

Gross Total Resection of a Ventral Foramen Magnum Meningioma via the Far Lateral Approach

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Abstract

We present the case of a 43-year-old female who was found to have a ventral foramen magnum mass during workup for limb paresthesia, headache, and neck pain. Given the relatively caudal location at the craniocervical junction a cranial approach was selected rather than an endo-nasal approach due to anticipated high CSF leak risk with the latter. She underwent a paracondylar far lateral craniotomy with C1–C2 laminectomies for gross-total resection of the mass.

Presentation

- 43-year-old woman presented with **upper and lower extremities paresthesia** and posterior cervical neck pain
- MRI revealed **ventral foramen magnum meningioma** with severe compression and signal change of spinal cord (*Figure 1*)
- Neurological examination:
 - **decreased sensation** in her forearms and the bilateral upper extremities as well as in her lower extremities, more pronounced distally
- Given significance of the compression, the size of the lesion and symptoms, the patient was recommended **surgical treatment**

Preoperative imaging

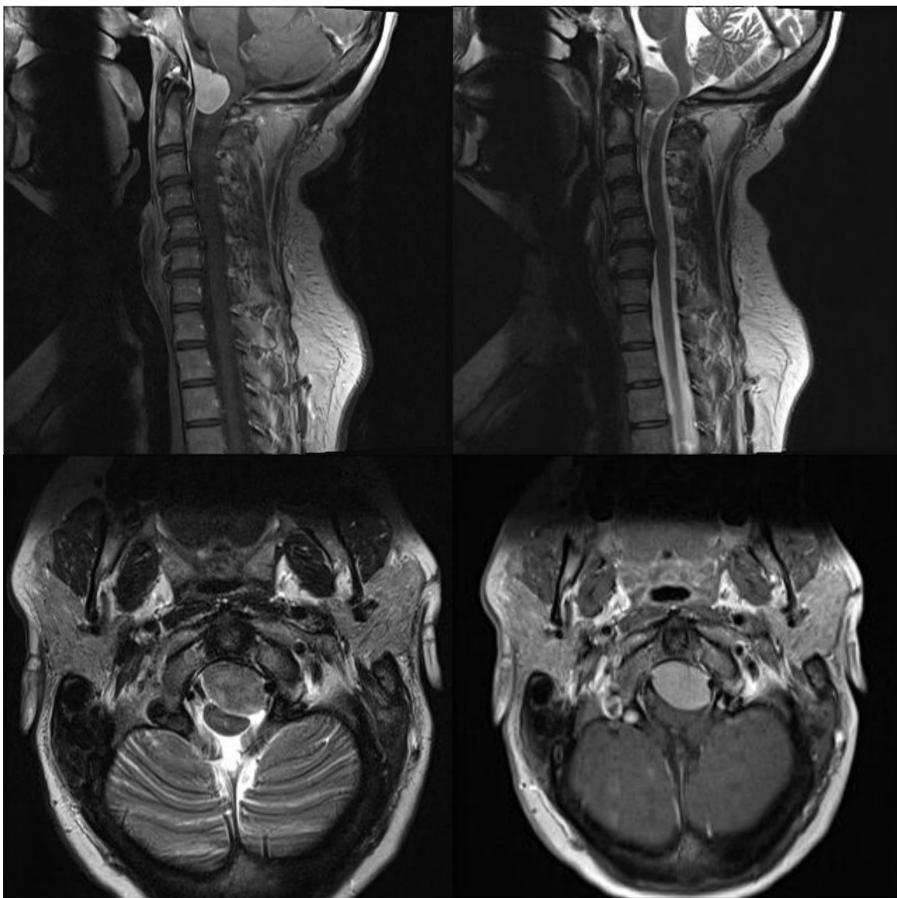


Figure 1. Preoperative MRI. Sagittal contrast-enhanced T1-weighted sequence (upper left) and T2-weighted sequence demonstrate a ventral foramen magnum meningioma with significant spinal cord compression. Axial T2 (lower left) and contrast-enhanced images (lower right) again demonstrate the tumor, predominantly left-sided.

Surgical strategy

- Three quarters prone position with arm in a sling
- U-shaped incision, off to the left side, in the posterior midline and into the postauricular space
- Paracondylar far lateral craniotomy with a C1 and C2 laminectomies
- Draining of CSF from the cisterna magna and cerebellomedullary cistern
- Cutting of the dentate ligaments
- Identification of the lower cranial nerves, the C1 rootlets, the C2 rootlets
- Identification of arachnoid border of the tumor and staying within the correct plane
- Internal debulking through “working windows” and collapse of the tumor capsule
- Disconnection of the tumor from the dural blood supply
- Piecemeal gross total resection of the tumor

Surgery

- Left-image guided paracondylar far lateral craniotomy for microsurgical resection of ventral foramen magnum meningioma with C1-C2 complete laminectomies



Scan Me

Postoperative course

- **No new neurological deficit**
- Pathology:
 - WHO Grade 1 meningioma with focally elevated MIB-1
- CTA chest demonstrating small segmental and subsegmental pulmonary embolisms without right heart strain, patient started on Eliquis
- Discharged to rehabilitation unit
- Improving sensation in extremities
- Gross total resection on a four-month postoperative course (*Figure 2*)

Four month postoperative course

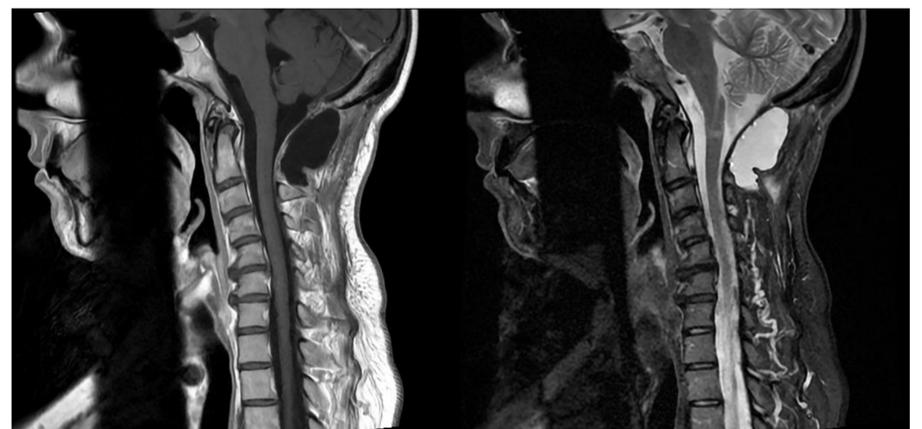


Figure 2. Postoperative sagittal contrast-enhanced T1-weighted (left) and T2-weighted (right) MRI demonstrating gross total resection.

Conclusions

Gross total resection of ventral foramen magnum meningioma can be safely achieved through a far lateral approach. Adequate exposure, meticulous microsurgical technique, and tailored bony removal enable complete tumor resection with favorable neurological outcomes.

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