

# Complications Associated with Transsphenoidal Pituitary Surgery: Experience of 1,171 Consecutive Cases Treated at a Single Tertiary Care Pituitary Center

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## Introduction

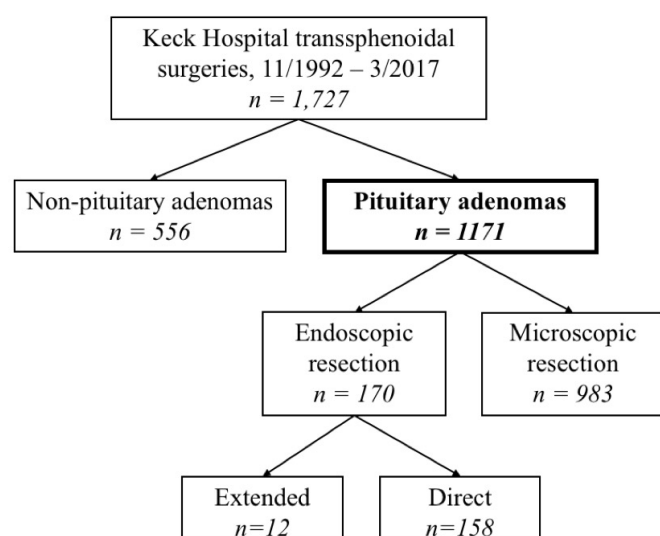
Pituitary adenomas (PAs) are benign neoplasms frequently encountered during workup for endocrinopathy, headache, or visual loss.

Transsphenoidal surgery remains the mainstay approach for PA resection. We retrospectively assessed safety and complication rates associated with transsphenoidal PA resection.

## Methods

A retrospective analysis of 1,171 consecutive transsphenoidal pituitary adenoma resections performed at the Keck Hospital of USC between November 1992 - March 2017 was conducted. Microscopic transsphenoidal resection was performed in 85.3%, and 14.7% were performed endoscopically. Analysis of perioperative complications and patient/tumor risk factors was conducted.

**Figure 1: Identification of Patients for Inclusion into Study**



## Results

- Overall median hospital stay was 3 days
- 1 perioperative mortality (0.1%)

**Surgical complications:** postoperative CSF leak (2.7%), epistaxis (1.1%), meningitis (1.0%), postoperative hematoma (1.0%), cranial nerve paresis (0.8%), hydrocephalus (0.7%), vision loss (0.6%), stroke (0.3%), abdominal hematoma or infection (0.2%), carotid artery injury (0.1%), and vegetative state (0.2%)

**Perioperative medical complications:** bacteremia/sepsis (0.5%), pneumonia (0.3%), myocardial infarction (0.3%), and DVT/PE (0.1%)

**Endocrine complications:** transient diabetes insipidus (4.3%), symptomatic hyponatremia (4.2%), new hypopituitarism (3.6%), permanent diabetes insipidus (0.3%) and adrenal insufficiency (0.2%)

### Notable risk factors for surgical complications:

- Prior TSS (11.4% versus 6.9%;  $p=0.029$ )
- Preoperative headache (9.3% vs. 6.9%;  $p=0.041$ )
- Preoperative vision loss (10.6% versus 6.9%;  $p=0.001$ )
- PA invasion on MRI (8.7% versus 4.4%;  $p=0.005$ )

### Microscopic vs. endoscopic:

No differences in surgical complication rates (6.4% vs. 9.4%;  $p=0.152$ )

No differences in endocrine complication rates (11.4 vs. 11.8%;  $p=0.888$ )

**Table 1: Frequency of Complications**

Complication Type	Number of Cases	Percentage
<b>Total complications</b>	<b>198</b>	<b>17.2%</b>
<b>Surgical Complications</b>	<b>79</b>	<b>6.9%</b>
<b>Perioperative Medical Complications</b>	<b>14</b>	<b>1.2%</b>
<b>Endocrine Complications</b>	<b>132</b>	<b>11.4%</b>

## Conclusions

In this single tertiary center study assessing complications associated with transsphenoidal PA resection, the rate of death or major disability was 0.26%. Risk factors for complications included prior surgical treatment and PA invasion. No differences in complication rates between endoscopic and microscopic surgery were observed. When performed at experienced pituitary centers, transsphenoidal surgery for PAs may be performed with a high degree of safety.

## References

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