

The Natural History and Underlying Mechanism of New Visual Deterioration Post Endoscopic Endonasal Pituitary Adenoma Resection

Background

- Postoperative visual deterioration following endoscopic endonasal transsphenoidal surgery for pituitary adenoma is very rare yet represents a significant morbidity.
- Reported mechanisms include iatrogenic injury, compressive effects, and ischemic insults.
- The natural history and underlying pathophysiology remain incompletely understood.
- The correlation between these mechanisms and the outcome of subsequent interventions is also poorly defined.
- The aim of this study is to investigate the natural course, mechanisms, and outcomes of visual deterioration in patients who underwent endoscopic endonasal pituitary adenoma resection.

Methods

- We retrospectively reviewed all patients who underwent endonasal transsphenoidal surgery.
- Period of **10 years** (2014–2024).
- A total of **790** consecutive patients were reviewed from our database.
- We included all the patients with pituitary adenoma who underwent endoscopic endonasal transsphenoidal surgery and had Postoperative visual deterioration.
- Demographic data, preoperative, intraoperative, postoperative clinical data were collected.
- Patients' clinical and visual outcomes were retrospectively collected and analyzed.

Table 1: Baseline Characteristics

Variable	Number
Total Number of Patients (N)	750
Early Postoperative Visual Deterioration (n, %)	9 (1.13%)
Mean Age (years)	52.14
Mean Operative Length (hrs:mins)	03:42

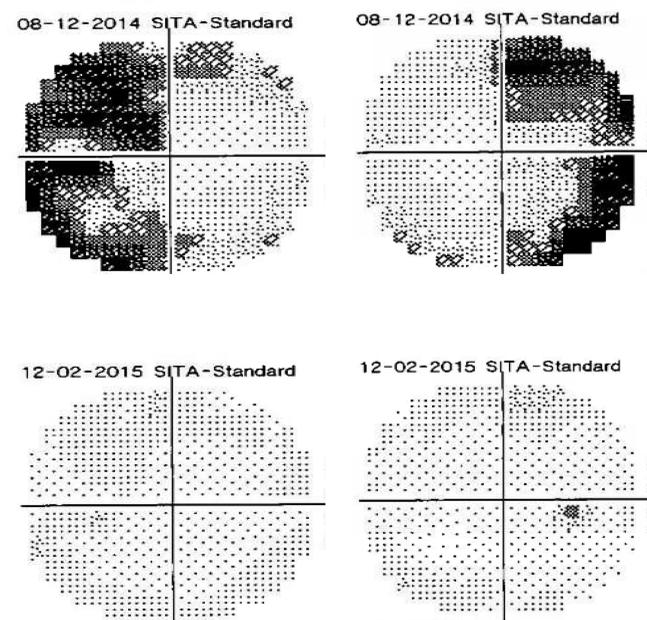
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Results

- Nine patients (1.13%) developed early postoperative visual deterioration.
- No intraoperative documentation of direct optic apparatus injury was identified.
- Ischemic mechanisms were observed in five patients.
- Compressive mechanisms accounted for four cases.
- Four patients (44%) underwent early reoperation for optic apparatus exploration and decompression.



- Full visual recovery to baseline occurred in all compressive cases following reoperation.
- Among the ischemic group (n = 5), three patients improved with supplemental oxygen and hypervolemic–hypertensive therapy (p = 0.03).
- Postoperative elevation in mean arterial pressure was significantly associated with partial visual recovery in ischemic cases (p = 0.04).

Conclusion

- Postoperative visual deterioration following endoscopic endonasal surgery for pituitary adenoma is very rare but represents a serious complication.
- Outcomes are closely related to the underlying mechanism and the intervention performed.
- Compressive etiology carries a favorable prognosis when promptly identified and treated with reoperation and decompression.
- Ischemic etiology can be partially reversible with aggressive medical management, including supplemental oxygen, hypervolemic–hypertensive therapy, and maintaining high mean arterial pressure in nearly half of cases.

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