

"Comparison of Complications, Trends, and Costs in Endoscopic versus Microscopic Pituitary Surgery: Analysis from a US Health Claims Database"

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Learning Objectives

- This study estimates trends in the overall burden and incidence of complications associated with microscopic and endoscopic transsphenoidal pituitary surgery.
- It examines costs of hospitalization associated with the development of complications.
- This analysis which was performed on data obtained from a national database is representative of a wide range of patients and /or practice settings and differs uniquely from previous studies which are either limited to single institutions or to a limited number of practice settings.
- Thus, the findings obtained from this unique study generalize more broadly across the entire spectrum of patients undergoing transsphenoidal pituitary surgery and provides a strong evidence base for the ongoing microsurgical-endoscopic transition in the management of pituitary pathologies.

Introduction

- Microsurgical and endoscopic techniques are commonly utilized surgical approaches to access pituitary pathologies. There is limited data comparing these two surgical procedures.
- This study evaluates postoperative complications and associated costs of microscopic and endoscopic techniques, and offers a unique perspective by examining national and regional differential trends in the United States employing a nationwide database.

Methods

- The Truven Market-scan database 2010-2014 was queried and Concurrent 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.

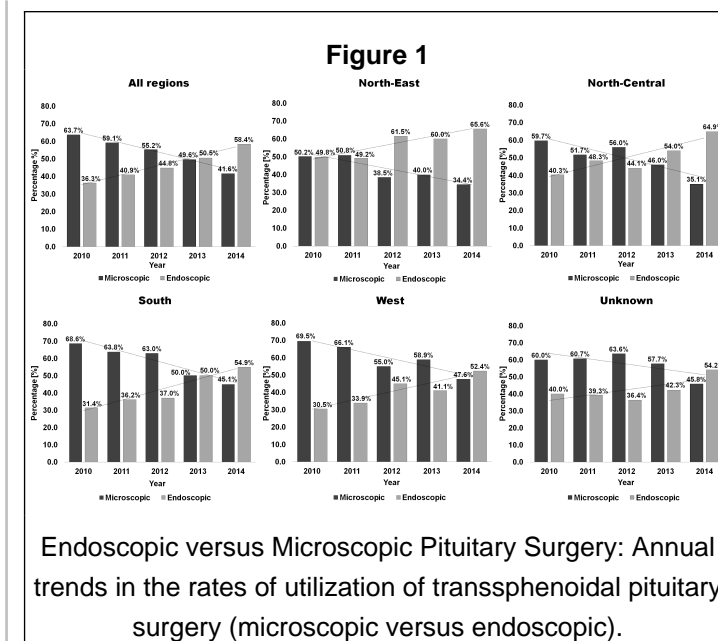
Results

- Among 5,886 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 versus microscopic procedures (See attached Figure 1).
- Postoperative complications occurred in 40.04% of cases, including diabetes insipidus [16.90%], syndrome of inappropriate anti-diuretic 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 CSF-leak [6.52%]).

- In our propensity based model, patients that underwent endoscopic surgery were more likely to develop

- Diabetes insipidus [OR=1.48; 95%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 CSF leak [OR=1.59; 95%CI=1.28-1.98]
- Altered mental status [OR=1.46; 95%CI=1.01-2.60]
- Postoperative fever [OR=4.31; 95%CI=1.14-16.23]

- Postoperative complications resulted in longer hospitalization and increased healthcare costs.



Conclusions

- Endoscopic approaches are increasingly being utilized to manage sellar pathologies relative to microsurgery.
- Postoperative complications occur in both techniques, with higher incidences of complications observed following endoscopic procedures.

Commentary

- Pituitary surgery is undergoing a transition with increased utilization of endoscopic techniques.
- The findings of increased complications in patients undergoing endoscopic surgery may reflect the early experience during the adoption phase of endoscopic and skull base techniques.
- Continued evaluation and serial critical review of surgical outcomes are important during this transition.