The Role of Endoscopic Endonasal Approach in the Treatment of Cavernous Sinus Meningioma: Case Series and a Proposed Treatment Algorithm

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Introduction

Treatment of cavernous sinus (CS) meningioma remains a controversy. Radical resection of these lesions through the transcranial route is associated with a significant amount of new neurosurgical deficits. Previous studies described the use of endoscopic endonasal approach (EEA) for decompression of CS meningiomas. Here we outline a treatment algorithm that incorporates the EEA in a comprehensive approach to CS meningiomas.

Methods

We describe our experience with this approach in 13 patients with symptomatic CS meningiomas. All patients presented with at least one cranial nerve deficits. All patients underwent EEA for medial decompression and biopsy of the CS meningioma as well decompression of the orbital apparatus as needed. Five patients subsequently underwent lateral decompression of the CS through craniotomy. All patients underwent radiation therapy.

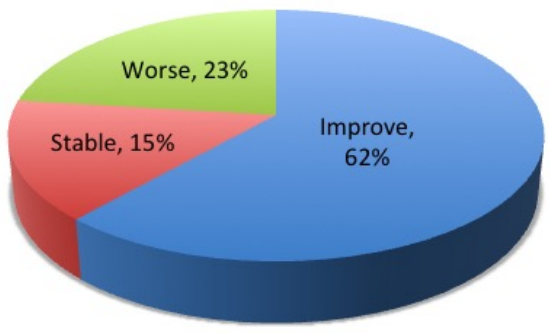
Patients Summary

Follow up	EEA	CRANE	Radiation	PATH	Ki
22	Yes	No	IMRT	WHO G1	<1%
42	Yes	Yes	IMRT	WHO G1	1%,3%
28	Yes	No	SRS	N/A	N/A
24	Yes	Yes	IMRT	WHO G1	1-5%
21	Yes	No	IMRT	WHO G1	2%
15	Yes	Yes	IMRT	WHO G1	2%
9	Yes	No	IMRT	WHO G1	1%
11	Yes	No	IMRT	WHO G!	N/A
0	Yes	No	IMRT	WHO G1	N/A
10	Yes	Yes	IMRT	WHO G1	5%
8	Yes	No	IMRT	WHO G1	N/A
8	Yes	No	IMRT	WHO G1	N/A
2	Yes	Yes	IMRT	WHO G1	2%

Results

Eight patients (62%) experienced improvement of their presenting symptoms. Two patients (15%) showed no improvement. Three patients (23%) had long term worsening of their symptoms due to non adherence with presecribed radiation or refusal of further cranial surgery. Overall 14 of 23 (60%) cranial nerve deficits improved with this treatment alorithm. Four of six cranial nerve 2 (80%) deficits improved after optic apparatus decompression. Improvement for deficits involving cranial nerves 3 through 6 ranged from 55 to 100% as outlined in table 2. There were no surgical complications.

Long Term Patient Outcomes



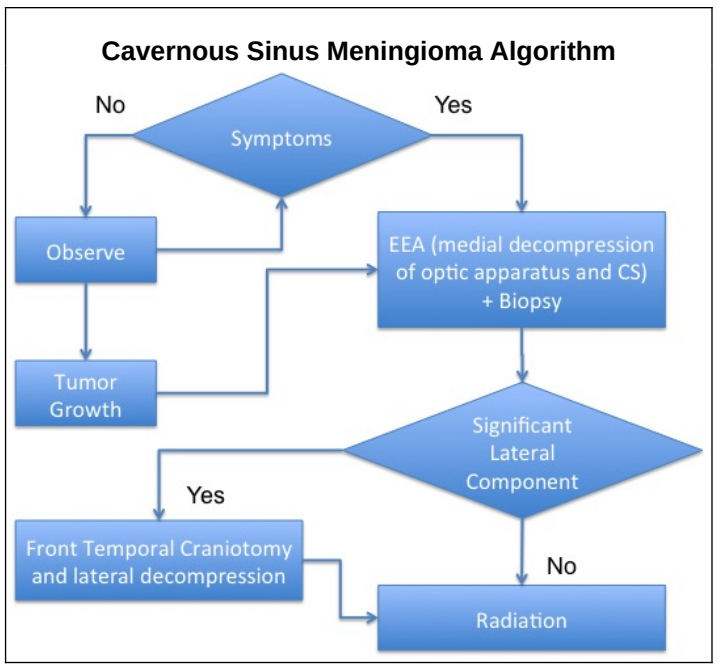
Cranial Nerves Improvement

Cranial Nerve	Number of Deficits	Improvement After EEA	Improvement After EEA/Craniotomy/ Radiation
2	6	4 (80%)	4 (80%)
3	7	5 (71%)	4 (60%)
4	1	1 (100%)	1(100%)
5	1	1 (100%)	1 (100%)
6	9	7 (78%)	5 (55%)
	23	17 (70%)	14 (60%)

Conclusions

We show that the endoscopic endonasal approach can be used as part of a comprehensive algorithm that include craniotomy along with radiation therapy to approach cavernous meningioma. All our patient that adhered to the proposed algorithm either improved or remained stable. We conclude that our proposed algorithm may lead to significant improvement in symptoms without significant surgical morbidity. Further studies will be needed to compare this approach to others and longer follow is needed to understand the longterm tumor control rates.

Cavernous Sinus Meningioma Algorithm



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