

## **Large ventral foramen magnum meningioma: Retrosigmoid suboccipital approach**

Sir,

Foramen magnum meningiomas (FMMs) are rare tumors accounting for 1.8–3.2% of all meningiomas.<sup>[1]</sup> FMMs are challenging tumors because of their relation to medulla oblongata, lower cranial nerves and vertebral artery.

We report the case of a seventy-year-old female who presented with history of neck pain and weakness in all four limbs for three months. Neurological examination showed quadriparesis with grade 4/5 power, hypertonia and hyperreflexia. Two days before surgery, she developed urinary retention and was catheterized. Magnetic resonance imaging (MRI) revealed a large ventral foramen magnum meningioma of size 3.5 × 2.8 × 3.2 cm severely compressing the brainstem [Figure 1].

Surgery was done in supine position with head turned to the left and fixed in a surgical head frame. The tumor was approached by a linear incision of 9 cm, behind the mastoid process. Right retrosigmoid suboccipital craniectomy was done. Bone removal was done laterally till the sigmoid sinus was exposed and inferiorly including the foramen magnum. No resection of the occipital condyle was done. Dura was opened in a cruciate manner. Intraoperatively brainstem was severely stretched posteriorly

by the tumor. Vertebral artery was seen adjacent to the base of the tumor. Tumor was soft to firm in consistency and initial debulking of the tumor was done. Total excision of the tumor was done (Simpson grade-2) with minimal handling of the brainstem as the tumor size provided great space for microsurgical removal. Post operatively, patient had transient lower cranial nerve palsy and mild left hemiparesis which recovered completely. Post operative MRI revealed complete excision of FMM [Figure 2]. Neurological examination at one year follow-up revealed power of 4+/5 on the left side and no cranial nerve deficits.

FMMs are difficult tumors to treat because of their location and vicinity of vital structures. FMMs are classified as posterior, lateral and ventral depending on their relation to the dentate ligament. [1] Various surgical approaches have been defined for approaching FMMs. [1,2] The goal is to achieve maximum tumor resection with minimum morbidity, by various approaches depending on the location and size of the tumor. Posterior FMMs are best approached by the posterior midline approach. Ventral and ventrolateral FMMs are approached by far lateral approach and the extreme lateral approach. Transoral approach has also been used for ventral FMMs. Conventional posterior suboccipital approach has also been used for anterior FMMs. [3] Far lateral approach, also called posterolateral approach or lateral suboccipital approach, is commonly used to resect ventral FMMs. [1,2] Condyle drilling varies from one third to one half of the condyle, in far lateral and extreme lateral approaches. Transcondylar approaches provide a significant greater area of exposure than the retrosigmoid approach. [4,5] Extent of removal of occipital condyle can be individualized according to the case. In some of the FMMs, removal of condyle might not be necessary. The present case did not require occipital condyle resection because the size of the tumor provided enough working space for tumor removal microsurgically by the retrosigmoid approach.

Retrosigmoid approach is well versed with most of the neurosurgeons as it is commonly done for approaching cerebellopontine lesions. The advantages of this approach are good visualization of tumor and cranial nerves as it provides a wide view of the posterior fossa. Posterior fossa vessels are also well visualized. The present case also illustrates that *large* ventral FMMs without spinal extension can be easily approached by conventional retrosigmoid suboccipital craniectomy without requiring partial condylectomy as the size of the tumor provides great surgical corridor for tumor removal.

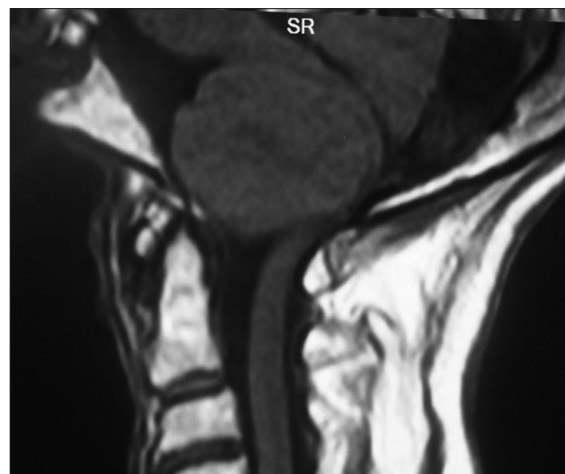
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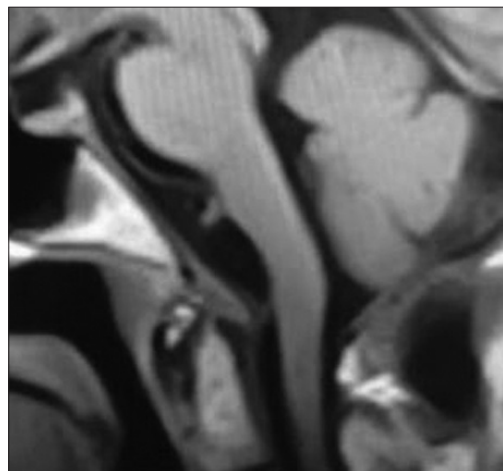
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**Figure 1: Pre operative MRI showing large ventral foramen magnum meningioma severely compressing the brainstem**



**Figure 2: Post operative MRI showing complete resection of tumor**

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