

Dual Approach Boosts Tumor Removal: Study in Chinese Neurosurgical Journal Compares Two Pituitary Surgery Methods

Two-team surgical approach removes more complex pituitary tumors, reduces bleeding risk, and lowers recurrence compared to traditional endonasal surgery

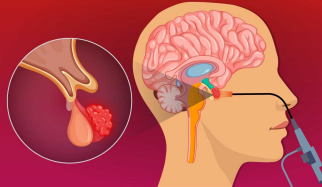
BEIJING, BEIJING, CHINA, August 14, 2025 /EINPresswire.com/ -- The pituitary gland, located at the base of the brain, secretes hormones that regulate vital body functions and control the activity of other hormone-secreting glands. Pituitary neuroendocrine tumors (PitNETs) are abnormal growths in this gland. In recent years, endoscopic endonasal surgery (EES), a minimally invasive technique, has become a widely used method for treating these tumors. In this approach, an endoscope is inserted through the nasal passages and sinuses—a route referred to as endonasal.

However, giant and irregular pituitary neuroendocrine tumors (GIPitNETs) pose a significantly greater challenge. These tumors are typically larger than 4 cm and often extend beyond the sella, the bony structure that houses the pituitary gland. They may grow upwards into the cranial cavity, the space within the skull that houses the brain. This extension can render the tumor inaccessible or invisible through the standard EES approach.

An alternative and innovative method used in such cases is the combined endoscopic endonasal and transcranial surgery (CECS). In this technique, one surgical team performs the EES approach while another team simultaneously carries out transcranial surgery, which involves accessing the

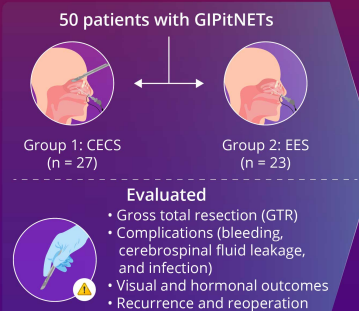
Exploring the Role of Combined Endoscopic and Transcranial Surgery in Treating Giant Irregular Pituitary Tumors

Giant and irregular pituitary neuroendocrine tumors (GIPitNETs) are aggressive tumors with complex intracranial extensions



Traditional endoscopic endonasal surgery (EES) often fails to fully remove these tumors, but combined endoscopic endonasal and transcranial surgery (CECS) can provide hope

Comparing outcomes of CECS vs. EES in the surgical management of GIPitNETs



	CECS	EES
Tumor visibility	Higher access	Limited intracranial extension
GTR	66.7%	13.0%
Postoperative bleeding	7.4%	65.2%
Recurrence	0%	17.4%
Visual improvement	77.8%	47.8%

CECS enables safer and more effective removal of complex pituitary tumors compared to EES, with reduced recurrence and bleeding

Giant and irregular pituitary neuroendocrine tumors surgery: comparison of simultaneous combined endoscopic endonasal and transcranial and purely endoscopic endonasal surgery at a single center

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tumor by creating small openings in the skull.

To analyze and compare the efficacy and complications of CECS and EES for GIPitNETs treatment, a team of researchers from China conducted a retrospective observational single-center cohort study. The study led by Dr. Changzhen Jiang and Dr. Xiaorong Yan from the Neurosurgery Research Institute, Fujian Medical University, China, was published in the [Chinese Neurosurgical Journal](#) and made available online on February 03, 2025. “We wanted to define the limitations and benefits of the two surgical procedures in the management of GIPitNETs,” says Dr. Jiang while explaining the aim of the study.

The research included 50 patients who underwent either EES or CECS between March 2018 and May 2023 at The First Affiliated Hospital of Fujian Medical University. All patients had tumors larger than 4 cm with significant intracranial extension. Endocrine tests were conducted before and after surgery to assess hormone levels. Magnetic resonance imaging (MRI) was used to evaluate tumor size and post-surgical outcomes. Researchers also analyzed hospital records for symptoms and complications, and ophthalmologists assessed visual function before and after surgery.

27 out of the 50 patients enrolled for this study were treated by CECS, and EES was performed on the remaining 23 patients. The researchers compared the obtained data using statistical analysis.

The results revealed a higher rate of gross total tumor removal (GTR) in the CECS group. GTR was achieved in 66% of patients in the CECS group, compared to just 13% in the EES group. Postoperative bleeding, a common and serious complication, was more prevalent in the EES group—65.2% compared to 7.4% in the CECS group. Additionally, all four cases of tumor recurrence due to residual tumor were reported in the EES group, suggesting that incomplete removal in EES may increase the risk of recurrence.

Interestingly, even though CECS achieved better tumor removal, visual outcomes were similar in both groups. “Partial tumor removal can also alleviate the pressure on optic nerves and lead to symptom relief. Thus, visual symptom improvement is possible after undergoing EES,” explains Dr. Yan.

However, CECS is not without its limitations. “The CECS technique requires a longer operation time and has greater surgical trauma with similar postoperative infection rates, compared to EES,” notes Dr. Jiang. Patients in the CECS group also had longer hospital stays. Despite the increased invasiveness of CECS, postoperative infection rates were comparable to those of the less invasive EES, indicating that CECS remains a safe option when performed carefully by experienced surgical teams.

Overall, the findings suggest that CECS may offer significant advantages in treating GIPitNETs, particularly when the tumor’s size or shape makes it inaccessible by EES alone. The improved

GTR rate and lower complication rate point to CECS as a more effective approach for complex cases, despite the longer operation and recovery times.

The research team plans to further investigate the long-term efficacy and safety of CECS. They aim to conduct follow-up studies over extended periods and hope to analyze more patient data through large-scale multicenter collaborations. With continuous improvements in surgical techniques, approaches like CECS may help make the treatment of complex tumors like GIPitNETs safer and more successful.

Reference

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About Dr. Xiorong Yan, from Fujian Medical University

Dr. Xiaorong Yan is a neurosurgeon at the Neurosurgery Research Institute, First Affiliated Hospital of Fujian Medical University in Fuzhou, China. She holds an MD in Neurosurgery from Shandong Medical University. Her work mainly focuses on endoscopic surgery for pituitary adenomas and other brain lesions. She co-led the recent comparison study of combined endoscopic endonasal-transcranial surgery versus purely endonasal surgery for giant pituitary

tumors, contributing to improved surgical strategies and patient outcomes. Dr. Yan has also contributed to other minimally invasive neurosurgical techniques, publishing clinical studies on spine and brain tumor procedures. She has over 20 published papers.

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