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The history of neurosurgery at Tufts Medical Center

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Tufts Medical Center grew from the Boston Dispensary, which was initially founded in 1796 by public-spirited Bostonians including Samuel Adams and Paul Revere. The union with Floating Hospital for Children, Pratt Diagnostic Center, and Tufts College Medical School transformed the Dispensary into the New England Medical Center in 1929. Though neurosurgical procedures were performed as early as the 1920s, the division was not established until 1948, and the residency program received Accreditation Council for Graduate Medical Education accreditation in 1950. Tufts-New England Medical Center was formed in 1968 after a merger with the newly renamed Tufts University School of Medicine and was again renamed Tufts Medical Center in 2008. The department has been led by Drs. Bertram Selverstone, Bennet Stein, William Shucart, Carl Heilman, and Ron Riesenburger. The residency program has produced neurosurgeons who have gone on to shape the field.

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Tufts Medical Center is a renowned institution that has been delivering healthcare services to the Boston community for over 200 years. Its distinguished history can be traced back to 1796, when a group of civic-minded Bostonians, including notable patriots Paul Revere and Samuel Adams, founded the Boston Dispensary (Fig. 1).[1] The Boston Dispensary was the third permanent medical facility in the United States and the first in New England. Modeled after a dispensary in London, the mission of the Dispensary was to provide free medical, dental, and nutritional care for Boston's underserved and economically disadvantaged, made possible through a subscription program paid for by its founders and donors. One of the original tickets, signed by Paul Revere, remains on display at the Massachusetts Historical Society.

The Dispensary formed several strategic relationships early in its history. In 1894, it partnered with the Floating Hospital for Children—the first pediatric hospital in New England—and concurrently became the primary teaching hospital for Tufts College Medical School, which opened in 1893. In 1929, New England Medical Center (NEMC) was formed from the union of the Boston Dispensary, Floating Hospital, and the world-renowned Pratt Diagnostic Clinic. NEMC merged with the Tufts University School of Medicine in 1968 and became Tufts-NEMC. In 2008, the hospital was again renamed Tufts Medical Center and, in 2014, was crowned the flagship hospital under the Tufts Medicine consortium, which includes Lowell General Hospital, Melrose-Wakefield Hospital, and several outpatient clinics. Despite the numerous transitions, expansions, and mergers, the spirit of the Boston Dispensary remains at the forefront at Tufts (Fig. 2).

The Beginning of Neurosurgery at New England Medical Center: 1920s–1970

Neurosurgical operations were being performed at the Boston Dispensary as early as the 1920s, when neurosurgery first became a specialty. However, formal neurosurgical education at NEMC did not start until 1949, when the Farnsworth Surgical Education Building was built.[2] Dr. William Sweet acted as consultant to Tufts Medical School and NEMC from 1948 to 1951, when he returned to the Massachusetts General Hospital as chief of neurosurgery. He, together with Dr. Robert Hsun-Piao Yuan, established the neurosurgery residency program at Tufts in 1950. Dr. Bertram Selverstone was named the first chair of the division, and recruited Drs. Yuan, Samuel Brend-

ABBREVIATIONS AANS = American Association of Neurological Surgeons; ABNS = American Board of Neurological Surgery; AVM = arteriovenous malformation; BIDMC = Beth Israel Deaconess Medical Center; CNS = Congress of Neurological Surgeons; NEMC = New England Medical Center; NENS = New England Neurosurgical Society; SNS = Society of Neurological Surgeons.

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FIG. 1. The Boston Dispensary. © Tufts Medicine, published with permission. Figure is available in color online only.

ley, and John Drew to the fledgling department. Dr. Yuan, who received his medical degree from St. John's Medical College in Shanghai and completed his residency at the University of Pennsylvania, practiced for several decades at Tufts and several community hospitals in and near Boston and was involved in teaching Tufts residents into the 2000s, long after his retirement. Dr. Drew was instrumental in establishing the neurosurgery department at the Boston Veteran's Affairs Medical Center.

Dr. Selverstone graduated from Columbia University and attended Harvard Medical School before completing his surgical training in Montreal. During World War II, he served as a captain in the United States Army Medical Corps, and after the war returned to Harvard as faculty before becoming the chair of the NEMC neurosurgery division. Dr. Selverstone's (and by extension, the division's) research focused on localization of brain tumors using radioisotopes and the treatment of intracranial aneurysms. He is best known for the invention of the Selverstone carotid clamp, which was utilized to progressively limit blood flow through the cervical carotid artery to obliterate aneurysms of the intracranial carotid artery and anterior circulation.[3] He also experimented with materials such as resins and plastics to "coat" aneurysms, hoping to reduce their likelihood of rupture. Although these techniques fell out of use, they represented early innovations at a time when aneurysms were among the most difficult and most unsuccessfully treated lesions facing the neurosurgeon. In 1970, Dr. Selverstone moved to Providence, Rhode Island, where he was appointed clinical professor of neurosurgery at Brown University.[4] He served as president of both the New England Neurosurgical Society (NENS) (of which he was a founding member) and the Neurosurgical Society of America.

Dr. Louise Eisenhardt graduated from Tufts School of Medicine, and though she was not a neurosurgeon, her impact on the field of neurosurgery cannot be understated and her connection to the school bears mentioning (Fig. 3).[5] At the age of 24, she became Dr. Harvey Cushing's editorial assistant and was tasked with compiling his book *Tumors of the Nervus Acusticus*. In 1925, she entered Tufts Medi-



FIG. 2. Tufts Medical Center. © Tufts Medicine, published with permission. Figure is available in color online only.

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cal School and, despite maintaining her editorial duties, graduated with the highest marks achieved at the school. After medical school she briefly taught psychopathology at Tufts before pursuing a career in neuropathology; as an instructor, she continued to collaborate with Dr. Cushing and was responsible for the creation and maintenance of his brain tumor registry, in conjunction with Percival Bailey. Her meticulous documentation and comprehensive follow-up of postoperative patients lead to improved understanding of the natural history of many of the tumor types treated by Dr. Cushing. She served as the editor in chief of the *Journal of Neurosurgery* from 1944 to 1965 and was the only woman to have held that position. She also had the distinction of being the first president of the American Association of Neurological Surgeons (AANS).

First Chair of the Department of Neurosurgery: Dr. Bennet Stein (1971–1981)

Following Dr. Selverstone's departure, Dr. Bennet Stein, who was previously at the Neurological Institute of New York, was named chair of the division. With him came Drs. Richard Fraser and William Shucart; neither would stay long (though Dr. Shucart would return), and Drs. R. Michael Scott, Kalmon Post, and Stephen Dell were brought in to fill their positions.[2]

Dr. Stein completed his undergraduate and medical education at Dartmouth College and McGill University. Before starting residency, he completed military service at multiple naval hospitals in the United States and traveled to the National Hospital in Queens Square, London, as a Fulbright Scholar. After returning from England, he completed his residency at the Neurological Institute of New York. He then became a special fellow of the National Institute of Neurological Disorders, Stroke, and Blindness, where he published landmark papers on vasospasm and studied the vestibular nuclei, subthalamus, and dorsal roots of the spinal cord. He was the first to describe the supracerebellar-infratentorial approach for the treatment of pineal region tumors and was a pioneer in the treatment of third ventricular and intramedullary spinal tumors.[6] He also worked closely with Tufts neuroradiologist Dr. Sam Wolpert to develop embolization techniques for intracerebral arteriovenous malformation (AVM).[7–9] In 1981, Dr. Stein returned to Columbia as the Byron Stookey Professor of Neurological Surgery and chairman of the department at the College of Physicians and Surgeons. He was a prolific author, publishing more than 170 articles. He also served as the governor of the American College of Surgeons, as director of the American Board of Neurological Surgery (ABNS), and as treasurer and president of the Society of Neurological Surgeons (SNS). He was known for his dedication to education and interests in cars, hockey, and his family. He passed away in 2022.[6,10]

Dr. Kalmon Post is internationally recognized for his work in pituitary, parasellar, and cerebellopontine angle tumors. He developed an interest in pituitary surgery while studying with Dr. Jules Hardy, an early pioneer in the transsphenoidal approach, in Montreal. Dr. Post started his career at Tufts University School of Medicine, joining Dr. Bennet Stein as faculty in 1976 and later as associate professor in 1979. Dr. Post worked with neuroendocrinologist Dr. Seymour Reichlin, who performed formative physiological studies of hypothalamic compounds and was the first to prove the existence of growth hormone–releasing and prolactin-releasing factors. Together with Dr. Reichlin, Dr. Post published several early studies on the clinical and radiographic evaluation of sellar tumors and surgical results. He published the first case report that noted low-dose dexamethasone suppression occurs in Cushing's disease. Along with Seymour Reichlin and Ivor Jackson, he published *The Pituitary Adenoma* textbook in 1980.[11] Dr. Post moved to Columbia University in 1981, and he joined Mount Sinai in 1991.



FIG. 3. Dr. Louise Eisenhardt. © AANS, published with permission.

Dr. R. Michael Scott was one of the preeminent leaders and mentors in pediatric neurosurgery (Fig. 4).[12] He began his training at Temple University, and after 1 year of surgical internship at Boston City Hospital (now Boston Medical Center), he went to the National Institute of Neurological Diseases and Blindness to study Parkinson's disease and viral infections. He returned to Boston to complete his neurosurgical residency at Massachusetts General Hospital and then became professor and director of pediatric neurosurgery at NEMC. In 1988, Dr. Scott moved across town to lead the pediatric neurosurgery program at Boston Children's Hospital. He served in leadership positions in multiple neurosurgical societies. Dr. Scott's contributions to the field of pediatric neurosurgery are both broad and innumerable, ranging from cerebrovascular disease[13–19] to congenital malformations to neuro-oncology; he developed the pial synangiosis technique for the treatment of pediatric stroke secondary to moyamoya disease and characterized cerebral changes in spina bifida.[20,21] He was an exceptional educator and clinician who has impacted the lives of his trainees and patients alike. He passed away in 2023 from glioblastoma.

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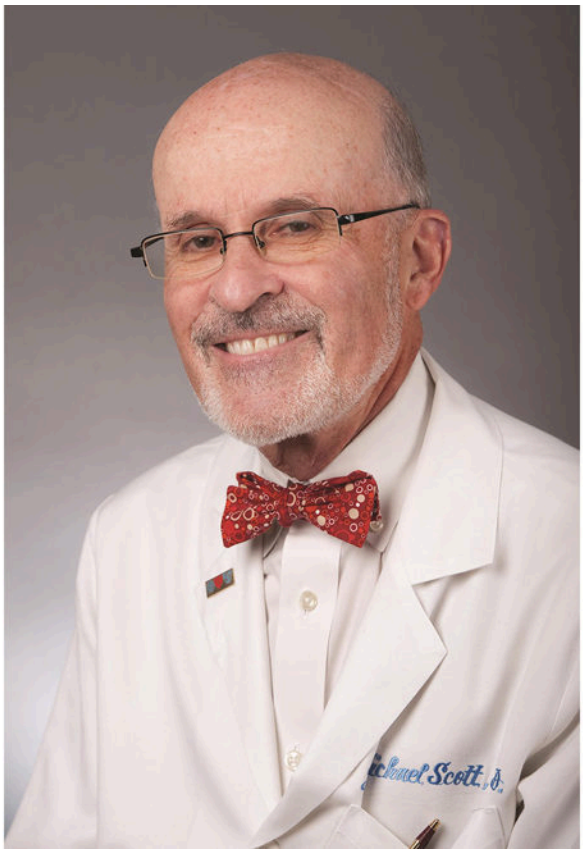


FIG. 4. Dr. R. Michael Scott. © Department of Neurosurgery, Boston Children's Hospital, published with permission. Figure is available in color online only.

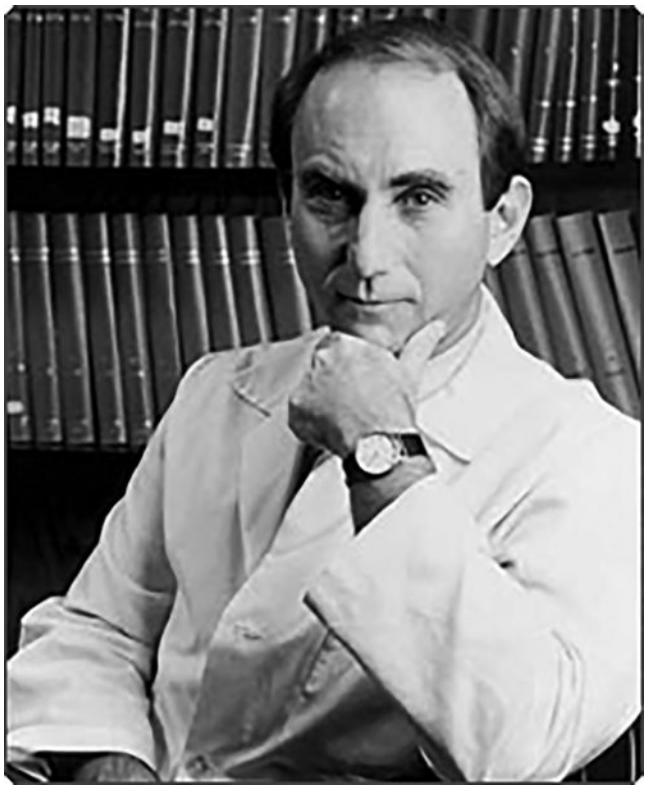


FIG. 5. Dr. William Shucart. Courtesy of *Tufts Journal*. © Tufts University, published with permission.

Second Chair of the Department of Neurosurgery: Dr. William Shucart (1981–2005)

Dr. Shucart returned to lead the department in 1981 after serving as professor and chair of neurosurgery at New York Downstate Medical Center. During his tenure, several notable neurosurgeons were on staff, including Drs. R. Michael Scott, Stephen Dell, David Kasdon, Jack Stern, Joel Abramovitz, Alan Cohen, Johnathan Borden, Carl Heilman, Julian Wu, and Kevin Yao. St. Elizabeth's Hospital and the Boston VA Medical Center were incorporated under the Tufts neurosurgical umbrella while Dr. Shucart was chair; it would later form a partnership with Brigham and Women's Hospital.[2]

Dr. Shucart attained his undergraduate degree from University of Missouri and his medical degree from Washington University in St. Louis, Missouri. After completing a medical internship at the University of Utah, he decided to switch to surgery. He then completed a year of surgical residency at Peter Bent Brigham (now Brigham and Women's) Hospital before being drafted into the US Army. He served as a medic in the Vietnam War and was involved in the battle that inspired the book *We Were Soldiers Once… and Young*, which was later adapted into a motion picture starring Mel Gibson.[22] After returning from Vietnam, he completed his neurosurgical residency at Columbia and the Hospital for Sick Children in Toronto. His first faculty position was at Tufts (Fig. 5). Soon after, he would accept a professor and chair appointment at State University of New York Downstate Medical Center. In 1981, he returned to Tufts to assume the role as chairman; he also was briefly chief of neurosurgery at Beth Israel Deaconess Medical Center (BIDMC) from 1996 to 1997. Dr. Shucart was instrumental in the advancement of the neuroscience department at Tufts University School of Medicine and was revered as an educator. He held several leadership positions in organized neurosurgery and received the Distinguished Service Award from the SNS in 2006. Together with Dr. Stein, he was first to describe the transcallosal approach to the ventricular system and helped develop new applications for neuroendoscopy with Dr. Carl Heilman.[23,24] He was prolific in his treatment of intracranial aneurysms, performing multiple aneurysm clippings a day at the height of his practice. Dr. Shucart advanced the treatment of neurovascular disorders utilizing both open and early endovascular techniques, including adjunct temporary balloon occlusion for basilar and paraclinoid aneurysms and endovascular detachable balloons.[25] He developed a classification system for dural arteriovenous fistulas along with Drs. Borden and Wu, also from Tufts.[25,26] Dr. Shucart hypothesized the "water-hammer effect," whereby an incompletely embolized aneurysm may recanalize and expand due to the constant pulsation of blood flow against the embolic material. He also contributed to data linking

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TABLE 1. Current neurosurgery faculty at Tufts Medical Center

Name	Subspecialty	Position
Carl Heilman, MD	Skull base	Chair Emeritus, Department of Neurosurgery Professor, TUSM
Julian Wu, MD	Neuro-oncology	Associate Chair Chief, Neurosurgical Oncology Residency Program Director Professor, TUSM
Adel Malek, MD, PhD	Cerebrovascular	Chief, Neurovascular Surgery Director, Cerebrovascular & Endovascular Division Professor, TUSM
James Kryzanski, MD	Spine, epilepsy	Chief, Epilepsy Surgery Co-Chief, Spinal Surgery Assistant Professor, TUSM
Ron Riesenburger, MD	Spine	Interim Chair, Department of Neurosurgery Director, Spine Center Co-Chief, Spinal Surgery Associate Professor, TUSM
Mina Safain, MD	Pituitary	Assistant Professor, TUSM Chief, Neurosurgery, Melrose-Wakefield Hospital
Marie Roguski, MD	Neuro-oncology	Assistant Professor, TUSM
Jason Frerich, MD	Spine	Director, Endoscopic Spine Surgery & Spinal Deformity
Jayde Nail, MD	Neurotrauma	Director of Neurotrauma Surgical Director of Neurological ICU Assistant Professor, TUSM

ICU = intensive care unit; TUSM = Tufts University School of Medicine.

angiographic vasospasm to adverse outcomes from surgery in aneurysmal subarachnoid hemorrhage patients, arguing for preoperative angiography to be performed in all cases prior to surgical intervention.[27]

Dr. David Kasdon graduated from Tufts School of Medicine and completed his residency at NEMC. He served as newsletter editor for the Congress of Neurological Surgeons (CNS) and was a member of the CNS Executive Committee and the Joint Council of State Neurosurgical Societies. He was one of the first to describe dorsal rhizotomy in the treatment of spasticity.[28,29] Unfortunately, he passed away suddenly in 1987 in a scuba diving accident. Dr. Kasdon was a beloved clinician and educator, and his memory is honored as the namesake of the neurosurgery conference room at Tufts Medical Center, where resident didactic education is continued today in the Tufts tradition. Tufts Medical School also established the Kasdon Award, which is given to the top graduating neuroscience student.

Dr. Alan Cohen is a distinguished figure in pediatric neurosurgery and is known for his work on pediatric brain tumors and minimally invasive neurosurgical techniques. He obtained his medical degree from Cornell University in 1978 and completed his residencies in general surgery and neurological surgery at New York University School of Medicine. Dr. Cohen joined the faculty at Tufts in 1988, where he served as director of pediatric neurosurgery for 7 years. He then spent the next 17 years at Case Western Reserve University School of Medicine, where he was chief of pediatric neurosurgery and surgeon in chief at Rainbow Babies and Children's Hospital. Dr. Cohen then came back to Boston and succeeded Dr. Scott as the chief of pediatric neurosurgery at Boston Children's Hospital. Since 2016, he has been the chief of pediatric neurosurgery at Johns Hopkins, where he holds the Carson Spiro Professorship in Pediatric Neurosurgery. Throughout his career, Cohen has held numerous leadership positions in various neurosurgical societies, including president of the SNS and American Society of Pediatric Neurosurgeons.[30–32]

Third Chair of the Department of Neurosurgery: Dr. Carl Heilman (2005–2024)

The current program's leadership group had its beginnings in the early 2000s, when Dr. Wu served as chief of the division of neurosurgery at BIDMC in Boston, working alongside Dr. Heilman, Dr. Adel Malek, and former Tufts Medical Center faculty Dr. Simcha Weller.[2] During this time, trainees at Tufts also rotated at BIDMC. Drs. Wu, Malek, and Weller would eventually move across the city to Tufts' neurosurgery department when Dr. Heilman was appointed chair of neurosurgery at Tufts following Dr. Shucart's retirement; Dr. Wu became the residency program director at Tufts, while Dr. Malek became the director of the cerebrovascular and endovascular surgery division. This core group of faculty has been a constant at Tufts Medical Center ever since, with many neurosurgical residents benefitting from the well-rounded and patient-centric mentorship they provide (Table 1).

After graduating from the University of Pennsylvania School of Medicine in 1986, Dr. Heilman came to Tufts

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FIG. 6. Dr. Carl Heilman. © Carl Heilman, published with permission. Figure is available in color online only.

Medical Center for his residency training and eventually completed a skull base surgery fellowship under Dr. Jon Robertson at the Semmes Murphy Clinic. He joined the faculty at Tufts in 1994 and was made chair in 2005 (Fig. 6).[33] Dr. Heilman is a pioneer in endoscopic skull base surgery and is credited with publishing one of the first papers on the endoscopic transsphenoidal approach to the sellar region.[24] He has written extensively on topics related to the skull base, meningiomas, and Chiari malformations, and he is considered a thought leader in those fields. Along with Dr. Adel Malek, he is a founder and board member of CereVasc, which developed the first device for endovascular treatment of hydrocephalus (eShunt), and holds multiple patents related to that development.[34,35] He has also served in as president of several neurosurgical societies, including the Society of University Neurosurgeons, Boston Society of Neurology and Psychiatry, NENS, and North American Skull Base Society (NASBS), as well as chair of ABNS (of which he also served as secretary).[36] In 2023, a resident research scholarship in his honor was established through the Neurosurgery Research and Education Foundation, which supports research on skull base pathology, as well as resident education through anatomical dissection.[37] Dr. Heilman stepped down from the role of chair in late 2024 but maintained his clinical practice at Tufts. Tufts neurosurgery residency alumnus and current faculty Dr. Ron Riesenburger was named interim chair in Dr. Heilman's stead.

Dr. Julian Wu attended Brown University, graduating magna cum laude, before earning his medical degree from the University of Connecticut Medical School in 1981. He completed his surgical internship at Boston City Hospital and neurosurgical residency at Tufts Medical Center. After residency, he pursued a neuroscience research fellowship at Tufts with support from the AANS and American Brain Tumor Association. His research focused on brain tumor tumorigenesis, progression, and invasion, and he has worked on several clinical trials examining immunotherapy, radiosurgery, and tumor treating fields.[38–42] Dr. Wu was instrumental in bringing stereotactic neuronavigation, awake craniotomy, and the use of fluorescence-guided brain tumor surgery to the neurosurgical oncology program at Tufts Medical Center. He remained at Tufts for the start of his practice and then went on to become the chief of neurosurgery at BIDMC and associate professor of surgery at Harvard Medical School. He came back to Tufts to join Dr. Heilman in 2005 as associate chairman, chief of neurosurgical oncology, and director of the residency program, roles that he has maintained since his return.[43] He is also a professor of neurosurgery at Tufts University School of Medicine. He is the codirector of the Boston Gamma Knife Center, the only Gamma Knife unit in Massachusetts and one of the few in New England. He is an authority on the use of Gamma Knife to treat pathologies including trigeminal neuralgia, AVM, and brain tumors.

Tufts Neurosurgery in the Modern Era

Since being founded in 1950, the residency program has had a strong history of training skilled neurosurgeons, many of whom go on to leadership positions in the field. The program has produced individuals that have made lasting contributions to academic, clinical, and organized neurosurgery and continue to do so actively (Table 2).[44]

A mixture of intensive didactic and hands-on clinical education has characterized the residency program since its inception. A decades-long cornerstone of the didactic training has been the weekly chief case conference. This conference is structured similarly to the oral board examinations administered by the ABNS, and it is led by a chief or senior resident who presents a patient case with a chief complaint. The residents take a history and ask about symptoms, clarify the clinical course, review imaging, and determine the best treatment options, taking the case from start to finish. During this, attending neurosurgeons highlight teaching points touched upon by the case and solidify concepts. The conference provides strong preparation for clinical practice and independent decision-making, as well as for oral board examinations during early practice. Alongside didactic education, residents frequent the operating room and interventional radiology suites, obtaining the necessary technical skill for independent practice to handle a variety of neurosurgical pathologies. A strong emphasis is placed on clinical decision-making individualized to the specific patient, a key concept in surgical practice that underlies patient selection and operative outcomes. Finally, the program includes a flexible elective year for residents to pursue their clinical and academic interests. Prior residents have pursued advanced degrees, endovascular or neurocritical care training, specialty rotations at other hospitals, and bench research with outside institutions.

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TABLE 2. List of Tufts neurosurgery residency graduates

Name	Year of Graduation	Current Practice/Positions Held
Franz E. Glasauer	1961	Chair/Chief, SUNY Buffalo (1983–1985)
David R. Cooper	1962	Deceased 2018
Joseph F. Arena	1965	Deceased 2008
Augusto G. Asinas	1966	Holyoke Medical Center, Holyoke, MA; retired
Richard J. Seibert	1971	Deceased 2015
Kyoo S. Ro	1972	Adventist Health, Glendale, CA
Albert L-Y Shen	1975	Deceased 1975
Eddy Garrido	1977	Jefferson Health-Thomas Jefferson University Hospitals, Sewell, NJ
Volker Sonntag	1978	Barrow Neurological Associates, Phoenix, AZ; retired 2010
David L. Kasdon	1978	Deceased 1987
Rodney A. Rozario	1980	Eastern Maine Medical Center, Bangor, ME
Brad Selland	1981	President, Bradford Distillery, Hingham, MA
Eduardo Mercado	1982	Deceased 2020
Thomas R. Peterson	1983	Hackensack UMC, Hackensack, NJ
Joel N. Abramovitz	1984	St. John Neurosurgical Center, Tulsa, OK
Ramon A. Batson	1987	Section Chief of Neurosurgery, Elite Brain & Spine of Connecticut, Norwalk & Danbury, CT
Jeffrey Yablon	1987	UCSF, Napa, CA
Gerald T. McGillicuddy	1988	UMass Memorial Medical Center, Worcester, MA
Julian K. Wu	1988	Associate Chairman, Department of Neurosurgery, Chief, Division of Neurosurgical Oncology, Tufts Medical Center
Stanley G. Pugsley	1989	Geisinger Community Medical Center, Scranton, PA
Kenneth L. Renkens	1990	Indiana Spine Group, Carmel, IN; retired 2021
John A. Wilson	1991	Chairman, Wake Forest Baptist Health Center, Winston-Salem, NC
Samuel R. Neff	1992	Deceased 2005
Robin F. Koeleveld	1993	North Carolina Neurosurgery & Spine, UNC Health Care, NC
Carl B. Heilman	1994	Neurosurgeon in Chief, Chairman of Neurosurgery, Tufts Medical Center, Boston, MA
Patrick A. Roth	1995	Chairman of Neurosurgery, Hackensack University Medical Center, Hackensack, NJ
Johnathan A. Borden	1996	Southwest Ohio Brain & Spine, Cincinnati, OH
Michael Gieger	1997	Neurosurgical Consultants, Inc., Norwood, MA
Frank D. Vrionis	1998	Baptist Health South Florida, Boca Raton, FL
David Estin	1998	Neurosurgeons of New Jersey, Ridgewood, NJ
Marc H. Friedberg	2000	Neurosurgical Consultants, Inc., Norwood, MA
Neil A. Troffkin	2001	Neurosurgical Consultants, Evansville, IN
Lyndell Y. Wang	2002	Kaiser Permanente, Redwood City, CA
Tina Lin	2003	Kaiser Permanente, Anaheim, CA
Samuel C. Kim	2004	Weill Cornell Spine & Brain Center, New York
James T. Kryzanski	2005	Chief, Division of Epilepsy Surgery, Neurosurgeon, Tufts Medical Center, Boston, MA
Justin Paquette	2006	Paquette Spine Institute, Beverly Hills, CA
Vasilios A. Zerris	2007	Chairman, Henry Dunant Hospital, Athens, Greece
Ron I. Riesenberger	2008	Director of the Spine Center, Neurosurgeon, Tufts Medical Center, Boston, MA
Daniel A. Hoit	2009	Semmes Murphy Clinic, Memphis, TN
Steven W. Hwang	2010	Shriners Hospital for Children, PA
Clemens M. Schirmer	2011	System Director, Cerebrovascular & Endovascular Neurosurgery, Geisinger Medical Center, Danville, PA
Pranatartiharan Ramachandran	2012	Assistant Professor, University of Kentucky Medical Center, Lexington, KY
Abraham Boskovitz	2013	Kaiser Permanente, Sacramento, CA
Ami Raval	2014	Grand View Health, Colmar, PA
William R. Miele	2015	Kaiser Permanente of Washington
Jason P. Rahal	2016	South Shore Hospital, Weymouth, MA

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TABLE 2. List of Tufts neurosurgery residency graduates

Name	Year of Graduation	Current Practice/Positions Held
Mina G. Safain	2017	Tufts Medical Center, Boston, MA
Marie Roguski	2018	Tufts Medical Center, Boston, MA
Richard Ogbuji	2019	Baystate Medical Center, Springfield, MA
Robert Heller	2020	Albany Medical Center, Albany, NY
Max Shutran	2021	Stamford Health Medical Group, Stamford CT
Richard Dowd	2022	South Coast Health, New Bedford, MA
T. Jayde Nail	2023	Tufts Medical Center, Boston, MA
Shane M. Burke	2024	Neurointerventional & Vascular Neurosurgery Fellowship, Hartford, CT
Michael Yang	2025	Complex Spine Fellowship, Barrow Neurological Institute, Phoenix, AZ

SUNY = State University of New York; UCSF = University of California, San Francisco; UMass = University of Massachusetts; UMC = University Medical Center; UNC = University of North Carolina.

Thanks to Drs. Heilman and Wu's heavy involvement in national resident education, Tufts also served as the New England regional location of the SNS Intern Boot Camp for many years prior to transitioning to an online module due to COVID-19; fortunately, the Boot Camp returned to being in person in 2024.

In 2020, with consistent increases in the case volume of patients treated at Tufts, the residency cohort was increased from 1 resident per year to alternating classes of 1 and 2 residents per year, expanding the cohort from 7 to 11 residents. The case mix index at Tufts is among the highest in the city in Boston, with a significant range from relatively straightforward "bread and butter" cases to some of the most complex neurosurgical challenges. Current residents receive particularly strong training in skull base surgery, endovascular neurosurgery, epilepsy surgery, Gamma Knife radiosurgery, and minimally invasive spine surgery, including some of the earliest advancements in routine use of awake spinal surgery using spinal anesthesia.[45] The department has also added robot-assisted spine surgery to its portfolio of advanced surgical adjunctive modalities, to the benefit of both patients and resident education.

Conclusions

Tufts Medical Center has a rich history of providing healthcare to the community in the same neighborhood where the Boston Dispensary was founded. This purpose has continued within the Department of Neurosurgery with its emphasis on sound patient care and resident education. The tradition of high-quality, patient-centered care continues today, and Tufts remains committed to its mission of healthcare innovation, leadership, charity, and service to all in the community. Tufts Medical Center is an institution that is deeply rooted in history and is committed to providing world-class care and research to its patients, and the Department of Neurosurgery is a leader in this endeavor.

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Disclosures

Dr. Malek is a founder, investor, and owner of intellectual property at CereVasc, Inc., outside the submitted work. Dr. Heilman reported personal fees from CereVasc, Inc., outside the submitted work.

Author Contributions

Conception and design: Heilman, Kosarchuk, Snyder, Patel, Riesenburger, Malek, Wu. Acquisition of data: Heilman, Kosarchuk, Snyder, Patel, Riesenburger. Analysis and interpretation of data: Heilman, Snyder, Patel. Drafting the article: Heilman, Kosarchuk, Snyder, Patel, Rodrigues, Dincer. Critically revising the article: Heilman, Kosarchuk, Snyder, Patel, Dincer, Boskovitz, Nail, Riesenburger, Malek, Wu. Reviewed submitted version of manuscript: Heilman, Kosarchuk, Snyder, Patel, Rodrigues, Dincer, Boskovitz, Nail, Riesenburger, Wu. Approved the final version of the manuscript on behalf of all authors: Heilman. Study supervision: Kosarchuk, Wu.

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