



Short- and Long-Term Biochemical Remission Rates of Surgically Treated Prolactinomas

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Introduction

- Prolactinomas (PIT-1 cell lineage staining pituitary neuroendocrine tumors) confer significant morbidity through hyperprolactinemia and mass effect.
- Dopamine agonist (DA) therapy is highly effective at resolving symptomatology and normalizing serum levels of prolactin. However long-term therapy is often required as only one-fifth of patients remain in remission after discontinuation. (1)
- Recently, transsphenoidal surgery for well-circumscribed prolactinomas without cavernous sinus invasion (Knosp grade 0 and 1) has been recommended as another first-line option given the possibility of surgical remission. (1)

The objective of this study was to assess biochemical remission rates following surgical treatment of prolactinomas at single tertiary care center.

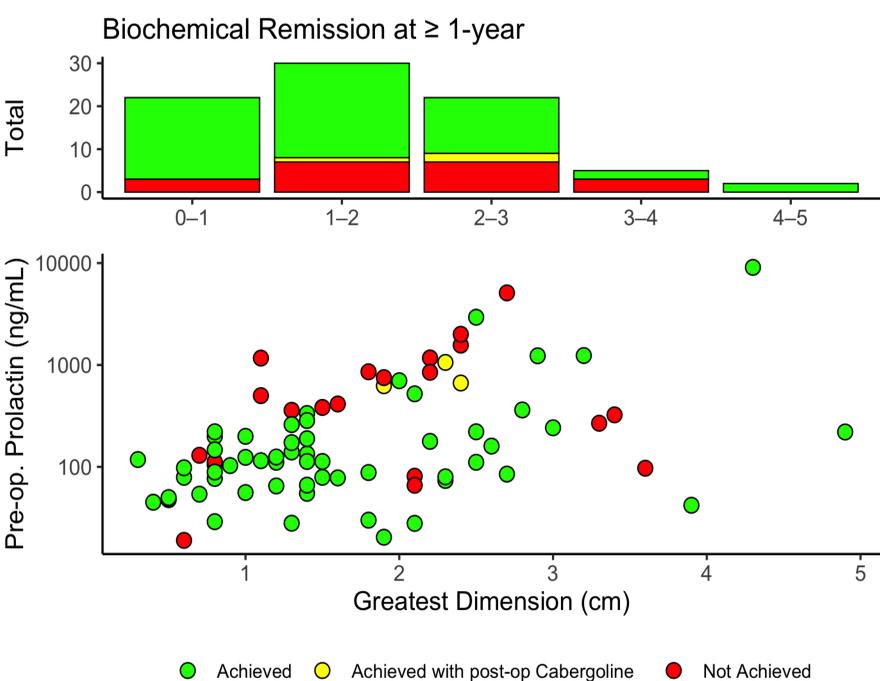
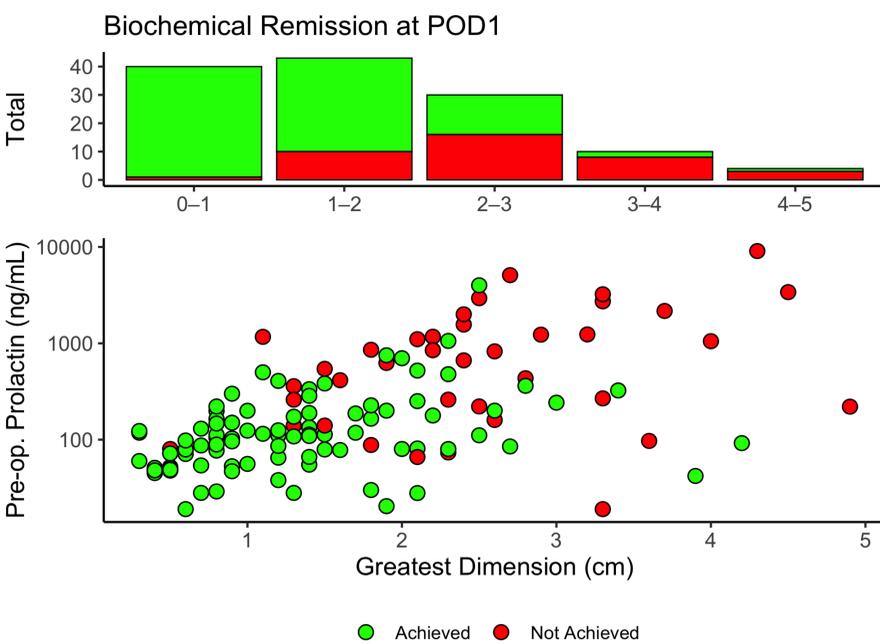


Fig. 1: Biochemical remission at POD1 (upper graph; n= 127) and at ≥ 1-year follow-up (lower graph; n=81) for prolactinomas of varying pre-operative size and prolactin expression (x- and y-axis, respectively). Three patients with biochemical remission on follow-up had initiated Cabergoline post-operatively, for the first time (yellow dots).

Materials and Methods

An IRB-approved single-center retrospective cohort study of patients who underwent endoscopic endonasal transsphenoidal surgery for resection of prolactinoma between 2011 and 2023 was performed. Patient demographics, perioperative data, and endocrinologic data were obtained using electronic health records. Data analysis and visualization were performed in RStudio (v4.5.0).

Greatest dimension (cm)	0-1	1-2	2-3	3-4	4-5
Normalization of prolactin (POD1)	98%	77%	47%	20%	25%
Hyperprolactinemia recurrence at ≥ 1-year, following remission at POD1	14%	24%	35%	50%	0%

Results

- 127 patients underwent surgical resection, of which 54% were female.
- Normalization of prolactin levels on post-operative day 1 was identified in 89 (70.1%) patients and was largely dependent on tumor size.
- Of those patients who trialed preoperative cabergoline (n=91, 71.7%), a total of 61 (67%) patients experienced normalization of prolactin levels immediately following surgery.
- Surgical associated morbidity included postoperative CSF leak among 5 patients (4%).

Discussion

This study assessed the rates of biochemical remission among 127 patients following surgical resection of a prolactinoma. When stratified by one-centimeter intervals for greatest tumor dimension on pre-operative imaging, the emerging trend is increased remission rates among smaller tumors.

With growing evidence showing surgery as a viable first-line treatment option, along with barriers to DA therapy adherence (intolerable side effects, resistance rates of 10-30%, etc.), establishing factors for improved surgical candidacy is vital to enhancing treatment outcomes for patients with prolactinomas. (2-3)

Conclusions

Surgery via the endoscopic endonasal transsphenoidal approach should be considered as an upfront therapy in select cases if performed by an experienced multidisciplinary skull base team. While there exists tremendous debate as to factors associated with surgical candidacy, in experienced centers, surgery can outperform or equal the efficacy of cabergoline in lesions up to 3cm.

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References

1. Petersenn S, Fleseriu M, Casanueva FF, Giustina A, Biermasz N, Biller BMK, Bronstein M, Chanson P, Fukuoka H, Gadelha M, et al. Diagnosis and management of prolactin-secreting pituitary adenomas: a Pituitary Society International Consensus Statement. *Nature Reviews Endocrinology* 2023 19:12 (2023) 19:722–740. doi: 10.1038/s41574-023-00886-5
2. Inder WJ, Jang C. Treatment of Prolactinoma. *Medicina (Lithuania)* (2022) 58: doi: 10.3390/medicina58081095
3. Zamanipoor Najafabadi AH, Zandbergen IM, De Vries F, Broersen LHA, Van Den Akker-Van Marle ME, Pereira AM, Peul WC, Dekkers OM, Van Furth WR, Biermasz NR. Surgery as a Viable Alternative First-Line Treatment for Prolactinoma Patients. A Systematic Review and Meta-Analysis. *J Clin Endocrinol Metab* (2020) 105: doi: 10.1210/CLINEM/DGZ144