Introduction

The transition from microscopic to a fully endoscopic transsphenoidal surgery requires a surgeon to assess how the change in surgical technique will affect the extent of tumor resection (EOR), neurologic and endocrine outcomes, as well as the perioperative complication rate. We compared a single surgeon’s experience transitioning from one technique to the other, and examined the operative outcomes and extent of resection between microscopic versus endoscopic transsphenoidal surgery.

Methods and Materials

Retrospective data analysis of adult patients who were treated surgically for a pituitary adenoma between August 2005 and May 2015 by a single neurosurgeon that was originally trained and practiced in the microscopic pituitary adenoma approach. We find that over time operative times and postoperative outcome, and the endoscopic learning curve were evaluated.

Results

One hundred nine patients underwent microscopic transsphenoidal surgery and two hundred seventy-five patients underwent a fully endoscopic approach. The patient characteristics were similar in the two groups. Operative room time was significantly shorter in the endoscopic group than in the microscopic group (180.2 vs. 215.6 mins, p<0.001, Figure 1). We found that it took 29 endoscopic cases before the operative times of both approaches were similar, and 73 endoscopic cases before the endoscopic cases were significantly shorter than the microscopic approach. The endoscopic and microscopic groups had similar volumetric EOR (83.1% vs 82.8%, p=0.371) as well as residual tumor volume (1.06cm³ vs 1.15cm³, p=0.765). The EOR was not compromised during the early stages of learning the endoscopic technique compared to the microscopic approach (Figure 2). The progression free survival for the two cohorts were found to be similar (p=0.426, Figure 3). Postoperative outcomes and complications were similar between the two groups. The mean length of hospital stay was 2.4 days in the endoscopic group and 3.2 days in the microscopic group (p=0.03, Figure 4).

Discussion

Endoscopic surgical approaches for transsphenoidal tumor resections have been adopted by an increasing number of neurosurgery institutions given the improved surgical visualization. Transitioning to a new technique places a surgeon at the start of a new learning curve, which can increase the amount of complications and extend the time of surgeries. The primary limitations of previous literature is the limited data on the evolution of outcomes and extent of resection for a surgeon transitioning from the microscopic technique to the endoscopic technique. This abstract presents a large learning curve analysis for endoscopic transsphenoidal surgery as well as a large cohort of patients to evaluate the endoscopic versus the microscopic endonasal transsphenoidal approach by a single neurosurgeon. We find that over time operative times and length of stay for the endoscopic approach are shorter, while there is a similar amount of complications and extent of resection between the two techniques.

Conclusions

During the transition from the microscopic to the endoscopic approach, similar surgical outcomes and extent of resection were achieved in the two cohorts. In our experience, the endoscopic approach offers the advantage of shorter operative times and lengths of hospital stays after the surgeon has developed more experience with the technique.

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References