



Introduction

Olfactory groove meningioma (OGM) includes a subset of anterior cranial fossa meningioma which has largely been addressed through wide surgical exposure techniques including bicornal or pterional craniotomy. Outcomes comparing these traditional approaches to minimally invasive approaches like the supraorbital craniotomy (SOC) are lacking

Methods and Materials

Institutional records at the authors' institution were reviewed over the last 10 years to include surgically resected OGMs. Variables of interest included demographics, grade of meningioma, tumor volume & height, size of frontal sinus, distance of tumor from posterior table of frontal sinus, surgical approach, extent of resection, recurrence, complications and follow up. Statistical analysis was performed using independent t-test for continuous and Chi-square test for categorical variables.

Results

A total of 53 patients were identified. Average age was 55 years and 68% were female. Grade I tumor was found in 55% and gross total resection (GTR) was achieved in 81%. The risk of recurrence was 11%. SOC was performed in 17 patients and traditional open approach was performed in 34 cases. Two patients underwent endoscopic endonasal approach and were excluded for subgroup comparison. The incidence of complications was 24.5% with CSF leak and seizures being the most common. The mean follow up was 32 months.

Comparison of SOC with traditional open approach revealed that tumors in the SOC subgroup had significantly smaller volume (mean volume 20 cm³ vs 65 cm³; **p<0.001**), shorter height (mean height 2.5 cm vs 3.85 cm; **p<0.001**) and were more posterior from the frontal sinus as compared to traditional approach (mean distance from posterior table of frontal sinus 1.5 cm vs 0.85 cm; **p=0.003**). The length of stay was significantly shorter in SOC subgroup (mean stay 4.25 days vs 8 days; **p=0.02**).

Results

Characteristic	Overall (n=53)	Eyebrow approach (n=17)	Open approach (n=34)	p-value
Age (years)	55 ± 15	56 ± 15	56 ± 15	P = 0.74
Female gender	36	13	25	P = 0.08
Tumor volume (cm ³)	47 ± 45	20 ± 20	65 ± 50	P < 0.001
Tumor Height (cm)	3.5 ± 1.25	2.5 ± 0.85	3.85 ± 1.15	P < 0.001
Size of frontal sinus (cm)	4.5 ± 2.25	4 ± 2	4.5 ± 3	P = 0.2
Distance from frontal sinus (cm)	1 ± 0.75	1.5 ± 0.5	0.85 ± 0.65	P = 0.002
Extent of resection				P = 0.38
Gross total	43	16	27	
Subtotal	8	1	7	
Length of surgery (hours)	7 ± 3	5.5 ± 2	7.5 ± 3	P=0.007
Recurrent disease	6	2	3	P = 0.20
Complications	13	3	9	P = 0.8
Length of stay (days)	7 ± 5.5	4.25 ± 4	8 ± 5.5	P = 0.01
Follow up (months)	32 ± 30	35 ± 37	29 ± 27	P = 0.35

Conclusions

SOC offers a shorter length of stay as compared to traditional approach for small to medium sized OGMs with a comparable extent of resection, risk of recurrence and complications. The size of frontal sinus did not appear to be a limiting factor in selecting SOC approach.