ENDOSCOPIC ENDONASAL AND SOPRAORBITAL KEYHOLE SURGERY FOR MANAGEMENT OF ANTERIOR SKULL BASE MENINGIOMAS


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INTRODUCTION

The supraorbital keyhole approach (SKA) and the endoscopic endonasal approach (EEA) are developed to provide alternative and less-invasive approaches to aid the resection of anterior skull base meningiomas.

The combined EEA-SKA offers two complementary surgical corridors in order to maxime meningioma resection while minimizing complications.
METHODS

From September 2004 to May 2016 77 cases were reviewed and divided according to operative technique into 3 different groups:

1) Purely EEA (29 cases)
2) Purely SKA (microscopic with endoscopic assistance, 38 cases)
3) Combined EEA with SKA (10 cases)

The three surgical techniques were analyzed and compared concerning complications, surgical radicality, endocrinologic profile, and ophthalmologic outcome and recurrences in the follow-up.
RESULTS

Gross-total resection was achieved in:
• 69% of the endonasal cases (20 patients out of 29)
• 84.2% of the SKA cases with endoscopic assistance (32 patients out of 38)
• 90% of the combined cases (9 patients out of 10).

In EEA group 4 patients presented CSF leak, (two required surgical revision), and 8 developed complete anosmia.

In the SKA group, 2 cases of post-operative frontal lobe contusions were registered, one required surgical re-operation.

BORDERLINE CASE:
EEA approach was selected in order to reduce the risk of unwanted brain contusions in already suffering frontal lobes.
RESULTS (2)

Pre-operative MRI showing a large olfactory groove meningioma

Post-operative head CT scan

Intraoperative images
Both approaches provide minimally invasive surgical routes to access meningiomas of the anterior cranial base.

The ideal approach should be tailored to the individual patient considering the tumor anatomy, lateral extension, and vascular encasement.

The combined approach (SKA and EEA) can be considered for larger meningiomas with lateral extension or broad vascular encasement and concomitant extensive infiltration of the skull base.
SUMMARY POINTS

• The EEA and SKA both provide adequate minimally invasive access to the lesions of the anterior skull base, with results comparable to traditional techniques, and overall less morbidity

• The combined approach (SKA and EEA) can be considered for larger meningiomas with lateral extension or broad vascular encasement

• The inherent limitations of each can be overcome by combining the two techniques, always maintaining the principles of minimal invasiveness