The Official Newsletter of the
Keck Medicine of USC
USC Brain Tumor Center
Patient referrals, (844) 33-**BRAIN** (844-332-7246)

USC Norris Comprehensive Cancer Center
Keck Medicine of USC

USC BRAIN TUMOR CENTER Report

Volume 5 ▪ Issue 3
SUMMER 2025

From the USC BTC Directors

Spring was an exciting and impactful season at the USC Brain Tumor Center. During the month of May—Brain Tumor Awareness Month—we proudly amplified and led advocacy efforts on behalf of our patients, their families, and the broader brain tumor community. From city-wide proclamations to community engagement events, our team remained deeply committed to raising awareness and supporting those affected by brain cancer.

We are incredibly grateful to all our supporters - especially during Brain Tumor Awareness Month - whose generosity helps fuel our mission and expand the impact of our work. Your support makes a difference in the lives of our patients and in the future of brain tumor care. In particular, we would like to thank our **BTC Community Advisory Council** and member **Dr. David Aroesty** for his time and

substantial contributions to our efforts.

In this issue, we shine a spotlight on one of our exceptional leaders—Co-Director of the USC Brain Tumor Center—whose accomplishments and passion for advancing brain tumor research and care continue to inspire us all.

Our **"Patient Corner"** features helpful guidance designed to simplify the process of scheduling appointments and following up with care, ensuring that our patients and families feel informed, empowered, and supported.

We're also proud to introduce our **2025 Summer Interns** - an inspiring group of future doctors, researchers, and healthcare leaders who are learning firsthand what it means to serve the brain tumor community with excellence and compassion.

As we continue striving to be the best brain tumor center in the country, we remain deeply committed to our mission—and to each of you. We are here for our brain tumor community, always.

Heal on!

Gabriel Zada, MD, MS, FAANS, FACS
Co-Director, USC Brain Tumor Center

David D. Tran, MD, PhD
Co-Director, USC Brain Tumor Center

Josh Neman, PhD
Scientific Director, USC Brain Tumor Center

Could electric fields supercharge an immune attack on the deadliest form of brain cancer?

A new study led by Keck Medicine of USC researchers may have uncovered an effective combination therapy for glioblastoma, a brain tumor diagnosis with few available effective treatments.

According to the National Brain Tumor Society, the average survival for patients diagnosed with glioblastoma is eight months.

The study finds that using **Tumor Treating Fields therapy (TTFields)**, which delivers targeted waves of electric fields directly into tumors to stop their growth and signal the body's immune system to attack cancerous tumor cells, may extend survival among patients with glioblastoma, when combined with immunotherapy (pembrolizumab) and chemotherapy (temozolomide).

TTFields disrupt tumor growth using low-intensity, alternating electric fields that push and pull key structures inside tumor cells in continually shifting directions, making it difficult for the cells to multiply. Preventing tumor growth gives patients a better chance of successfully fighting the cancer. When used to treat glioblastoma, TTFields are delivered through a set of mesh electrodes that are strategically positioned on the scalp, generating fields at a precise frequency and intensity focused on the tumor. Patients wear the electrodes for approximately 18 hours a day.

Researchers observed that TTFields attract more tumor-fighting T cells, which are white blood cells that identify and attack cancer cells, into and around the glioblastoma. When followed by immunotherapy, these T cells stay active longer

Continues on page 2

"Tumor Treating Fields therapy" *continued*

and are replaced by even stronger, more effective tumor-fighting T cells.

> "By using TTFields with immunotherapy, we prime the body to mount an attack on the cancer, which enables the immunotherapy to have a meaningful effect in ways that it could not before," said **David Tran, MD, PhD**, chief of neuro-oncology with Keck Medicine, co-director of the USC Brain Tumor Center and corresponding author of the study. "Our findings suggest that TTFields may be the key to unlocking the value of immunotherapy in treating glioblastoma."

TTFields are often combined with chemotherapy in cancer treatment. However, even with aggressive treatment, the prognosis for glioblastoma remains poor.

Immunotherapy, while successful in many other cancer types, has also not proved effective for glioblastoma when used on its own.

However, in this study, adding immunotherapy to TTFields and chemotherapy was associated with a 70% increase in overall survival. Notably, patients with larger, unresected (not surgically removed) tumors showed an even stronger immune response to TTFields and lived even longer.

This suggests that, when it comes to kick-starting the body's immune response against the cancer, having a larger tumor may provide more targets for the therapy to work against.

Optune, tumor treating fields therapy device. (Graphic/ Courtesy of Novocure)

Using alternating electric fields to unlock immunotherapy

Pembrolizumab, the immunotherapy used in this study, is an immune checkpoint inhibitor (ICI), which enhances the body's natural ability to fight cancers by improving T cells' ability to identify and attack cancer cells.

However, there are typically few T cells in and around glioblastomas because these tumors originate in the brain and are shielded from the body's natural immune response by the blood-brain barrier.

This barrier safeguards the brain by tightly regulating which cells and substances enter from the bloodstream. Sometimes, this barrier even blocks T cells and other therapies that could help kill brain tumors. This immunosuppressive environment inside and around the glioblastoma is what makes common cancer therapies like pembrolizumab and chemotherapy significantly less effective in treating it. Tran theorized the best way to get around this issue was to start an immune reaction directly inside the tumor itself, an approach known as in situ immunization, using TTFields.

This study demonstrates that combining TTFields with immunotherapy triggers a potent immune response within the tumor — one that ICIs can then amplify to bolster the body's own defense against cancer.

> "Think of it like a team sport — immunotherapy sends players in to attack the tumor (the offense), while TTFields weaken the tumor's ability to fight back (the defense). And just like in team sports, the best defense is a good offense," said Dr. Tran, who is also a member of the USC Norris Comprehensive Cancer Center.

Study methodology and results

The study analyzed data from **2-THE-TOP**, a **Phase 2 clinical trial**, which enrolled 31 newly diagnosed glioblastoma patients who had completed chemoradiation therapy.

Of those, 26 received TTFields combined with both chemotherapy and immunotherapy. Seven of these 26 patients had inoperable tumors due to their locations — an especially high-risk subgroup with the worst prognosis and few treatment options.

Patients in the trial were given six to 12 monthly treatments of chemotherapy alongside TTFields for up to 24 months.

The number and duration of treatments were determined by patients' response to treatment.

The immunotherapy was given every three weeks, starting with the second dose of chemotherapy, for up to 24 months.

Patients who used the device alongside chemotherapy and immunotherapy lived approximately 10 months longer than patients who had used the device with chemotherapy alone in the past.

Moreover, those with large, inoperable tumors lived approximately 13 months longer and showed much stronger immune activation compared to patients who underwent surgical removal of their tumors.

> "Further studies are needed to determine the optimal role of surgery in this setting, but these findings may offer hope, particularly for glioblastoma patients who do not have surgery as an option," said Dr. Tran.

Moving the research forward

Keck Medicine is participating in the multicenter **Phase 3 clinical trial** to validate the efficacy of TTFields with immunotherapy and chemotherapy. Tran, who has been researching TTFields for more than a decade, serves as the chair of the steering committee for this trial. **Frances Chow, MD**, neuro-oncologist with USC Norris, is the principal investigator of the Keck Medicine study site.

This Phase 3 trial, currently open at 28 sites across the United States, Europe, and Israel, aims to enroll over 740 patients through April 2029, including those with gross total resection, partial resection or biopsy-only tumors to assess the extent of how surgically removing tumors influences immune response.

Keck School of Medicine of USC authors of this study include **Dongjiang Chen, PhD**, assistant professor of research neurological surgery; **Son Le, PhD**, assistant professor of research neurological surgery; **Harshit Manektalia**, research programmer; **Ming Li, PhD**, professor of research population and public health sciences; and **Adam O'Dell**, research lab specialist. **Ashley Ghiaseddin, MD**, and **Maryam Rahman, MD, MS**, colleagues from the University of Florida, also contributed to this work.

This study was funded by a grant from Novocure, which manufactures Optune, the TTFields device used in this study. Dr. Tran has received honoraria from Novocure for consultant work. Dr. Chen and Dr. Tran are inventors of two patent applications related to work reported in this study.

USC Brain Tumor Center Spotlight: Gabriel Zada, MD, MS

Dr. Zada is Co-Director of the USC Brain Tumor Center, Professor of Neurological Surgery, Otolaryngology, and Internal Medicine and Resident Program Director at the Keck School of Medicine of USC Department of Neurological Surgery.

Dr. Gabriel Zada, Director of the USC Brain Tumor Center, is a nationally renowned neurosurgeon whose leadership has elevated USC into one of the most advanced and compassionate centers for brain tumor care in the country. As a Professor of Neurological Surgery at the Keck School of Medicine of USC and Program Director of the Neurosurgery Residency, Dr. Zada combines surgical excellence with an unwavering commitment to education and innovation and advocacy for his patients. He specializes in the treatment of brain, skull base, and pituitary tumors using minimally invasive techniques, including endoscopic and keyhole surgeries, awake craniotomies, and advanced radiosurgical interventions. Under his direction, the USC Brain Tumor Center has become a leader in offering multidisciplinary, personalized treatment plans that prioritize both medical outcomes and the patient experience and offer access to innovative clinical trials.

Dr. Zada has performed more than 3,000 complex brain tumor surgeries and is deeply involved in

translational research aimed at developing safer, more effective therapies. At USC's Zilkha Neurogenetic Institute, he leads NIH-funded investigations into the molecular and genetic underpinnings of brain tumors, with a particular focus on tumor genomics, epigenetics, and personalized medicine. He has authored over 300 peer-reviewed publications and is the editor of several leading neurosurgical textbooks, including ***The Atlas of Sellar and Parasellar Lesions*** and ***Subcortical Neurosurgery***. As a respected voice in the academic community, he has also served on the editorial board of the ***Journal of Neurosurgery*** and is a sought-after lecturer at national and international scientific meetings.

In addition to his surgical and research accomplishments, Dr. Zada is a beloved mentor and advocate who brings a patient-first philosophy to every aspect of his work. He was recently honored as Keck Medical Center's inaugural ***Physician of the Year***, recognizing not only his clinical expertise but also his empathy, leadership, and dedication to mentorship. He is an active member of the ***American Brain Tumor Association's Clinical Advisory Committee*** and has helped shape national standards of care through his contributions to clinical trials and policy. Through his vision, the USC Brain Tumor Center continues to grow as a beacon of hope and innovation—bridging science, surgery, and humanity for patients and families affected by brain tumors. What he cares about most is seeing his patients and their families thrive after their diagnoses and leaving a lasting legacy in scientific contributions and his trainees.

PATIENTS CORNER: How to Schedule and Maintain Follow-Up Appointments at the USC Brain Tumor Center

By Rebekah Ghazaryan, RN, BSN, PHN, NP-S; RN Clinical Coordinator - USC Brain Tumor Center | USC Pituitary Center

Rebekah Ghazaryan, RN, PHN, FNP-S

Navigating care after a brain tumor diagnosis can feel daunting and just out right scary—but you're not alone. At the USC Brain Tumor Center, we are committed to supporting you every step of the way. Whether you're newly referred or returning for ongoing care, understanding how to schedule and maintain your appointments is key to ensuring the best possible outcomes.

Making Your First Appointment

If you are a new patient or are being referred by another provider, our dedicated Patient Access Team is here to guide you through the process. Here's how to get started:

1. Contact Us

Call the USC Brain Tumor Center directly at **(844) 33-BRAIN**. Our team will assist with gathering your medical records and verifying insurance.

2. Have Your Information Ready

When calling, it's helpful to have the following on hand:

- Insurance details
- Referring provider contact info (if applicable)
- Relevant imaging or pathology reports
- A list of current medications

3. Medical Records Submission

We may ask you to send recent MRI/CT scans and clinical notes prior to your first appointment. Our coordinators can help with this step to avoid delays.

Follow-Up Appointments: Why They Matter

Follow-up appointments are more than routine check-ins—they are a critical part of your treatment and recovery. Even after surgery, radiation, or chemotherapy, regular surveillance allows your care team to:

- Monitor for recurrence or progression
- Assess treatment effectiveness
- Manage long-term effects
- Adjust medications or rehabilitation plans

For many patients, follow-up visits are scheduled every 3–6 months during the first two years post-treatment, with timing adjusted based on your tumor type, treatment response, and recovery progress.

How to Schedule Follow-Up Visits

You can schedule your follow-up appointment in several convenient ways:

- During Your Visit: Before leaving the clinic, ask the front desk to schedule your next appointment.
- By Phone: Call the BTC scheduling line at **(844) 33-BRAIN** during business hours.
- Through **MyUSCChart**: Use the patient portal to view upcoming appointments or send a secure message to your care team.

If you're having new symptoms—such as headaches, vision changes, memory issues, or new neurological concerns—contact the clinic right away. Early evaluation is key.

Tips for Staying on Track

- Mark your calendar or set reminders through your phone or email.
- Update your care team if you change phone numbers, insurance, or primary care providers.
- Keep a health journal to track any new symptoms, medication side effects, or questions you may have for your team.

You're Part of the Team...

At USC BTC, our approach is patient-centered and collaborative. Staying engaged with your follow-up care helps us tailor treatment plans that meet your individual needs and optimize long-term outcomes.

If you're unsure when your next appointment should be, don't hesitate to reach out. We're here to support you, every step of the way.

For questions or to make an appointment, please call the USC Brain Tumor Center at **(844) 33-BRAIN** or visit keckmedicine.org/brain-tumor.

Fight On and Heal On!

The USC Brain Tumor Center participates in the National Brain Tumor Society Los Angeles 5K Walk/Run

The USC Brain Tumor Center is a proud sponsor of the **National Brain Tumor Society (NBTS)**. This past Spring on a beautiful Sunny California Day our Brain Tumor Community showed up in full force. Members of our team raised funds and participated in the **NBTS Los Angeles 5K Walk/Run** in Griffith Park.

This event was created to raise awareness and funding in support of brain tumor patients and their families. **Dr. Gabriel Zada**, Director of the USC Brain Tumor Center was invited to speak to the participants about the importance of events like these to raise awareness and funds for brain tumor research. He also shared some of the advocacy efforts the USC Brain Tumor Center is involved in and invited all to join in this fight.

Thank you to everyone who joined us for the Southern California Brain Tumor Walk & Race. Your presence, your energy, and your stories made this event unforgettable. We walked for loved ones. We walked for hope. We walked to fuel the research and resources that patients and families so urgently need.

We are so incredibly grateful to the National Brain Tumor Society, for leading the charge and bringing us all together. Their work is changing lives, and we're proud to stand beside them. To our patients, survivors, caregivers, and clinicians: this walk was for you. And the momentum doesn't stop here. Heal On!

Annual Tour de Pier supporting the Uncle Kory Foundation

It was a beautiful and inspiring day in Manhattan Beach this past spring as the USC Brain Tumor Center proudly participated in the annual **Tour de Pier**. This unique and high-energy stationary cycling event brings the community together to raise awareness and critical funds for cancer research.

With the ocean breeze in the air and an incredible spirit of unity all around, our team cheered all who rode in honor of the patients, families, and caregivers affected by brain tumors. Each turn of the pedal represented a collective commitment to advancing research, finding cures, and supporting those facing a cancer diagnosis.

Events like Tour de Pier not only strengthen our mission but also remind us of the power of community, advocacy, and movement toward a future filled with hope, healing, and breakthroughs.

USC Brain Tumor Center advocacy leads to official proclamations for May 2025

The City of Los Angeles, Los Angeles County, and the State of California have proclaimed **May 2025** as **Brain Tumor Awareness Month**. The decision was a result of longstanding advocacy and outreach efforts from the USC Brain Tumor Center, part of Keck Medicine of USC.

On May 1, Assemblymember Mike Fong successfully presented a motion to declare May 2025 as Brain Tumor Awareness Month in the California State Assembly, stating that "Increased public awareness of brain tumors through advocacy and support for vital research, as well as education about the impact brain tumors have on the lives of patients and their families, are critical to finding a cure."

On May 13, the Los Angeles County Board of Supervisors unanimously approved the motion to honor the resilience of individuals living with brain tumors and the critical work of health care professionals and researchers.

The motion, drafted by County Board Chair Kathryn Barger and Supervisor Holly J. Mitchell, stated that Los Angeles County diagnoses and treats more brain tumors than any other county in California. It also cited the contributions of the USC Brain Tumor Center and praised the center's "cutting-edge diagnostic tools and innovative approaches to design a treatment plan personalized to your precise care needs and type of tumor."

The City of Los Angeles joined the movement and issued its own formal declaration on May 30. Councilmember Adrin Nazarian presented the official proclamation to the USC Brain Tumor Center team at City Hall.

Advisory Council Dinner at Smitty's

On May 22, members of the USC Brain Tumor Center Advisory Council, along with Surgical Director, **Dr. Gabriel Zada** and Scientific Director, **Dr. Josh Neman**, gathered for a lovely dinner at Smitty's Grill in Pasadena to applaud the advocacy and support that Advisory Council members provide to the Center throughout the year. Their commitment lends varied voices and generous annual support towards the Center's mission to provide cutting-edge, comprehensive patient care and to advancing translational research efforts leading to improved treatment and outcomes.

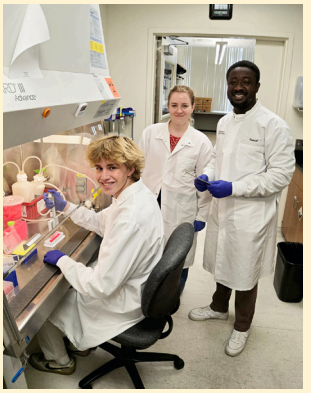
The leaders shared updates on the Center's progress over the nearly five years since the USC BTC was established, as well as promising research that was soon to be published. Also present at the dinner was USC Department of Neurosurgery Chair, **Dr. William Mack** and Immediate Past Chair, **Dr. Steven Giannotta**. Both leaders articulated the commitment to advance brain tumor care as a Keck School of Medicine priority and gratitude for the BTC Center leadership. This expression was echoed by Advisory Council member, **David Aroesty, MD**, who graciously committed his support with a gift to the USC Brain Tumor Center fund, in honor of his mentors and friends, **Dr. Giannotta** and **Dr. Martin Weiss**.

We thank Gregg Smith and The Smith Brothers Restaurants for their generous support of the USC Brain Tumor Center in the month of May and for joining us.

Training the Next Generation - Summer High School Internships at the USC Brain Tumor Center

The Each summer, the USC Brain Tumor Center is proud to host a select group of high school students for our Summer Internship Program. The goal of this initiative is to educate and inspire the next generation of physicians, scientists, healthcare professionals, and administrators who will one day play a critical role in advancing the fight against brain cancer.

Through hands-on learning experiences, our interns gain early exposure to the complexities of neurosurgery, oncology, clinical research, and patient-centered care—all while being mentored by dedicated members of our multidisciplinary team.



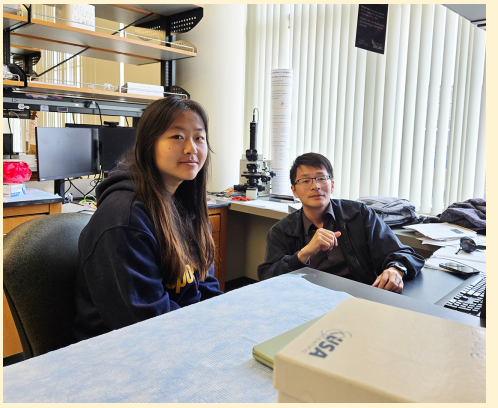
This year's cohort of interns engaged directly with ongoing projects that span basic science, clinical trials, data analysis, and patient advocacy.

They are participating in research discussions, shadowing clinical activities, and learning firsthand what it means to be part of a collaborative academic medical center dedicated to solving one of the most challenging diseases in medicine.

Their energy, curiosity, and commitment are inspiring, and we are excited to see how their experiences at USC will shape their future educational and professional paths.

Most importantly, they will leave the program not only with new knowledge and skills but also with a deeper understanding of the importance of awareness, advocacy, and compassion in brain tumor care.

We are incredibly grateful to the faculty, researchers, clinicians, and staff who generously share their time and expertise with our interns this summer.



Their mentorship reflects the heart of the Brain Tumor Center's mission—not only to treat and cure, but to teach, empower, and invest in the future.

Together, we are building a stronger, more informed community committed to improving the lives of brain tumor patients everywhere.

Cleveland Clinic | Keck School of Medicine of USC

26th Annual
Brain Tumor Update and
15th Annual
Symposium on Brain Metastases and Spine Tumors

Cleveland Clinic and Keck School of Medicine of USC Co-Sponsored Annual Meeting on Brain and Spinal Tumors

The 26th Annual Brain Tumor Update and the 15th Annual Symposium on Brain Metastases and Spine Tumors is co-provided by Cleveland Clinic and Keck School of Medicine of the University of Southern California.

This meeting will offer a focused review of advancements in the diagnosis, treatment, and multidisciplinary management of brain and spine tumors.

The symposium includes expert-led sessions on Spinal Tumors and Metastases; Brain Metastases; Technology and Brain Tumor Management; Sellar and Parasellar Tumors; Sex, Hormones and Brain Tumors; and Gliomas.

Raising Funds for USC Brain Tumor Center Research


Nicole Measles

Many thanks to our all of our donors and champions who helped raise over $150,000 towards the USC Brain Tumor Center fund over the last three months! Special thanks to Bree Gallagher, Willa Chandler, The Smith Brother Restaurants, Mayfied Junior School 8th grade class, the Self Family, and Aida Lozada for your generous efforts to support the USC BTC—we cannot thank you enough!

Nicole Measles, Director of Development at **Nicole.measles@med.usc.edu** or **(213) 806-0693**.

SELECTED PUBLICATIONS

Current understanding of the role of DNA methylation in pituitary neuroendocrine tumors. ***Peterson R, Cote DJ, Zada G.*** *Neurooncol Adv. 2025 Jan 2;7(Suppl 1):i2-i9. doi: 10.1093/noajnl/vdae149.*

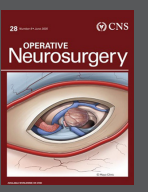
Pituitary neuroendocrine tumors (PitNETs) are unusual among neoplasms in that sporadic tumors are not typically associated with genetic mutations. Instead, epigenetics, a non-mutational process by which gene expression is modified via a variety of mechanisms, may be a driving factor in PitNET growth and behavior. DNA methylation is one of the most well-understood forms of epigenetic modification. Research on DNA methylation profiles of PitNETs has identified a large number of genes silenced or upregulated by DNA methylation, particularly when methylated at CpG islands of gene promoter regions. Global patterns of DNA methylation may provide valuable insight into the origins of pituitary adenoma subtypes, assist with PitNet diagnostics, and have been found to correspond to the current World Health Organization classification of PitNETs based on transcription factor lineage. Analysis of differentially methylated regions of individual genes may have prognostic value as well as guide research toward nonsurgical therapeutic strategies. Pituitary epigenetics and DNA methylation analysis are rapidly growing areas of interest with the potential to shape the future of pituitary tumor diagnostics and treatment.

A core outcome set for pituitary surgery research: an international delphi consensus study. ***Valetopoulou A, Newall N, Khan DZ, Borg A, Bouloux PMG, Bremner F, Buchfelder M, Cudlip S, Dorward N, Drake WM, Fernandez-Miranda JC, Fleseriu M, Geltzeiler M, Ginn J, Gurnell M, Harris S, Jaunmuktane Z, Korbonits M, Kosmin M, Koulouri O, Horsfall HL, Mamelak AN, Mannion R, McBride P, McCormack AI, Melmed S, Miszkiel KA, Raverot G, Santarius T, Schwartz TH, Serrano I, Zada G, Baldeweg SE, Marcus HJ, Kolias AG; PitCOP Collaborators.*** *Pituitary. 2025 Jul 23;28(4):88. doi: 10.1007/s11102-025-01553-w.*

This study aimed to develop a core outcome set (COS) for pituitary surgery to enhance the quality, efficiency and effectiveness of future pituitary adenoma surgery research. Thirty-three outcomes were identified through a systematic review of pituitary adenoma surgery outcomes and a study on patient-reported measures. These were presented in an online survey to healthcare professionals (HCPs), patients and caregivers. In the first round, participants scored each outcome's importance on a 5-point scale (1-strongly disagree; 5-strongly agree) and could also suggest additional outcomes, which were reviewed and, if appropriate, added to existing domains. In the second round, participants re-scored the updated the list, considering group median and interquartile range scores from the previous round. Outcomes with a median score of 5 were included in the COS. A final live online consensus meeting discussed and voted on borderline outcomes (median scores 3-4). We advocate for use of the COS in future pituitary surgery research.

Hospital procedural volume is inversely linearly associated with complications in endoscopic endonasal transsphenoidal resection of pituitary tumors. ***Han JS, Demetriou AN, Dallas J, Bae G, Ding L, Mack WJ, Attenello FJ, Zada G.*** *J Neurosurg. 2025 Jun 27:1-10. doi: 10.3171/2025.3.JNS242018.*

Prior studies have shown that high-volume centers have improved outcomes in patients undergoing transsphenoidal resection for pituitary tumors. However, those investigations have not examined this association specifically for the endoscopic approach and are limited by characterizing the volume outcome association using arbitrary dichotomous volume cutoffs. The objective of the current study was to delineate the continuous volume-outcome relationship adjusted for risk factors in patients with benign pituitary tumors undergoing endoscopic endonasal transsphenoidal surgery (ETSS) and systemically identify volume cutoffs after which there is no significant increase in complication risk. A multivariable analysis with institutional case volume as a continuous variable exhibited a linear association with risk of major and sellar tumor-specific complications specific to this patient population.



Associations Between Tumor Characteristics, Postoperative Complications, and Early Versus Late Discharge After Endoscopic Endonasal Pituitary Adenoma Resection. ***Guerra GA, Prasad A, Shah I, Cote DJ, Gomez D, Peterson R, Shiroishi M, Carmichael J, Briggs RG, Zada G.*** *Oper Neurosurg. 2025 Jun 16. doi: 10.1227/ons.0000000000001667.*

Enhanced recovery after surgery protocols have resulted in a paradigm change in perioperative care with applications in cranial neurosurgery. Protocols have been implemented to increase rates of early discharge with length of stay being an important metric after pituitary adenoma (PA) resection. The aim of this study was to assess characteristics associated with early discharge on postoperative day 1 or 2 (POD 1-2) after endoscopic endonasal surgery (EES) for PA. An analysis was performed of 524 patients undergoing EES for PA resection from December 2012 to December 2022. Patients discharged POD 1 were compared with POD >2 patients to determine associations with tumor and patient characteristics, preoperative symptoms, and postoperative complications. Tumor characteristics and presenting symptoms may assist in determining patients who are appropriate for early discharge after EES for PA resection. POD 1-2 discharge seems to be a practical option for many patients after EES, without additional risk of readmission or further complications.

Trends in glioblastoma treatment, survival, and disparities in access to care in the United States from 2004 to 2019: a National Cancer Database analysis. ***Pham J, Sisti J, Cote DJ, Kang K, Briggs RG, Gomez D, Shah I, Lawler SE, Chen CC, Attenello F, Zada G.*** *J Neurosurg. 2025 May 16:1-13. doi: 10.3171/2025.1.JNS242671.*

Population-based studies of histologically confirmed glioblastoma without molecular classification have demonstrated the doubling of 3-year overall survival (OS) since 2005 despite minimal additions to the treatment armamentarium. The authors aimed to evaluate whether changes in tumor characteristics and treatment patterns were associated with survival outcomes. Additionally, the authors sought to elucidate disparities in access to established and novel therapeutic modalities for patients with glioblastoma. The authors queried all patients diagnosed with glioblastoma by histology irrespective of biomarkers from the National Cancer Database and divided patients into 4 equal periods: 2004-2007, 2008-2011, 2012-2015, and 2016-2019. Differences in OS were tested using the Kaplan-Meier log-rank test. Logistic regression models were constructed to identify predictors of receiving trimodal therapy (surgery, radiation, and chemotherapy) and immunotherapy. Improvements observed in OS for glioblastoma over the past 2 decades were associated with an increased use of trimodal therapy in accordance with clinical guidelines. Addressing ongoing disparities in the access to established and novel therapeutic modalities for glioblastoma is necessary to optimize outcomes and enhance research discoveries.

Hosted by Keck Medicine of USC

CLINICAL TRIALS:
Now Enrolling at the
USC Brain Tumor Center

Have you or someone you know recently been diagnosed with a brain tumor? Choosing the right treatment can be challenging. To find out more about our breakthrough treatments, contact our specialized brain tumor team at (844) 33-BRAIN (844-332-7246) or email frances.chow@med.usc.edu.

GammaTile Center of Excellence

This designation recognizes the institution's exceptional expertise in the Gamma**Tile** procedure. Gamma**Tile** is an innovative radiation source that is placed during surgery to deliver focused, immediate radiation. It is designed to protect healthy tissue and minimize radiation side effects, including hair loss. Gamma**Tile** is available for advanced brain tumors including glioblastoma, meningioma, and metastatic brain tumors.

	Trial	Interventions	Phase
	Glioblastoma		
1	DB107-RRV, DB107-FC, and Radiation Therapy With or Without Temozolomide (TMZ) for High Grade Glioma	• DB107-RRV + DB107-FC + Standard Therapy	Phase 1/2A
2	EF-41/KEYNOTE D58: Phase 3 Study of Optune Concomitant With Temozolomide Plus Pembrolizumab in Newly Diagnosed Glioblastoma	• Optune + Pembrolizumab + Standard Therapy • Optune + Placebo + Standard Therapy	Phase 3
3	GammaTile and Stupp in Newly Diagnosed GBM (GESTALT)	• GammaTile + Standard therapy • Standard therapy	Phase 4
4	Multi-Center Randomized Controlled Phase 2b Clinical Trial to Evaluate the Safety and Efficacy of TVI-Brain-1 Combined with Conformal Radiotherapy and Temozolomide Compared to Standard Therapy as a Treatment for Newly Diagnosed O6-Methylguanine Methyltransferase Negative (MGMT Unmethylated) Grade 4 Astrocytoma (GBM)	• TVI-Brain-1 + Radiation + Temozolomide • Standard therapy	Phase 2b
5	A Phase 1/2 Study of Selinexor and Temozolomide in Recurrent Glioblastoma	• Selinexor + Temozolomide • Temozolomide	Phase 1/2
6	An Open-Label, Phase 1/2A Dose Escalation Study of Safety and Efficacy of NEO100 in Recurrent Grade IV Glioma	• Perillyl alcohol (inhaled)	Phase 1/2A
7	Study of NEO212 (Temozolomide-Perillyl Alcohol Conjugate) in Advanced Brain Cancer	• NEO212 (oral)	Phase 1
	Meningioma		
8	An Open-Label, Phase 2 Study of NEO100 in Participants with Residual, Progressive or Recurrent High-grade Meningioma	• Perillyl alcohol (inhaled)	Phase 2
9	Observation or Radiation Therapy in Patients with Newly Diagnosed Grade II Meningioma That Has Been Completely Removed by Surgery (NRG-BN003)	• Radiation • Standard therapy	Phase 3

Keck Medicine of USC
BEYOND EXCEPTIONAL MEDICINE™
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Los Angeles, CA 90033
Patient referrals, (844) 33-**BRAIN** (844-332-7246)

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At the USC Brain Tumor Center, our mission is to provide exceptional, comprehensive and innovative concierge-style treatment plans for adults and children with all types of brain tumors and related conditions. ***Giveto.USC.edu***

We Are the USC Brain Tumor Center

NEUROSURGERY
Gabriel Zada, MD, MS
Josh Neman, PhD
Steven Giannotta, MD
Frank Attenello, MD, MS
Thomas Chen, MD, PhD
Aaron Cohen-Gadol, MD, MSc
Cheng Yu, PhD
Oscar Aurelio, PhD
Camelia Danilov, PhD
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