



The Impact of Tumor Resection on Symptomatic Relief of Visual Impairment Caused by Pituitary Adenomas with Suprasellar Extension: How Much Tumor Removal Should be Achieved in Microscopic Transsphenoidal Surgery?

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Introduction

Although most pituitary adenomas are amenable to transsphenoidal excision, the surgical management of the pituitary adenomas with suprasellar extension is challenging. Some patients need the second transsphenoidal surgery or transcranial surgery for relieving their visual impairment. The aim of this study was to investigate the relationship of the amount of tumor removal and visual improvement after microscopic transsphenoidal surgery.

Methods

We retrospectively analyzed the surgically treated patients who had visual impairment caused by optic chiasm compression due to pituitary adenomas. Visual improvement was determined by assessment of visual acuity, visual field and postoperative decompression of optic chiasm in MRI. The patients who had postoperative first day MRI were included in the study. Preoperative and postoperative tumor volumes were determined with calculation as $\text{Width} \times \text{Diameter} \times \text{Height}$. According to preoperative and postoperative tumor volumes, the amount of the tumor removal was evaluated and defined as percentile for each patient. Wilcoxon test was performed using SPSS 18.0 to compare preoperative and postoperative tumor volumes. A p value lower than 0.05 was accepted as statistically significance.

Results

A total of 26 patients were evaluated. There were 14 men and 12 women. Visual improvement was achieved in 23 of 26 patients only one surgery whereas second transsphenoidal surgery was performed in 3 patients to achieve visual improvement (11.5%). None of the patients was received transcranial surgery. The mean preoperative tumor volume was 18.62 ± 16.89 cc (6.2-80 cc) and the mean postoperative tumor volume was 4.55 ± 4.29 cc (1.5-15 cc) in patients who received one transsphenoidal surgery ($p < 0.001$). The mean percentile of tumor removal was 71.7 ± 18.5 in these patients.

Conclusions

In this study we investigated the relation of the amount of the tumor removal and visual improvement. According to our study results, at least 50% tumor removal (mean 71.7%) should be performed in surgery to achieve visual improvement.

Learning Objectives

By the conclusion of this session, participants should be able to :

- 1) Describe the importance of amount of tumor removal on patient visual improvement
- 2) Discuss, in small groups, the surgical strategy of pituitary adenomas with suprasellar extension
- 3) Identify an effective treatment of giant pituitary adenomas