

Clinical Profile and Surgical Outcomes of Pituitary Adenoma Patients Treated via Endoscopic Transsphenoidal Approach: Experience from a Tertiary Care Center

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Abstract: Introduction: Pituitary adenomas are common sellar and suprasellar tumors, accounting for 10–15% of all intracranial neoplasms. The endoscopic transsphenoidal approach has become the preferred surgical method due to better visualization, minimal invasiveness, and reduced morbidity. Aim: To evaluate the clinical profile, surgical outcomes, and postoperative complications in patients with pituitary adenoma operated via the endoscopic transsphenoidal route at our institution. Materials and Methods: A retrospective analysis was conducted on 50 consecutive patients with pituitary adenoma who underwent endoscopic transsphenoidal surgery between January 2023 and August 2025 at Dr. S.N. Medical College, Jodhpur. Demographic data, hormonal profile, visual outcome, extent of resection, and postoperative complications were recorded and analyzed. Results: The mean age of patients was 43.6 years (range: 18–70 years); 32 were males and 18 females. Non-functioning adenomas constituted 60% (n=30), and functioning adenomas 40% (n=20), including prolactinomas (n=10), GH-secreting (n=6), and ACTH-secreting (n=4). Visual improvement was noted in 78% of patients with preoperative visual deficit. Gross total resection was achieved in 84% of cases. Postoperative diabetes insipidus occurred in 10% (transient in 8%, permanent in 2%). CSF leak occurred in 6% of patients and meningitis in 2%. There was no operative mortality. Hormonal normalization was achieved in 70% of functioning adenomas. Conclusion: The endoscopic transsphenoidal approach provides excellent visualization and outcomes in pituitary adenoma surgery with acceptable morbidity. It should be considered the standard approach in experienced centers.

Keywords: Pituitary adenoma, Endoscopic transsphenoidal surgery, Visual outcome, Hormonal remission, Complications

1. Introduction

Pituitary adenomas are benign neoplasms arising from adenohypophyseal cells and constitute around 10–15% of all intracranial tumors. They can be broadly divided into functioning (hormone-secreting) and non-functioning types. common clinical presentations include headache, visual impairment due to optic chiasm compression, and hormonal disturbances.

The transsphenoidal route for pituitary surgery was popularized by Hardy in the 1960s, and in recent decades, the endoscopic transsphenoidal approach has gained dominance owing to its panoramic view, less tissue trauma, and shorter hospital stay.

This study aims to evaluate the clinical characteristics, outcomes, and complications of patients undergoing endoscopic transsphenoidal surgery for pituitary adenoma at our tertiary care center.

2. Materials And Methods

Study Design: Retrospective, Single-Center Study.

Study Period: January 2023 To August 2025.

Setting: Department Of Neurosurgery, Dr. S.N. Medical College, Jodhpur, Rajasthan, India.

Inclusion Criteria:

- All Patients Diagnosed Radiologically and Endocrinologically as Pituitary Adenoma.
- Patients Operated Via Endoscopic Transsphenoidal Route.

Exclusion Criteria:

- Recurrent or Residual Adenomas Reoperated Elsewhere.
- Patients Lost to Follow-Up before 3 Months.

Data Collected: Age, Sex, Clinical Presentation, Hormonal Status, Visual Status, MRI Findings, Extent of Resection, And Postoperative Complications.

Outcomes Analyzed: Visual Improvement, Hormonal Normalization, Extent of Resection, and complications such as CSF leak, DI, and Meningitis.

Follow-Up: All patients were followed for a minimum of 3 months postoperatively with clinical, hormonal, and radiological evaluation.

3. Results

Demographics:

Total Patients – 50

Mean Age – 43.6 Years (Range 18–70)

Male: Female Ratio – 1.8: 1

Key Findings Summarized Below:

Non-Functioning Adenoma: 30 (60%)

Functioning Adenoma: 20 (40%)

– Prolactin-Secreting: 10 (20%)

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– GH-Secreting: 6 (12%)
 – ACTH-Secreting: 4 (8%)
 Preoperative Visual Deficit: 36 (72%)
 Postoperative Visual Improvement: 28 (78% Of Affected)
 Gross Total Resection: 42 (84%)
 Hormonal Normalization (Functioning Group): 14 (70%)
 CSF Leak: 3 (6%)
 DI (Transient/Permanent): 5 (10%) / 1 (2%)
 Meningitis: 1 (2%)
 Mortality: 0 (0%)
 Hospital Stay: Mean Duration – 4.8 Days (Range 3–10 Days).

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4. Discussion

The endoscopic transsphenoidal approach has revolutionized pituitary surgery by providing a direct, panoramic view of the Sella and Parasellar region with minimal nasal trauma. In our study, Gross Total Resection was achieved in 84% of Cases, Comparable to Published Series (Cappabianca et al., 2002; Gondim et al., 2010).

Visual improvement in 78% of cases correlates with the literature, where reported rates range between 70–85% (Dekkers et al., 2016). hormonal remission in 70% of functioning adenomas also aligns with reported remission rates of 65–80%.

Postoperative complications were minimal: Transient DI In 8%, CSF leak in 6%, and no mortality. This highlights the safety of the endoscopic approach when performed by trained teams.

Thus, our experience reinforces the role of endoscopic transsphenoidal surgery as an effective, Minimally Invasive, and safe technique for pituitary adenomas.

5. Conclusion

Endoscopic Transsphenoidal Surgery Provides Excellent Outcomes in terms of tumor resection, hormonal control, and visual recovery with minimal complications. it should be considered the gold standard for management of pituitary adenomas in modern neurosurgical practice.

References

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