

SpineSection

NEWSLETTER

AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves

Greetings!

We are pleased to present you with the latest Newsletter of the Joint Section on Disorders of the Spine and Peripheral Nerves of the American Association of Neurological Surgeons and Congress of Neurological Surgeons.

In this issue, we present interviews with our outgoing Chair, Marjorie Wang, and Paul McCormick, the Meritorious Award recipient for Spine at the recent Spine Summit Meeting in Orlando. Also, Bob Harbaugh, Tony Asher and Mo Bydon provide an update on the status of the Quality Outcomes Database. In our Peripheral Nerve learning corner, TJ Wilson and Zack Ray describe nerve transfers for disabling injuries

of the upper trunk of the brachial plexus. Finally, John Ratliff elucidates key changes in CPT coding for 2018.

Thank you to everyone who joined us for the immensely successful Spine Summit Meeting in Orlando, March 14-17, 2018. See you next year in Miami!!

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American Association of Neurological Surgeons
and the American Association of Neurosurgeons



Interview with Outgoing DSPN Chair, Marjorie Wang, MD, MPH

by Cheerag Upadhyaya, MD

What was your favorite part about being Chair of the AANS/CNS Joint Section of the Spine & Peripheral Nerves?

Wang: My favorite part about being Chair was working with the fantastic team that is the Executive Committee. The committee chairs and members have a vast repertoire of skills and expertise that they generously share. They volunteer their time and skills because they believe in the difference we can make through the DSPN in influencing the direction of health care. I also had the opportunity to work with Juan Uribe and Dan Hoh, who created, organized, and delivered the amazing scientific program for the 2018 annual meeting.

What was your biggest challenge this year?

Wang: There were four major challenges and areas of intense activity and accomplishment this year. Many of these activities are continuing on into 2019 as well.

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Interview with Marjorie Wang, MD, MPH

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These were: public relations, rapid response, membership engagement, and strategic planning:

- Public Relations Task Force, led by Zo Ghogowala, was responsible for communicating with the public about neuro-surgical successes and positive patient impacts in the context of many negative press stories about spine surgery. This year's annual meeting included the first ever Round Table discussion of Return to Productivity, including multiple stakeholders. DSPN social media presence also increased exponentially with the spine blog and Twitter. #Spine18 hashtag made 5,826,948 impressions during this year's annual meeting!
- Rapid Response Committee: led by Lou Tumalian and Charley Sansur, was charged to further develop into a proactive committee, rather than a "response" committee, and to inform research and guidelines efforts to target "high risk" areas where the DSPN anticipates challenges to surgical practice.
- Membership: led by Aruna Ganju, initiated programs to energize residents and fellows to join the DSPN and to continue active involvement and engagement with the DSPN after training.
- Strategic Planning: led by John Hurlbert, surveyed membership and designed short and long-term strategic goals and priorities for the DSPN to align with membership needs. Further surveys of residents, fellows, physician assistants and nurse practitioners are being analyzed to provide more insight into future DSPN meetings and activities.

Given your long standing interest in health services research / outcomes research, what do you believe are the near term and long term challenges to spine surgery?

Wang: There have been many changes that have altered the relationship between the patient and physician. The way health care is being delivered is changing dramatically. Almost every day, we hear about another merger or another company entering the health care market and vowing to change the way care is delivered. There has also been a shift in decision-making away from patients and physicians and to payors or insurance companies, and to use of big databases without personalization of this data to each patient in the context of their life. For physicians, there has been a shift in how we practice, with more of the burdens of administering health care placed on our shoulders. These pressures are taking attention from our basic and necessary focus: the patient.

What changes must neurosurgery and spine surgery consider as we shift from a volume based to value based paradigm of care?

Wang: As physicians, we are part of our patients' lives, and we have the ability to advocate for patients in relationships with payors, regulatory agencies, and industry. We have a unique perspective in helping

to define value for our patients, and we need to define values that are missing from big data, such as return to productivity or play. We also have the ability to define better team-based care pathways and to help use our clinical skills to try to assess patient risk and complexity in a way that can complement the quality measures that are used, and to bring more meaning to "value." We know there is more to our patients' lives than length of stay and 30-day readmissions!

Follow-up question - how can neurosurgeons and spine surgeons take the lead in addressing the above challenges?

Wang: We can take the lead by using the DSPN to network, learn new skills, and to advocate for our patients. We need to take home these ideas and knowledge and share them with our colleagues. We can join hospital committees, state societies, and outreach to our community and local business leaders. We must be proactive and question the status quo. Each of us makes a difference in our community every day, and together, we can have a louder and more powerful voice to advocate for our patients by using the DSPN and its resources and connections.

Who were your mentors in neurosurgery, spine surgery, and health services research / outcomes research?

Wang: I am fortunate to have a long history (33 years!) of past section leaders' experience to draw upon. The meritorious member award winners, Paul McCormick and John McGillicuddy, are giants in neurosurgery who have changed our field and provided models for my practice. Honored Guests Vince Traynelis and Rick Sasso also continue to challenge the way we practice and make me think deeply. My mentors from the Robert Wood Johnson programs have also had a big influence on my research and advocacy efforts today.

What avenues would you suggest to guide young neurosurgeons and spine surgeons who are interested in pursuing health services research / outcomes research?

Wang: I encourage you to be creative about finding your own nontraditional path. Seek a variety of training experiences and use resources to round out your neurosurgical training. Don't ignore unexpected opportunities.

What advice would you give to a young neurosurgeon and spine surgeon? What advice would you offer to young women who are interested in spine surgery?

Wang: Believe in yourself and your ability to help your patients and to improve the way health care is delivered. You have the strength and ability to build upon your training, knowledge, and core values even when times are tough. Be clear about your mission and your purpose, and know both what you want to do and why.

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What advice would you give someone who wants to become more involved in the section?

Wang: We need you! Our webpage, spinesection.org, lists the committees and members and their current roles. Contact anyone on the page then show up, be involved, network, and take on projects.

On behalf of the entire Section, I would like to thank you for your hard work and service to the DSPN.

Wang: Being Chair of the DSPN has been a deeply rewarding and challenging experience. I very much look forward to continuing to help the DSPN achieve further successes and recognition as The Best Spine and Peripheral Nerve Surgery organization in the world.

NeuroPoint Alliance Quality Outcomes Database Update

■ Robert Harbaugh, M.D.
■ Anthony Asher, M.D.
■ Mohamad Bydon, M.D.

Introduction

The Quality Outcomes Database continues to thrive and now involves over 100 major medical centers in the US, with over 80,000 patients enrolled to date. The Lumbar Spine Surgery database has nearly 55,000 patients across 90 participating centers nationwide, with numbers continuously increasing. Our Spine Deformity QOD currently includes more than 50 participating organizations, and the Cervical Spine registry continues to grow with over 23,000 patients enrolled across more than 70 participating centers. The Neurovascular QOD, our first subspecialty separate from Spine, has over 20 participating centers and data on over 3,300 patients. Our most recent endeavor, the Tumor QOD, is expected to launch in the near term after approval of variables from the Joint Tumor Section.

Our continued success is heavily dependent on the involvement and support of surgeons. On Sunday April 29, 2018, NPA is offering a full-day registry course in conjunction with the AANS Annual Scientific Meeting in New Orleans as well as QOD registry-specific training courses later in the year.

The Quality Outcomes Database (QOD) registry program recently reached an important milestone with the enrollment of our 75,000th spine patient. Enrollment in the QOD registries continues to accelerate. With your help, the QOD has become the largest spine care registry in the United States.

The QOD's Practice Based Learning Network (PBLN) was established in August 2012 based on the need to establish a grass-roots community environment among the participating centers that would help foster and cultivate the success of the QOD program. The initial charter of the PBLN was to develop foundational and pertinent educational initiatives, create a mentoring network, improve systematic and standardized data collection efforts, and promote a thorough understanding of QOD processes. The future plans of the PBLN are to expand the mentoring program, continue to develop quality-focused

education, help to provide patient education and decision-making tools, and to help benchmark the value of QOD participation.

From an operational perspective, our average national 12-month follow up rates remain high compared with other existing and previous spine registry efforts. In the coming months, we will focus on optimizing methods for patient follow up and will work with the PBLN to further enhance our standards for data completeness and integrity. All of us gain when outside stakeholders sense strong internal and external validity in our data. Conspicuous and robust efforts to ensure data completeness and reliability help develop and maintain that confidence.

Descriptive analyses of the lumbar spine database have been presented at annual meetings of the AANS and the CNS, and over twenty articles have been published with many more in development. The analyses reveal that our data accuracy and validity remains high. The outcomes data confirms previous observations that have demonstrated sustained improvements in observed and patient reported outcomes for patients undergoing spine surgery. Furthermore, patient satisfaction with these outcomes is generally high. To help us understand variability in patient outcomes, we engaged the Institute for Healthcare Improvement (IHI) through a generous grant from the NREF to lead a 9-month Spine Surgery Learning Community project to conduct a "deep dive" analysis of the combined contribution of patient-specific variables to specific outcomes related to length of stay and readmissions. The project results are being analyzed and disseminated to facilitate shared medical decision making, practice-based learning, focused quality improvement and more effective resource utilization.

In summary, the QOD has made tremendous advances in its first six years of operation and has evolved into an important vehicle to promote healthcare quality, safety and efficiency. The NPA Board of Directors thanks the PBLN and all participating QOD centers for their continued support of this important quality program.

Interview with Meritorious Award Recipient for Spine, Paul McCormick, MD, MPH

Khoi Than, MD

Dr. McCormick, thank you for taking the time to be interviewed for the Spine Section Newsletter. You are considered one of the fathers of spinal neurosurgery. How did this interest develop in an era when most of neurosurgery was in the intracranial compartment?

McCormick: Spine was an up and coming subspecialty in neurosurgery in the early 90's. I think I could have been happy doing any number of things in neurosurgery but I thought I could make a greater contribution in spine because there were so few of us. It was initially difficult because spine was not one of the more celebrated areas of neurosurgery. We used to do 'stump the professor' sessions at our national meetings where some of the new generation of dedicated spine surgeons would describe how we would manage complex spinal conditions. Anything that included corpectomy, interbody fusion, or pedicle fixation was openly denigrated and dismissed by many of our senior participants. Boy, have times changed.

Who were your mentors, and what role did they play in your development?

McCormick: I've had a number of mentors who had an influence on my career. Bennett Stein was probably the most influential. He was Chairman of the Department of Neurosurgery at Columbia. His commitment to the field of neurosurgery was particularly inspirational. He was a true student of the nervous system and always made you feel that it was an honor to be able to be part of a profession that treated patients with neurological disorders. He was also one of the first neurosurgeons who understood the importance of spine care in neurosurgery and that sub-specialization, especially in spine, was crucial to the continued growth and development of our specialty.



What would you consider to be your most impactful contribution to the field of spinal neurosurgery?

McCormick: Probably the most recognized contribution is the development of a classification scale for patients with intramedullary spinal cord tumors.

You have served as an important leader in both the Section and beyond, including President of the AANS. What advice do you have for surgeons who are interested in neurosurgical leadership?

McCormick: For me, leadership was a byproduct, not the intent of my career. What was important to me was not recognition or achievement but simply to do the best I could at whatever I did or was asked to do. There's a certain virtue in just committing to excellence in any task or responsibility, even if no one else notices.

What are the important skills that are needed to be a good leader? For skills that are not innate, how does one develop them?

McCormick: Leadership is a balance between your own personal values, attributes, and beliefs, and the values and mission of the people and organizations that you lead.

What are some unique challenges facing spine surgeons today that didn't when you were starting your practice in the early 1990s?

McCormick: Spine surgery is rapidly advancing due to innovation, technology, and accumulating knowledge. Innovation is critical to our continued success and advancement but it needs to be coordinated and critically assessed in a manner that is transparent, evidenced based, and patient focused. External expectations, scrutiny, and accountability are much more apparent now than when I first began surgical practice in the early 1990s so the challenges have also increased.

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In what direction do you see the future of spine surgery heading?

McCormick: It's always difficult to predict the future. However, there are trends that suggest that spine surgery is evolving into its own specialty in terms of knowledge base, technical skills, technological capabilities, and clinical practice. One has to look no further than the professional practice organizations such as the Cervical Spine Research

Society, North American Spine Society, Scoliosis Research Society, and even the Joint Spine Section to see not only the development and growth of spine surgery as a distinctive surgical specialty, but the convergence of orthopedic and neurosurgical disciplines. It will be up to the next generation to navigate these changes and challenges for the good of our specialty and the patients we treat. I think we're in great hands. Good luck.

What's Up at the RUC

John Ratliff, MD

Here follows a brief missive about what is going on with CPT and the RUC for 2018. There are 4 new coding recommendations that you need to know to make sure you are appropriately coding and capturing the value for your work.

1. 22853/22854 and 22845 NCCI edit: In 2017 CPT eliminated the code for intervertebral body devices, 22851, and replaced it with 3 new codes (22853, 22854, and 22859). The new codes incorporated any integral fixation into the code description, so if you place an intervertebral body spacer with fixation that is integral to the device and not free-standing, you do not additionally code for 22845. If the plate is a unique, free standing, independent biomechanical device, it should be separately reported with 22845 in addition to the intervertebral device code.

This was fine, but in 2017 the National Correct Coding Initiative (NCCI) published an edit affecting Medicare payments that noted that you could not report 22845 at the same intervertebral space where you reported 22853 or 22854, even if the intervertebral body spacer does not have any intrinsic fixation and the plate is a completely free standing device. This was contested by all national spine societies, but to no avail.

CMS offered the following correction: To report anterior plate fixation (22845) when appropriately used at the same level where you are placing an intervertebral body device (22853 or 22854), you have to add a -59 to the 22845 code. Then it should be paid without a problem.

2. Corpectomy coding: Partial corpectomy has always been taught by AANS/CNS as resection of at least 50% of a cervical vertebral body or 33% of a thoracic or lumbar vertebral body. In 2018, these recommendations have been accepted and made part of CPT nomenclature for all corpectomy codes. So, if you are coding for a cervical corpectomy, you must complete and document in your operative note resection of the appropriate percentage of the relevant cervical vertebral body.

3. Bone marrow aspirate for spine fusion: Prior to 2018, spine surgeons have reported bone marrow aspirate (BMA) for spinal fusion with 38220. That code was changed for 2018 so that it can only be used for diagnostic purposes. To provide a code for BMA for spine fusion, a new code was created: **20939**. Use this code in 2018 for BMA for spinal fusion.

4. Reporting 63047 with 22630/22633: For years we have talked about whether or not you can report lumbar decompression (usually 63047) at the same level where you do an interbody fusion (22630 or 22633). AANS/CNS have consistently taught that this is appropriate, if the work entailed by the laminectomy or decompression is more work than would be required for the interbody fusion. This logic is incorporated into the definition and RUC valuation of the interbody fusion codes (22630 and 22633). In cases where you report decompression, you would report the decompression code with a -59 modifier in addition to the interbody fusion.

There was an NCCI edit published 1/1/2015 that we have discussed in previous Spine Section Newsletters that stopped this for Medicare. The NCCI edit prevented you from using the -59 for the decompression code at the same level as the interbody fusion code; the -59 for Medicare would be assumed to mean that you were decompressing at a different level. So after that you could not report using a -59 modifier to Medicare, but you could to private payers, to Workmen's Comp, or if you were wRVU based.

That changed again in October 2016 when a CPT Assistant article was published saying essentially the same point as the NCCI edit. The CPT Assistant noted that 63047 could not be reported at the same level as 22633, making essentially the same point of the NCCI edit applicable to all payers.

We are actively opposing this, we feel it is incorrect, and we continue to actively advocate for correction of the CPT Assistant article. The CPT Assistant article was published without consultation from any spine societies. Your Section leadership partnered with all national spine societies to write a formal appeal to CPT [[Spine societies letter](#)]. At present, this appeal is still pending but we will keep you informed.

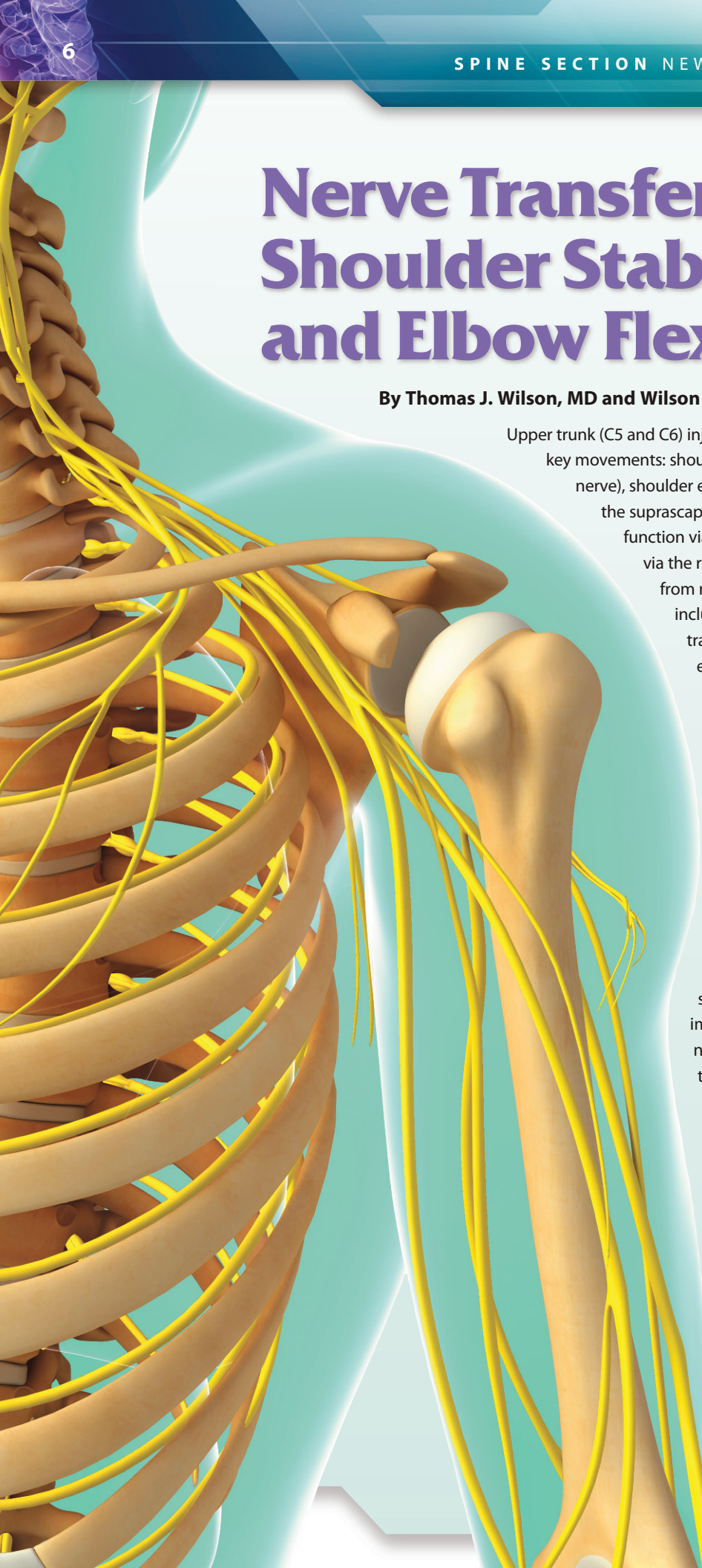
Nerve Transfers for Shoulder Stability/Function and Elbow Flexion

By Thomas J. Wilson, MD and Wilson (Zack) Ray, MD

Upper trunk (C5 and C6) injuries result in impaired shoulder stability and loss of three key movements: shoulder abduction (loss of deltoid function via the axillary nerve), shoulder external rotation (primarily loss of infraspinatus function via the suprascapular nerve), and elbow flexion (loss of brachialis and biceps function via the musculocutaneous nerve and brachioradialis function via the radial nerve). Upper trunk injuries most commonly arise from motor vehicle accidents. Primary nerve surgery options include neurolysis, nerve graft repair, and more recently, nerve transfers. The advent of nerve transfers has significantly expanded the surgical armamentarium. The nerve transfer options for upper trunk injuries are also relevant for postoperative C5 (and C6) palsies that occur following cervical spine operations, when spontaneous recovery does not occur. While a variety of nerve transfer options are available, we will briefly review the most commonly employed options here.¹

For shoulder stability, abduction, and external rotation, the two primary targets for nerve transfer are the axillary and suprascapular nerves. For the axillary nerve, the most commonly employed donor is a triceps branch of the radial nerve. When triceps function is normal, loss of a single head of the triceps does not result in functional impairment of elbow extension, making this a good donor nerve. Branches to each of the heads of the triceps have their relative merits and demerits as donor nerves. The long head is the least functionally important for elbow extension and the nerve branch to the long head has the largest diameter and highest motor axon count.² This branch is short, however, making obtaining sufficient length difficult. The branch to the medial head has the advantage of length, making it an attractive option. For the suprascapular nerve, the spinal accessory nerve is the most commonly employed donor. The spinal accessory nerve is typically transected distal to the first motor branch to the trapezius to allow continued function of the upper trapezius. This transfer can be performed from either an anterior or posterior approach.

A meta-analysis of nerve transfers for restoration of shoulder function showed an average abduction recovery of 92°. Nearly 80% of patients achieved



MRC grade 3 or better abduction, and nearly half achieved grade 4 or better.³ Average time to MRC grade 2 deltoid function following radial to axillary nerve transfer is approximately 7 months.⁴ Reported average external rotation recovery has ranged from 56° - 118°.^{5,6} Double transfer of the spinal accessory nerve to the suprascapular nerve and radial nerve triceps branch to the axillary nerve represents a nerve transfer strategy with potential for significant functional recovery.

Typically, following an upper trunk injury, restoration of elbow flexion is the top priority. A vast array of donors has been utilized, but likely the most significant advance in nerve transfers was advent of transfer of an ulnar nerve fascicle to the biceps branch of the musculocutaneous nerve, known as the Oberlin transfer. During this nerve transfer, a fascicle of the ulnar nerve serving predominantly the flexor carpi ulnaris is selected as the donor. The flexor carpi ulnaris is served by multiple fascicles within the ulnar nerve and wrist flexion is also served by the median nerve-innervated flexor carpi radialis, making functional impairment unlikely utilizing this donor. The donor fascicle supplying the flexor carpi ulnaris is typically located in the radial-ventral portion of the ulnar nerve.⁷ Debate exists as to whether or not this transfer should be combined with transfer of a median nerve fascicle to the brachialis branch of the musculocutaneous nerve. When this transfer is utilized, a fascicle supplying the flexor carpi radialis is chosen as a donor.

The Oberlin transfer has been a very successful nerve transfer. In one of the early series published by Oberlin, 75% of patients achieved at least MRC grade 3 elbow flexion. More recent series have suggested even better outcomes. Leechavengvongs reported >90% of patients achieved at least MRC grade 4 elbow flexion using the Oberlin transfer. To date, adding a median nerve fascicle to brachialis branch transfer has not been associated with improved outcomes.^{8,9} Nonetheless, some continue to favor performing the double nerve transfer of an ulnar nerve fascicle to biceps branch and median nerve fascicle to brachialis branch.¹⁰

Nerve transfer strategies have added to the available options for restoration of function following upper trunk injuries. Good outcomes can be expected utilizing the described nerve transfers. Specific indications for nerve transfer versus nerve graft repair continue to evolve. While initially described in the context of traumatic nerve injuries, these strategies are also applicable for patients with postoperative C5 (and C6) palsies following cervical spine surgery. With an incidence of approximately 5% following cervical spine operations, when spontaneous recovery does not occur, spinal accessory to suprascapular, radial nerve triceps branch to axillary nerve, and ulnar nerve fascicle to biceps branch of the musculocutaneous nerve transfers are viable options for restoration of function in these patients.^{11,12} Whether secondary to trauma or in the context of postoperative palsy following cervical spine

surgery, early referral to a peripheral nerve surgeon should be considered when there is upper trunk-innervated muscle weakness in order to facilitate optimal implementation of these reconstructive strategies.

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Peripheral Nerve Updates for DSPN Members

Line Jacques, MD

1. The peripheral nerve business dinner during the 2018 AANS annual meeting will be held on Sunday, April 29th 2018 location TBD.

2. The 2017 Kline lecture will be presented by Dr. Eric Zager (University of Pennsylvania) on Tuesday May 1st 2018 during the AANS meeting in New Orleans, Louisiana. The lecture title: Nerves and the NOLA connections.

3. The Kline Research Award will be offered again this year to support either basic or clinical research related to peripheral nerves with funding in the amount of 10 000\$. The research award provides means of peer review for clinical projects, and therefore, to enhance competitiveness for potential National Institutes of Health (NIH) funding.

Dr. Sudheesh Ramachandra (Dr. Midha, University of Calgary) will present a talk entitled: Neuroanatomical analysis of distal surcharge end-to-side nerve repair for incontinuity nerve injury in rodents on Tuesday, May 1st 2018 during the AANS annual meeting in New Orleans.

4. Winner of the 2018 Kline Research Award will be announced at the 2018 DSPN meeting in Orlando, Florida

Kline Abstract Award, PN Abstract Award and the top PN Kuntz Abstract Award will be offered at the DSPN meeting and the abstracts will be podium presentations.

5. Kline NREF Fund "Honor your mentor" is on the NREF website. If you would like to contribute to the fund please visit Kline NREF Fund website: <http://www.nref.org/donate>

Note that the Peripheral Nerve Division leadership controls the use of the NREF PN funds (including the Kline fund) for research or education, within the guidelines of the NREF.

6. Upcoming meetings

ASPN annual meeting

February 1-3, 2019 JW Marriott Desert

Springs Palm Desert, California

<http://www.peripheralnerve.org/meeting>

Sunderland Society meeting

March 3-6th, 2018 in Palo Alto, CA, USA

Sunderland Society meeting

March 3-6th, 2018 in Palo Alto, CA, USA

21st Narakas meeting

Leiden, Netherlands; May 16-18th 2018

Toronto Obstetric Brachial Plexus Workshop-
Hospital for Sick Children in Toronto, Canada;

May 25-26th 2018

The 5th annual Peripheral Nerve Dissection Course:
"The Kline Legacy" in New Orleans, Louisiana will take place on February 16-17th 2019.

Email your suggestions, meeting information, or other newsletter topics to: John O'Toole, MD john_otoole@rush.edu.

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