motion orthosis has become an effective tool in regaining active motion, even in those patients with joint stiffness or tendon adhesions in a variety of injuries.
This edition of the Hand Surgery Quarterly features a round table discussion on tendon and bony injuries around the proximal interphalangeal (PIP) joint. The types of injuries are varied, as are the treatment approaches. We will focus on surgical codes for management of these clinically significant problems.

Central slip injuries around the PIP joint typically fall into one of two categories: (1) acute, or (2) chronic. Acute open injuries will typically require irrigation and debridement of the affected joint with surgical repair of the extensor mechanism. Closed injuries may be treated conservatively at first. With operative fixation, CPT 26418 (extensor tendon repair without graft) or CPT 26420 (extensor tendon repair with free graft) are appropriate descriptors of the work involved. In unusual cases where there is PIP joint instability or subluxation, CPT 26776 or CPT 26785 may be reasonable to reflect the work involved in reducing the PIP joint and stabilizing the joint with a Kirschner wire.

With chronic central slip injuries and loss of central slip substance, an extensor tenotomy may be performed in boutonniere deformities that are passively correctable. This would help to relieve the hyperextension at the distal interphalangeal joint while permitting increased finger flexion. CPT 26060 can be employed in these situations and describes a subcutaneous extensor tenotomy.

For more moderate deformities, lateral band release or reconstruction is a useful tool. The lateral bands can be step-cut over the middle phalanx and the lengthened proximal and distal portions then sutured to one another. This may help to re-establish the balance of the lengthened central slip while avoiding complications associated with mallet deformity. Another approach may include excision of the triangular ligament and transverse retinacular ligaments, thereby allowing the lateral bands to be repositioned dorsally. The bands are then sutured distal to the PIP joint. Regardless of the approach, CPT 26476 (tendon lengthening, extensor) would be appropriate coding for these surgeries.

With more severe or fixed boutonniere deformities, surgical treatment would focus mostly on regaining finger extension. A volar plate release with possible collateral ligament release should be reported using CPT 26525 (capsulotomy for contracture). Finally, in cases with associated degenerative changes at the PIP joint, arthrodesis or arthroplasty surgeries would be reasonable. CPT codes 26860-26863 should be used for PIP joint arthrodesis, while CPT codes 26535-26536 describe PIP joint arthroplasty, depending upon the approaches used.

For peri-articular fractures about the PIP joint, conservative surgical treatment may include percutaneous fixation using Kirschner wires or dorsal block pinning with associated PIP joint instability. For pinning of either the proximal phalanx or middle phalanx, CPT 26727 is used. If there is associated PIP joint instability, then CPT 26776 is used to describe pinning across the PIP joint. Any kind of open approach to the fracture would require use of CPT 26746 (open treatment of articular fracture), while an open approach used specifically to treat a PIP joint dislocation would need CPT 26785 (open treatment of joint dislocation). These codes are often combined with one another, depending upon the severity of the fracture and any associated joint instability.

For significant PIP fracture-dislocations, open reduction with internal fixation may not be possible. Hemihamate arthroplasty has become a popular alternative to volar plate arthroplasty in the treatment of these injuries. The work of a hemihamate arthroplasty can best be described with the following codes: (1) CPT 26567 to describe the corrective osteotomy and bony contouring at the base of the middle phalanx, (2) CPT 20900 for harvest of the bone graft from the hamate, and
Finally, PIP arthrodesis or arthroplasty surgeries are appropriate for injuries that are chronic or non-salvageable. These codes have been discussed for central slip injuries.

### Central Slip Injuries

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>26060</td>
<td>Tenotomy, subcutaneous, single, each digit</td>
</tr>
<tr>
<td>26418</td>
<td>Extensor tendon repair, dorsum of finger, single, primary or secondary, without free graft, each tendon</td>
</tr>
<tr>
<td>26420</td>
<td>Extensor tendon repair, dorsum of finger, single, primary or secondary, with free graft, (includes obtaining graft) each tendon</td>
</tr>
<tr>
<td>26426</td>
<td>Extensor tendon repair, central slip repair, secondary (boutonniere deformity); using local tissues</td>
</tr>
<tr>
<td>26428</td>
<td>Extensor tendon repair, central slip repair, secondary (boutonniere deformity); with free graft</td>
</tr>
<tr>
<td>26440</td>
<td>Tenolysis, simple, flexor tendon; palm or finger, single, each tendon</td>
</tr>
<tr>
<td>26476</td>
<td>Tendon lengthening, extensor, hand or finger, single, each</td>
</tr>
<tr>
<td>26525</td>
<td>Capsulectomy or capsulotomy for contracture; interphalangeal joint, single, each</td>
</tr>
<tr>
<td>26535</td>
<td>Arthroplasty, interphalangeal joint; single, each</td>
</tr>
<tr>
<td>26536</td>
<td>Arthroplasty, interphalangeal joint; with prosthetic implant, single, each</td>
</tr>
<tr>
<td>26776</td>
<td>Percutaneous skeletal fixation of interphalangeal joint dislocation, single, with manipulation</td>
</tr>
<tr>
<td>26785</td>
<td>Open treatment of interphalangeal joint dislocation, with or without internal or external fixation, single</td>
</tr>
<tr>
<td>26860</td>
<td>Arthrodesis, interphalangeal joint, with or without internal fixation</td>
</tr>
<tr>
<td>26861</td>
<td>Arthrodesis, interphalangeal joint, with or without internal fixation; each additional interphalangeal joint</td>
</tr>
<tr>
<td>26862</td>
<td>Arthrodesis, interphalangeal joint, with or without internal fixation; with autograft (includes obtaining graft)</td>
</tr>
<tr>
<td>26863</td>
<td>Arthrodesis, interphalangeal joint, with or without internal fixation; with autograft (includes obtaining graft), each additional joint</td>
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### Proximal Interphalangeal Joint Fracture-Dislocations

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>20900</td>
<td>Bone graft, any donor area; minor or small eg, dowel or button)</td>
</tr>
<tr>
<td>26567</td>
<td>Osteotomy for correction of deformity; phalanx of finger</td>
</tr>
<tr>
<td>26727</td>
<td>Percutaneous skeletal fixation of unstable phalangeal shaft fracture, proximal or middle phalanx, finger or thumb, with manipulation, each</td>
</tr>
<tr>
<td>26740</td>
<td>Closed treatment of articular fracture, involving metacarpophalangeal or proximal interphalangeal joint; without manipulation, each</td>
</tr>
<tr>
<td>26742</td>
<td>Closed treatment of articular fracture, involving metacarpophalangeal or proximal interphalangeal joint; with manipulation, each</td>
</tr>
<tr>
<td>26746</td>
<td>Open treatment of articular fracture, involving metacarpophalangeal or proximal interphalangeal joint, with or without internal or external fixation, each</td>
</tr>
<tr>
<td>26776</td>
<td>Percutaneous skeletal fixation of interphalangeal joint dislocation, single, with manipulation</td>
</tr>
<tr>
<td>26785</td>
<td>Open treatment of interphalangeal joint dislocation, with or without internal or external fixation, single</td>
</tr>
</tbody>
</table>
In April, I had the pleasure of participating in a collaborative, one week, mission trip with the Touching Hands Project and the World Pediatric Project at Milton Cato Hospital, in St. Vincent. The World Pediatric Project, and their Pediatric Orthopaedic Surgery team lead by Dr. Eric Gordon from St. Louis, have been working alongside local pediatricians and orthopaedic surgeons to assist in the care of children with complex orthopaedic issues over the last 10 years. This was the first year a hand surgery team accompanied Dr. Gordon’s team to provide hand specific care. Our exceptional hand team was lead by Dr. Kevin Little and included Dr. Rupi Mavi (anaesthesia), Todd Burrch (surgical scrub tech) and Charles (Chuck) Walters (OT).

Kate Corbett was team coordinator from the World Pediatric Project. I have never participated in such a well-organized mission trip, and I cannot praise Kate and her teams work enough! Our team hailed from St. Louis, Omaha, Colorado Springs, Dallas, and Cincinnati, and therefore we all met for the first time in an open-air bar at the airport in Barbados. Many hours, and a few delays, later, we hopped a small plane for St. Vincent and made our way to our rooms at the beautiful resort a short boat ride away from the main island.

We started our trip with a busy day in clinic on Sunday. As long as the day felt for us, I was moved by the resolve of the patients and their families who sat, without complaint, for hours in an open air waiting room in the hot, humid weather. Over 40 patients were seen in our hand clinic, with patients traveling from islands across the Caribbean seeking care, advice, comfort, and treatment for a wide array for pediatric upper extremity concerns. Children with cerebral palsy and joint contractures, syndactyly, symbrachydactyly, polydactyly, Poland’s syndrome, Arthrogryposis, camptodactyly, brachial plexus palsy, thumb hypoplasia, radial longitudinal deficiency, fracture malunions, tendon lacerations, and nerve lacerations presented in rapid succession. I think I saw the complete breadth of a pediatric hand fellowship in 6 hours! During clinic we identified 11 children who we felt were good immediate surgical candidates.

Monday began the first of four operative days. The local surgeons were generous enough to provide our teams with two operating rooms, one for hand surgery and one for pediatric orthopaedic surgery. We supplied the majority of our instrumentation, and then used a rolling cart as a make shift hand table. We did not have fluoroscopy available in our operative suite.

There were several memorable cases. Our second case was an 18 year old young man who had unfortunately been involved in an altercation with a machete 5 months prior to our visit. His ulnar nerve and volar flexors had been lacerated and a repair had been attempted. He had a complete ulnar nerve palsy with extrinsic flexor contractures. We identified a large neuroma and

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revised the ulnar nerve repair along with releasing the severe scarring around his flexor tendon, allowing us to open his fingers out of his hand for the first time in months. We were also able to perform two posterior elbow releases and triceps tendon lengthenings in two young, precocious children with arthrogryposis, achieving passive flexion to 90 degrees in both children.

On Wednesday, we elected to perform an awake tenolysis on a 12 year-old girl with a flexor tendon laceration to her ring finger several years prior. She was incredibly brave as she allowed me to perform an awake digital block. We provided her with some mild monitored sedation. During the procedure, we asked her about her injury. She stated that her finger was cut on glass during a New Years’ Eve party at her parents home. Her mother had not taken her to the hospital that evening because they would have to walk through the “gun area”, just adjacent to her home. I think this statement struck the entire room, as we appreciated the circumstances that brought her to need our assistance, and a world so different from our own.

I am so thankful I was able to participate in this trip and it was most definitely the highlight of my fellowship. I cannot thank all of the providers, organizers, and most importantly the wonderful patients enough. I plan to continue to work with the Touching Hands Project and the World Pediatric Project during my career as a hand surgeon.
AROUND THE HAND TABLE

Nerve Transfers –
New Techniques and New Applications

Robert Spinner, Moderator/Chair
Thomas Tung, Justin Brown, Christine Novak

INTRODUCTION
R. Spinner:
In the past, nerve transfers were utilized almost exclusively for post-traumatic, preganglionic brachial plexus lesions. Recent advances (i.e., newer techniques) have led to improved outcomes. Now nerve transfers are being used increasingly for the majority of patients with all types of brachial plexus injuries. Novel nerve transfers are being applied in the treatment of patients with other peripheral nerve injuries or spinal cord injury as well as in non-traumatic situations. Nerve transfers have become an important part of our reconstructive armamentarium.

QUESTION 1:
What is your current surgical strategy for a postganglionic C5, 6 lesion in a patient 6 months after injury? Do you explore the brachial plexus? How late would you perform nerve transfers in an adult after a complete C5,6 lesion without any recovery of function?

T. Tung:
I would recommend transfer of the distal accessory to the suprascapular nerve from a posterior approach, and double fascicular transfer (DFT) using a flexor carpi ulnaris (FCU) fascicle and flexor carpi radialis (FCR) fascicle of ulnar and median nerves to the biceps and brachialis branches of the musculocutaneous nerve respectively. Depending on the preservation of the pectoralis major muscle, I would also consider transfer of medial pectoral nerve branches if available to the axillary nerve also from an anterior approach. I do consider exploring the plexus more for pan plexus injuries but will still depend more on the exact level and extent of the injury and the likelihood of finding relatively good proximal stump fascicles. I would still consider these transfers up to 8-9 months after injury, and a little longer for the DFT transfer since these are done so close to the target motor endplates. I would not consider nerve transfers a year or more after injury.

J. Brown:
Earlier in my practice I was relying completely on nerve transfers in these cases. More recently I have preferred to reduce ambiguity by exploring the plexus. At that time I will perform the spinal accessory to suprascapular transfer as the spinal accessory has more axons at this level than from the posterior approach. The Oberlin is such a good transfer that I will use it regardless of findings, but if there is an excellent chance of proximal recovery, I will often only transfer to biceps branch. If it is unlikely to recover from above, I will do both (the double fascicular). That being said, it is not wrong in a purely C5-6 injury to simply use transfers and avoid the plexus. These transfers are some of the most tried and true in our armamentarium.

C. Novak:
Sensorimotor retraining utilizing available cortical plasticity and establishing new motor patterns are essential to maximize outcome.

Begin preoperatively with patient education, this provides the opportunity for the patient to understand the planned nerve transfer(s) and to teach the patient the exercises to recruit the reinnervated muscle(s).

Initially, the patient will need to contract the muscle from the donor nerve to initiate contrac-

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tion of the recipient muscle. Even in cases when the entire donor nerve is used, donor nerve/muscle action strengthening should be used. These exercises can begin in the early postoperative period with strengthening of the donor muscle action as reinnervation begins.

Begin with gravity assisted or gravity eliminated positions and isometric contractions. Utilize muscle biomechanics and physiology to assist with retraining. As strength increases, begin strategies to dissociate donor muscle action from recipient muscle action. Correct muscle imbalances and also strengthen muscles that are weak from disuse and did not sustain a nerve injury (such as the cervicoscapular region).

QUESTION 2:
What is your favorite set of distal nerve transfers in the upper limb and why?

J. Brown:
It is hard to pick another transfer than the Oberlin or “double fascicular.” This has been a critical addition to our surgical options and has been found effective even up to 2 years following a complete injury. Another transfer that has utility in a number of situations is Bertelli’s supinator to PIN. This is my “go to” in lower plexus and spinal cord injury and has been relatively reliable to provide good finger extension.

T. Tung:
My favorite transfer is the double fascicular transfer from the median and ulnar nerves to the musculocutaneous nerve for elbow flexion. It is a direct transfer with the donor nerve fascicles very close to the target motor endplates, and therefore can be done longer after the injury than many other transfers. The dissection is more limited and therefore if done alone, can be done as outpatient surgery. The rehabilitation is straightforward and the outcomes are better than any other transfer for elbow flexion or otherwise.

Chris? Do you find it easier or harder to rehab patients treated with nerve transfers or tendon transfers? Any thoughts on how best to rehab?

C. Novak:
Similar strategies are used for both tendon and nerve transfers. In the early postoperative stage following immobilization, the patients can see and feel muscle contraction following a tendon transfer and this can help with the retraining. For nerve transfers, in the early postoperative period it is important to contract or “think about contracting” the donor muscle with contraction of the reinnervated recipient muscle. I think that the biggest differences in both nerve and tendon transfers are the specific transfers that are performed and individual patient factors. These specific individual factors can impact how well the patient is able to recruit the recipient muscle and incorporate it into functional activities.

QUESTION 3:
What is your favorite nerve transfer in the lower limb and why?

T. Tung:
The lower limb is less favorable for nerve transfers for many reasons. The availability of potential donor motor nerves is much less and therefore antagonistic donor motor nerves have often been reported. The distances required for regeneration to reach target motor endplates is greater. The recovered strength required of the target muscle for a good functional outcome is also greater, especially for functions involved in weight bearing. And the rehabilitation is more complicated because of the repetitive, fast, and cyclical nature of walking and running.

Having said that, my favorite transfer, with much fewer choices to select from, is the obturator to femoral nerve transfer for femoral palsy. The donor and recipient motor branches have plenty of length for direct transfer, the donor deficit is minimal, and the entire anterior obturator branch can be used to reinnervate 2 quadriceps muscles. Depending on the mechanism of injury, partial femoral nerve palsies may sometimes spare the sartorius motor branches, which then are available as an additional donor motor nerve to reinnervate possibly a third quadriceps muscle. The functional outcome is average but still very helpful because a femoral nerve palsy is so debilitating, but can be very (continued on next page)
**QUESTION 4:** Describe your current experience in patients with spinal cord injury and nerve transfers.

**T. Tung:**
I have not done any of these cases myself but Ida Fox in our group is doing these with good results that are very beneficial for the patients considering their disability.

**J. Brown:**
Traditional tendon transfers have been well worked out in these patients and it is important that we replace those transfers that we know that we can improve upon and not simply re-invent the wheel. The role of nerve transfers in C5 injuries (international classification 0-2) have provided a paradigm shift in the management of these patients. Historically we had very little we could offer these folks (essentially nothing in IC 0 and primarily wrist-extension driven passive tenodeses in IC 1-2). With nerve transfers we can now typically achieve active elbow extension, finger extension and finger flexion in these folks. This is the group where nerve transfers have really demonstrated their merit. The jury is still out in the lower groups – particularly for grasp, but for triceps and finger extension it looks like the nerve transfers will win.

**C. Novak:**
My experience is with the SCI nerve transfers performed by Drs. Fox and Mackinnon at Washington University. Supplying patients with improved hand function, even anterior intersosseous nerve function, can improve upper extremity strength and function because the patient is now doing more hand activities and positively impact independence in activities of daily living such as feeding, drinking and self-catheterization. In the appropriately selected patients with SCI, nerve transfers can be life changing reconstructive procedures and provide opportunities for independent function.

**QUESTION 5:** What other indications besides trauma are you performing nerve transfers? Give examples.

**J. Brown:**
Recently viral-induced motor-neuron diseases in pediatric patients have been a source, tumor resections requiring nerve sacrifice, poorly recovering Parsonage-Turner syndrome, and severe radiculopathies.

**T. Tung:**
I will consider nerve transfers in any patient with a critical functional deficit and a potential good motor donor for transfer. Other than trauma, these may include patients with neuritis (Parsonage-Turner syndrome) with incomplete recovery, functional deficit after tumor resection, iatrogenic injury, or radiation-induced plexopathy/neuropathy. Neuritis patients often have more distal hand deficits and may be candidates...
for distal nerve transfers in the forearm such as median to radial nerve transfers and vice versa. Lower extremity nerve transfers should be considered in patients where often there are no other surgical options because of the inaccessibility of the proximal stump. Such cases may include sciatic or femoral nerve defects after proximal tumor resection or femoral palsy after total hip replacement. Even if the proximal stump is accessible, the regeneration distance required to reach the target motor endplates or the amount of nerve graft material needed to fully reconstruct large caliber nerves such as the sciatic may be prohibitive for more standard reconstruction.

CONCLUSION/CLOSING THOUGHTS:

T. Tung:
Much is made at national meetings about nerve transfers versus tendon transfers. The view of our group is that both techniques have advantages and disadvantages that should be considered with the patient’s priorities and goals. Distal nerve transfers such as those in the forearm can be used to reconstruct more complicated functions like intrinsic hand function or multiple finger movements. We have found for example that transfer of the FCR/PL branch(es) of the median nerve to the PIN has the potential to provide individual finger extension because we believe the nervous system is more pliable and adaptable than is appreciated. As such, patients who are musicians or whose work requires keyboarding are better candidates for nerve transfer. However, we do not see such outcomes in all patients, and those that need to recover as quickly as possible and require more gross motor function are better candidates for tendon transfers. For more complex problems, both techniques may be used for a more complete reconstruction as they are not necessarily mutually exclusive if well planned. For such complicated cases where surgical options are limited, the addition of new techniques helps to provide an optimal reconstruction and potentially better outcomes.

J. Brown:
Nerve transfers have truly found their place as an important method of restoring function in the right patient population, bringing nerve solutions to disorders beyond nerve trauma. They remain an important modality amongst others, including tendon transfers, tenodeses, bony fusions, and occasionally muscles transplants. All options should be weighed and the most effective strategy for a given deficit selected, considering the patient’s age, rehab potential, life expectancy, etc.

C. Novak:
For optimal function, rehabilitation strategies after nerve transfer need to focus on cortical and sensorimotor retraining to establish new motor patterns and reestablishing muscle balance. With increasing strength, incorporate functional tasks that are meaningful to the patient and utilize the new movement patterns. Ultimately, it’s all about the brain.

R. Spinner:
I appreciate all of your expert opinions on some controversial and evolving questions. You have provided the current state of the art on nerve transfers and have shed some light on future directions. It is clear that our nerve transfers will play an increasing role in nerve reconstruction as we try to best decipher better ways to rewire the nerve pathway.
Hand Surgery Update VI

In 1994, the American Society for Surgery of the Hand published the first Hand Surgery Update under the editorship of Dr. Paul Manske as a brainchild of Dr. James Urbaniak (President, American Society for Surgery of the Hand, 1991-1992). The stated goal of that original work was to “present a synopsis of important information, by established hand surgeons, from recently published articles.” In developing Hand Surgery Update VI, we had 3 goals: select authors who are preeminent subject matter experts in the areas covered by each chapter; provide a true update of published literature over the last 5 years while linking it to the past with a summary of a “classic” article; and emphasize the most recent impactful information—not create an exhaustive text—thereby complimenting the previously published ASSH Textbook of Hand & Upper Extremity Surgery. It was a privilege for us to review each of these chapters. We learned a tremendous amount and were constantly reminded of the vastness of our specialty.

The practice of hand surgery is truly a global one and we are indebted to our international colleagues for their great contributions to the field; this sentiment is reflected in the cover design of the book. We also recognize all of our authors who donated countless hours of hard work to provide outstanding and provocative chapters that we hope you will enjoy reading. In the years to come, we hope you will enjoy and rely on Hand Surgery Update VI. It was an honor to serve our ever-changing specialty, through the publishing of this edition. The book is available as an e-book or hard copy on the ASSH website.

Peter M. Murray, MD
Warren C. Hammert, MD
**HAND Featured Articles**

**Triggering of Carpal Tunnel Syndrome Symptoms in Patients Using Urban Public Transportation**

*Hand 2016 11:257-261; doi:10.1177/1558944715628007*

Luiz Guilherme de Saboya Lenzi, Carlos Henrique Fernandes, Lia Myiamoto Meirelles, João Baptista Gomes dos Santos, Flávio Faloppa, Jorge Raduan Neto

**Nonoperative Management of Acute Upper Limb Ischemia**

*Hand 2016 11:131-143; doi:10.1177/1558944716628499*

Victor W. Wong, Melanie R. Major, and James P. Higgins

**Patient-Reported Outcome Measures for Hand and Wrist Trauma: Is There Sufficient Evidence of Reliability, Validity, and Responsiveness?**

*Hand 2016 11:11-21; doi:10.1177/1558944715614855*

Peter Jonathan Dacombe, Rouin Amirfeyz, and Tim Davis

**A Prospective Randomized Trial Comparing the Effectiveness of One versus Two (Staged) Corticosteroid Injections for the Treatment of Stenosing Tenosynovitis**

*Hand 2014 9:340-345; doi:10.1007/s11552-014-9603-4*


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**IFSSH Presents “Pioneers of Hand Surgery” Awards**

This year, Dr. Wyndell Merritt was honored by the IFSSH as a “Pioneer of Hand Surgery” for his outstanding contributions to the field. The IFSSH annually awards this status to individuals who excel exceptionally, beyond what is normally expected in the hand surgical field. To learn more about this distinct honor visit the IFSSH website.

The award will be given at the IFSSH&IFSHT Congress in Buenos Aires, Argentina on October 24-28, 2016.
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5-Day Annual Meeting Program Highlights

► Ultrasound Pre-Course
  Tuesday, January 10, 2017

► Wide Awake Hand Surgery Pre-Course
  Tuesday, January 10, 2017

► Instructional Courses

► MOC Courses: Dupuytren’s & Metacarpal Fractures

► Panels - Wrong Procedure Surgery / Worst Complications / Patient Safety / Iatrogenic Nerve Injury

► Invited Guest Speakers
  - Alexander S. Parker, PhD
  - Peter J. Stern, MD
  - Stuart L. Weinstein, MD

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