



**Name: Justin M. Brown, M.D.**

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### **Education:**

- *08/92-05/94*: Psychology, James Madison University, Harrisonburg, Virginia (transferred prior to graduation)
- *08/94-05/96*: B.S., Psychology Track II: Neuroscience, Cum Laude, Vanderbilt University, Nashville, Tennessee
- *08/97-05/01*: M.D., Eastern Virginia Medical School, Norfolk, Virginia

### **Postdoctoral Training:**

#### **Fellowship**

- *07/07-06/08*: Peripheral Nerve Fellow, Division of Plastic and Reconstructive Surgery, Washington University School of Medicine, St. Louis, Missouri. Susan E. Mackinnon.
- *07/02-06/07*: Resident, Department of Neurosurgery, Baylor College of Medicine, Houston, Texas. Robert G. Grossman.

#### **Residency**

- *07/01-06/02*: Intern, Michael E. DeBakey Department of Surgery, Baylor College of Medicine, Houston, Texas.
- *07/02-06/07*: Resident, Department of Neurosurgery, Baylor College of Medicine, Houston, Texas. Robert G. Grossman.

### **Additional Educational Clinical “Mini-Fellowships”:**

- Royal National Orthopedic Hospital, Stanmore, England: Peripheral Nerve Surgery (Rolfe Birch and Thomas Carlstedt)
  - Millesi Surgery Center, Vienna, Austria: Brachial Plexus Reconstruction (Hanno Millesi)
  - Chang Gung Memorial Hospital, Linkou, Taiwan: Brachial Plexus Reconstruction (David Chuang)
  - Mayo Clinic, Rochester, Minnesota: Brachial Plexus Reconstruction (Robert Spinner, Alex Shin, Allen Bishop)
  - Changhai Hospital, Shanghai, China: New Approaches to Functional Reconstruction in SCI (Shaocheng Zhang)
  - Department of Hand Surgery, Huashan Hospital, Shanghai, China: Brachial Plexus Reconstruction
  - Spinal Injuries Unit, Oswestry, England: Conservative Management of Spinal Cord Injury (Wagih El Masri)
  - Lyon, France: Functional Neurosurgery for the Management of Spasticity (Marc Sindou, Patrick Mertens)
  - Swiss Paraplegic Center, Nottwil, Switzerland: Tetraplegic Hand Reconstruction (Jan Friden)
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## **Licensure and Certifications:**

- *2008 – 2012:* Missouri license no. 2007004395
- *2011 – Present:* California license no. A117012
- *2012:* American Board of Neurological Surgery
- *2017 - Present:* Massachusetts Medical License no. 273253

## **Faculty Academic Appointments:**

- *08/08 – 04/11:* Associate Director, Center for Nerve Injury and Paralysis, Washington University School of Medicine, St. Louis, Mo
- *08/08 – 04/11:* Assistant Professor, Department of Neurological Surgery and Division of Plastic and Reconstructive Surgery, Washington University School of Medicine, St. Louis, Mo
- *07/16 – 08/17:* Associate Vice Chair of Clinical Affairs, Department of Neurosurgery
- *09/14 – 07/17:* Co-Director of the California Paralysis Center, Long Beach, Ca.
- *09/11 – 07/17:* Co-Director, UCSD Paralysis Center, Departments of Neuroscience and Neurosurgery, UCSD School of Medicine
- *09/11 – 07/17:* Director, Neurosurgery Peripheral Nerve Program, UCSD School of Medicine
- *07/15 – 07/17:* Associate Professor, Department of Neurological Surgery, UCSD School of Medicine
- *11/17 – Present:* Director of Reconstructive Neurosurgery
- *06/18 – Present:* Director of Mass General Paralysis Center

## **Appointments at Hospitals/Affiliated Institutions:**

- *07/07 – 04/11:* Barnes Jewish Hospital, St. Louis, Mo
- *07/08 – 04/11:* St. Louis Children's Hospital, St. Louis, Mo
- *04/11 – 10/17:* Hillcrest Medical Center, San Diego, Ca
- *04/11 – 10/17:* Thornton Hospital/Jacob's Medical Center, La Jolla, Ca
- *07/12 – 10/17:* Rady Children's Hospital, San Diego, Ca
- *12/17 – Present:* Massachusetts General Hospital, Boston, Ma
- *04/18 – Present:* Newton-Wellesley Hospital, Newton, Ma
- *03/18 – Present:* Spaulding Rehabilitation Hospital, Cambridge, Ma.

## **Major Administrative Leadership Positions:**

### **Local**

- *07/13 – 08/17:* Director of Surgery 401 Course: Introduction to Neurosurgery
- *07/14 – 08/17:* Director of Neurosurgery Morbidity and Mortality

### **National**

- *06/10 – 06/14:* Scientific Medical Advisory Board Member, American Thoracic Outlet Syndrome Association
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- *07/10 – 07/12*: Advisory Board Member to Missouri Spinal Cord Injuries Research Program
- *08/14 – Present*: Volunteer Medical Advisor to Life Beyond Boundaries Rehabilitation

### **International**

- *11/09 – 05/12*: President and Founding Member, International Society for Restorative Neurology
- *05/12 – Present*: Serving on Board of Directors for International Society for Restorative Neurology

## **Committee Service:**

### **Local**

- *07/13 – 07/14*: Medical Ethics Committee
- *07/14 – 10/17*: Anatomical Services Committee
- *07/14 – 10/17*: UCSD Surgery Quality Improvement Review Committee

### **National**

- *01/13 – 01/14*: Coding Committee for American Society for Peripheral Nerve
- *01/14 – 01/15*: Grants Committee for American Society for Peripheral Nerve
- *01/15 – 01/16*: Membership Committee for American Society for Peripheral Nerve
- *01/15 – 01/18*: Affiliate Membership Committee for American Association of Hand Surgery
- *01/17 – Present*: Technical Exhibits Committee for American Society for Peripheral Nerve
- *09/18 – Present*: International Mentor with American Society for Peripheral Nerve
- *01/17 – Present*: Finance Committee for American Association for Hand Surgery
- *10/18 – Present*: Neurosurgery Investigative Task Force for Pan African Assoc. of Christian Surgeons (PAACS)

## **Professional Societies:**

- *07/09 – 09/12*: American Spinal Injury Association
  - *07/09 – 09/12*: International Spinal Cord Society
  - *07/09 – 09/12*: International Society for Motor Control
  - *07/11 – 12/14*: California Neurology Society
  - *07/11 – 12/14*: San Diego Neurosurgery Association
  - *01/02 – Present*: American Association of Neurological Surgeons
  - *01/03 – Present*: Congress of Neurological Surgeons
  - *01/09 – Present*: AANS/CNS Section on Disorders of Spine and Peripheral Nerves
  - *07/09 – Present*: American Association for Hand Surgery
  - *07/09 – Present*: International Society for Restorative Neurology
  - *07/09 – Present*: Society for Neuroscience
  - *07/10 – Present*: American Society for Peripheral Nerve
  - *10/18 – Present*: Pan-African Association of Christian Surgeons (PAACS)
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## Editorial Activities:

- Guest Editor for Special Edition of *Clinical Neurology and Neurosurgery*, “Restorative Neurology and Motor Control.” Volume 114, Issue 5.
- Guest Editor for Special Supplement of *Clinical Neurology and Neurosurgery*, “The application of motor control in rehabilitation medicine.” Volume 129, Supplement 1.
- Guest Editor for Special Edition of *Neurosurgical Focus*, “*Neurosurgical Rehabilitation: Restorative Functional and Reconstructive Neurosurgery.*” Volume 43, Issue 1.

## Adhoc Reviewer

- Invited reviewer for journals: Muscle and Nerve, Audiology and Neurotology, Clinical Neurology and Neurosurgery

## Honors and Prizes:

- 1995, Member PSI CHI, National Honor Society in Psychology
- 2001, Alpha Omega Alpha Honor Medical Society
- 2007, Young Investigator Award, 2nd Congress of the International Society for Reconstructive Neurosurgery.
- 2009, Sanford Larson Research Award, AANS/CNS Section on Disorders of the Spine and Peripheral Nerves for “Objective Quantification of Postural Correlates of Multilevel Nerve Compression”.
- 2014, “Best Abstract”, American Urological Association National Conference in Orlando, FL

## Report of Funded and Unfunded Projects

### Funding Information:

#### Past

- *January 2011- June 2011:* Barnes Jewish Hospital Foundation Grant for Spinal Cord and Nerve Injury Research Award. (\$50,000)
  - *March 2009 – February 2010:* Department of Defense and Henry M. Jackson Foundation for the Advancement of Military Medicine, Award No. MDA 905-02-2-0007. “Comprehensive Resource for the Management of Peripheral Nerve Trauma”. Justin M. Brown, Co-Investigator (Funding amount: \$250,000.00)
  - *March 2009:* Sanford Larson Research Award, “Objective Quantification of Postural Correlates of Multilevel Nerve Compression.” Justin M. Brown, PI (Funding amount \$30,000.00)
  - *October 2014:* UC Office of the President, Center for Health Quality and Innovation: “UC Care Check.” Multiyear grant to explore the effect of instituting checklists in the OR and in daily progress note documentation upon patient care and outcomes (funding amount \$215,351 over 3 years).
  - *August 2014:* Kali’s Cure Research Award, “Nerve Transfers in Spinal Cord Injury.” Justin M. Brown, PI (funding amount \$20,000)
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## Current

- *May 2010 – Present*: MPI: M.R. Ruggieri (contact) and M.F. Barbe NIH 1R01NS070267-01. Justin M. Brown, Co-Investigator.
- *March 2015*: RR&D Merit Review Award (Parent I01), “Novel Modular Nerve Lengthening Device for Peripheral Nerve Regeneration.” Justin M. Brown, Consultant (\$1.1M over 4 years; 5% effort)
- *September 2015*: Craig H. Neilsen Foundation Award, “Functional Comparison Between Nerve and Tendon Transfer after SCI.” Justin M. Brown, Co-Investigator (funding amount \$600,000 over 3 years) (Currently reapplying for transition of the grant to MGH)
- *November 2018*: New York State Department of Health (SCIRB) DOH01-PART3-2019-00006, “CNS reorganization in a mouse model of nerve transfer to treat SCI.” Justin M. Brown, Co-PI (funding amount \$150,000/year)(received preliminary acceptance).

## Projects Submitted for Funding

- *July 2008 – May 2011*: “Implantation and Use of a Neuroprosthesis for Toileting in Individuals with Spinal Cord Injury”. To evaluate the effectiveness of a neuroprosthetic device and its impact on individuals’ quality of life. Role: Principle Investigator. HRPO# 09-0072.
- *July 2008 – May 2011*: “Computer-Assisted Evaluation of Outcomes following Nerve Reconstruction Procedures”. Serial assessments of patients following nerve grafting or transfer procedures for careful identification of deficits produced and results gained, utilizing video motion capture technology and surface electromyography. Role: Principle Investigator. HRPO# 09-0269.
- *October 2009 – May 2011*: “Pathological Shoulder/Scapular Postures and Dynamics in Multi-Level Upper Extremity Neuropathies with Applications of Lidocaine, Tourniquet or Transcutaneous Stimulation”. Inducing models of upper extremity neuropathy in healthy controls and augmenting afferent input in neuropathy patients to modulate postural control and ameliorate pathological postures and dynamics. Role: Principle Investigator. HRPO# 09-0792.
- *September 2010 – September 2012*: “The role of nerve transfers in recovering hand function following cervical spinal cord injury”: Pilot study of 3 patients who underwent nerve transfers to restore prehension. Operations completed, outcomes continue for 18 months. Role: Principle Investigator. HRPO# 10-0663.
- *February 2011 – May 2011*: “Restoring micturition with nerve transfers”: Pilot study to investigate the efficacy of a somatic to parasympathetic nerve transfer to elicit detrusor contraction following SCI. Role: Co-investigator with Dr. Henry Lai of Urology
- *December 2011 – 2012*: “Assessing Outcomes of Nerve Transfer Interventions for Improving Upper Extremity Function in Upper Motor Neuron Impairment. HRPO# 110986.

## Training Grants and Mentored Trainee Grants

- *May 2009–July 2009*: NIH/NHLBI Training Grant, Grant No. 5 T35 HL007815-14 “Develop a Normative Kinematic Profile Quantifying SSPD in persons without Disability and After Interventions which Alter Afferent Input from the Extremity”. Justin M. Brown, PI; Student James Essenberg.
  - *May 2009 – July 2009*: Dean’s Summer Fellowship Grant “Objective Assessment of Hand Function Using Video Motion Capture: Application to Upper Extremity Peripheral Nerve Surgery”. Justin M. Brown, PI; Student Maryam Saheb-Al-Zamani.
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## Previous Projects

- “Objective Assessment of Functional Outcomes Following Brachial Plexus and Peripheral Nerve Operations”. Develop objective methods for pre-operative planning and post-operative assessment of nerve injury and reconstruction to maximize functional recovery. Role: Principle Investigator. HRPO# 08-1353.
- “Electromyography as a Predictor of Nerve Transfer Outcome”. IRB #170004
- “Nerve Transfers in Chronic SCI for Wrist and Finger Extension”. IRB #150987
- “Quantitative Electromyography in Nerve Transfer Surgery”. IRB #20437
- “Reachable Work Space as an Outcome for Nerve Transfer Surgery”. IRB #T20438
- “Quantitative Muscle Ultrasound Characteristics in Reinnervating Muscle”. IRB #T20436
- “Intra-Operative Comparison Between Intramuscular and Extramuscular Needle Electrode Compound Motor Action Potential and Multi-Point Motor Unit Number Estimate”. IRB #T20433
- “Motor Unit Number Estimate Associated with MRC Grade 3”. IRB #T20434
- “Collection of Neuromuscular Tissues for Morphological Characterization”. IRB #150986

## Report of Local Teaching and Training

### Teaching of Students in Courses:

- Surgery 410: 3rd year medical student introduction to neurosurgery, course director

### Formal Teaching of Clinical Fellows and Research Fellows (post-docs):

- Mark A. Mahan, MD – 6 month infolded fellowship during 5th year of residency at Barrow Neurological Institute, July to December 2012.
- Daniela Alexandru, MD – 3 month infolded fellowship during 6th year of residency at UC Irvine Department of Neurosurgery, October to December 2014.
- Sean Kaloostian, MD – 1 month infolded fellowship during 6th year of residency at UC Irvine Department of Neurosurgery, February 2017.
- Abdul-Wahab Shararah, MD, FRCSC – 12 month post-residency fellowship (following completion of plastic surgery and hand fellowships), August 2016 to July 2017.
- Mark Attiah, MD – 12 month research fellowship/clinical observership during 5th year of residency at UCLA Department of Neurosurgery, July 2018 – present.

### Other Mentored Trainees and Faculty:

- William Janes, Occupational Therapy Student. Washington University School of Medicine. July 2008 – May 2011. Postural Correlates of Upper Extremity Neuropathy Syndromes. Utilizing Motion Analysis technology to identify shoulder, neck and back postures and dynamics for correlation with the development of neuropathy syndromes. July 2008 – ongoing. Funding through Sanford Larson Award.
  - Maryam Saheb-Al-Zamani, Medical Student. Washington University School of Medicine. May – July, 2009. “Objective Assessment of Hand Function Using Video Motion Capture” Presented at 4th Annual Research Training Symposium and Poster Session. October 28, 2009
  - James Essenberg, Medical Student. Washington University School of Medicine. May – July, 2009. “Alterations in
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proximal shoulder kinematics following tourniquet-induced ischemia”. Presented at 4th Annual Research Training Symposium and Poster Session. October 28, 2009.

- Jakub Godzik, Medical Student. Washington University School of Medicine. May 2010 – April 2011. Afferent augmentation via transcutaneous stimulation to modulate proximal shoulder postures and dynamics in upper extremity neuropathy syndromes.
- Melissa Ley, Student. Washington University in St. Louis. May 2010 – August 2010. Nerve transfers for the restoration of hand function in cervical spinal cord injury.
- Caitlin Burbank, Student. Washington University in St. Louis. May, 2010 – February 2011. Objective assessment of hand function following nerve transfer operations using motion analysis and functional evaluations.
- Ronald Hoard, II, Student. Washington University in St. Louis. May 2010 – May 2011. Effect of noxious stimuli upon proximal upper extremity postures and kinematics.
- Rachel Meltzer, Student. Washington University in St. Louis. May 2010 – May 2011. Alterations in proximal shoulder kinematics following tourniquet-induced ischemia.
- Joey Imbs, Student. Washington University in St. Louis. May 2010 – July 2010. Effect of lidocaine-induced model of carpal tunnel syndrome upon shoulder postures and dynamics.
- Nicholas Vivio, Student. Washington University in St. Louis. May 2010 – May 2011. Outcomes assessment of nerve transfers within the forearm and hand: case series of median to radial, median to ulnar, and brachialis branch of musculocutaneous to the anterior interosseous nerve.
- Ross Fellars, Nil Gural, and Alice Ndikumana, Washington University School of Engineering Student Project Team. September 2010 – December 2010. Development of hand held device for augmenting proprioceptive input in upper extremity neuropathy: stochastic resonance vs. direct afferent stimulation.
- Hue Le, Student. Washington University in St. Louis. September 2010 – May 2011.
- Allyson Bosworth, Student. Washington University in St. Louis. September 2010 – May 2011.
- Ashley Newton, Student. Washington University in St. Louis. September 2010 – May 2011.
- Patricia Hong, Student. Washington University in St. Louis. September 2010 – May 2011.
- David Deriso, Student. UCSD Neuroscience. May 2011 – 2012.
- Edgar Ortega. Medical Student, UC Riverside, Summer 2014.
- David Michael. Student UCSD, Summer 2014.
- Madhawi Mitwalli. July 2016 – July 2017. Saudi Pre-Residency Mentorship Program
- Willem Rinkel, MD. September 2018 – present. *Resident Plastic-, Reconstructive- and Hand surgery*, University Medical Center Utrecht *General surgery residency*, Diakonessenhuis, Utrecht. ASPN international mentorship program

## **Formal Teaching of Peers (e.g., CME and other continuing education courses):**

### **Local Invited Presentations:**

*No presentations below were sponsored by outside entities*

- May 2005. Brown, J.M.: “Recovery of Speech Function following a devastating Left Hemisphere Brain Injury: A Case Report and Demonstration.” Neurosurgery Grand Rounds Lecture, Baylor College of Medicine, Houston, Tx.
  - August 2005. Brown, JM.: “A Single-Stage Dorsal Approach for the En Bloc Resection of a Sacral Chordoma”. Neurosurgery Grand Rounds Lecture, Baylor College of Medicine, Houston, Tx.
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*Local Invited Presentations Continued:*

- October 2005. Brown, J.M.: “A Case of Intracranial Rosai-Dorfman Disease Mimicking Meningiomatosis”. Neurosurgery Grand Rounds Lecture, University of Texas M.D. Anderson Cancer Center, Houston, Tx.
  - January 2006. Brown, J.M.: “Current Surgical Management of Brachial Plexus Injuries, Including Novel Nerve Transfers”. Neurosurgery Grand Rounds Lecture, Baylor College of Medicine, Houston, Tx.
  - January 2006. Brown, J.M.: “The Surgical Management of Spina Bifida and Its Sequelae”. Neurosurgery Grand Rounds Lecture, Baylor College of Medicine, Houston, Tx.
  - November 2007. Brown, J.M.: “Nerve Transfers for the Restoration of Continence”. Grand Rounds Presentation, Washington University Division of Plastic and Reconstructive Surgery.
  - February 2008. Brown, J.M.: “Reconstructive Neurosurgery: Nerve Transfers.” Grand Rounds Presentation, Washington University Department of Neurological Surgery.
  - June 2008. Brown, J.M.: “Nerve Transfers in the Forearm and Hand”. Annual Research Symposium, Washington University Department of Neurological Surgery
  - February 2009. Brown, J.M.: “Diagnosing & Addressing Lower Motor Neuron Injuries in the SCI Patient.” Presented at therapist in-service meeting at The Rehabilitation Institute of St. Louis.
  - March 2009. Brown, J.M.: “Nerve Transfers: From Peripheral to Central Indications”. Presented at Washington University SOM Department of Neurorehabilitation Grand Rounds.
  - March 2009. Brown, J.M.: “From Neuropathy to Reconstructive Neurosurgery”. Presented at Washington University SOM Department of Neurology Grand Rounds.
  - April 2009. Brown, J.M.: “Nerve Injury, Repair and Regeneration”. Washington University Department of Neurosurgery resident education lecture.
  - August 2009. Brown, J.M.: “Nerve Injuries: From Neuropathy to Nerve Palsy”. Presented at Christian Northeast Hospital Grand Rounds. St. Louis, Mo.
  - November 2009. Brown, J.M.: “The Double Nerve Transfer for Restoration of Shoulder Function”. Presented at the *Center for Nerve Injury and Paralysis* Seminar, “New Techniques in Peripheral Nerve Reconstruction”. Washington University School of Medicine.
  - January 2010. Brown, J.M.: “Nerve-Related Pain: Neuritis, Neuropathy and Neuromas”. Department of Pain Management Grand Rounds Presentation. Washington University School of Medicine, St. Louis MO.
  - March 2010. Brown, J.M.: “An Introduction to Peripheral Neurosurgery”. Washington University School of Medicine, Department of Neurosurgery.
  - May 2011. Brown J.M., “Peripheral Nerve Injury and Regeneration.” UCSD Neurosurgery Grand Rounds.
  - June 2011. Brown, J.M. “Peripheral Nerve Surgery.” UCSD Orthopedic Surgery Research Conference
  - July 2011. Brown, J.M. “Peripheral Nerve Reconstruction and New Directions in Nerve Transfers”. UCSD Division of Plastic and Reconstructive Surgery Grand Rounds.
  - Sept 2011. Brown, J.M. “Tumors of the peripheral nervous system”. UCSD Neuro-Oncology Conference.
  - Sept 2011. Brown, J.M. “The Surgical Treatment of the Peripheral Nervous System”. Rady Children’s Hospital, San Diego, Ca
  - October 2011. Brown, J.M.: “Nerve Injury, Repair and Regeneration”. UCSD Neurosurgery Resident Education Conference.
  - October 2011. Brown, J.M.: “Peripheral Nerve Surgery: Tumors, Pain and Paralysis”. UCSD General Surgery Grand Rounds
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*Local Invited Presentations Continued:*

- November 2011. Brown, J.M.: “Peripheral Nerve Surgery and Nerve Regeneration”. UCSD Department of Pathology Research Grand Rounds
  - November 2011, Brown, J.M.: “Nerve Injuries and the Surgical Management of Pain”. UCSD Anesthesiology Pain Management Grand Rounds
  - December 2011. Brown J.M.: “Peripheral Nerve Surgery: Tumors, Pain, Paralysis, and Spasticity”. Presented at the San Diego Neurology Society, La Jolla, Ca
  - March 2012. Brown, J.M.: “The Basic Science of Nerve Regeneration.” UCSD Orthopedic Surgery Research Grand Rounds.
  - July 2012. Brown, J.M.: “Nerve Transfers.” Presentation at UCSD Rehab Services, Perlman Rehabilitation and Physical Therapy.
  - August 2012. Brown, J.M. “Brachial Plexus and Peripheral Nerve Repair.” Presentation at Rady Childrens Hospital San Diego. Neurosurgery Grand Rounds.
  - October 2012. Brown, J.M.: “Thoracic Outlet Syndrome.” Presentation at Grand Rounds for UCSD Plastic Surgery.
  - March 2013. Brown, J.M.: “Surgical Management of Infant Brachial Plexus Injury.” Presentation to San Diego Hand Therapists, at UCSD Hand Therapy Department.
  - May 2013. Brown, J.M. “Basics of Pain Management in the Neurosurgical Patient”. SNS Resident Boot Camp Conference. San Diego, Ca.
  - May 2014. Brown, J.M.: “Basics of Pain Management in the Neurosurgical Patient”. SNS Resident Boot Camp Conference, San Diego, Ca.
  - May 2015. Brown, J.M.: “Surgery in Stroke Recovery.” UCSD Stroke Conference: Stroke 360. La Jolla, Ca.
  - May 2015. Brown, J.M.: “Basics of Pain Management in the Neurosurgical Patient”. SNS Resident Boot Camp Conference. San Diego, Ca.
  - June 2015. Brown, J.M.: “The Role of Nerve Transfer in Restoring Function Following SCI”. UCSD-Head North Neural Injury and Regeneration Symposium. La Jolla, Ca.
  - July 2015. Brown, J.M. & Rechnic M.: “Cases in functional reconstruction: choosing the correct intervention.” UCSD Division of Plastic and Reconstructive Surgery Grand Rounds, San Diego, Ca.
  - August 2015. Brown, J.M.: “Nerve Transfer Techniques” for “Advances and Best Practices in Upper Extremity Nerve Repair” Axogen Educational Seminar Series, San Diego, Ca.
  - September 2015 Brown, J.M.: “Select Topics in Neurosurgery.” Lecture for UCSD medical student surgery subspecialties rotation.
  - October 2015. Brown, J.M. & Rechnic M.: “Cases in functional reconstruction: choosing the correct intervention, part 2.” UCSD Division of Plastic and Reconstructive Surgery Grand Rounds, San Diego, Ca.
  - March 2016. Brown, J.M.: “Practical Neurosurgical Anatomy: cadaver course.” Annual Surgery Boot Camp for 4th Year Medical Students, San Diego, Ca.
  - May 2016. Mandeville RM, Brown JM, Allison D.: “Localization of Cervical Stimulation Leads with Collision Studies”. UCSD, Department of Neurosurgery, San Diego, Ca.
  - June 2016. Brown, J.M.: “Surgery to Reverse Paralysis.” (Featured Speaker) AST National Surgical Technology Conference, San Diego, Ca.
  - July 2016. Brown, J.M.: “Peripheral Nerve and Brachial Plexus Essentials.” UCSD Plastic Surgery Grand
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### *Local Invited Presentations Continued:*

- Rounds, San Diego, Ca.
- March 2017. Brown, J.M.: “Practical Neurosurgical Anatomy: cadaver course.” Annual Surgery Boot Camp for 4th Year Medical Students, San Diego, Ca.
  - December 2017. Brown, J.M.: “Defining Lower Motor Neuron Injuries in Cervical SCI.” Neuroradiology Grand Rounds, Massachusetts General Hospital, Boston, Ma.
  - January 2018. Brown, J.M.: “Innovative Surgical Strategies to Restore Movement in Reduce Spasticity in Individuals with Spinal Cord Injury.” Knowledge in Motion Lecture Series, Spaulding Rehabilitation Hospital, Boston, Ma.
  - March 2018. Brown, J.M.: “The Role of Nerve Transfers in SCI.” Harvard Combined Plastic Surgery Grand Rounds, Shriners’ Hospital, Boston, Ma.
  - May 2018. Brown, J.M.: “Surgical Strategies to Restore Movement in Reduce Spasticity following SCI.” Collaborative SCI Workgroup, Spaulding Rehabilitation Hospital, Boston, Ma.
  - May 2018. Brown, J.M.: “Peripheral Nerve Neurosurgery: from neuropathy to functional restoration.” Neurology Grand Rounds, Newton-Wellesley Hospital, Boston, Ma.
  - July 2018. Brown, J.M., Williams, Z.: “Peripheral nerve skills lab for residents.” Resident teaching hour. Massachusetts General Hospital, Boston, Ma.
  - September 2018. Brown, J.M.: “Managing peripheral nerve reconstruction patients.” MGH Neurosurgery Nursing Rounds. Massachusetts General Hospital, Boston, Ma.
  - September 2018. Brown, J.M.: “SCI Hand Reanimation Using Nerve Transfers.” MGH Congress of Reconstructive Neurosurgery: Restoring Function Following Devastating Injuries. Massachusetts General Hospital, Boston, Ma.

*This conference was organized by myself and was the first such conference to be held at MGH:*

- November 2018. Brown, J.M.: “Case presentations in SCI hand reanimation.” MGH Resident teaching rounds. Massachusetts General Hospital, Boston, Ma.

## **Report of Regional, National and International Invited Teaching and Presentations**

*Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.*

### **Regional:**

- July 2008. Brown, J.M.: “Nerve Transfers and Brachial Plexus Surgery”. Grand Rounds Presentation at Saint Louis University, Department of Neurosurgery.
  - September 2008. Brown, J.M.: “Nerve Injury & Nerve Transfers”. Presented at Southwest Medical Group’s lunch CME Program.
  - November 2008. Brown, J.M.: “Understanding Entrapment Neuropathy”. Presented at Anderson Hospital CME Symposium, Maryville, IL.
  - December 2009. Brown, J.M. “Reconstructive Neurosurgery: Applying Nerve Transfers to Upper Motor Neuron Disorders”. Staff Presentation, St. Louis VA Medical Center.
  - May 2010. Brown, J.M., “Thoracic Outlet Syndrome”. International Spine and Pain Institute’s St. Louis Evening Series Class, SSM Rehabilitation/DePaul Health Center, St. Louis, MO. May 2010.
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- August 2011. Brown, J.M. “The Role of Peripheral Nerve Surgery in NeuroRehabilitation” Sharp Memorial Hospital Rehabilitation Center, San Diego, Ca
  - Sept 2011. Brown, J.M. “Surgical Rehabilitation and the Role of Epidural Stimulation in Enhancing Ambulation”. Presentation for Boston Scientific, Valencia, Ca
  - December 2011. Brown J.M.: “New Directions in Peripheral Nerve Reconstruction”. Department of Neurosurgery Grand Rounds, University of California at Irvine
  - January 2012. Brown, J.M.: “Nerve Surgery in NeuroRehabilitation.” Therapy Grand Rounds, Sharp Memorial Hospital Rehabilitation Center
  - January 2012. Brown, J.M.: “Recent Developments in the Management of Peripheral Nerve Injury.” Presented at the San Diego Academy of Neurosurgery, La Jolla, Ca
  - June 2012. Brown, J.M.: “Function-enhancing procedures program.” Lecture at Post Acute Integrative Health Rehab Facility.
  - August 2012. Brown, J.M. “Thoracic outlet syndrome.” Presentation at the University of California, Irvine. Neurosurgery Grand Rounds.
  - October 2012. Brown, J.M.: “Management of Obstetrical Brachial Plexus Injury”, an educational presentation at *Practical Pediatrics*: California Center for Performing Arts, Escondido, Ca.
  - June 2013. Brown, J.M.: “Neurosurgical Procedures in Neurorehabilitation”, Presentation at Oak Tree Osteopathy, San Diego, Ca.
  - September 2013. Brown, J.M.: “Restoring Movement with Peripheral Nerve Surgery.” Presentation at the UC Irvine Neurosurgery Grand Rounds, Irvine, Ca.
  - February 2014. Brown, J.M.: “Restoration of Neurological Function after Central and Peripheral Nerve Lesions.” Presentation at Scripps Clinic/Scripps Green Hospital Neurosciences Grand Rounds. San Diego, Ca.
  - March 2014. Brown, J.M.: “New Directions in Peripheral Nerve Surgery.” Presentation of Huntington Hospital Neurosurgery Grand Rounds. Los Angeles, Ca.
  - April 2014. Brown, J.M.: “New Directions in Peripheral Nerve Surgery.” Neurosurgery Grand Rounds at Cedars-Sinai Medical Center. Los Angeles, Ca.
  - November 2014. Brown, J.M.: “Reconstructive Neurosurgery for Spinal Cord Injury.” Presentation at Scripps Neuro-Restorative Care Conference: Rehabilitation to Recovery, San Diego, Ca.
  - April 2015. Brown, J.M.: “Putting it Back Together: Peripheral Nerve Surgery.” Scripps Code Trauma and Critical Care Nursing Symposium. San Diego, Ca.
  - October 2015. Brown, J.M.: “Peripheral Nerve Surgery for Spasticity from TBI.” Orthopedic Rehabilitation Association Annual Meeting, Carlsbad, Ca.
  - November 2015. Brown, J.M.: “Essentials of peripheral nerve reconstruction.” UC Irvine Department of Neurosurgery Grand Rounds, Irvine, Ca.
  - October 2016. Brown, J.M., Nathan, R, Vasile, A.: “Multidisciplinary Team Approach to Function Restoration in SCI.” Paradigm Annual Summit: Oceans of Opportunity, Laguna Beach, Ca.
  - March 2017. Brown, J.M.: “Neuro Restoration.” Scripps 12th Annual Brain Injury Rehabilitation Conference.
  - August 2018. Brown, J.M.: “Clinical program for upper extremity reanimation in SCI and the role of nerve transfers.” SCI Grand Rounds, West Roxbury VA Medical Center, Boston, Ma.
  - September 2018. Brown, J.M.: “Hand reanimation in tetraplegia.” Reconstructive Neurosurgery: Restoring
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### *Regional Invited Teaching and Presentations Continued:*

Function following devastating injuries. Massachusetts General Hospital, Boston Ma.

- November 2018. Brown, J.M.: “Clinical program for paralysis reversal and associated neurophysiology.” Neurology Grand Rounds, Jamaica Plains Boston VA Medical Center, Boston, Ma.

### **National:**

- October 2007. Brown, J.M.: “Reconstructive Neurosurgery: Nerve Transfers”. Grand Rounds Presentation, Ohio State University Medical Center, Department of Neurological Surgery, Columbus, Oh.
  - November 2007. Brown, J.M.: “Reconstructive Neurosurgery: Nerve Transfers”. Grand Rounds Presentation, University of Florida Department of Neurological Surgery, Gainesville, Fl.
  - January 2008. Brown, J.M.: “Reconstructive Neurosurgery: Nerve Transfers”. Grand Rounds Presentation, Barrow Neurological Institute, Department of Neurological Surgery, Phoenix, Az.
  - September 2008. Brown, J.M.: “Improving Results of Brachial Plexus Surgery with Nerve Transfers.” Presented at University of Illinois at Peoria, Department of Neurological Surgery during visiting professorship., Peoria, Il.
  - December 2008. Brown, J.M.: “Nerve Transfers: From Peripheral to Central Indications”. Presented at “Cookies and Research,” Shepherd Center, Atlanta, Ga.
  - January 2009. Mackinnon, S.E., Brown, J.M.: “Nerve Transfers for the Upper Extremity- What Works”. Instructional course given at American Association for Hand Surgeons, Annual Meeting, Maui, Hi.
  - March 2009. Brown, J.M.: “Coding in Peripheral Nerve Surgery”. Presented at AANS/CNS Section on Disorders of the Spine and Peripheral Nerves Annual Meeting, Scottsdale, Az.
  - September 2009. Brown, J.M.: “Neurosurgery in SCI: Deafferentation and the Lower Motoneuron in Cervical SCI”. Presented at American Spinal Injury Association’s 35th Annual Scientific Meeting. Dallas, TX.
  - April 2010. Brown, J.M.: “The Expanding Indications for Nerve Transfers”. Combined Neurosciences Conference at Vanderbilt University School of Medicine, Nashville, Tennessee.
  - July 2010. Brown, J.M.: “Neurosurgical Rehabilitation for Upper Motor Neuron Disorders”. Methodist Rehabilitation Hospital Grand Rounds. Jackson, Mississippi.
  - August 2010. Brown, J.M.: “The Expanding Indications For Nerve Transfers”. Neurosciences Grand Rounds, University of Florida at Jacksonville.
  - September 2010. Brown, J.M.: “Reconstructive Neurosurgery and The Expanding Indications for Nerve Transfers”. Combined Neurosciences Grand Rounds, University of California at San Diego.
  - October 2010. Brown, J.M.: “The Expanding Indications for Nerve Transfers”. Neurosurgery Grand Rounds presentation at University of Southern Florida. Tampa, Florida.
  - February 2012. Brown J.M. “Peripheral Nerve Trauma”. California Neurology Society
  - April, 2011. Brown, J.M.: “The Role of Nerve Transfers in Recovering Paralyzed Limbs.” Presented at the Occupational Therapy Association of California 2011 Spring Symposium, Anaheim, Ca.
  - June 2011. Brown, J.M. “Surgical Neurorehabilitation and Nerve Transfers”. Rancho Los Amigos National Rehabilitation Center’s Neuro-Rehab Grand Rounds, Downey, Ca
  - October 2011. Brown, J.M.: “The Role of Nerve Transfers in Recovering Paralyzed Limbs”. Presented at the Occupational Therapy Association of California’s 2011 Annual Meeting, Sacramento, Ca.
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### *National Invited Teaching and Presentations Continued:*

- January 2012. Brown, J.M.: “Nerve Transfers for Radial and Ulnar Deficits”. Presented at ASPN/AAHS Annual Meeting Combined Course 203 -Nerve Transfers vs. Tendon Transfers: Timing, Treatment Options, and Post-Operative Therapy.” Las Vegas, Nevada.
  - March 2012. Brown, J.M.: “Peripheral Nerve Trauma.” Presented at the California Neurology Society Annual Meeting, Anaheim, California.
  - April 2012. Ruggieri MR, Brown JM, Braverman AS, Bernal RM, Pontari MA, Dean GE, Lamarre NS, Barbe MF. “Transfer of femoral nerve branches to pudendal nerve branches reinnervates the urethral and anal sphincters in a canine model and is feasible in a cadaver study.” American Urological Association, Atlanta, GA
  - September 2012. Brown, J.M.: “The Role of Peripheral Nerve Surgery in Restoring Motor Control Following Neurotrauma.” Presented at Western Neurosurgical Society Annual Meeting in Colorado Springs, CO
  - April 2013. Brown, J.M.: Annual Meeting of the AANS, New Orleans, La.
  - May 2013. Brown, J.M.: “Surgery for Upper Extremity Recovery” presented at American Spinal Cord Injury Association course “Restorative Neurology of Upper Extremity Function in Tetraplegia: Neurobiology, Assessment, Clinical Research, and Novel Treatments”, Chicago, Il.
  - May 2013. Brown, J.M.: “Nerve Interventions for Upper Motor Neuron Disorders.” Presentation at Grand Rounds LAC USC Medical Center., Los Angeles, Ca.
  - June 2013. Mahan, M.A., Brown, J.M.: “Deep Temporal Nerve Transfer for Facial Reanimation.” Presentation at the 12th International Facial Nerve Symposium: Boston, Ma.
  - June 2014. Brown, J.M.: “Acute Peripheral Nervous System Trauma”. Presented at the California Neurology Society Annual Meeting. Reno, NV.
  - January 2015. Brown, J.M.: “Ultrasound and MRI in Nerve Injury.” Presented at American Society of Peripheral Nerve Annual Meeting. Paradise Island, Bahamas.
  - July 2015. Brown, J.M. “Enhancing nerve coaptation with placental tissue.” Allosource – Denver, Colorado
  - January 2016. Brown, J.M. “Instructional Course 115: Nerve Transfers: New Techniques and New Applications.” American Association of Hand Surgery Annual Meeting, Scottsdale, AZ
  - May 2016. Brown, J.M.: “Peripheral Nerve Surgery in Restoring Motor Control Following SCI.” 9th World Congress for Neurorehabilitation, Philadelphia, Pa.
  - August 2016. Brown, J.M.: “Peripheral Nerve Surgery.” 7th Annual ONE Spine Residents and Fellows Course, Seattle Science Foundation, Seattle, Wa.
  - November 2016. Brown, J.M.: “Clinical Program for Paralysis Reversal.” Burke Medical Research Institute Grand Rounds/Visiting Professorship, White Plains, NY.
  - January 2017. Brown, J.M.: “Role of neurostimulation in intra-operative decision making.” Presented at 2017 American Association of Hand Surgery, Waikoloa, Hi
  - January 2017. Brown, J.M.: “Application of Peripheral Nerve Surgical Techniques after Spinal Disorders.” Presented at 2017 American Association of Hand Surgery, Waikoloa, Hi
  - January 2017. Brown, J.M.: “Reconstructive Neurosurgery.” Northwestern University Department of Neurosurgery Grand Rounds, Chicago, Il.
  - April 2017. Brown, J.M.: “Surgical Management of Paralysis.” Massachusetts General Hospital Department of Neurosurgery Grand Rounds. Boston, Ma.
  - June 2017. Brown, J.M.: *“Reconstructive Neurosurgery: from peripheral nerves to the central nervous*
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### *National Invited Teaching and Presentations Continued:*

- system.*” Temple University School of Medicine Department of Neurosurgery Grand Rounds
- March 2018. Brown, J.M.: “*Discussion: Upper Extremity Entrapments.*” Spine Summit 2018: The Annual Meeting of the AANS/CNS Section on Disorders of the Spine and Peripheral Nerves. Orlando, FL.
  - April 2018. Brown, J.M.: “*Lower Extremity Nerve Entrapments.*” 2018: The Annual Meeting of the AANS. New Orleans, La.
  - April 2018. Brown, J.M.: “*Lower Extremity Nerve Reconstruction.*” 2018: The Annual Meeting of the AANS. New Orleans, La.
  - October 2018. Brown, J.M.: “Lower Extremity Nerve Entrapments.” 2018: CNS Annual Meeting. Houston, Tx.
  - October 2018. Brown, J.M.: “Management of brachial plexus injuries: from birth to adult.” 2018: CNS Annual Meeting. Houston, Tx.
  - October 2018. Brown, J.M.: “Upper motor neuron functional assessment for evaluation of potential restorative intervention.” 2018 International Association for NeuroRestoratology, Rutgers University, Piscataway, NJ
  - October 2018. Brown, J.M.: “Reconstructive Neurosurgery for Restoration of Movement Following SCI.” 2018 International Association for NeuroRestoratology, Rutgers University, Piscataway, NJ

### **International:**

- September 2006. Brown, J.M.: “Where We Are and Where We Are Going in Reconstructive Neurosurgery of the Spinal Cord and Related Peripheral Nerves”. International Symposium on Spinal Cord Motor Control “From Denervated Muscles to NeuroControl of Locomotion” with the 22nd Dr. Janez Faganel Memorial Lecture. Ljubljana, Slovenia.
  - April 2008. Brown, J.M.: “Nerve Transfers in the Forearm and Hand”. 1st Sino-European Meeting on Brachial Plexus Microreconstructive Surgery, Venice, Italy.
  - October 2008. Brown, J.M.: “Functional Neurosurgery of the Chronic Spinal Cord Injury Patient”. Presented at the Vienna International Restorative Neurology Symposium: “Summer School for the Biological Treatment of Chronic Spinal Cord Injury,” Vienna, Austria.
  - February 2009. Brown, J.M.: “Diagnosing & Addressing Lower Motor Neuron Injuries in the SCI Patient”. Presented at the 7th International Symposium on Experimental Spinal Cord Repair and Regeneration. Brescia, Italy
  - June 2009. Brown, J.M.: “Nerve Tumors: What We Should Know About Them”. Presented at 13th Annual Esser Course, Beurs World Trade Center, Rotterdam, Netherlands.
  - April 2010. Brown, J.M.: “Advantages and Limitations of Nerve Transfers in the Upper Extremity”. Japanese Society for Surgery of the Hand (JSSH) Annual Meeting. Niigata, Japan.
  - April 2010. Brown, J.M.: “Nerve Transfers and Potential Applications in Spinal Cord Injury”. General Assembly Teaching Conference, Nantong Rich Hospital. Nantong-Jiangsu, China.
  - April 2010. Brown, J.M., Dimitrijevic, M.R.: “Human Spinal Cord Model of Injury and Strategies for Repair”. 3rd Annual Conference for the International Association of Neurorestoratology. Beijing, China.
  - April 2010. Brown, J.M., Dimitrijevic, M.R.: “Spontaneous Recovery in Spinal Cord Injury”. 3rd Annual Conference for the International Association of Neurorestoratology. Beijing, China.
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- May 2010. Brown, J.M.: “The Effect of a Peripheral Nerve Lesion Upon Postural Control”. 2nd Asian and Oceanian Conference of Physical and Rehabilitation Medicine, Symposium on Motor Control of Spinal Cord Injury. Taipei, Taiwan.
  - January 2011. Brown, J.M.: “Utility of Nerve Transfers in the Forearm and Hand”. Presented at ASPN Annual Meeting. Course 204: Adult Brachial Plexus Lesions. Cancun, Mexico.
  - March 2011. Brown, J.M.: “Recovering tetraplegic hands with nerve transfers”. Presented at “Tribute to the Life and Career of Wagih El Masri.” Oswestry, England.
  - May 2012. Brown, J.M.: “The Clinical Practice of Reconstructive Neurosurgery.” Presented at the International Society for Restorative Neurology Inaugural Meeting, Melbourne, Australia
  - October 2012. Brown, J.M.: “Surgical Interventions to Restore Sensorimotor Control in SCI”, presented at the American Congress of Rehabilitation Medicine Annual Meeting ACRM-ASNR, in Vancouver B.C.
  - November 2012. Brown, J.M.: “New directions in Peripheral Nerve Surgery”; Guadalajara Neurosurgical Summit, Guadalajara, Mexico
  - February 2013. Brown, J.M.: “Assessment and Management of Obstetrical Brachial Plexus Injuries”. The Second Abu Dhabi Pediatric Neurology Conference 2013, Abu Dhabi, United Arab Emirates.
  - February 2013. Brown, J.M.: “Restoring Motor Control Following Neurotrauma”. Mafraq Hospital Neurotrauma Grand Rounds, Abu Dhabi, United Arab Emirates.
  - August 2013. Barbe, M., Brown, J.M., Ruggieri, M.R.: Presentation at the 43rd Annual Meeting of the ICS: International Continence Society, “Somatic Nerve Transfer to Pelvic Nerve Reinnervates the Detrusor Muscle After Spinal Root Injury”, Barcelona, Spain.
  - June 2016. Brown, J.M.: “Why Should We Use the Combined Median/Ulnar Nerve Transfer.” Brachial Plexus and Peripheral Nerve Surgery 3: A Surgical Jam Session, Madrid, Spain.
  - June 2016. Brown, J.M.: “Nerve Transfer Options for Low Palsies: Our Strategy.” Brachial Plexus and Peripheral Nerve Surgery 3: A Surgical Jam Session, Madrid, Spain.
  - June 2016. Brown, J.M.: “The Role of Nerve Transfers in Chronic SCI: Candidate Identification and Early Results.” Brachial Plexus and Peripheral Nerve Surgery 3: A Surgical Jam Session, Madrid, Spain.
  - September 2016. Brown, J.M. “Basic concepts in the biology of nerve injury and regeneration.” Myelin Clinic Course: Brachial Plexus and Peripheral Nerve, Torreon, Mexico
  - September 2016. Brown, J.M. “Principles of Successful Nerve Transfers.” Myelin Clinic Course: Brachial Plexus and Peripheral Nerve, Torreon, Mexico.
  - March 2017. Brown, J.M.: “What’s New in Peripheral Nerve Surgery?” *6th Latin American Congress for Surgery and Rehabilitation of the Brachial Plexus*, Guadalajara, Mexico.
  - March 2017. Brown, J.M.: “Suprascapular Nerve Injury and Repair.” *6th Latin American Congress for Surgery and Rehabilitation of the Brachial Plexus*, Guadalajara, Mexico.
  - March 2017. Brown, J.M.: “C5-7 Nerve Injuries: Our Strategy.” *6th Latin American Congress for Surgery and Rehabilitation of the Brachial Plexus*, Guadalajara, Mexico.
  - March 2017. Brown, J.M.: “Physician Education in Brachial Plexus Surgery in the US.” *6th Latin American Congress for Surgery and Rehabilitation of the Brachial Plexus*, Guadalajara, Mexico.
  - July 2017. Brown, J.M.: “Introduction: Pathology of Brachial Plexus Trauma.” BRACHIALCON 2017, 9th Biennial National Conference of Brachial Plexus Surgery Group of India, Mangalore, India.
  - July 2017. Brown, J.M.: “Distal Nerve Transfers in Spinal Cord Injury.” BRACHIALCON 2017, 9th Biennial National Conference of Brachial Plexus Surgery Group of India, Mangalore, India.
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### *International Invited Teaching and Presentations Continued:*

- July 2017. Brown, J.M.: “*Late Nerve Reconstruction.*” BRACHIALCON 2017, 9th Biennial National Conference of Brachial Plexus Surgery Group of India, Mangalore, India.
- July 2017. Brown, J.M.: “*Round Table Discussion: Partial Adult Palsy.*” BRACHIALCON 2017, 9th Biennial National Conference of Brachial Plexus Surgery Group of India, Mangalore, India.
- May 2018. Brown, J.M.: “The Double Crush Syndrome and Upper Extremity Nerve Entrapments.” Spring Symposium of the Dutch Association for Hand Therapy. Bussum, Netherlands.
- May 2018. Brown, J.M.: “The Double Crush Syndrome and Upper Extremity Nerve Entrapments.” Dutch Society of the Hand. ’s Hertogenbosch, Netherlands.
- May 2018. Brown, J.M.: “Nerve repair under tension: a concept revisited.” Dutch Society of the Hand. ’s Hertogenbosch, Netherlands.
- November 2018. Brown, J.M.: “Nerve transfer to restore bladder function after spinal cord injury.” Working to Walk 2018, Vancouver, B.C., Canada

## **Report of Clinical Activities and Innovations**

### **Current Licensure and Board Certification:**

- *06/2008 – 12/2012:* Missouri license no. 2007004395
- *2011 – Present:* California license no. A117012
- *2012:* American Board of Neurological Surgery
- *2017 – Present:* Massachusetts Medical License - #273253

### **Practice Activities:**

Dr. Brown’s clinical neurosurgical practice is based at Massachusetts General Hospital in peripheral nerve and reconstructive neurosurgery. His clinical practice focuses upon adult paralyzing injuries, including peripheral nerve trauma, brachial plexus injuries, stroke, and spinal cord injuries. Additionally, Dr. Brown holds bimonthly interdisciplinary clinics at Spaulding Rehabilitation Hospital for restorative procedures in the spinal cord injury population. Associated clinical research efforts are outlined above.

### **Clinical Innovations:**

Dr. Brown has made contributions to the role of peripheral nerve transfers in the reanimation of arm and hand function following spinal cord injury. These contributions include candidacy identification using novel neurophysiological techniques, novel surgical techniques, and kinematic assessment of hand function outcomes. Additionally, he has travelled extensively to add to his surgical armamentarium. This has led to his assimilation of procedures rarely performed un the US, including the selective peripheral neurotomy to reduce spasticity and improve motor control in patients with upper motor neuron disorders and the contralateral C7 nerve transfer via the retropharyngeal route for augmenting results of complete brachial plexus injuries.

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# Report of Teaching and Education Innovations

## **Director of SURG 410: Introduction to Neurosurgery**

Surg 410 is a two week long course designed for third year students interested in exploring neurosurgery as a career choice. Students spend the two weeks participating in both the operating room as well as peri-operative patient care. Students attend neurosurgery grand rounds and resident didactic sessions. Weekly didactics will focus on the pertinence of neurosurgical principle to general medicine, pediatrics, obstetrics, and surgery.

In addition to teaching in the OR and on the wards, I spend an hour with students weekly reviewing the cases and clinical conditions observed the prior week and educating them regarding basic science and clinical decision-making.

## **SNS Neurosurgery “Boot Camp”**

The SNS Boot Camp Fundamental Skills Course was designed to introduce important principles of neurosurgical care to PGY 1 Neurosurgery residents across the country. Complete with lecture and hands-on lab sessions, residents are educated on professionalism, communications, hierarchical supervision, and basic procedural skills relevant to internship and junior residency.

I provide lectures and participate in directing small group teaching sessions and cadaveric surgical simulation stations at this annual event that is hosted by our division.

## **Neurosurgical Resident Training**

As a part of my weekly neurosurgical practice I actively participate in resident and medical student education. This includes skill development in the operating room, didactic teaching on rounds, and individual case discussions in clinic or between cases.

# Report of Technological and Other Scientific Innovations

## Report of Education of Patients and Service to the Community

*No presentations below were sponsored by outside entities. Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.*

### **Activities:**

#### **Educational Material for Patients and the Lay Community:**

- January 2013. Brown, J.M.: Interview with KPBS; “Selective Peripheral Neurotomy”.
  - March 2013. Brown, J.M.: Interview with NBC Channel 7; “Selective Peripheral Neurotomy”
  - March 2013. Brown, J.M.: Interview at San Diego 6 News; “Nerve Transfers & Paralysis”;
  - September 2012. Brown, J.M.: “Treatments to Enhance arm, hand and ambulatory function following stroke.” Presentation at the San Diego Brain Injury Foundation Meeting, San Diego, Ca.
  - October 2013. Brown, J.M.: “Restoring Function after Spinal Cord Injury.” Presentation at Sharp Memorial Hospital, Spinal Cord Injury Support Group, San Diego, Ca.
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- November 2012. Brown, J.M.: “The Role of Peripheral Nerve Surgery in Restoring Motor Control Following Neurotrauma” Presented at Unite 2 Fight Paralysis - Working 2 Walk Science & Advocacy Symposium; Irvine CA
- August 2014. Brown, J.M.: “Restoring Function in SCI Using Nerve Transfers.” Kali’s Cure Annual Fund-Raiser. Charlevoix, MI.
- September 2015. Brown, J.M. “Clinical Practice of Function Restoration in Chronic SCI.” Working to Walk, Unite to Fight Paralysis, Bethesda, Md.
- June 2016. Brown, J.M.: “Surgical Rehabilitation in Spinal Cord Injury: Lecture and Demonstration.” (Featured speaker) *Contemporary Trends in Spinal Cord Injury Management*, Kennedy Krieger Institute, Baltimore, Md.
- March 2017. Brown, J.M.: Interview at San Diego 6 News; “Restoring hand function after spinal cord injury”;
- January 2018. Brown, J.M.: “Surgical Neurorehabilitation.” Knowledge in Motion Lecture Series, Spaulding Rehabilitation Hospital, Boston, Ma.

## Report of Scholarship

### Research Investigations:

- Mokhtee, D.B., **Brown, J.M.**, Mackinnon, S.E. and Tung, T.H., 2009. Reconstruction of posterior interosseous nerve injury following biceps tendon repair: case report and cadaveric study. *Hand*, 4(2), pp. 134-139.
- **Brown, J.M.**, Mokhtee, D., Evangelista, M.S. and Mackinnon, S.E., 2010. Scratch collapse test localizes Osborne’s band as the point of maximal nerve compression in cubital tunnel syndrome. *Hand*, 5(2), pp.141-147.
- Ruggieri M.R., Braverman A.S., Bernal R., Lamarre N.S., Brown J.M., Barbe M. F.: Reinnervation of Urethral and Anal Sphincters with Femoral Motor Nerve to Pudendal Nerve Transfer. *Urology*. 2011 Nov;30(8):1695-704.
- Barbe, M.F., **Brown, J.M.**, Pontari, M.A., Dean, G.E., Braverman, A.S. and Ruggieri Sr, M.R., 2011. Feasibility of a femoral nerve motor branch for transfer to the pudendal nerve for restoring continence: a cadaveric study: Laboratory investigation. *Journal of Neurosurgery: Spine*, 15(5), pp.526-531.
- Janes, W.E., **Brown, J.M.**, Essenberg, J.M. and Engsberg, J.R., 2012. Development of a method for analyzing three-dimensional scapula kinematics. *Hand*, 7(4), pp.400-406.
- **Brown, J.M.**, Barbe, M.F., Albo, M.E. and Ruggieri Sr, M.R., 2013. Anatomical feasibility of performing a nerve transfer from the femoral branch to bilateral pelvic nerves in a cadaver: a potential method to restore bladder function following proximal spinal cord injury: Laboratory investigation. *Journal of Neurosurgery: Spine*, 18(6), pp.598-605.
- Hoard, R.W., Janes, W.E., **Brown, J.M.**, Stephens, C.L. and Engsberg, J.R., 2013. Measuring scapular movement using three-dimensional acromial projection. *Shoulder & elbow*, 5(2), pp.93-99.
- Jahn, J., Janes, W.E., Saheb-Al-Zamani, M., Burbank, C.M., **Brown, J.M.** and Engsberg, J.R., 2013. Identification of three movement phases of the hand during lateral and pulp pinches using video motion capture. *Hand*, 8(2), pp.123-131.
- Mahan, M.A., Gasco, J., Mokhtee, D.B. and **Brown, J.M.**, 2015. Anatomical considerations of fascial release in ulnar nerve transposition: a concept revisited. *Journal of neurosurgery*, 123(5), pp.1216-1222.
- Mahan, M.A., Vaz, K.M., Weingarten, D., **Brown, J.M.** and Shah, S.B., 2015. Altered ulnar nerve kinematic behavior in a cadaver model of entrapment. *Neurosurgery*, 76(6), pp.747-755.
- Gomez-Amaya, S.M., Barbe, M.F., **Brown, J.M.**, Lamarre, N.S., Braverman, A.S., Massicotte, V.S. and Ruggieri, M.R., 2015. Bladder reinnervation using a primarily motor donor nerve (femoral nerve branches) is functionally

superior to using a primarily sensory donor nerve (genitofemoral nerve). *The Journal of urology*, 193(3), pp.1042-1051.

- Gomez-Amaya, S.M., Barbe, M.F., Lamarre, N.S., **Brown, J.M.**, Braverman, A.S. and Ruggieri, M.R., 2015. Neuromuscular nicotinic receptors mediate bladder contractions following bladder reinnervation with somatic to autonomic nerve transfer after decentralization by spinal root transection. *The Journal of urology*, 193(6), pp.2138-2145.
- Verenna, A.M.A., Alexandru, D., Karimi, A., **Brown, J.M.**, Bove, G.M., Daly, F.J., Pastore, A.M., Pearson, H.E. and Barbe, M.F., 2016. Dorsal Scapular Artery Variations and Relationship to the Brachial Plexus, and a Related Thoracic Outlet Syndrome Case. *Journal of Brachial Plexus and Peripheral Nerve Injury*, 11(01), pp.e21-e28.
- Mandeville, R.M., **Brown, J.M.**, Gertsch, J.H. and Allison, D.W., 2016. Use of Posterior Root-Muscle Reflexes in Peripheral Nerve Surgery: A Case Report. *The Neurodiagnostic Journal*, 56(3), pp.178-185.
- Barbe, M.F., Gomez-Amaya, S., Braverman, A.S., **Brown, J.M.**, Lamarre, N.S., Massicotte, V.S., Lewis, J.K., Dachert, S.R. and Ruggieri, M.R., 2017. Evidence of vagus nerve sprouting to innervate the urinary bladder and clitoris in a canine model of lower motoneuron lesioned bladder. *Neurourology and urodynamics*, 36(1), pp.91-97.
- Wali, A.R., Park, C.C., **Brown, J.M.** and Mandeville, R., 2017. Analyzing cost-effectiveness of ulnar and median nerve transfers to regain forearm flexion. *Neurosurgical Focus*, 42(3), p.E11.
- Bhatia, A., Doshi, P., Koul, A., Shah, V., **Brown, J.M.** and Salama, M., 2017. Contralateral C-7 transfer: is direct repair really superior to grafting? *Neurosurgical Focus*, 43(1), p.E3.
- Wali, A.R., Santiago-Dieppa, D.R., **Brown, J.M.** and Mandeville, R., 2017. Nerve transfer versus muscle transfer to restore elbow flexion after pan-brachial plexus injury: a cost-effectiveness analysis. *Neurosurgical Focus*, 43(1), p.E4.
- Wali, A.R., Gabel, B., Mitwalli, M., Tubbs, R.S. and **Brown, J.M.**, 2018. Clarification of Eponymous Anatomical Terminology: Structures Named After Dr Geoffrey V. Osborne That Compress the Ulnar Nerve at the Elbow. *Hand*, 13(3), pp.355-359.
- Salvadeo, D.M., Tiwari, E., Frara, N., Mazzei, M., **Brown, J.M.**, Braverman, A.S., Barbe, M.F. and Ruggieri Sr, M.R., 2018. Determining integrity of bladder innervation and smooth muscle function 1 year after lower spinal root transection in canines. *Neurourology and urodynamics*.
- Mary F. Barbe, Danielle M. Salvadeo, Sandra M. Gomez-Amaya, Alan S. Braverman, Ekta Tiwari, Neil S. Lamarre, Justin M. Brown, Nagat Frara, Michael R. Ruggieri Sr. \* NAU-18-0508.R1 - Anatomical evidence of sensory and sympathetic reinnervation of the bladder after genitofemoral or femoral nerve transfer to the pelvic nerve in a canine model (accepted for publication)

### Other peer-reviewed scholarship:

- McPherson C.M., Brown J.M., Kim A.W., DeMonte F. Regression of Intracranial Rosai-Dorfman Disease Following Corticosteroid Therapy. Case Report. *Journal of Neurosurgery*, 2006 May; 104(5):840-4.
  - Brown J.M., Mackinnon S.E.: Nerve Transfers in the Forearm and Hand. *Hand Clinics*, Volume 24, Issue 4, November 2008, Pages 319-340
  - **Brown, J.M.**, Shah, M.N. and Mackinnon, S.E., 2009. Distal nerve transfers: a biology-based rationale. *Neurosurgical focus*, 26(2), p.E12.
  - Brown J.M., Yee A., Mackinnon S.E. Distal median to ulnar nerve transfers to restore ulnar motor and sensory function within the hand: technical nuances. *Neurosurgery*. 2009 Nov;65(5):966-77; discussion 977-8.
  - **Brown, J.M.**, Tung, T.H. and Mackinnon, S.E., 2010. Median to radial nerve transfer to restore wrist and finger
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extension: technical nuances. *Operative Neurosurgery*, 66(3), pp.ons75-ons83.

- Sachanandani, N.S., **Brown, J.M.**, Zaidman, C., Brown, S.S. and Mackinnon, S.E., 2010. Intra-neural perineurioma of the median nerve: case report and literature review. *Hand*, 5(3), pp.286-293.
- **Brown, J.M.**, Yee, A., Ivens, R.A., Dribben, W. and Mackinnon, S.E., 2010. Post-cervical decompression parsonage-turner syndrome represents a subset of C5 palsy: six cases and a review of the literature: case report. *Neurosurgery*, 67(6), pp.E1831-E1844.
- **Brown, J.M.**, 2011. Nerve transfers in tetraplegia I: background and technique. *Surg Neurol Int*, 2(121.10), p.4103.
- **Brown, J.M.** and Tansey, K.E., 2012. Clinical features of brain motor control and influence in upper motor neuron dysfunction. *Clinical neurology and neurosurgery*, 114(5), p.441.
- **Brown, J.M.** and Kakulas, B.A., 2012. Restorative neurology: Past, present, and future. *Clinical neurology and neurosurgery*, 114(5), p.524.
- **Brown, J.M.**, 2012. Special Issue Restorative Neurology and Motor Control: Preface. *Clinical neurology and neurosurgery*, 114(5).
- **Brown, J.M.**: The Reconstructive Neurosurgery of Spinal Cord Injury, In M.R. Dimitrijevic, B.A. Kakulas, W.B. McKay and G. Vrbova (Eds.). *The Restorative Neurology of Spinal Cord Injury*. Oxford University Press, 2012.
- **Brown, J.M.**, Deriso, D.M. and Tansey, K.E., 2012. From contemporary rehabilitation to restorative neurology. *Clinical neurology and neurosurgery*, 114(5), pp.471-474.
- **Brown, J.M.**, Vivio, N. and Sheean, G.L., 2012. The clinical practice of reconstructive neurosurgery. *Clinical neurology and neurosurgery*, 114(5), pp.506-514.
- Vaz KM, **Brown, J.M.**, Shah SB: *Peripheral nerve lengthening as a regenerative strategy*. Neural Regen Res. 2014 Aug 15;9(16):1498-501.
- Mahan MA, Sheean G, **Brown, J.M.**: Segmental Architecture of the Spinal Accessory Nerve. Acta Neurochir. January 2014; 156(1):169-70.
- Allison DW, Gertsch JH, Mahan MA, Sheean GL, **Brown, J.M.** Anesthesia Considerations for Monitoring TCMEPs in Adults Diagnosed with Poliomyelitis as Children: A Case Report. Neurodiagnostic Journal 2014 Mar; 54(1):28-35.
- Mahan MA, Kader AK, **Brown, J.M.**: Robot-Assisted triple neurectomy for iatrogenic inguinal pain: a technical note. Acta Neurochir. January 2014; 156(1): 171-5.
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## Narrative Report

The major theme of my research is “function restoration by means of nerve reconstruction” in the setting of three main categories of functional compromise: 1) peripheral nerve injury and lower motor neuron-source paralyzes (e.g. brachial plexus and nerve injuries); 2) complete paralyzes of upper motor neuron source (e.g. ASIA A cervical spinal cord injury); 3) Degraded motor control with associated spasticity (e.g. stroke, traumatic brain injury or cerebral palsy). In conjunction with the Departments of Orthopedic Surgery, Plastic Surgery, Neurology and Physical Medicine and Rehabilitation, a center has been created to champion this clinical and research endeavor that I direct. Within the “Mass General Paralysis Center,” multidisciplinary clinics addressed each of these entities of functional compromise. While our research collaboration included basic scientists, therapists and others for whom we provided a translational venue, as clinicians our primary aim was to better define obstacles to successful recovery of function in these clinical scenarios and successfully navigate these to establish effective clinical interventions. My career goal is to develop procedures and practice standards (diagnostics, interventions and rehabilitation methods), which will be well founded and effective in improving patient quality of life. In the setting of an academic surgical training program, this accumulated knowledge will be passed on to future leaders in surgery who will then be able to build upon our foundations.

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