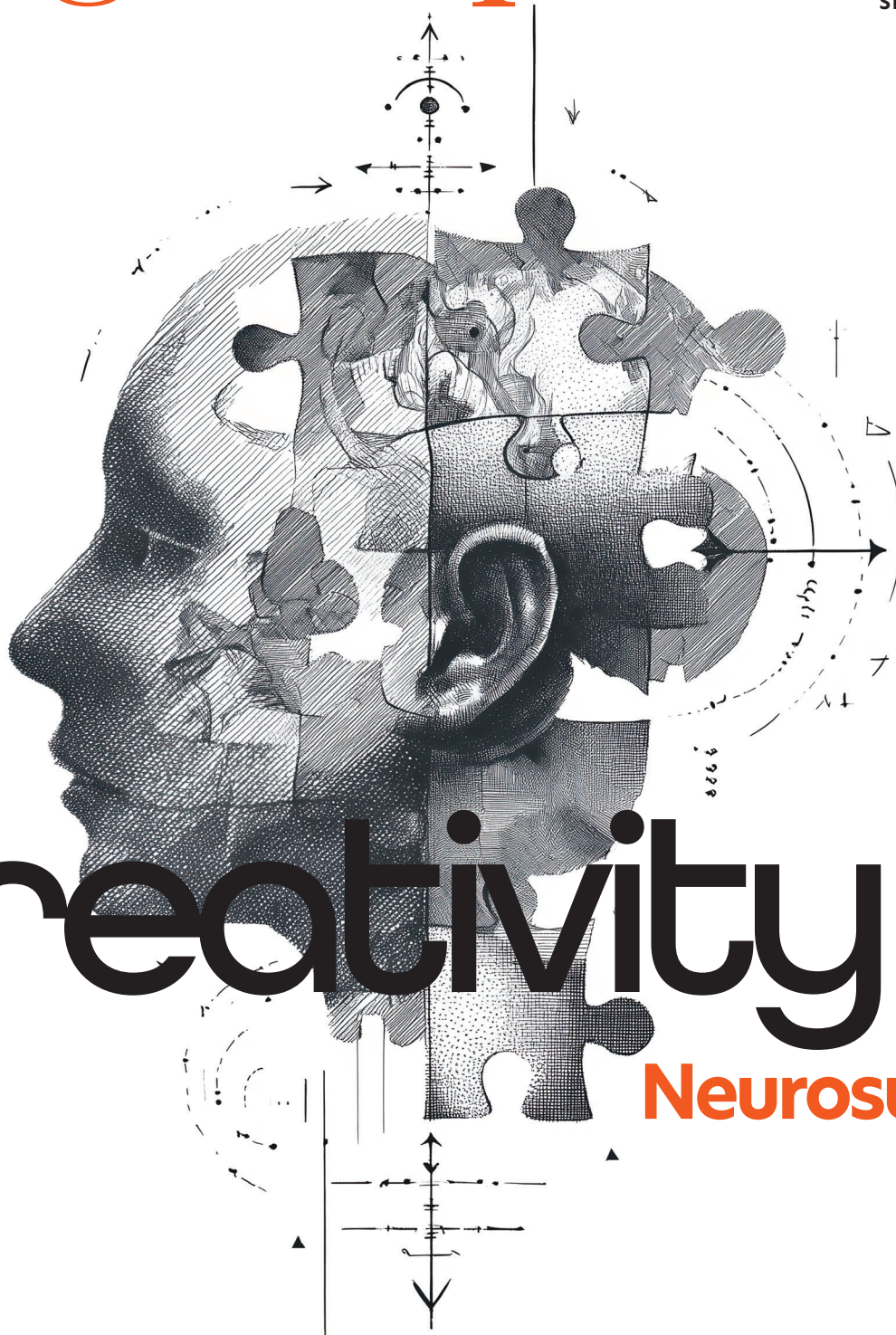


congressquarterly

SPRING 2026



Creativity & Neurosurgery



CNS

6 Creative Diversions: Staying Sane in Neurosurgery

12 The Network Basis of Creative Thought in the Human Brain

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EDITOR'S NOTE



Julie L. Chan
Editor



Ramesh Grandhi
Managing Editor

In this issue, we celebrate creativity. While creativity may not be the first word that comes to mind when describing neurosurgeons, it is deeply embedded in both our professional work and our lives beyond the operating room.

We begin with Jay Wellons, who reflects on the importance of writing as a means of providing commonality among colleagues, and as a way to connect with readers and share the experience of neurosurgery through a personal lens. Daniel Resnick follows with a thoughtful perspective on creative pursuits, emphasizing the importance of maintaining outlets that foster identity beyond the operating room.

This theme continues with Samantha Spellicy, who explores how creative activities can serve both as educational tools and as a way to recharge mentally. From there, Rikki Rabinovich and Ben Shofty take us into the brain itself, highlighting the evolving understanding of neural networks and their role in creative thought.

Creativity in practice is further illustrated by Siddharth Srinivasan and colleagues, who demonstrate how emerging technologies such as augmented reality and 3D modeling are transforming surgical training and expanding what is possible in our field.

We also honor the legacy of Takanori Fukushima, whose innovations in skull base instrumentation exemplify the lasting impact of creative vision. Allan Friedman and Ali Zomorodi provide a tribute that thoughtfully bridges past achievements with modern.

Beyond the feature articles, this issue includes a Foundation Update from Lola Chambless, as well as a reflection by Douglas Kondziolka on creativity in medical publishing, as showcased through the *Neurosurgery* cover art.

Finally, we conclude with updates from the Washington Committee, led by Alex Khalessi and Charlotte Pineda.

We hope this issue encourages you to reflect, create, and continue pushing the boundaries of what neurosurgeons can achieve both inside and outside the operating room.

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PRESIDENT'S MESSAGE



Martina Stippler, MD, FCNS
President, Congress of Neurological Surgeons

Dear Colleagues,

Maybe creativity is not the first thing you think of when you think about qualities that make a good neurosurgeon. Resilience, steady hands, hard work, and intelligence may come to mind first—but I would argue that creativity is such a core principle of our profession.

If you look at the pioneers of our field, they needed not only the tenacity and skills to birth the field of neurosurgery—no, they needed creativity to see solutions where others only saw barriers and obstacles. I came across this quote by Albert Szent-Györgyi, Nobel Prize-winning biochemist: *"Discovery consists of looking at the same thing as everyone else and thinking something different."*

We neurosurgeons need to hold creativity close and be open to it. This is how we move the field forward, how we innovate, how we find solutions where others only see problems. Creativity can help us every weekend we are on call and are confronted with an injury or tumor we have never seen before, but it also inspires our research and scholarly efforts.

I have always been a creative person, but the day-to-day realities of neurosurgery and raising my two children — Oscar and Nora — leave less room for it than I would like. At the beginning of this year I made it a priority to lean into my creative side again, even if just for a few minutes a day. So, I started scrapbooking. It is a wonderful way to capture the memories of the mundane and the meaningful alike: the day-to-day moments at home, the conferences, the adventures, the things you did outside of work. Those 10 minutes I spend gluing, sticking, and cutting feel like a small investment that pays big dividends down the road — a genuine refresh and reset after a demanding day of relentless decision making and high stacks operations.

We neurosurgeons need to hold creativity close and be open to it. This is how we move the field forward, how we innovate, how we find solutions where others only see problems.

Perhaps no one in our field embodied this spirit of creativity more beautifully than Dr. Takanori Fukushima, whom we celebrate in this issue. When existing surgical instruments could not meet the demands of his creative surgical vision, he did not accept that limitation — he designed his own. Every perfectly balanced suction tip, every angled bipolar, every microscissor in his catalog was born from a creative mind that refused to be constrained by what already existed. That is creativity in its most concrete and consequential form, a force that directly advances patient care.

In this CNSQ you will hear from neurosurgeons that have engaged with creativity in many different ways. Dr. Jay Wellons

makes a moving case for why neurosurgeons should write — about bearing witness to patients' stories and building compassion across the profession. Dr. Daniel Resnick follows with an upbeat piece about staying sane through hobbies. He plays blues guitar in a band and cheerfully admits he's the weakest link. Samantha Spellicy takes it further, arguing creativity should be treated as a trainable, mandatory skill, not just a hobby. She even cites neuroscience showing acute stress impairs creative cognition. Then Rikki Rabinovich and Ben Shofty go deep into the actual brain networks underlying creative thought — the default mode, salience, and executive control networks working in dynamic interplay.

I hope this issue of the CNSQ inspires you to embrace your creative side and use it to level up your research, innovate a new

surgical solution, or lean into it to relax and recharge. Let's continue to strive to be brilliant and creative!

And if this issue sparks something in you — if you find yourself wanting to write, to share your story, or to connect with fellow neurosurgeon-authors — I hope you will join us in Washington DC at the CNS 2026 Annual Meeting. Dr. Wellons will be leading a workshop on Sunday on how to get published in neurosurgery. It is a wonderful opportunity to learn, to meet fellow authors, and to carry this creative energy forward together. 📌

Yours,

Martina Stippler, MD, FCNS

President, Congress of Neurological Surgeons

"Join us in Washington, DC on Monday, November 2, for a special luncheon seminar 'Scalpel to Pen: The Neurosurgeon's Guide to Getting Published.'"



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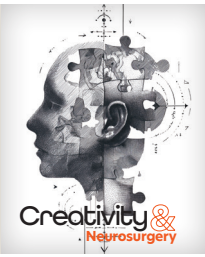
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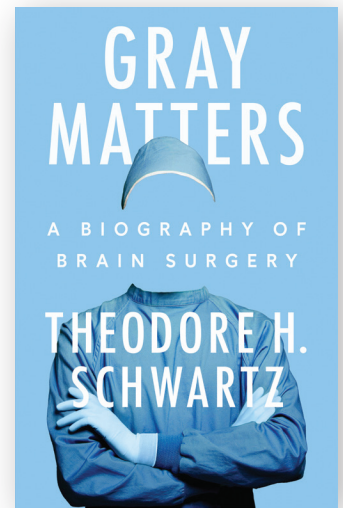
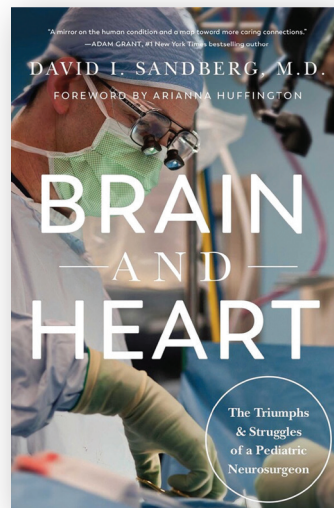
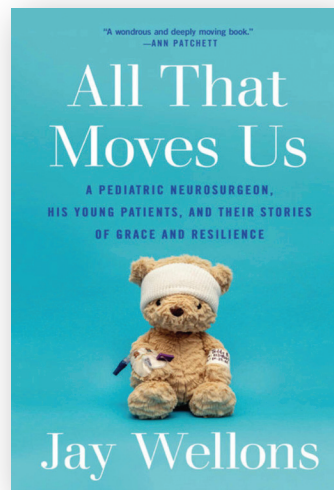


Jay Wellons, MD,
MSPH, FCNS

Why Neurosurgeons Should Write

Neurosurgeons are privy to nearly the entire spectrum of human emotion, certainly elation and profound grief, and often in swings that are only separated by the glass walls between patient rooms as we move from one to the next in the intensive care units, emergency departments, and postoperative family discussion rooms we visit as part of our workday. Back and forth. On and on. This very pattern, this metronomic rhythm, we learn early on as residents. A busy neurosurgical resident may be explaining to a grieving adult son that his beloved father will not survive his ground-level fall due to a massive subdural hematoma resulting in fixed and dilated pupils; that no surgery would reverse brain death. In that conversation there is world-altering sadness and often confusion (and sometimes anger) that the resident must learn how to manage in the moment, hopefully mirroring sage mentors from past experiences. Then, an emergent call comes from the pediatric ICU. There is a six-year-old child with acute hydrocephalus from a posterior fossa tumor who is herniating. Within minutes that same resident is donning her sterile gown while quickly explaining the upcoming external ventricular drain to the frightened parents, their world equally breaking apart in front of their eyes. Then, with a quick incision, a twist drill hole, and the passing of the ventricular catheter, the pressure is relieved. Soon afterwards, the child opens their eyes and the family is overcome with relief. Yet their journey is far from over.

We learn early on how to walk with our patients through these life-changing moments in which the very words that come out of our mouths and the actions that we both prescribe and proscribe, will live with these patients and their families forever. As we ourselves move through this life, our own families will at some point experience illness and suffering and those same extremes of sadness and joy. Then, inevitably, we will personally as well. And we will look to someone, hopefully well versed in walking with their patients for a time, to guide us to a place of understanding, acceptance, and hopefully



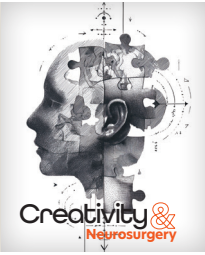
healing. Life, death, joy, grief, anger, gratitude, pain, relief—these emotions and qualities all bind us together as human beings and we as neurosurgeons have the privilege to live these experiences with our patients and their families, and to try to heal as best as we can.

There is a strong history of physician writers over the course of recorded human history, chronicling not only symptoms and early understanding of disease, but the ethical and emotional aspects of medicine. Galen, Maimonides, John Keats, Anton Chekhov, William Carlos Williams, and the inimitable Oliver Sachs are just a few who have understood the importance of weaving a narrative through both fiction and nonfiction to expose a deeper understanding of the human condition. There have also been neurosurgeon writers as far back as Wilder Penfield himself, and more recently Paul Kalanithi whose moving memoir *When Breath Becomes Air* was published posthumously, and of course our field's master storyteller Henry Marsh. Now there are, fortunately, an increasingly greater number of us who endeavor to uncover those same common threads that bind us all together.

I believe that neurosurgeons write because we want to tell our patients' stories in a way that helps others see the courage in the midst of suffering, the hope both lived and dashed, because from that we all can gain just a bit more of an understanding of this life that we were put on this earth to live. In some way, our patients' stories are ours too, just the tiniest bit, and just perhaps it is our responsibility to explain what it means for us to walk alongside them, tell of their lived experiences, and then reflect based on our own. Our perspective is indeed important. The neurosurgical memoirs published to date are certainly not devoid of our own experiences. It was best-selling author Ann Patchett who once told me that readers need to understand the lens through which the writer witnesses their patients' lives (or their characters' lives if fictional), so that they in turn can better connect to the writer as well as the subject. I also believe that speaking of our perspective—our lens—better bears witness to our own metamorphosis as humans.

This work also helps to build a commonality. Important of course among our neurosurgical colleagues—I *thought I was the only one struggling with this*—but also in our readers. To tell these stories that we all deal with, of suffering and challenges and joy and self-doubt and all the places existing somewhere in between, brings a sense of knowing and understanding that begins to build the incredibly important sense of compassion for one another. Compassion that can be missing from the daily newsfeeds, or e-blasts, or podcasts from which money is to be made and power is to be gained by splitting us apart.

We write for all these reasons and so much more. The leadership of the Congress of Neurological Surgeons has found it fit to ask several of us neurosurgeon-writers to discuss the importance of the neurosurgical voice in literature as well as the nuts and bolts of the process of publishing at the upcoming CNS meeting in Washington, DC, in a lunchtime session entitled "Scalpel to Pen: The Neurosurgeon's Guide to Getting Published." Please join us where we will discuss our own motivations to write, as well as strategies to find an editor, agent, and publisher. Also on the docket for discussion: What does it mean to market a book, to go on book tour, and to try to communicate your message on a broader stage, even translating it to the screen? The members of the panel and I look forward to seeing you in Washington, DC. 



Daniel Resnick, MD,
FCNS

Creative Diversions: Staying Sane in Neurosurgery



Neurosurgery is the best job in the world. We have tremendous impact on our patients' lives. The immediate rewards associated with saving the life of a tumor/trauma/vascular patient or the relief of suffering for a spine patient are huge and addictive. We use cutting-edge technology in the operating room daily. We are well respected in our communities and generally well paid for what we do. In exchange for these benefits, however, we are required to dedicate substantial time and resources not just to the acquisition of the necessary skillset but also to the maintenance of our practices. We need to be available to our patients, responsive to our referring providers, and maintain skills, credentials, and certifications that reflect a lifelong commitment to the field. The intensity of the neurosurgical lifestyle and the ongoing effort required to maintain that lifestyle create a situation where the individual's identity is completely intertwined with their profession. Some embrace this. I have a limited presence on social media (due to my extraordinarily advanced age) yet have multiple "Facebook friends" who actively promote their neurosurgical practices—showing cases, putting up

copies of recent publications, etc. Some, like me, prefer to keep church and state a bit more separated. I do my best to be known as "Dan" when meeting fellow parents at kids' sporting events, yet even when we do not seek to identify ourselves as neurosurgeons, the community labels us as soon as our cover is blown. A recent example in my life was when a musician collapsed on stage at a music venue where I am a regular. Whilst lending a hand, I was outed as a medical professional and questions were asked. I am now "Dr. Dan" at that bar. Sometimes I wonder if some of the opportunities I am given in the music community are due to this status and not necessarily due to any musical talent.

The intensity of the neurosurgical lifestyle and the investment we make in our identities as neurosurgeons can lead to poor outcomes. What happens to our self-worth when we have a complication? When we get sued? When we get fired? Is our self-worth tied directly to our RVU production? Are we really the peerless leader of the medical team—brilliant, skilled, devastatingly good-looking, and loved by all? These expectations are a direct path to early career burnout and poor behavior both in and out of the hospital. To avoid this trap, it

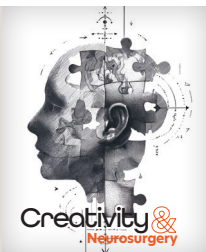
The benefits of getting outside of our heads, getting outside of our super-specialized, super-intense and super-empowering lives are measured in longevity in our career, better family relations, and a substantially improved quality of life.

is important to maintain an identity outside the profession. Family and friends are the first line of defense against the dark spiral of self-absorption. A clever four-year-old is quite capable of putting the supreme doctor in his or her place. Beyond this, hobbies incorporating physical and creative outlets allow us to find joy, blow off steam, and bond with a diverse set of folks who have things to teach us.

My personal outlets are exercise and music. I have been a musician wannabe my entire life. I was cursed at a young age to have just enough talent to allow me to succeed in school but not enough discipline to ever reach the next level. To be fair, I did use that time somewhat effectively to secure a career path to what I have described as the best job in the world. That said, I ache when my teacher (who is 30 years my junior) expresses shock when I reveal that I had never heard of the scale/technique/song he assumed that I, a player with decades more experience, would know. Listening to him demonstrate, or listening to him in concert, emphasizes the gaps in my knowledge. I keep plugging away, however, and have managed to join a band made up of several professional players, a local blues celebrity, and me. Every time we play, I feel inadequate,

stretched, and insecure. I am constantly asking questions about song structure, alternative scales, and how I can fit in better. This stretch, this feeling of NOT being in charge, NOT being the most brilliant, skilled, or devastatingly good-looking player on the stage, is exactly why this is so important for me to be there. Learning humility in a blues jam allows me to grow as a person without the consequences of learning humility in the operating room or clinic. I cannot emphasize how freeing it is to let go of one's (substantial) ego and learn from folks with backgrounds and life experiences so far outside my own. I cannot describe how valuable the lessons of music and life are.

I strongly encourage young neurosurgeons to take care of business—get a job, pass the boards, watch your finances and don't be stupid. Once these basics are met, my next piece of advice is “get a hobby.” The benefits of getting outside of our heads, getting outside of our super-specialized, super-intense and super-empowering lives are measured in longevity in our career, better family relations, and a substantially improved quality of life. 



Samantha Spellicy,
MD, PhD

Canvas to Case: Reclaiming Hours through Creativity

At some point in residency, most of us realize the hardest part is not the hours themselves—the hours spent rounding, writing notes, taking call, or operating. It is the dichotomy those hours represent. Every hour at work is another hour away from home. Another hour away from our friends, families, pets, and hobbies. Hours that accumulate as missed anniversaries, rescheduled dinners, and lonely holidays.

For me, leaning into creativity during residency initially started as a way to reclaim those hours. It allowed me to integrate the competing demands of training and life and maximize the moments outside of the hospital.

One of the first times I consciously used creativity this way was in medical school. I had just emerged from a Step 2 study hiatus and was finishing a vascular neurosurgery elective. I felt wrenched in three directions: I wanted to spend more time with my neglected partner, I needed to study vascular anatomy, and I hoped to find a meaningful way to say thank you to my elective mentor for their time and guidance.

I have always been a tinkerer and builder, so when I stumbled upon some spare craft wire at home, an idea began to take shape. I realized I could kill three birds with one stone. Through the creation of an angio-inspired copper wire model, I could practice 3D neurovascular anatomy, use the model as a thank-you gift for my mentor, and do this all while sitting on the couch with my partner. I could let my hands stay busy with the project while my mind was free to wander or be conversationally present. What surprised me was not only how educational and productive the project proved to be but also how restorative it felt.

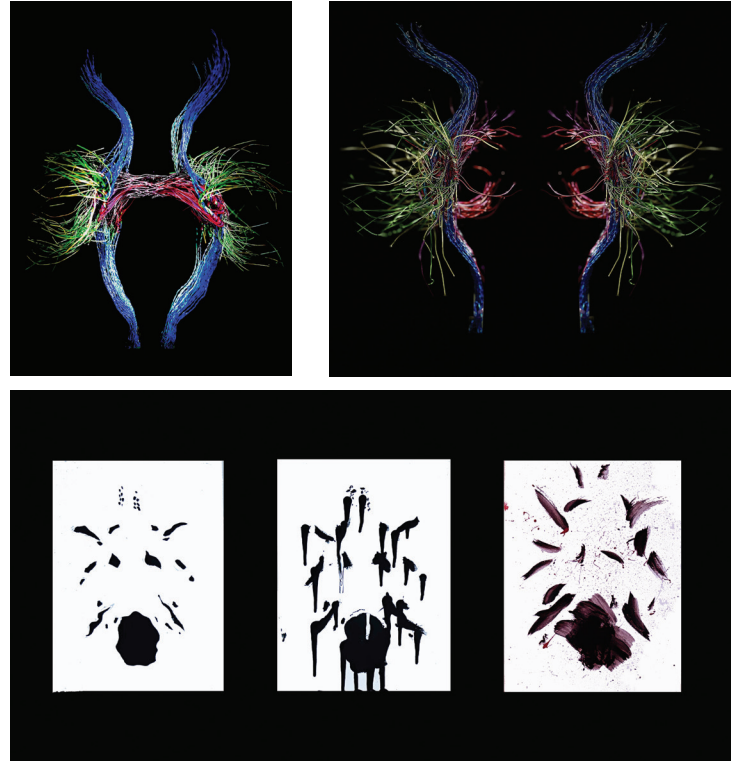
While art has a storied history in neurosurgery and neuroscience, it is usually associated with an educational purpose, not the impact on its creators. Cushing, for example, whose drawings gave a neurosurgeon-oriented perspective of intraoperative findings¹, and Ramón y Cajal, whose sketches brought the cellular neuroanatomic unit into large-scale focus, are renowned for their educational artistic contributions in their respective fields. Both produced exquisite representations of anatomy, patterns, and scientific tenets, but what were the internal impacts on these creators? Maybe these works were not purely educational gifts for the next generation of surgeons and

scientists. Perhaps, even subconsciously, these creative works were a way for the pioneers before us to replay, reflect, and repurpose a poor intraoperative outcome into something therapeutic.

The beneficial effects of creativity and art have long been recognized colloquially, but only recently have we begun to understand this relationship on a neuroanatomical level. A recent systematic review demonstrated that active and passive engagement with creative projects activates circuits in the medial prefrontal cortex and amygdala, which have been implicated in adaptive emotional regulation.² In participants who regularly engage in art therapy, other studies have found a significant decrease in circulating levels of cortisol³ and a sustainable decrease in scores of emotional exhaustion, perceived stress, anxiety, and depression⁴. When specifically considering health care workers, these and similar studies propose art therapy and other creative outlets as tools available in a provider's arsenal to stave off burnout.

While a large proportion of research efforts have been dedicated to ascertaining the positive potential benefits and effects of creative endeavors, others have highlighted the negative effects environmental factors can have on our ability to harness these creative pathways. For example, a recent encephalographic-based study found that acute stress impairs creative cognition.⁵ In a field such as neurosurgery, dappled with acute stress triggers, it would be advantageous to have resilience in these creative response pathways. When the bed stops working during your leveled spine trauma case, the donor vessel in your direct bypass is unsalvageably injured, or when the tracking in your insular glioma case is off, having reinforced these creative pathways in a variety of conditions could prove valuable. If stress siphons our creativity but creativity strengthens our emotional regulation, cultivating these creative pathways may not just be recreational but protective in the operating room.

For that reason, since starting residency, I have tried to treat creativity not just as a hobby but as a mandatory, trainable skill set. From the towering canvas taking up our living room wall to the abstract shapes physically painted on the wall, I leveraged creativity to make a home. It has been freeing to work on a tactile and precise project with my hands without the overshadowing consequences of a



mistake, allowing my mind to meanderingly reflect on my week while I work. Selfishly, it also has been an efficient way to leave tangible reminders of my existence for the hours I am gone. A more elevated way of conveying “Sam was here” on the surfaces of our home.

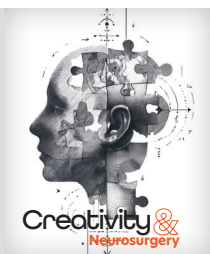
Even more impactful were the projects I share with my spouse: the music we made from converted electrophysiological neural recordings, mosaic serving trays, and even the deck and greenhouse we built in our backyard. Each stands as a physical mark of time spent working collectively to transform a concept into something tangible, maximizing our time together while simultaneously strengthening these generative pathways. Sure, building a deck may be a more “spine-forward” style of creativity compared to an acrylic painting, but I contend it reinforces these creative circuits in a different context while providing the same meditative benefits.

I hope others have the opportunity to realize how liberating, yet essential, creative practices can be in neurosurgical residency. When the rigor of structured training programs, bureaucratic institutional limitations, or uncontrollable patient outcomes feels suffocating, taking a pen to paper, brush to canvas, or clay to wheel can help restore agency. When stuck between the familiar neurosurgical dichotomies of success and loss, guilt and pride, or sleep deprivation

and mindfulness, established, robust creative pathways can flip us from one extreme to another. Ultimately, residency will always carry a cost. Creativity and art outside of the hospital provide a restorative avenue for time outside of the hospital while reinforcing strengths needed for our time inside. 🇺🇸

Resources

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2. Barnett KS, Vasii F. How the arts heal: a review of the neural mechanisms behind the therapeutic effects of creative arts on mental and physical health. *Front Behav Neurosci*. 2024;18:1422361.
3. Kaimal G, Ray K, Muniz J. Reduction of Cortisol Levels and Participants' Responses Following Art Making. *Art Ther (Alex)*. 2016;33(2):74-80.
4. Tjasink M, Carr CE, Bassett P, Soosaipillai G, Ougrin D, Priebe S. Art therapy to reduce burnout and mental distress in healthcare professionals in acute hospitals: a randomised controlled trial. *BMJ Public Health*. 2025;3(2):e002251.
5. Wang X, Duan H, Kan Y, Wang B, Qi S, Hu W. The creative thinking cognitive process influenced by acute stress in humans: an electroencephalography study. *Stress*. 2019;22(4):472-81.



Celebrating Neurosurgeon Artists

For the past three years, the CNS has recognized and celebrated the works of neurosurgical artists, showcasing their work in various formats at the CNS Annual Meeting. For those who may have missed it, we are pleased to share a selection of this artwork by CNS Member neurosurgeons and trainees in this issue of *Congress Quarterly*.



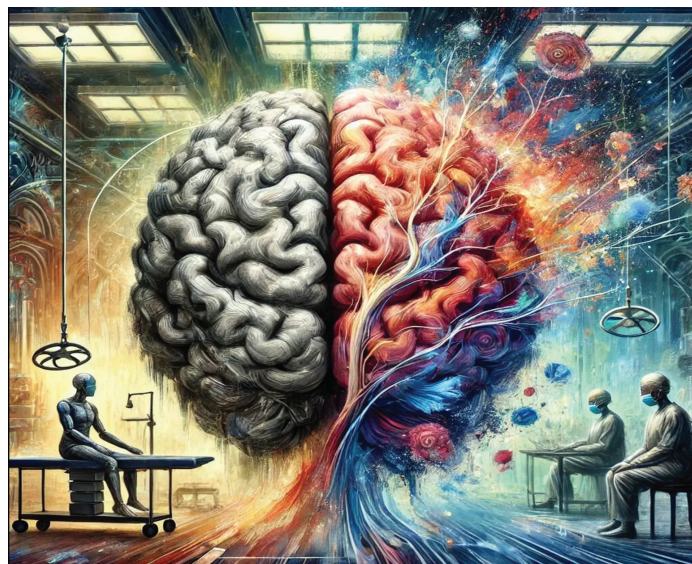
"Un(s)trapped"

len Li



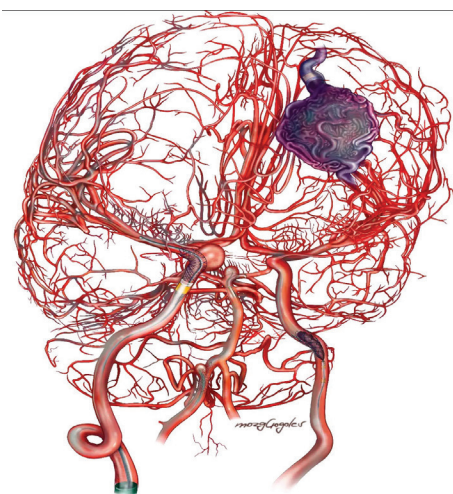
"7 years old"

Ali A. Mohamed



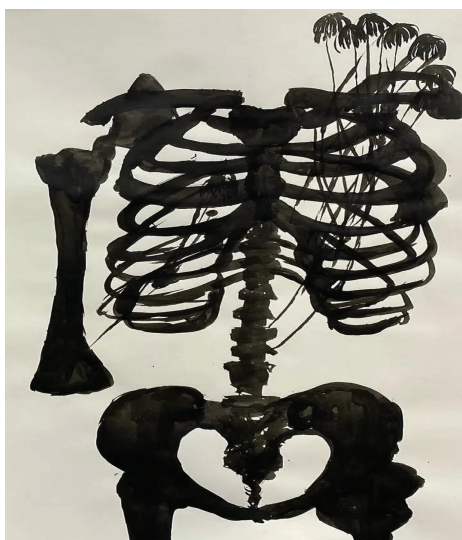
"Anatomical Harmony: The Human Head in Cross Section"

Muhammad Ibrahim



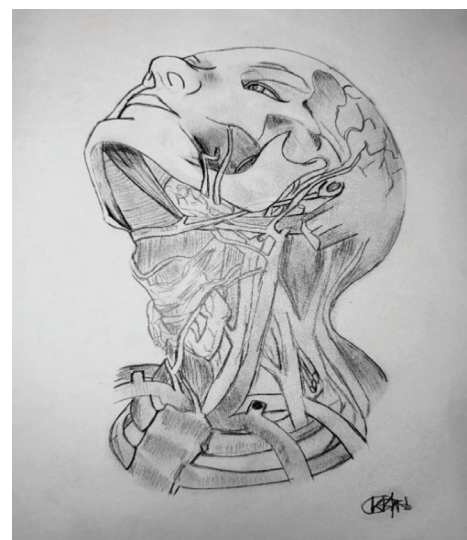
"Endovascular Catharsis"

Aleksey Gogolev



"Memento Somnis"

Hiba Fatima Hamid

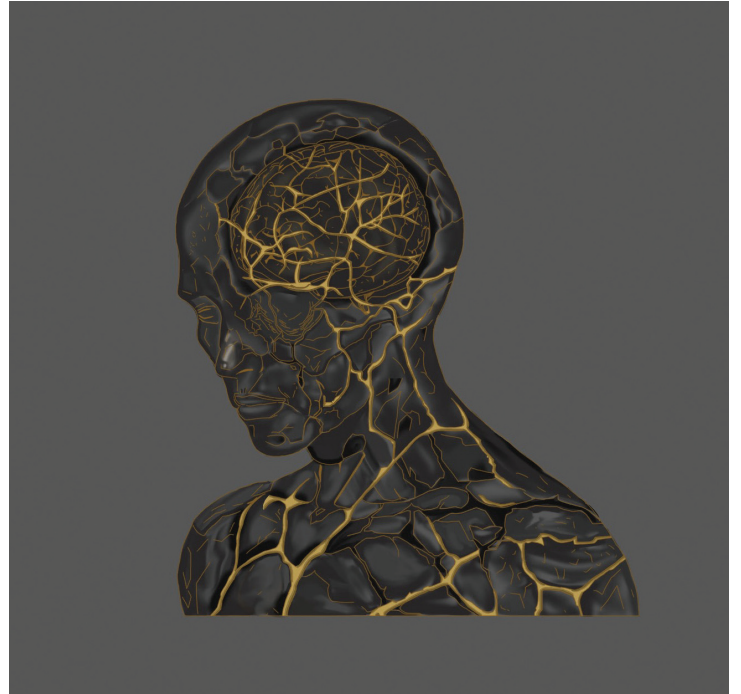


"Anatomy of Connection"

Aikaterini Katramadou



"Memento Mori"
Ansley Unterberger



"Kintsugi"
Sraavya Anne



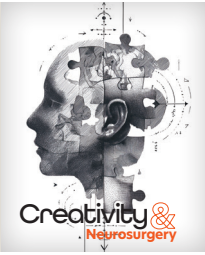
"Starry Cortex"
Karoline Schereck Kreitmeyer

Spotlight CNS: Podcasts

If you are enjoying this issue of *Congress Quarterly*, we encourage you to check out the CNS' recent Wellness Podcast: *"Art as Therapy."*

In the April 2026 episode of the CNS Wellness podcast, we welcome two guests who have each used art in their own way to promote their own emotional and psychological well-being. Dr. Kathryn Ko, a neurosurgeon who sees her art as an extension and complement of her career, and Katie Denisova, an operating room nurse who uses her art as an abstract escape from the pressures of being a healthcare worker. We learn how people can use art, or any form of creative expression, to help find solace. [◀](#)

Guests: Katie Denisova and Dr. Kathryn Ko
Co-hosts: Brian Gantwerker and Lara Massie



Rikki Rabinovich, PhD

Ben Shofty, MD, PhD,
FCNS

The Network Basis of Creative Thought in the Human Brain

Creativity is a defining feature of human cognition and a driving force for societal progress and individual achievement. Unsurprisingly, artists, philosophers, and scientists have always been fascinated by this uniquely human trait and have long attempted to both characterize and enhance it. Yet, although critical to human experience, creativity eludes study because creative thought is internally generated and not directly observable. A key question is whether creative output arises from spontaneous inspiration or from careful contemplation. As humans, we spend much of our time engaged in externally focused, cognitively demanding activities; yet it is nearly cliché that many creative breakthroughs occur during moments of introspection or idle mind-wandering. Isolated from the external world, mind-wandering allows the mind, at rest, to traverse the cognitive landscape; however, useful creative output requires re-engagement with the external world to evaluate and contextualize creative ideas. Recent advances in cognitive neuroscience using invasive brain recordings suggest that creativity emerges from dynamic interactions among large-scale brain networks that balance spontaneous, internally generated thought with goal-directed judgment and appraisal.

In 1872, Friedrich Nietzsche argued in *The Birth of Tragedy*¹ that creative expression emerges from two opposing but complementary intellectual forces: spontaneous, chaotic Dionysian inspiration and rational, structured Apollonian logic. Creative output, in this view, requires a balance between imagination and discipline. Nietzsche later emphasized that creativity is not merely a product of unrestrained improvisation but rather depends critically on judgment and the capacity to reject, refine, and organize ideas into a coherent form.

This analysis foreshadowed modern theories of creative ideation that describe two cognitive modes—idea generation and evaluation. In idea “generation,” unconstrained thinking allows ideas to arise spontaneously. Thus, idea generation links creativity to more general forms of spontaneous thought, like mind-wandering—after all, useful novel ideas are less likely to arise if the mind is entirely focused on a specific task. Meanwhile, during idea evaluation, top-down constraints are imposed to assess candidate ideas and choose an optimal solution. Both phases are vital to successful creative output.

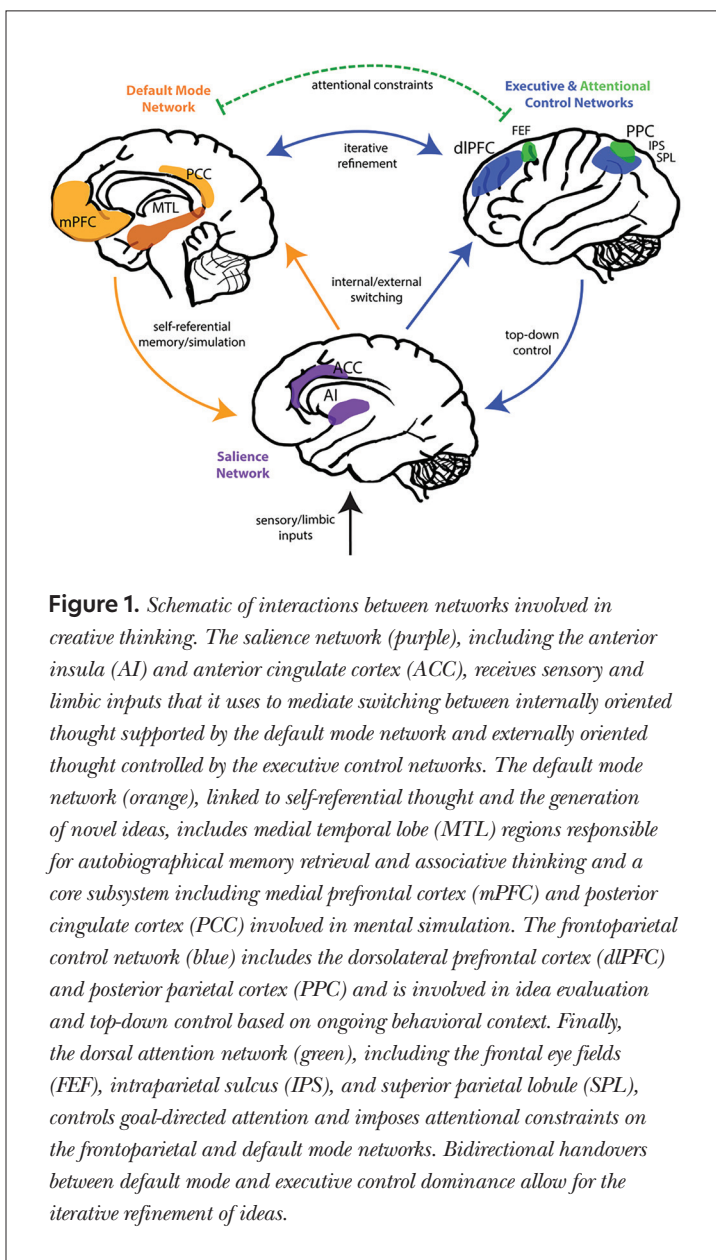
Rather than being a unidirectional transition from generation to evaluation, creative thought involves fluid bidirectional shifts between these modes of thought. This fluidity allows the thinker to “step back” from good—but possibly suboptimal—solutions and explore other options to find the best answer. Without this bidirectional process, the mind would “get stuck” with one solution and be unable to come up with alternatives.

Creative idea generation, evaluation, and the transition between the two modes appear to rely on neural dynamics within and across distributed brain systems: the default mode network, which supports internally generated thought and memory-based simulation; the salience network, which detects behaviorally relevant information and helps regulate transitions between cognitive states; and executive control networks, which implement goal-directed evaluation and attentional constraints (Figure 1). Here, we discuss these neuroanatomical and functional substrates that underlie creative thought.

The default mode network plays a complex role in the generation of creative ideas

Creative idea generation is thought to depend on the default mode network—so called because it comprises a set of brain regions that are often observed to be active at rest (i.e., the default mode of the brain) but deactivated during attention to external tasks. This network is also involved in self-directed thought processes like dreaming, mind-wandering, and episodic memory retrieval. Research has demonstrated that neural dynamics within the default mode network are shaped by the ongoing cognitive state and that creative thought corresponds to its recruitment.² Invasive manipulations in neurosurgical patients have also demonstrated a causal role of the default mode network in creativity: disrupting the integrity of this network through electrical stimulation decreases behavioral metrics associated with creative output.³

Although this network is consistently implicated in creative cognition, its contribution appears to be context-dependent and is not well described by simple increases or decreases in activity. Some studies have identified increased default mode network recruitment and interconnectivity during spontaneous thought and idea generation, but other studies have linked reduced coherence to



enhanced associative thinking. For example, mindfulness meditation and psychedelics decrease connectivity within the default mode network and are thought to increase cognitive flexibility and divergent thinking.^{4,5} Some theories posit that reduced within-network synchrony in the default mode network—along with increased global multimodal connectivity—may reflect a loosening of constraints that enables freer associative thinking.

The seemingly contradictory findings regarding the role of the default mode network in creativity may be reconciled by recognizing functional specialization within this network, including dissociations between known subsystems of the default mode network: a medial temporal lobe subsystem supporting associative thinking and a midline core centered on the medial prefrontal and posterior cingulate cortices that interfaces more closely with executive control regions. Creative performance may therefore depend not on global engagement of the default mode network but on flexible coupling between its subsystems and other networks, allowing spontaneous associations to remain accessible to evaluation and refinement.

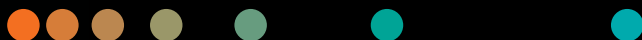
The salience and executive control networks complement the default mode network to mediate transitions between idea generation and evaluation

Whereas default mode network activity is particularly associated with generating ideas via memory retrieval and mental simulation, the evaluation of the ideas requires coordination with the salience and executive control networks.⁶ The salience network, including the anterior cingulate cortex and anterior insula, is thought to play a role in switching between internally and externally oriented cognitive states and to mediate interactions between the default mode and executive control networks.⁷ During creative ideation, the salience network filters spontaneous thoughts, identifies promising ideas, and modulates their access to executive control systems, such that only relevant ideas are selected for elaboration and refinement. The executive control system, comprising frontoparietal and dorsal attention networks, can then evaluate candidate ideas for their novelty and utility given the ongoing behavioral context, attentional demands, and task-dependent constraints.⁸

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The handover of control between default, salience, and executive networks is not a unidirectional sequence. Rather, top-down feedback from the executive control networks to the default mode network enables iterative refinement and the strategic exploration of alternative solutions when initial ideas prove suboptimal. By maintaining ongoing task-specific goals and directing attention, the executive control networks constrain the scope of further idea generation, improving the efficiency of creative thought production. Thus, rather than operating sequentially, the default mode, salience, and executive control networks exhibit dynamic interactions that enable the generation, refinement, and selection of creative ideas.

These network-based models of creativity are also directly relevant to neurosurgery. Operations for tumors, epilepsy, or other focal lesions may spare classical language and motor cortices yet still disrupt creative thinking if they injure critical hubs or white-matter connections within the default mode, salience, or executive control networks. A network-aware surgical framework could therefore improve preoperative counseling and intraoperative mapping and motivate postoperative assessment of higher-order cognition beyond standard neurological endpoints.

Creativity and mental health

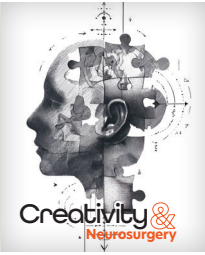
Besides underlying a key human cognitive function, these network interactions are relevant to psychiatric disorders associated with altered creative thinking or dysregulation in related cortical networks. In a healthy brain, we observe anticorrelation between activity in the default mode network and externally directed attention; this anticorrelation is reduced in attention-deficit/hyperactivity disorder, which may explain both the attention disturbances and heightened divergent thinking that characterize this disorder. Meanwhile, psychosis is linked to enhanced idea generation (by increasing the likelihood of mental associations between unconnected concepts) but impaired idea evaluation. On the other hand, disorders characterized by rigid thought patterns or maladaptive rumination, like obsessive-compulsive disorder and depression, may reflect impairments in flexible thought. These links between creative ideation and mental health crystallize the importance of studying this cognitive ability.

Conclusion

Over the past several decades, cognitive neuroscience has moved away from strictly localizationist approaches toward network-based models of brain function that emphasize the role of distributed but interconnected cortical systems. This shift has been critical for the study of creativity, a multifaceted cognitive capacity that depends on flexible coordination within and across multiple large-scale brain networks. Understanding how these networks interact provides a mechanistic framework linking creativity with neural dynamics and deepens our appreciation of neuropsychiatric disorders caused by disruptions of these systems. 

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Utilizing Augmented Reality and 3D Skull Base Models in Neurosurgical Training: Navigating the Learning Curve

Minimally invasive skull base surgery, once a niche, is now a cornerstone, driven by major technological advances and maturing anatomical understanding. Improvements in visualization, particularly the widespread availability of high-definition and 4K systems, combined with classic cadaveric dissections, have raised the bar of minimally invasive skull base surgery. However, the clinical exposure required to build proficiency remains limited. Many of these pathologies are uncommon, and case volumes for complex extended skull base approaches may be sporadic even in high-volume centers. While cadaveric dissection remains the gold standard for anatomical education and procedural rehearsal, access to cadavers is constrained by availability, cost, and logistics. These realities create a persistent training gap, particularly for residents and fellows who need repeated, deliberate practice to assimilate corridor anatomy and operative choreography.

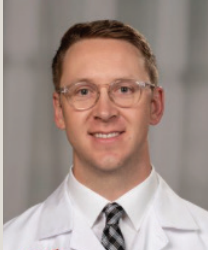
Augmented reality (AR) entered the neurosurgical arena in the late twentieth century. It has expanded across multiple neurosurgical avenues, including skull base, cerebrovascular, neuro-oncology, spine, epilepsy, and functional neurosurgery. In practical terms, augmented reality refers to a process in which the software ingests patient imaging data and reconstructs relevant anatomy, such as a tumor and adjacent critical structures, including cranial nerves and major blood vessels. These reconstructions can then be displayed as an overlay on the operative field, through the operating microscope, endoscopes, or dedicated AR eyeglasses. Unlike virtual reality (VR), which replaces the user's real-world view with a fully simulated environment, augmented reality preserves the real patient and superimposes digital information on top of what the surgeon is seeing. This overlay can be particularly useful when normal tissue planes are distorted by factors such as scarring, adhesions, or tumor-related displacement, making anatomical boundaries less distinct. By projecting the preoperative imaging-derived anatomy onto the surgical view after exposure, augmented

reality can help the surgeon maintain spatial orientation and anticipate the likely location of vessels and cranial nerves relative to the lesion. With skull base lesions, the target is often deep, and normal landmarks may be obscured by overlying brain, narrow corridors, and tumor-related distortion. In that setting, this anatomy can be initially disorienting. This is particularly evident during intratumoral work, where the operative view is limited and the usual reference landmarks are no longer within the operative frame. For example, in an endoscopic approach to an anterior skull base pathology, as dissection proceeds deeper within the lesion, the relationship to critical vascular structures such as the paraclival internal carotid artery can become difficult to judge, especially if the artery is displaced, splayed, or partially encased by bone or tumor. If the surgeon's attention is too focused and spatial awareness is lost, complications may arise.

Augmented reality can mitigate this problem by projecting a translucent, imaging-derived overlay onto the live surgical view. When aligned appropriately, the overlay helps the surgeon reestablish spatial awareness by indicating where key anatomical structures are relative to the current field of view. In deep corridors, this reorients the surgeon and allows them to focus on the task while remaining spatially aware. During the superficial stages, it can support pre-dissection planning by clarifying the lesion's depth and boundaries, thereby informing the intended trajectory and angle of approach. This utility is particularly relevant for middle fossa and posterior fossa skull base lesions. Taken together, these advantages suggest that augmented reality may indirectly improve operative efficiency by helping surgeons maintain orientation, confirm trajectories, and identify critical anatomy more rapidly. In turn, this has the potential to shorten operative time and, by reducing uncertainty and unintended deviation in deep corridors, may also lower the risk of complications. That said, broader adoption and more standardized evaluation are needed before these benefits can be quantified reliably and synthesized across studies.



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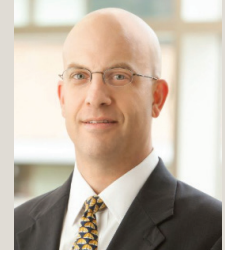
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Neurosurgery today is fundamentally different from what it was a century ago. Contemporary practice operates under heightened medicolegal scrutiny, rising patient expectations, and minimal tolerance for complications. In parallel, exposure to highly complex skull base pathology may be limited in many training environments, which can dilute experiential learning and widen the gap between the skills trainees must acquire and the opportunities available to acquire them. This reality supports the case for adjunct technology not as a luxury but as a practical tool to bridge training needs while maintaining the standard of care patients deserve. When residents and fellows incorporate augmented reality into their routine learning and operative workflows, it can reinforce anatomical orientation, sharpen three-dimensional corridor-based understanding, and promote safer intraoperative decision-making. If the infrastructure exists to overlay imaging-derived anatomy onto the operative field, augmented reality can also function as a “double-check” in moments of uncertainty, helping the surgeon confirm the proximity of ongoing dissection planes to critical neurovascular structures. When in doubt, a surgeon is unlikely to hesitate to use a readily available tool that enhances spatial awareness and situational confidence. Of course, augmented reality must be applied thoughtfully. Limitations such as brain shift can reduce overlay accuracy if the system relies solely on preoperative imaging. However, these constraints are increasingly addressable through multimodal integration, such as coupling augmented reality with real-time intraoperative ultrasound to dynamically update anatomy.

It is also important to distinguish between augmented reality and the emerging concept of mixed reality. Mixed reality extends beyond simple overlay by allowing the virtual content to be spatially anchored to the real world and interact with the user in an immersive, dynamic way, effectively behaving like a manipulable hologram that remains registered to the live scene the operator is viewing. In some training programs, 3D-printed skull base models have been paired with augmented reality software. Once the physical model is generated after being scanned or derived from digital segmentation, key structures such as cranial nerves and major vessels are displayed as overlays while trainees rehearse skull base approaches on the model. This creates a repeatable environment in which learners can practice approaches and maintain awareness of critical anatomy that is otherwise difficult to visualize consistently during early training.¹ A natural next step, contingent on appropriate consent and ethical oversight, is patient-specific rehearsal. Imaging-derived datasets can be used to generate 3D prints of actual skull base tumors, including their relationships to cranial nerves and vascular structures. Trainees can

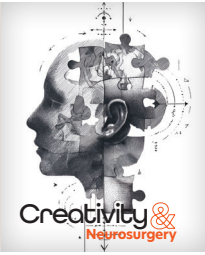
then practice tumor removal on these patient-specific 3D-printed models with augmented reality guidance to anticipate operative planes, corridor constraints, and points of risk. Such simulations will never fully replicate live surgery, for example there is no true bleeding and deep down mentally we are cognizant of this fact. However, these models can still improve spatial orientation and set more accurate expectations for intraoperative anatomy.

Looking forward, the most compelling opportunity may be the integration of 3D-printed patient-specific models with augmented or mixed reality to simulate intraoperative contingencies, not just “ideal” anatomy. For instance, one could envision a scenario in which the AR/mixed reality overlay reproduces an inadvertent internal carotid artery injury: the trainee encounters the event during a simulated tumor resection, applies a temporary clip, performs a repair maneuver on the model vessel (e.g., suturing a printed carotid analog), and then removes the temporary clip within a defined time window. Building structured, interactive crisis modules of this kind would meaningfully raise the ceiling of skull base training by rehearsing both routine corridor work and high-stakes complication management in a controlled laboratory setting.

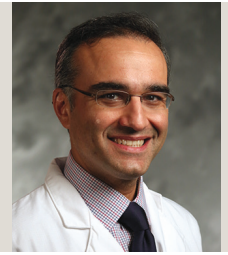
More broadly, augmented reality should not be framed as a standalone technological milestone. In a training ecosystem, immersive virtual reality, cadaveric dissection, 3D-printed models, wet-lab simulation, and mixed reality are complementary modalities, each addressing different components of skill acquisition. The long-term goal is clear: augmented reality or mixed reality, paired with high-fidelity, patient-specific 3D-printed models, should closely resemble the operative experience so that trainees can rehearse not only the ideal approach but also the decision points, risk zones, and contingency planning that define safe skull base surgery. In parallel, objective assessment must be built into the curriculum. Standardized metrics such as approach completion, anatomical violations, operative efficiency, instrument discipline, and situational awareness can be used to aid faculty in evaluating the readiness of trainees to perform surgery in a reproducible manner. The practical payoff is a safer, more trustworthy transition from the laboratory to the operating room: when a trainee demonstrates consistency and judgment in simulation, the attending neurosurgeon can confidently delegate discrete operative steps under supervision, rather than relying solely on subjective impressions or sporadic case exposure. ■

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Takanori Fukushima's Legacy in Skull Base Instrumentation

Dr. Takanori Fukushima was a teacher, friend, and role model to neurosurgeons around the world. My first exposure to Dr. Fukushima was at the meeting of the Congress of Neurological Surgeons in Seattle, 1988. There was a symposium on surgery of the skull base and cavernous sinus. Skull base surgery was in its infancy. The room was packed. Many of the best-known neurosurgeons were on the podium and the rest of the stars of that time were in the audience. Taka stood up to speak. For the first time, he unveiled his C6 to supraclinoid carotid venous bypass. The audience was impressed—many were jealous—and I was in awe. Dr. Fukushima taught me on that day that a master surgeon isn't just proficient in state-of-the-art procedures. A master surgeon sees beyond what is already known, explores the possibilities, and invents ways to realize those possibilities.

He was a master of neuroanatomy. He spent countless hours in the laboratory exploring its nuances, and he used that knowledge to describe surgical corridors unknown to others. Watching him operate, it seemed so simple, effortless, and natural. He showed us that shaving the petrous temporal bone medial to the posterior semicircular canal during a presigmoid retrolabyrinthine transmastoid petrosectomy yields a flatter view of the upper and middle clivus. The more of the jugular tubercle the surgeon removes when approaching a tumor or an aneurysm through an extreme lateral infrjugular transcondylar approach, the better the view of the middle and lower clivus. Using a more superior-to-inferior trajectory when approaching the third ventricle through an anterior interhemispheric transseptal approach will avoid stretching the anterior communicating artery and afford the surgeon a better view behind the optic chiasm.

His innovations in skull base surgical approaches are legendary. But for Dr. Fukushima, success in performing these approaches required new surgical instruments. He understood the intimate relationship between pathology, anatomy, approach, and instrumentation. He had recognized that deep, confined, and delicate skull base operations required a level of precision beyond



what could be achieved with contemporary surgical tools. So, he designed and implemented his own.

For Dr. Fukushima, the instruments must be an extension of the surgeon's hand, having the perfect length, balance, tactile feedback, and angulation. Additionally, the tools must not interfere with illumination or the visualization axis of the microscope. He believed a well-designed surgical instrument allowed the surgeon to execute precise movements, at a distance, and without excessive force—"fingertip surgery." Today, many manufacturers have catalogs filled with instruments built on these principles. At first glance, it may seem extravagant to have so many variations of the same instrument, but in a particular situation, a bipolar with a perfectly angled tip is invaluable for obtaining hemostasis without damaging adjacent structures; or an appropriately angled curette can free up that last piece of tumor without damaging the seventh nerve. Each tool was developed to solve a specific problem.

His approach to instrument design was a reflection of his surgical philosophy. His suction system is an example of this. The suctions are perfectly balanced so they can be held with minimal force and no fatigue. The tear-drop-shaped opening allows for very precise adjustment of the suction strength with the tip of the thumb. The suction tips are gently tapered to allow maximal visualization at the depths. They are malleable to allow adjustments in the curvature to suit the anatomical needs, and a transitional silicone tube eliminates any traction on the surgeon's hand. These features allow the surgeon to dissect, retract, and aspirate without additional resistance.

Fukushima microdissectors and microscissors reflect the same design philosophy. The dissectors have weighted and textured handles to allow excellent tactile feedback. The tips are designed for sharper dissection with minimal tissue injury. The scissors have various lengths, blade thicknesses, and angulations to allow for precise dissection of arachnoid, tumors, or ligamentous structures at the skull base. The bipolars were designed with thin tips of varying angulation that incorporate nonstick properties with sufficient opposition force to allow for dissection and manipulation of tissues. The scissors and bipolars are balanced to rest in the hand with minimal effort, allowing hours of use without hand fatigue. And all of these are tapered to allow for keyhole surgery through small craniotomies.

Beyond just developing instruments, Dr. Fukushima was committed to teaching their use. Through numerous hands-on courses, live surgeries, and many hours of videos, he demonstrated how to hold a suction tube, how to get the most out of ring curettes, how to use bipolars for dissection of tumors, and how to use microscissors as the primary tool for dissection around cranial nerves. He believed technical mastery could not be achieved without a deep understanding of microsurgical instrumentation. His influence is felt every time a surgeon operates deep in the skull base using finely crafted tools designed for precision, respect for anatomy, and surgical humility.

Taka's reverence for precision and comportment came, in part, from his upbringing. His father was the chief Shinto priest at the Meiji Shrine, a 170-acre sanctuary in the heart of Tokyo. Growing up in this environment, Taka internalized and came to embody the Japanese concept of *kodawari*—an uncompromising commitment to pursuing perfection in every detail of one's craft. He taught us that surgery is not just following a series of steps, but that each step must be properly executed. He stressed the importance of taking care of details: correct positioning of the patient, correctly holding instruments, and maintaining perfect hemostasis. His writings are filled with surgical pearls.

To describe what it was like to be in the operating room with Dr. Fukushima, I would quote Michael Bliss's prescient observation in his excellent biography of Cushing: "Some neurosurgeons think theirs has become a surgical trade like any other. Others still see neurosurgery as a high-tension, high-skill frontier, an Everest of medicine, requiring Cushingesque, priestly, or simply obsessive levels of work and dedication."¹ Dr. Fukushima embodied the latter completely.

Taka was very human. He was warm and giving, and full of energy. He approached skiing, golf, and playing music with the same dedication and drive for excellence that he brought to the operating room. We were extraordinarily fortunate to attract him to Duke Neurosurgery in 1999. Not only did he raise the level of our skull base surgery by several notches, but his enthusiasm and insistence on excellence inspired residents and faculty alike. His passing leaves a void that is difficult to articulate. He was our friend, partner, and role model for the past twenty-five years. When we think of Taka, we feel the joy of striving to do better while sucking out all the marrow of life.

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Cover Art: Creativity at a Medical Journal



Douglas Kondziolka,
MD, MSc, FCNS

I remember the first time that a figure from one of my accepted articles was chosen to be on the cover of a medical journal. That was pretty exciting! Indeed, when I was at the University of Pittsburgh, we began a tradition where any of the department members' journal covers showing their image would be framed and put in our conference room. This was not only a great selection of neurosurgical art over the years, but it brought some fun and competition. It was not only a privilege to have your article accepted, but to be on a cover—well, that was really something!

When I started out as a resident, I looked forward to getting a copy of the

journal each month to see what made it onto the cover. Fairly early in my career, our rat epilepsy model of radiosurgery response was chosen by Dr. John Jane for the *Journal of Neurosurgery* (**Figure 1**). When Dr. Michael Apuzzo was Editor-in-Chief of *Neurosurgery*, cover art was taken to new heights. It seemed there were no limits. Artistic topics included classic neurosurgical images or photographs, images from history, or elements of current events. Dr. Nelson Oyesiku continued that tradition with many fine and fascinating covers. I particularly liked his vision on data science (**Figure 2**), but there really are so many.



Creativity is a fundamental component of neurosurgery. We create new concepts for surgical procedures, we create new means of evaluation and analysis, and we create new digital tools both for surgery and for documentation. When I became Editor-in-Chief, it was time to do a few new creative things. I studied the appearance of over 100 different medical journals. First, we created new colors and fonts for our journals. The “red” journal needed to be red, and we chose a darker red color for *Operative Neurosurgery* and a deep red for *Neurosurgery Practice*. To make cover art pop, we decided upon both red and white background colors for the covers of *Neurosurgery*. This would give more flexibility to the artistic concepts. Some images are just better shown on different backgrounds—just like choosing a proper frame. We also embraced the idea of full-page cover art, initially used by Dr. Apuzzo.

My goal was to have each cover be neurosurgical in origin and scope whenever possible. We use our covers to celebrate the work of our authors. Sometimes authors

email us or notify us about a possible cover selection, but each month we consider all the possibilities. As a specialty highly reliant on imaging, beautiful advances in imaging science are often excellent for cover art. Many institutions are fortunate to have excellent medical illustration services. We often use their professional art for cover depictions if particularly compelling. For some special topics we work on the art months ahead. When the September, October, or November issue represents the Annual Meeting issue of the Congress of Neurological Surgeons, I work with the CNS President to develop cover art that reflects the meeting theme.

At the last CNS meeting, the Mayo Clinic shared many fine neurosurgical drawings with attendees in the exhibit hall. As a lover of neurosurgical history, I was drawn to these. In fact, we will be featuring one as the 2026 *Neurosurgery Practice* cover image, which you will see debut with the publication of the March issue of *Neurosurgery Practice* (Figure 3).

How does one make it onto the cover? As articles are accepted, if there is a

particularly compelling image, it is selected to go on a monthly list of potential cover illustrations. Our productions editor also makes suggestions. Sometimes we choose an image or two straight from the article, and sometimes we have it modified by the authors to make it more artistic. The February 2026 issue showing separation of craniopagus twins and their venous systems was a wonderful illustration that we thought ideal for a cover.

What happens when journals go all digital? Will anyone really appreciate a small cover or thumbnail on a website? I hope so, but I fear not. When *Operative Neurosurgery* went all digital last year, I decided to continue to print one page showing its cover in the print issue of *Neurosurgery* along with the *Operative Neurosurgery* table of contents. Doing so allows such great cover art to remain at print size. When each journal is launched and arrives by mail or in your inbox, I hope that the creativity shown on the cover is appreciated for the celebration of our specialty that it is meant to reflect. ■

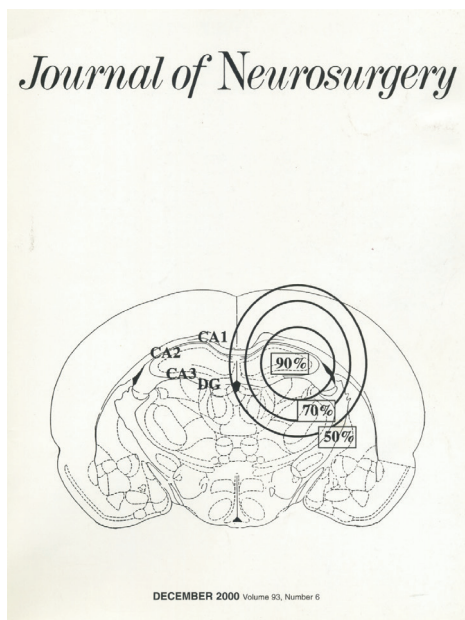


Figure 1. December 2000 Volume 93, Number 6 cover image of the *Journal of Neurosurgery*. © AANS, used with permission.

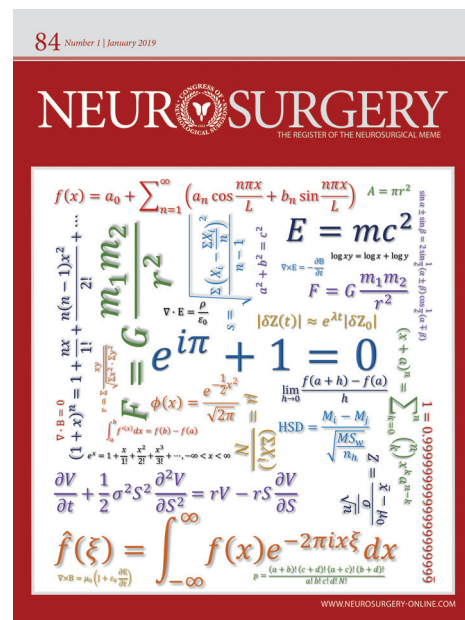


Figure 2. *Neurosurgery* January 2019 cover image.

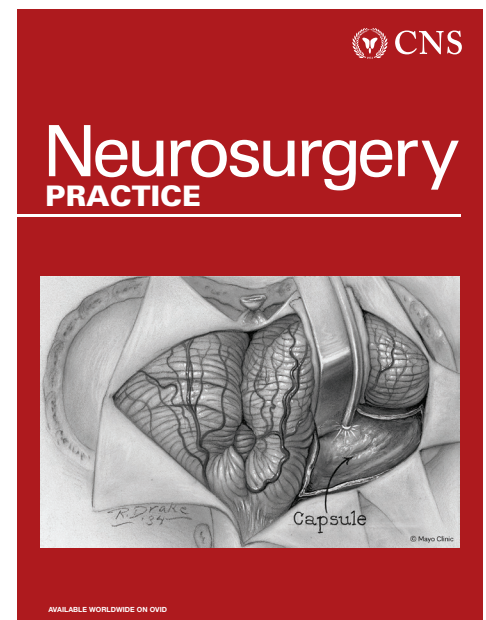


Figure 3. *Neurosurgery Practice* 2026 cover image. Used with permission of Mayo Foundation for Medical Education and Research, all rights reserved

INSIDE THE CNS



Washington Committee Update



Alexander Khalessi
MD, MBA, FACS, FCNS
Chair, Washington
Committee



Charlotte Pineda, MPP
Vice President, Health
Policy and Advocacy

Congress Advances FY 2026 Funding Package with Major Health Policy Riders

In a welcome return to regular appropriations following the collapse of the December 2024 omnibus package, Congress passed the Consolidated Appropriations Act, 2026, clearing the decks of previously negotiated policies while responding to a series of major administrative actions taken over the past year. For organized neurosurgery and the broader physician and research communities, the legislation delivered several significant victories to protect biomedical research funding, preserve congressional oversight, and stabilize key federal health programs.

Signed into law on February 3, 2026, the legislation funded the Departments of Labor, Health and Human Services, and Education for fiscal year 2026 while advancing a broad set of health policy directives affecting the National Institutes of Health and the Centers for Disease Control and Prevention. NIH received \$48.7

billion under the final package, an increase of \$415 million above FY 2025 levels, while the National Institute of Neurological Disorders and Stroke received \$2.804 billion to support neuroscience research and investigator-initiated funding. The National Cancer Institute received \$7.352 billion, including expanded investments in childhood cancer research, prevention, and early detection initiatives. While the CDC did see a reduction in funding, Congress provided \$761 million to support traumatic brain injury programs, including concussion surveillance, firearm injury prevention research, and more.

One of the most consequential provisions for academic medicine involved congressional intervention into NIH's attempted overhaul of indirect cost reimbursement policy. Earlier in 2025, NIH proposed imposing a universal 15 percent cap on facilities and administrative (F&A) cost reimbursement rates, replacing longstanding negotiated agreements with academic institutions. The Washington

Committee [led national physician groups in opposition](#) to the proposal and worked directly with House appropriators to preserve the protective language through final negotiations. The enacted bill reinforces that indirect cost structures must continue to be negotiated rather than imposed administratively across the board.

The legislation also included several significant Medicare Advantage (MA) and Medicare Part D policy riders affecting physician payment policy, pharmacy benefit manager transparency, telehealth services, rural health programs, and plan oversight. Among the most notable were new Medicare Part D reforms targeting pharmacy benefit manager compensation practices, including "delinking" provisions intended to reduce the financial incentive to favor higher-cost drugs by separating certain pharmacy benefit manager compensation from a drug's list price or rebate value. The bill also establishes new statutory requirements governing

Through the work of the Washington Committee, the CNS plays a vital role in advancing neurosurgery's key health care initiatives on Capitol Hill.

By collaborating with other medical societies, patient advocacy groups, and stakeholders, the committee builds alliances to amplify the voice of neurosurgeons in healthcare policy discussions and keep neurosurgical patients at the forefront.

the accuracy of MA provider directories. Beginning in plan year 2028, MA plans must maintain publicly accessible, regularly updated, and standardized provider directories that contain specified information about participating providers, patient access, and covered services.

The package also reauthorized the Dr. Lorna Breen Health Care Provider Protection Act, extending federal support for physician mental health and burnout prevention programs.

Expanding Neurosurgery's Influence in Washington

One of the most effective ways to strengthen neurosurgery's voice in Washington is to ensure that neurosurgeons themselves serve in the rooms where federal policy decisions are made. While the Washington Committee continues to support advocacy through direct engagement with Congress and federal agencies, expanding neurosurgical representation across advisory bodies, commissions, and federal

leadership positions remains a growing strategic priority.

In January, Quality Subcommittee Chair-Elect **Anthony M. DiGiorgio**, DO, MPH, was appointed to the National Committee on Vital and Health Statistics (NCVHS), the statutory public advisory body to HHS on health data, health information standards, privacy, interoperability, and modernization of federal health information systems. The appointment was facilitated through Washington Committee engagement and relationship development and represents a significant opportunity for neurosurgery to help shape ongoing federal discussions surrounding health data infrastructure and digital health policy.

That same month, **Ricardo A. Hanel**, MD, PhD, was [appointed](#) to the Advisory Council on Alzheimer's Research, Care, and Services. Established under the National Alzheimer's Project Act of 2011, the Advisory Council provides recommendations to HHS and federal partners on advancing dementia research, strengthening care

delivery models, and improving long-term support for patients with Alzheimer's disease. Dr. Hanel is believed to be the first neurosurgeon appointed to the Advisory Council, expanding neurosurgery's presence in national conversations surrounding neurodegenerative disease policy, research, and patient care.

Physician-Owned Hospitals Take Center Stage in House Hearing

On March 18, 2026, as part of the House Energy and Commerce Committee's ongoing health care affordability series following its January 22 hearing featuring health insurance CEOs, the Subcommittee on Health convened a hearing, [Lowering Health Care Costs for All Americans: An Examination of the U.S. Provider Landscape](#). The hearing included representatives from the American Medical Association, American Hospital Association, American Academy of Family Physicians, and other national stakeholders. The Washington Committee helped secure Dr. DiGiorgio as a panelist.

A central focus of the hearing was the role of physician-owned hospitals (POH) and independent physician practices in promoting competition, reducing consolidation, and improving patient access. During his [testimony](#), Dr. DiGiorgio argued that federal policy has steadily weakened the independent physician sector through site-of-service payment disparities, restrictions on POH expansion, and increasing administrative burden.

Dr. DiGiorgio highlighted research showing that many physician-owned hospitals deliver high-quality care at lower or comparable costs while maintaining high patient satisfaction and lower complication and readmission rates.

Congressional Effort Emerges to Delay MPFS Efficiency Adjustment

The Washington Committee continues to make Medicare physician payment reform among its top federal advocacy priorities, with particular focus on CMS's finalized "efficiency adjustment" under the CY 2026 Medicare Physician Fee Schedule (MPFS). Finalized in the CY 2026 rule, the policy imposes an across-the-board 2.5 percent reduction to work RVUs for nearly all non-time-based services based on assumed physician productivity gains over time.

In response, the Washington Committee advanced a multi-pronged advocacy strategy focused on both immediate relief and broader structural reform. Efforts included coalition engagement, direct outreach to CMS and congressional offices, and development of a revised framework for evaluating physician services and code valuation under the Medicare payment system.

Those efforts culminated in the introduction of the Efficiency Adjustment Delay Act ([H.R. 7520](#)), bipartisan legislation delaying implementation of the adjustment

while Congress and stakeholders evaluate its long-term impact. The legislation and bipartisan lead sponsorship resulted directly from Washington Committee-led advocacy efforts. The Committee secured Representative **Ron Estes** (R-KS) as the Republican lead sponsor, with E. **Sander Connolly**, MD, helping to secure Representative **Tom Suozzi** (D-NY) as the Democratic co-lead. Dr. Khalessi was featured in the bill sponsors' [official press release](#) supporting the legislation, with an accompanying [coalition letter of support](#).

Medicare Fraud Prevention Request for Information

The Washington Committee, alongside fourteen specialty and subspecialty societies representing more than 100,000 physicians through the Alliance of Specialty Medicine, submitted formal comments in response to CMS's representing more than 100,000 physicians through the Alliance of Specialty Medicine, submitted formal [comments](#) in response to CMS' Comprehensive Regulations to Uncover Suspicious Healthcare Activity (CRUSH) initiative, aimed at strengthening Medicare's ability to detect and prevent fraudulent billing.

While the Washington Committee strongly supports efforts to combat fraud, waste, and abuse in Medicare, its response raised significant concerns that poorly designed program integrity policies risk penalizing good-faith physicians while doing little to deter bad actors.

Billing Deadlines

CMS is considering [shortening the window](#) in which physicians must submit bills for services already provided. Many billing delays stem from Medicare's own administrative processes, such as lengthy enrollment reviews for new physicians. The CNS made clear in its response that

penalizing doctors for such delays serves no meaningful fraud-prevention purpose—the most effective tools are precise and targeted, not broad mandates that fall hardest on physicians who fully comply with Medicare rules.

Neurosurgery Applauds New Dietary Guidelines

In January, the Administration [released](#) the updated Dietary Guidelines for Americans, 2025-2030. The guidelines represent a return to whole foods, reduced reliance on ultra-processed products, and age-adjusted nutritional patterns across the lifespan. Dr. Khalessi, MD, MBA, [commented](#) on the guidelines, thanking Secretaries **Robert F. Kennedy, Jr.**, and **Brooke Rollins** for their leadership in elevating nutrition as a national health priority and highlighted several important examples of how neurosurgical outcomes depend on proper nutrition.

From Advocacy to Action: A Year in Review

Over the past year, the stories featured throughout this section have reflected more than policy updates. They have documented tangible advocacy outcomes, from blocking NIH's proposed 15 percent indirect cost cap to securing changes to CMMI's WISer Model. CNS's 2025 Annual Report provides a year-in-review of the Washington Committee's advocacy during **Dr. Khalessi's** first year as chair. [Click here](#) to view the report. 📄

IMAGES IN NEUROSURGERY

Intracranial venous stenting for pseudotumor cerebri

We present a 55-year-old female who presented with headaches and blurry vision. She underwent a lumbar puncture with an opening pressure of 36 mmHg consistent with a diagnosis of pseudotumor cerebri. Ophthalmologic exam demonstrated papilledema. T2-weighted MRI demonstrated expanded empty sella and dilated CSF spaces around the optic nerves (**Figure 1**). MR venogram demonstrated severe right transverse-sigmoid junction venous stenosis (**Figure 2**). Diagnostic venogram with venous pressure measurements demonstrated severe right transverse-sigmoid venous stenosis and pathological gradient of 67 mmHg across the stenosis (**Figure 3**). Medical management with acetazolamide and dual antiplatelet therapy was initiated. Intracranial venous stent (Zilver 10x60mm) was placed with resolution of venous stenosis and venous pressure gradient (**Figure 4**). The patient reported significant reduction in headaches and improvement in vision. She did not require ventriculoperitoneal shunt placement. [✕](#)

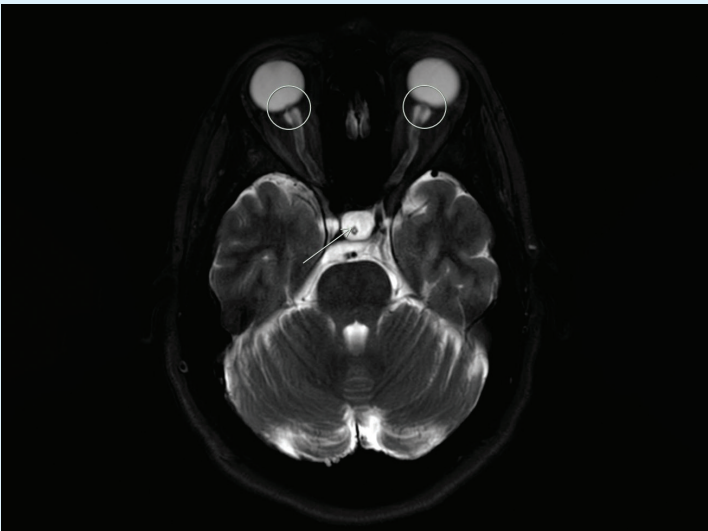


Figure 1: T2-weighted axial MRI demonstrates expanded empty sella and dilated CSF spaces around the optic nerves



Figure 2: MR venogram demonstrates right transverse-sigmoid junction venous stenosis

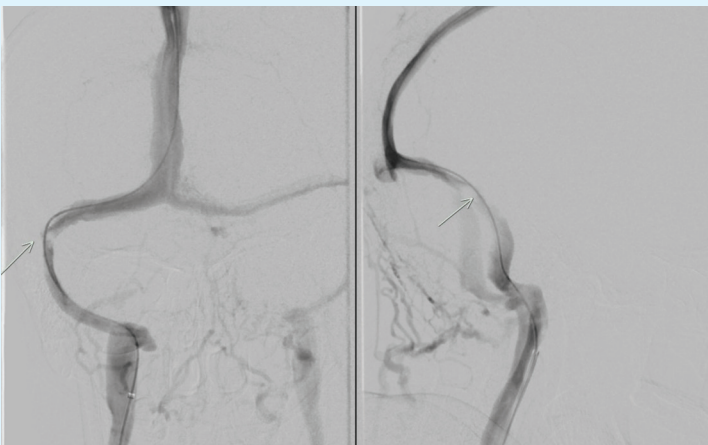


Figure 3: Diagnostic venogram demonstrates right transverse-sigmoid junction venous stenosis with pathological gradient of 67 mmHg across the stenosis

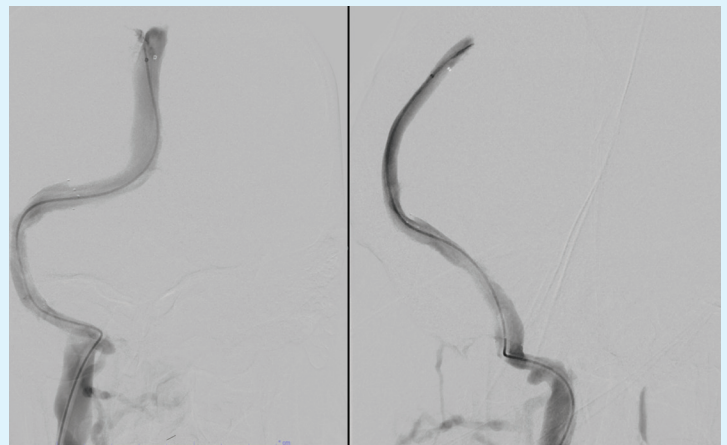


Figure 4: Diagnostic venogram after placement of venous stent across the transverse-sigmoid junction demonstrates resolution of stenosis



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