

A Minimal Invasive Skull Base Approach: Eyebrow Incision and Supraorbital Craniotomy

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Introduction

The eyebrow incision and supraorbital craniotomy approach is specified for anterior skull base and orbitofrontal lesions as a minimal invasive surgical technique. It is a remarkable option for successfull skull base surgery.

Methods

We report 19 patients that were operated with eyebrow incision and supraorbital craniotomy.

Results

In 19 patients (12 females, 7 males) different tumours (4 intraorbital tumours,4 retroorbital meningiomas, 6 olfactor groove meningiomas, 3 sfenoid wing meningiomas, 1 glial tumour and 1 metastatic tumour) were operated with eyebrow incision and supraorbital craniotomy. The avarage follow-up time was 2,7 years. Gross total tumour resection was achieved in 90% patients. The average surgical time was 178 minutes. The avarage hospital stay time was 3 days. No mortality, no new neurological deficit, no cerebrospinal fluid (CSF) fistula and no infection were detected in patients. Patients' cosmetic satisfaction degree were high.

Discussion

The patient is placed supine on operating table and the head is fixed in a three-pin holder (1). For retractor-free intracranial dissection the head is retroflexed about 15° so that frontal lobe falls away from anterior cranial fossa with gravity effect. The incision is begun laterally from the supraorbital incisura within the eyebrow. If the incison follow the orbital rim, best cosmetic result is achieved. The skin incision should not extend medially to the supraorbital nerve. After subcutaneous tissue dissecton towards to frontal region, the frontal and supraorbital muscles are retracted with sutures. The burr hole is made lateral to the temporal line at the level of the frontal cranial base. Approximately 25×15 mm craniotomy is created and the dura is opened in a simple 'C' shape (2). The approach can be used in various regional lesions as meningiomas, anterior circulation aneurysms, pituitary adenomas, optic pathway gliomas, mucocele, paranasal sinus neoplasms, and frontobasal lesions(3).

Learning Objectives

The approach that is the shortest way for anterior skull base and orbitofrontal lesions.

Conclusions

Eyebrow incision and supraorbital craniotomy approach is safe and shortest way for anterior skullbase and orbitofrontal lesions. The advantages of this approach are minimal brain retraction, lack of complications and fast recovery.

References

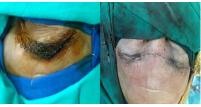
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Single or bilateral incision



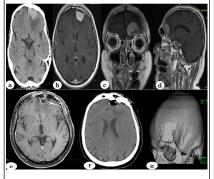
Single eyebrow (left) and bilateral eyebrow incision(right, for olfactor groove meningioma) preperations

The position of patient



The supraciliar skin incision and cranitomy borders are painted (left) and patient was fixed with three pin head holder in supine position(right)

Case 1



50 yo male was admitted with headache and seizures. A frontal meningioma detected in the left frontal lobe with edema. Axial sections of CT and MRI (a,b), coronal and sagittal sections of MRI (c,d). Early postoperative axial CT and MRI(e,f) and 3D reconstruction of CT (g).

Case 2

60 yo female was admitted with headache and we detected an olfactor groove meningioma on MRI (a:sagittal, b:axial and c:coronal sections). Early postoperative CT(d), axial section MRI(e) and 3D reconstructed CT(f) are shown.

