Transsphenoidal approach complications

- Hospital procedural volume is inversely linearly associated with complications in endoscopic endonasal transsphenoidal resection of pituitary tumors
- Outcomes of the Transsphenoidal Approach for ACTH-Secreting Pituitary Tumours and the Role of Postoperative ACTH in Predicting the Late Recurrence of Cushing's Disease: A Retrospective Analysis of 50 Cases
- Secondary Pituitary Abscess Inside a Macroadenoma Complicated by Postoperative Hemorrhage and Reinfection: A Case Report
- Transcranial Microsurgery as a Salvage Strategy in Giant Pituitary Adenomas: A Single-Center Experience and Long-Term Follow-up Results
- Safety and efficacy of endoscopic vs. microscopic approaches in pituitary adenoma surgery: A systematic review and meta-analysis
- Contralateral Transmaxillary Approach For a 13-Year-Old Boy with a Petrous Apex Cholesterol Granuloma: A Case Report
- Management of cerebrospinal fluid leaks from lateral sphenoid sinus wall: Tailored approach based on proposed zone-wise classification
- Impact of nasal septal deviation on surgical outcomes in endoscopic transsphenoidal surgery: a population-based study

Transsphenoidal surgery is the preferred first-line therapy for most pituitary neuroendocrine tumor (PA), and the conventional strategy of treatment is intracapsular resection(IR). The protocol of extracapsular resection (ER), which considers the pseudocapsule as the PA boundary for surgical removal, has also been introduced.

A systematic literature review was performed in the PubMed, EMBASE, Web of Science and Cochrane databases. Articles comparing IR and ER were included.

There were 7 studies containing 1768 cases in accordance with the inclusion criteria. Although the meta-analysis showed no significant difference in complete resection, a sensitivity analysis revealed that ER was more conducive to total PA resection than IR. Moreover, we found a significant difference in favor of ER regarding biochemical remission. Furthermore, there was no significant difference in the incidence rate of certain complications, such as hormone deficiency, diabetes insipidus, intraoperative cerebrospinal fluid(CSF), and postoperative Cerebrospinal fluid fistula. However, sensitivity analysis suggested that IR decreased the risk of intraoperative Cerebrospinal fluid fistula.

This meta-analysis unveiled that ER contributed to biochemical remission. To some extent, these results also showed that ER played a positive role in complete resection, but that IR reduced the incidence of intraoperative Cerebrospinal fluid fistula. However, the available evidence needs to be

further authenticated using well-designed prospective, multicenter, randomized controlled clinical trials [1)]

For a transsphenoidal approach, no significant differences in surgical outcomes, mortality during the perioperative period or complications were observed between patients younger than 14 years old and similar patients in the general population [2)].

Microsurgical and endoscopic techniques are commonly utilized surgical approaches to pituitary pathologies. There are limited data comparing these 2 procedures.

To evaluate postoperative complications, associated costs, and national and regional trends of microscopic and endoscopic techniques in the United States employing a nationwide database.

The Truven MarketScan database 2010 to 2014 was queried and Current Procedural Terminology codes identified patients that underwent microscopic and/or endoscopic transsphenoidal pituitary surgery. International Classification of Diseases codes identified postoperative complications. Adjusted logistic regression and matched propensity analysis evaluated independent odds for complications.

Among 5886 cases studied, 54.49% were microscopic and 45.51% endoscopic. The commonest surgical indications were benign pituitary tumors. Annual trends showed increasing utilization of endoscopic techniques vs microscopic procedures. Postoperative complications occurred in 40.04% of cases, including diabetes insipidus (DI; 16.90%), syndrome of inappropriate antidiuretic hormone (SIADH; 2.02%), iatrogenic hypopituitarism (1.36%), fluid/electrolyte abnormalities (hypoosmolality/hyponatraemia [5.03%] and hyperosmolality/hypernatraemia [2.48%]), and cerebrospinal fluid (CSF) leaks (CSF rhinorrhoea [4.42%] and other Cerebrospinal fluid fistula [6.52%]). In our propensity-based model, patients that underwent endoscopic surgery were more likely to develop DI (odds ratio [OR] = 1.48; 95% confidence interval [CI] = 1.28-1.72), SIADH (OR = 1.53; 95% CI = 1.04-2.24), hypoosmolality/hyponatraemia (OR = 1.17; 95% CI = 1.01-1.34), CSF rhinorrhoea (OR = 2.48; 95% CI = 1.88-3.28), other Cerebrospinal fluid fistula (OR = 1.59; 95% CI = 1.28-1.98), altered mental status (OR = 1.46; 95% CI = 1.01-2.60), and postoperative fever (OR = 4.31; 95% CI = 1.14-16.23). There were no differences in hemorrhagic complications, ophthalmological complications, or bacterial meningitis. Postoperative complications resulted in longer hospitalization and increased healthcare costs.

Endoscopic approaches are increasingly being utilized to manage sellar pathologies relative to microsurgery. Postoperative complications occur in both techniques with higher incidences observed following endoscopic procedures [3)].

Internal carotid artery injury

Internal carotid artery injury after transsphenoidal approach.

see Leaks into sphenoid sinus.

Hypopituitarism

see Hypopituitarism after surgery.

Cerebrospinal fluid fistula after endoscopic skull base surgery

Cerebrospinal fluid fistula after endoscopic skull base surgery

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Transnasal transsphenoidal (TNTS) resection of pituitary tumors involves wide fluctuation in hemodynamic parameter and causes hypertension and tachycardia due to intense noxious stimuli during various stages of surgery. None of routinely used anesthetic agents effectively blunts the undesirable hemodynamic responses, and therefore usually there is a need to use increased doses of anesthetic agents. Dexmedetomidine may ensure optimal intraoperative hemodynamic stability during critical moments of surgical manipulation. In addition, DEX reduced the anesthetic requirement with rapid recovery at the end of surgery.

DEX as an anesthetic adjuvant improved hemodynamic stability and decreased anesthetic requirements in patients undergoing Transsphenoidal resection of pituitary tumor. In addition, DEX provided better surgical field exposure conditions and early recovery from anesthesia [4].

Rhinological Consequences

Rhinological Consequences after transsphenoidal approach

Hyponatremia after transsphenoidal surgery

see Hyponatremia after transsphenoidal surgery..

Case reports

A rare case of subdural pneumocephalus, unassociated with CSF leak, developed in the sellar and suprasellar regions. This complication was diagnosed in an adult male 1 week after the removal of a large tumor in the same site via ETSS. The patient presented with a severe headache and visual deterioration. He was diagnosed by a CT scan and managed emergently via ETSS. The headache was

relieved immediately after surgery, and the recent visual deterioration was reversed the next day. As far as we have reviewed in the context of complications of ETSS, no previous study has reported such a complication of pneumocephalus unassociated with CSF leak following ETSS. As a conclusion, pneumocephalus can occur with or without CSF leakage as a complication of ETSS, and it may be avoided by a good (water-tight) sealing of the surgical site [5].

References

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