

# Does Aggressive Resection of Rathke's Cleft Cyst Affect Recurrence Rates? A Systematic Review and Meta-Analysis of 1151 Cases

Zachary S. Mendelson BS; Qasim Husain BS; Sedeek Elmoursi MD; Peter Svider BA; Jean Anderson Eloy MD; James K. Liu MD



Rutgers University, New Jersey Medical School, Newark, New Jersey

### Introduction

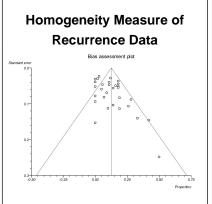
Rathke's cleft cysts (RCC) arise from the development of the Rathke's cleft pouch. These commonly occurring cysts are typically asymptomatic, but sometimes present with headaches, endocrine dysfunction, and visual loss. Recurrence is common after either drainage or surgical removal. The purpose of this study was to review published outcomes for RCC management, and determine whether specific factors, including patient demographics, cyst pathology, radiologic parameters, or surgical techniques, predispose to their recurrence.

### **Learning Objectives**

- 1. Perform systematic analysis of surgical cases of Rathke's cleft cysts in the literature
- 2. Determine overall recurrence rate of Rathke's cleft cysts after surgical removal
- 3. Determine if any factors consistently contribute to higher recurrence rates

### **Methods**

A systematic review of studies for RCC from 1990 to 2012 was conducted. Cases were identified using a MEDLINE/PubMED search, and from the bibliographies of relevant articles obtained from the primary search. Relevant studies reporting recurrence rate were identified, and data were extracted regarding patient demographics, presenting symptoms, cyst characteristics, surgical treatment, and outcomes. A meta-analysis for recurrence rates was also performed.



Funnel plot with slight asymmetry indicating some likelihood of publication bias.

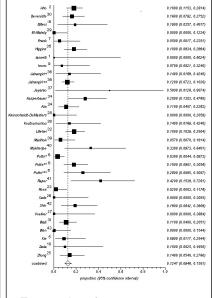
### Outcome Data

Outcom e Measure	Articles reporting (%)	Number of Patients (%)	Weighted average
Presenting Symptoms			
Pre-Op Headache	86%	87	55%
Visual deficit	50%	36	34%
Endocrine Dysfunction	86%	89	46%
Location of Cyst			
Intrasellar	61%	46	42%
Intrasellar w/suprasellar	61%	46	52%
extension			
Suprasellar	61%	46	6%
Cyst Size (Diameter)	43%	54	14.9 mm
Treatment			
Transsphenoi dal approach	100%	100	96%
Open Crani otomy	100%	100	4%
Total Drainage and Wall Biopsy	93%	95	32%
Sub-total resection of cyst wall with complete drainage	93%	95	28%
Gross Total Resection	93%	95	40%
Outcomes			
Average Follow-up	86%	90	38 months (16- 79months)

Final Aggregate Data Summary

## Proportion Meta-analysis of Recurrence

Proportion meta-analysis plot [random effects]



Forest plot of recurrence rates

### Results

Twenty-eight journal articles comprising a total of 1,151 cases of RCC revealed an average follow-up of 38 months (range, 16 to 79 months). There was a relatively equal distribution of treatment approaches, with 35% subtotal resection (STR), 33% gross total resection (GTR), and 32% complete drainage with wall biopsy of cases. Overall recurrence rate for RCC was 12.5%. The microsurgical transsphenoidal approach was found to have a higher recurrence rate (14% versus 8%) and new endocrine dysfunction rate (25% versus 10%) compared to the endoscopic approach.

# Comparison of Surgical Techniques

Study	Number of Patients	Recurred	Rate	New Postop Endocrine Dysfunction Rate
		urgical App		
Wait <sup>38</sup>	73	8	11	18
Aho <sup>1</sup>	118	21	18	27
Jahangiri* <sup>18</sup>	14	2	14	31
Jahangiri** <sup>18</sup>	147	18	12	23
Kasperbauer <sup>20</sup>	26	8	31	24
Zhong <sup>43</sup>	45	6	13	40
El-Mahdy and Powell <sup>10</sup>	28	0	0	N/A
	Total: 451	Total:63	Weighted average: 14%	Weighted average: 25%
Er	idoscopic Er	ndonasal Ap	proach (EEA)	)
Koutourousiou <sup>23</sup>	14	2	14	29
Madhok <sup>27</sup>	35	2	6	9
Xie <sup>40</sup>	23	2	9	4
Frank <sup>11</sup>	22	1	5	5
Jayaro <sup>19</sup>	2	1	50	0
	Total: 96	Total:8	Weighted average:	Weighted average: 10%

Recurrence rates and complication rates of microsurgical and endoscopic series

### Conclusion

This study describes the experience with the largest sample size of RCC. Postoperative complications, such as pituitary dysfunction, can be kept to a minimum by using a less aggressive technique such as simple drainage. In this analysis, the microsurgical approach resulted in a slightly higher recurrence rate and endocrine dysfunction rate compared to the endoscopic approach. However, due to the large differences in sample size between the two groups, further prospective studies must be performed to confirm these findings. The overall recurrence rate of RCC with current treatment methodologies is 12.5%.

#### References

1. Aho CJ, Liu C, Zelman V, Couldwell WT, Weiss MH: Surgical outcomes in 118 patients with Rathke cleft cysts. J. Neurosurg. 102:189-193, 2005
2.Armijo-Olivo S, Stiles CR, Hagen NA, Biondo PD, Cummings GG:
Assessment of study quality for systematic reviews: a comparison of the Cochrane Collaboration Risk of Bias Tool and the Effective Public Health Practice Project Quality Assessment Tool: methodological research. J. Eval. Clin. Pract. 18:12-18, 2012

3.Benveniste RJ, King WA, Walsh J, Lee JS, Naidich TP, Post KD: Surgery for Rathke cleft cysts: technical considerations and outcomes. J. Neurosurg. 101:577-584, 2004