Jugular foramen meningioma with transverse and sigmoid sinuses invasion and jugular vein extension

Case report

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Introduction

Meningiomas of the jugular foramen are extremely rare, and represent approximately 0.7-4% of all posterior fossa meningiomas and 10% of all intrajugular tumours. We present the case of a jugular foramen meningioma with predominantly intraluminal invasion of the transverse, sigmoid sinuses, jugular bulb and internal jugular vein with venous occlusion.

Preoperative MRI

Jugular foramen meningioma with predominantly intraluminal invasion of the transverse, sigmoid sinuses, jugular bulb and internal jugular vein with venous occlusion.
Questions & Answers:

1. **What are the indications for surgery?**

2. **How do you approach this situation?**
   The surgical approach in this case is a high lateral cervical approach with exposure of internal carotid artery, jugular vein and cranial nerves IX-XII as well as a combined posterior temporo-basal and retrosigmoid craniotomy with mastoidectomy and retrolabyrinthine petrosectomy.

History and Examination:

A 45-years-old woman presented a 4-months history of right tinnitus, hearing loss and dizziness with otherwise a normal neurological exam.

MR imaging, positron emission tomography computing of the brain and conventional angiography were performed preoperatively and revealed a right-sided, extraaxial dural-based mass in the jugular foramen. The lesion filled the distal transverse sinus, the sigmoid sinus and the jugular bulb, extending to the internal jugular vein. (Fig. 1)

The surgical approach was a high cervical approach with exposure of internal carotid artery, jugular vein and cranial nerves IX-XII as well as a combined posterior temporo-basal and retrosigmoid craniotomy with mastoidectomy and posterior retrolabyrinthine petrosectomy. The transverse, sigmoid sinuses, jugular bulb and superior internal jugular vein were removed en bloc and the exophytic intradural tumor extension around cranial nerves IX, X, XI and XII was resected subtotally. (Fig. 2)

The tumor was classified as a WHO grade I transitional meningioma.

Postoperatively, the patient presented a transient right facial weakness (House and Brackmann II). MR imaging showed partial resection. (Fig. 3) She was discharged home in good condition on the 11th postoperative day.

Questions & Answers:

3. **If there is a residual mass post-operatively, how do you manage it?**
   Observation with serial MRI (3 month, 6 month, and one year) is an option. Stereotactic radiosurgery or radiation therapy is another option, depending on the size of the residual mass and pathology.

4. **What is the most potential surgical complication specific to this case?**
   The risk of haemorrhage with venous sinus injury. Air embolism or venous infarction. Injury to cranial nerves VII, VIII, IX, X, XI and XII during the surgical approach or resection of the exophytic intradural tumor.
Conclusion:

In such particular cases, surgical planning should consider the unusual growth pattern of this type of meningioma, which had predominantly invaded the intraluminal venous compartment, and which exhibited minimal intradural extension only. The resection of tumor together with the occluded sinus/es can be performed safely.

Postoperative MRI

The exophytic intradural tumor extension around cranial nerves IX, X, XI and XII was resected subtotally.