

Abstract

Introduction

The supraorbital keyhole (SO) craniotomy is a minimally invasive approach to pathologies of the anterior cranial fossa, parasellar region, prepontine cistern, and anterior Sylvian fissure. This approach is typically performed through an eyebrow incision. This technique has been previously described, but the impacts of multiple repeat surgeries through an eyebrow incision has not been extensively reported. Here we report the outcomes of repeat SO craniotomies through an eyebrow incision.

Methods

All patients undergoing SO craniotomies at a single institution were reviewed over a 15-year period from September 2010 to September 2025. End points for this study included cosmetic outcome, frontalis palsy, forehead hypesthesia, infection and pseudomeningocele formation.

Results

During the study period, 76 SO craniotomies were performed on 71 different patients. A total of seven redo SO craniotomies were performed. All patients in both groups had satisfactory cosmetic outcomes with no evidence of hyperpigmentation or eyebrow alopecia. No wound infections occurred during the study period. Frontalis palsy was seen in 14.3% of patients undergoing redo craniotomy and 27.8% of patients undergoing initial craniotomy. Forehead hypesthesia was more common in the initial craniotomy group occurring in 53.8% of cases and in only 28.6% percent of cases in the redo craniotomy group. Forehead hypesthesia was transient in all but 2 patients (4.7%). Only one patient developed a pseudomeningocele which was managed conservatively and resolved within three months of the surgery.

Conclusion

Performing repeat SO craniotomies through an eyebrow incision is safe and can lead to good cosmetic and surgical outcomes in patients with recurrent disease of the anterior cranial fossa.

Demographics

	Initial Craniotomy	Repeat Craniotomy
Number of patients	69	7
Age (years; mean, range)	60.5 (16-96)	56.3 (41-69)
Gender		
Female (%)	47 (68.1%)	3 (42.9%)
Primary Pathology		
Meningioma	36 (52.2%)	3 (42.9%)
Aneurysm	26 (37.7%)	0
Craniopharyngioma	2 (2.9%)	4 (57.1%)
Other	5 (7.2%)	0
Symptomatic at Presentation	28/69 (40.6%)	7/7 (100%)
Length of Stay (days; mean, range)	4.4 (1-62)	3 (1-8)

Table 1: Demographic data for 76 supraorbital craniotomies

Results

	Initial Craniotomy	Repeat Craniotomy	p value
Good cosmetic outcome	69/69 (100%)	7/7 (100%)	1.00
Frontalis palsy	10/36 (27.8%)	1/7 (14.3%)	0.66
Forehead hypesthesia	21/39 (53.8%)	2/7 (28.6%)	0.41
Infection	0/69 (0%)	0/7 (0%)	1.00
Pseudomeningocele	1/69 (1.4%)	0/7 (0%)	1.00

Table 2: Outcomes of repeat supraorbital craniotomy

Conclusions

- Infection, CSF leak, and cosmetic outcomes were similar between groups
- There was no significant difference in the rates of forehead hypesthesia and frontalis palsy between the initial and repeat supraorbital craniotomy groups
- Repeat supraorbital craniotomy via eyebrow incision is safe and can be considered for treatment of recurrent disease in the anterior cranial fossa