Surgical Management and Outcome of Meningiomas with Tentorial Involvement – Our Institutional Experience.

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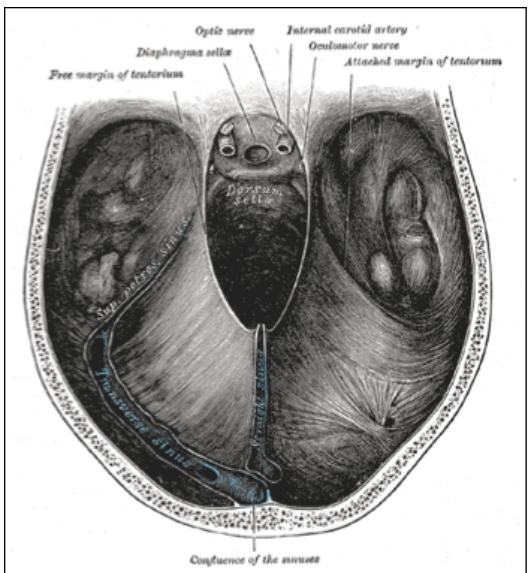
Introduction

Meningiomas surgery involving the Tentorium is technically challenging. Varoius classifications were proposed in order to optimize handling strategy (table 1)(1,2). Our institute policy is to operate all tumors of the posterior fossa as well as petroclival tumors under intraoperative monitoring protocol containing SEP's. MEP's, EMG of cranial nerves and BAEP's (3). We were interested to look into our operative results dealing with such tumors.



Gray's Anatomy - Public Domain

Methods

We retrospectively reviewed 93 patients (68 with tentorial and 25 with petroclival meningiomas with tentorial involvement) treated surgically between 1996 -2010. Data collected contained patient's characteristics (gender, age etc.), symptoms and signs at presentation, Histology, operative complications, GOS at follow up and Simpson's resections-Grade.

Table 1: Classification of Meningiomas with tentorial involvement

Petroclival: Originating in the upper 2/3 of the clivus at the petroclival junction medial to the fifth CN

Sphenopetroclival: Involvement of the posterior CS, clivus, petrous apex, sphenoid sinus and grow into the middle and posterior fossa

Tentorial

- Supra- and Infratentorial
- Falcotentorial
- Medial (anterior, middle, posterior)
- Lateral (anterior, middle, posterior)

Cavernous Sinus

Results

Female/Male ratio was 74/19, Age ranged from 26 to 87 years (Mean 58). Mean follow-up was 17,8 months (range 3-80). Seven patients presented with atypical meningioma (WHO Grade 2), while the rest had various hitological combinations of WHO Grade 1 meningiomas. Gross-Total Resection (Simpson Grade 1/2) was achieved in 70 cases (76.1%), whereas partial resection (Simpson Grade 3/4) was achieved in 23 cases.
One patient died due to generalized brain edema (1%). 13 patients (14%) needed a second procedure due to complication. Tumor recurrence occurred in 17 cases (14 where primarily graded as Simpson 4 and 3 as Simpson 1/2).
On follow up 64, 23 and 5 patients have reached Glasgow Outcome Scale of 5, 4 and 3 respectively.
When asked subjectively of their outcome, 82 patients (88%) where satisfied with the operative results.) while only 11 patients were not satisfied with the operative results.

Conclusions

Meningiomas' resection in the tentorial region is challenging, and can be very hazardous. Our operative strategy containing an obligatory intraoperative neurophysiological monitoring is in our opinion justified in order to reduce the risk of postoperative complications (Table 2). This case series shows that Gross-Total resection is possible with good results. Caution should be taken not to force Gross-Total resection on costs of morbidity or mortality.

Table 2: Our Intraoperative Neurophysiological Monitoring Protocol

medSEP ▪ 50% Amplitude Reduction ▪ 10% increase in Latency	**CN-EMG** ▪ Spikes ▪ Bursts ▪ Sound Control
MEP ▪ 50% Amplitude Reduction ▪ 10% increase in Latency ▪ 20% increase in Stimulus intensity	**BAEP** ▪ 50% Amplitude Reduction Wave V ▪ 1.0-1.5msec Increase in Latency Waves I-III ▪ Latency Wave V
Reaction? ▪ Short Break / Intervention stopped ▪ Retractors` Replacement ▪ Irrigation / BP Increase / Body Temperature Increase ▪ Tamponade instead of Coagulation ▪ Use of Vasodilatatores ▪ Local – Papaverine ▪ Systematic - Nimodipine	

References

1. Al-Mefty O: Meningiomas. Lippincott Williams and Wilkins, 1991 **2.** Guidetti B, et al. J Neurosurg 69:183-7, 1988 **3.** Krammer MJ et al. Br J Neurosurg. 2009 Feb;23(1):48-55.