

A Beautiful Mind Pioneers a New Approach to

# NEURO SURGERY

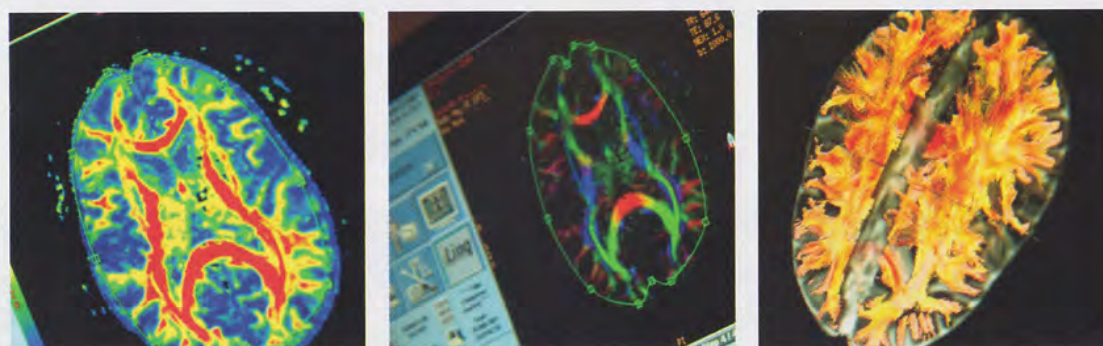
A 10-year-old boy emigrates from Israel to America with his family. English is his third language and he struggles with schoolwork and friendships. A diligent, hardworking student, he wins his high school science fair, earns a Bachelor of Science degree with honors from New York University and, eventually, M.D. and Ph.D. degrees from the State University of New York, where he is class valedictorian. After years of residency and advanced fellowship training in the nation's most respected teaching hospitals, he becomes one of America's top neurosurgeons.

## Yaron A. Moshel, M.D., Ph.D.

Co-Director, The Brain Tumor Center of New Jersey  
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What could be the plot of an inspirational movie is actually the true story of Yaron Moshel, M.D., Ph.D., a recent addition to Overlook's neurosurgical team and Atlantic NeuroSurgical Specialists (ANS), New Jersey's largest private neurosurgical practice.

Dr. Moshel is one of a select few surgeons who specialize in removing deep-seated brain tumors using technology that includes computer-guided navigation, awake intraoperative brain mapping, endoscopy, and microsurgery.

"Many surgeons are hesitant to remove a tumor if it's too close to critical brain structures that control vision, language, body movements, or other high-level cognitive functions," says Dr. Moshel. "My approach is different. I go into surgery, not just with anatomical MRI images showing where the tumor is located, but with functional data showing how that tumor relates to the individual patient's ability to speak, see, move, and think."

One of the most unique and beneficial aspects of this surgical approach is that it's often done while the patient is awake – from beginning to end.

"Traditionally, neurosurgeons would only discover whether their patient's brain function was intact following surgery when he or she wakes from anesthesia...at which point it is too late to undo the operation," explains Dr. Moshel. "Recent advancements in anesthesia, as well as imaging, allow us to keep some patients awake and engaged throughout the entire surgery, which allows us to monitor their function continuously. This yields much better outcomes for these otherwise inoperable brain tumors."

The critical data obtained in a functional MRI scan prior to surgery helps Dr. Moshel determine whether to keep patients awake or asleep during delicate neurosurgical procedures. The MRI images are transmitted to the operating room where they are used during surgery via a GPS-like tracking system for the brain, allowing electrical mapping of important regions of the brain throughout surgery (regardless of whether the person is awake or asleep). When language function is impacted, Dr. Moshel often opts to keep patients awake, as it's the best way to directly monitor higher-level cognitive functions.

"Every brain – just like every person – is unique and requires a customized approach to surgery," adds Dr. Moshel. "The brain is organized in multiple pathways on both the surface, where most

processing happens, and the deep tissue regions. When removing a tumor, the challenge is to remove it completely and without severing these important connections. New imaging technology and intraoperative brain mapping allow us to identify the safe boundaries of the tumor and remove it more precisely and in one sculpted piece. Most patients leave with a clean MRI. This makes a huge difference in survival and quality of life."

Previously assistant professor of neurosurgery at Thomas Jefferson University Hospital in Philadelphia, Dr. Moshel's clinical interests and neurosurgical abilities extend beyond the treatment of brain tumors. He is experienced in the surgical treatment of skull base, pituitary, and spine tumors using the latest techniques in computer-guided navigation, minimally invasive endoscopy, microsurgery, and stereotactic radiosurgery (CyberKnife®); the surgical treatment of epilepsy; minimally invasive treatment of trigeminal neuralgia; cervical spine surgery; and Chiari malformations.

"What attracted me to Overlook and ANS is that it mimics what a high-level academic neurosurgical department has in place," remarks Dr. Moshel. "With so many highly trained neurosurgeons on staff, each of us has the ability to develop a super-specialized practice. Here, we can develop best practices, engage in clinical research, set bold new standards, and ensure that patients receive the most groundbreaking neurosurgical treatment."

"At the same time, it's very friendly and personal. My colleagues call each other on our cell phones all the time. Most of us live locally and we are active in our communities."

"A huge benefit for Overlook patients is easy access to every specialist involved in their care and collaboration across multiple disciplines, such as radiology, neurology, and neurosurgery," says Dr. Moshel, who co-directs the Brain Tumor Center of New Jersey at Overlook with Dr. Michael Gruber.

"A multidisciplinary brain tumor board – one that includes every specialist involved in each case – meets with patients and their families together, in one office, to discuss a prognosis and treatment plan. This collaborative one-stop approach to patient care is what distinguishes a true cancer center."

Dr. Moshel admits he's come a long way since his early days as a young immigrant child in Brooklyn.

"I was fascinated at an early age with neuroscience and how the brain works," he remembers. "I am also an eternal optimist and try to find beauty in the most difficult situations. I love taking care of my patients and remind them that every day is precious...that life is beautiful."