

# Predictors of Long-Term Outcome and Recurrence Post Endoscopic Endonasal Rathke's Cleft Cysts Surgery



Sami Khairy, Alejandro Vargas-Moreno, Damanpreet Kaur Lang, Jessica Rabski, Shaun Kilty, Fahad Alkherayf

Division of Neurosurgery, Department of Surgery, The Ottawa Hospital, Ottawa, Ontario, Canada.  
Department of Otolaryngology, Head and Neck Surgery, The Ottawa Hospital, Ottawa, Ontario, Canada.  
The Ottawa Hospital Research Institute, Ottawa, Ontario, Canada.

Department of Neurosurgery and Department of Otolaryngology, Head and Neck Surgery, University of Ottawa, Ottawa, Canada.



## Background

- Rathke's cleft cysts (RCCs) are benign, epithelium-lined cystic lesions arising from remnants of the Rathke pouch, typically situated in the sellar and suprasellar regions.
- While many RCCs are asymptomatic and managed through conservative observation, those causing mass effect on the optic chiasm or pituitary gland require surgical intervention, predominantly via a transsphenoidal approach.
- A primary clinical challenge is the risk of recurrence.
- The specific factors that predispose a patient to recurrence are not fully established, making long-term prognosis difficult to predict.
- This study aims to evaluate long-term surgical outcomes and identify specific clinical or radiological predictors that correlate with the risk of recurrence.

## Methods

- A retrospective, single-center review was conducted using a dedicated neurosurgical database covering a 10-year period (2014–2024).
- The study included all consecutive patients with a confirmed diagnosis of Rathke's Cleft Cyst who were treated surgically via the endoscopic endonasal approach.
- Demographic, preoperative, intraoperative, and postoperative clinical data were collected.
- Patients' clinical and radiological outcomes were analyzed for recurrence and reoperation.

Table 1. Patient Characteristics and Operation Parameters

Characteristic	Mean	n (%)
Age (years)	54.6	30 (100)
<b>Gender</b>		
Female		18 (59)
Male		12 (41)
<b>ASA Class</b>		
Class I		0 (0)
Class II		7 (23.33)
Class III		19 (63.33)
Class IV		2 (6.67)
Class V		0 (0)
ASA Emergency		1 (3.33)
Operation Parameter	Mean ± SD	Range
Total surgery time (minutes)	150 ± 45	80–280
Estimated Blood loss (ml)	95 ± 120	0–400
Highest Intraoperative MAP (mmHg)	170 ± 45	118–280
Lowest Intraoperative MAP (mmHg)	62 ± 10	39–80
<b>Hospitalization</b>		
Length of stay (LOS)	9 ± 7	3–31
<b>Readmission</b>		
Readmission within 30 days		2 (6.67)
Readmission within 90 days		0 (0)

## Results & Discussion

**Patient Demographics:** The study cohort consisted of 22 patients. The mean age at the time of surgery was **54.6 years**, with a female majority (**59%**).

### Surgical Outcomes:

Four patients (**18.1%**) required a secondary operation during the study period.

only one patient experienced a postoperative CSF leak, and two patients (**9%**) developed permanent diabetes insipidus.

### Recurrence Characteristics:

- During the follow-up period, recurrence was documented in 27% of the cohort (6 patients).
- The average duration between the initial surgery and the identification of recurrence was 23 months.
- Of the 6 recurrences, 50% (3 patients) became symptomatic, requiring further surgical intervention.
- After analyzing all preoperative, intraoperative, and post-operative variables, initial cyst size was identified as the only factor with a statistically significant correlation to the risk of recurrence.

Table 2. Surgical Reconstruction Techniques and Complications

Techniques/Material	n (%)
Nasal flap	25 (83.33)
<b>Sealants used</b>	
Tissel (fibrin glue)	20 (66.67)
Floseal (hemostatic agent)	18 (60)
Duraform (dural substitute)	20 (66.67)
Durametrics (dural patches)	2 (6.67)
No sealant	10 (33.33)
Intraoperative lumbar drain	2 (6.67)
Postoperative lumbar drain	5 (16.67)
<b>Intraoperative Complications</b>	
CSF leak	10 (33.33)
Nerve injury (optic, oculomotor, facial, optic chiasm)	0 (0)
Other cranial nerve injury	0 (0)
<b>Postoperative Complications</b>	
CSF leak	4 (13.33)
Diabetes insipidus (DI)	4 (13.33)
New visual symptom	2 (6.67)
Postoperative hematoma	1 (3.33)
Bleeding	1 (3.33)

## Conclusion

- Endoscopic transsphenoidal surgery remains an effective gold standard for RCCs, providing rapid improvement in symptoms for most patients.
- Despite successful initial outcomes, the 27% recurrence rate highlights the necessity for long-term radiological and clinical follow-up.
- Clinicians should regard the initial size of the cyst as a critical prognostic marker; larger cysts may require more frequent surveillance.
- To further refine these predictors and improve surgical strategies, future multi-center studies with larger sample sizes and even longer follow-up durations are recommended.

## Contact

Dr Fahad Alkherayf MD, MSc, CIP, FRCS  
Minimally Invasive and Skull Base Surgery  
Neuro-Oncology Surgery and CyberKnife

Division of Neurosurgery, Department of Surgery, The Ottawa Hospital  
1053 Carling Ave  
Ottawa, ON, K1Y 4E9  
Canada  
E-mail: [falkherayf@toh.ca](mailto:falkherayf@toh.ca)

## References

- Mendelson ZS, Husain Q, Elmoursi S, Svider PF, Eloy JA, Liu JK. Rathke's cleft cyst recurrence after transsphenoidal surgery: A meta-analysis of 1151 cases. *Journal of Clinical Neuroscience*. 2014 Mar;21(3):378–85.
- Trifanescu R, Stavrinides V, Plaha P, Cudlip S, Byrne JV, Ansorge O, et al. Outcome in surgically treated Rathke's cleft cysts: long-term monitoring needed. *European Journal of Endocrinology*. 2011 Jul;165(1):33–7.
- Hacioglu A, Tekiner H, Altinoz MA, Ekinci G, Bonneville JF, Yaltirik K, et al. Rathke's cleft cyst: From history to molecular genetics. *Rev Endocr Metab Disord*. 2025 Apr;26(2):229–60.
- Han SJ, Rolston JD, Jahangiri A, Aghi MK. Rathke's cleft cysts: review of natural history and surgical outcomes. *J Neurooncol*. 2014 Apr;117(2):197–203.
- Cabuk B, Selek A, Emengen A, Anik I, Canturk Z, Ceylan S. Clinicopathologic Characteristics and Endoscopic Surgical Outcomes of Symptomatic Rathke's Cleft Cysts. *World Neurosurgery*. 2019 Dec;132:e208–16.
- Mendelson ZS, Husain Q, Kanumuri VV, Eloy JA, Liu JK. Endoscopic transsphenoidal surgery of Rathke's cleft cyst. *Journal of Clinical Neuroscience*. 2015 Jan;22(1):149–54.
- Menéndez-Torre EL, Gutiérrez-Hurtado A, Ollero MD, Irigaray A, Martín P, Parra P, et al. Natural history and surgical outcomes of Rathke's cleft cysts: a Spanish multicenter study. *Front Endocrinol*. 2024 Jun 17;15:1413810.