



# Weill Cornell Medicine

## Center for Comprehensive Spine Care



### MICHAEL VIRK, MD, PhD

Assistant Professor of Neurological Surgery  
Weill Cornell Medicine Center for Comprehensive  
Spine Care

Phone: 646-962-3388

Fax: 646-962-0118

### SURGICAL SPECIALTIES & CLINICAL EXPERTISE

Adult Scoliosis

Spinal Tumors

Minimally Invasive Spine Surgery

Traumatic Spinal Injuries and Fractures

Spinal Cord Injury

Endoscopic Discectomy

Image Guidance and Neuro-Navigation

Spinal Stenosis

Herniated Disc

Radiculopathy

Spondylolisthesis

Occipitocervical Pathology

Ankylosing Spondylitis

Revision Spine Surgery

Failed Back Syndrome

Spinal Compression Fractures

Basilar Invagination

Back Pain

Pain Syndromes

Michael Virk, M.D., Ph.D., is an award-winning neurosurgeon specializing in minimally invasive and complex spine surgery. He is committed to a patient-centered, multidisciplinary approach to treat spinal disorders that include deformity, tumor, trauma, spinal cord injury, and degenerative disease. Dr. Virk uses state-of-the-art minimally invasive techniques with intraoperative, computer-assisted navigation and endoscopy. He also uses fundamental, open surgical strategies in patients who will benefit most from these.

Dr. Virk's research background in neuronal signaling has provided him with a unique understanding of how the brain, spinal cord, and peripheral nerves function in normal and pathological states. His research interests are in spinal cord injury and pain, as well as in long-term outcomes following spinal surgery for deformity, tumors, and degenerative disease. As such, he is dedicated to long-term follow-up of his post-operative patients and he continues to utilize a team-based approach throughout the post-operative period. Integrative care, of which surgery is but one component, is a cornerstone of his patient treatment philosophy. Dr. Virk's ultimate treatment goal is to help patients regain function to the greatest extent possible with minimal pain and short hospital stays so that they can return to enjoying their lives.

[comprehensivespine.weillcornell.org](http://comprehensivespine.weillcornell.org)

## TRAINING

Dr. Virk graduated from St. Ignatius College Preparatory in San Francisco, California, before traveling east to earn an undergraduate degree in psychology at Cornell University. He continued on to the NIH-funded Medical Scientist Training Program at Oregon Health and Science University in Portland, where he earned his M.D. and Ph.D. degrees. He completed his neurological surgery residency at NewYork-Presbyterian/Weill Cornell Medical Center and Memorial Sloan Kettering Cancer Center. During his residency, Dr. Virk did a research fellowship at the Rockefeller University. Following his Chief Resident year, he returned to San Francisco to pursue a fellowship in minimally invasive and complex spine surgery at the University of California, San Francisco.

## RESEARCH & PUBLICATIONS

Dr. Virk has extensive research experience that has resulted in several publications. His Ph.D. thesis work was completed in the lab of John Williams, Ph.D., at the Vollum Institute of Oregon Health and Science University. This work focused on neuronal signaling in response to opiates and the mechanisms underlying tolerance and addiction to these pain medications. He also completed a post-doctoral research fellowship with Nobel Laureate Paul Greengard, Ph.D., and Michael Kaplitt, M.D., Ph.D., at the Rockefeller University, where his work centered on basal ganglia circuitry associated with reward seeking and pain. He is interested in translational projects involving dysfunctional neuronal signaling and circuits, particularly those associated with traumatic spinal cord injury and pain.

Dr. Virk is also involved in clinical outcomes research following spine surgery. These projects revolve around degenerative disease, minimally invasive and image-guided spine surgery, as well as spinal cord injury. Dr. Virk's research has been published in *PNAS*, *Journal of Neuroscience*, *Neurosurgery*, *Neurosurgery Focus*, and the *Journal of Neurosurgery*, and he co-authored multiple chapters, including one on minimally invasive spine surgery, for the 7th edition of *Youmans and Winn Neurological Surgery*, a definitive neurosurgical reference.

## CLINICAL LOCATIONS

Weill Cornell Medicine  
Center for Comprehensive Spine Care  
240 East 59th Street, 2nd floor  
(at Second Avenue)  
New York, NY 10022

NewYork-Presbyterian/Lower Manhattan  
156 William Street  
11th floor  
New York, NY 10038



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## Brain & Spine Center

**Weill Cornell Medicine**  
**Brain and Spine Center**  
Starr Pavilion, Suite 651  
525 E. 68th St., Box 99  
New York, NY 10065

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