Far Lateral Approach with C-shaped Incision to Resect a C2 Schwannoma

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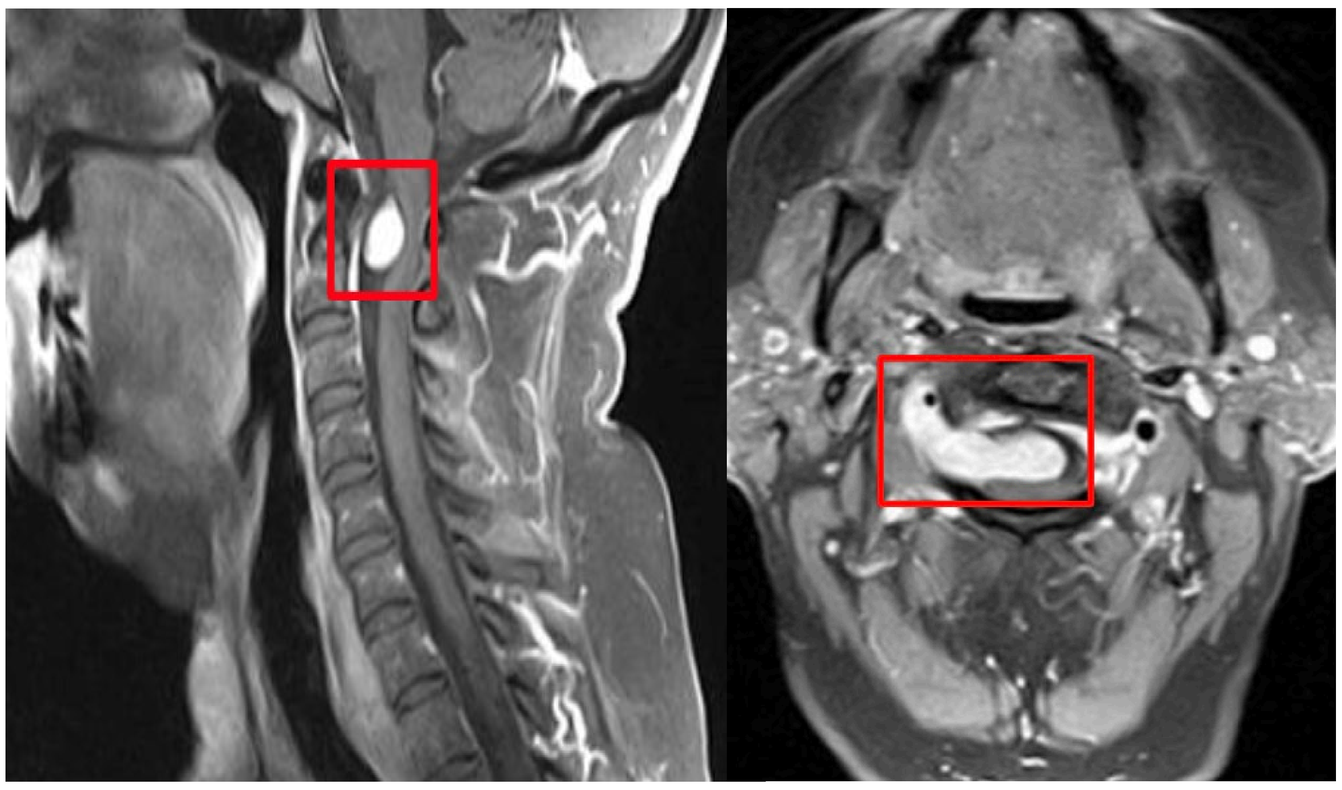
BACKGROUND:

This is the case of a 48 year-old female who presented with symptoms of severe cervical myelopathy.

MRI of the cervical spine revealed a large hyperintense lesion consistent with a schwannoma arising from the right C2 nerve root with:

- Extension through the neural foramen
- Displacement of the cervical cord posteriorly and the right vertebral artery anteriorly.
- Measurements of 3.7 x 1.2 x 1.5 cm on imaging

PREOPERATIVE IMAGING:



SURGICAL APPROACH:

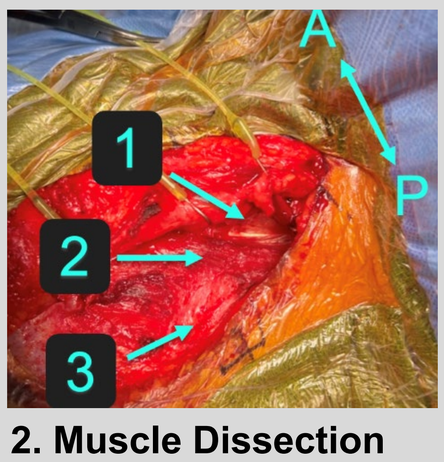
A far lateral approach with C-Shaped incision was determined to be optimal given the tumor's proximity to the vertebral artery and extension through the neural foramen.

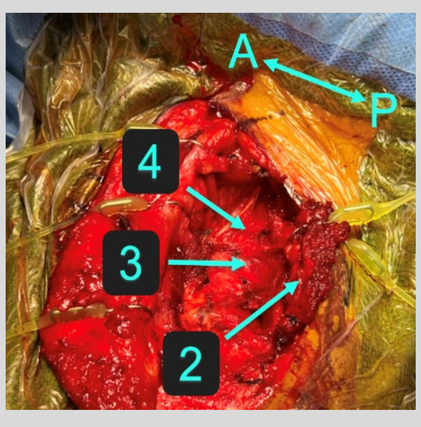
- More direct line in tumor approach and improved anterior access
- Minimize potential morbidity improving patient outcomes

KEY PROCEDURAL STEPS:

1. Positioning & Preparation

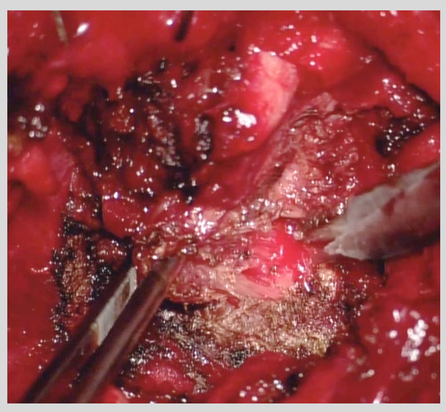
- The patient head is secured in 3 pin fixation in lateral position with the right shoulder up.
- A C-Shaped incision is marked starting at level of the transverse sinus and extending toward the anterior margin of the sternocleido masteoideus

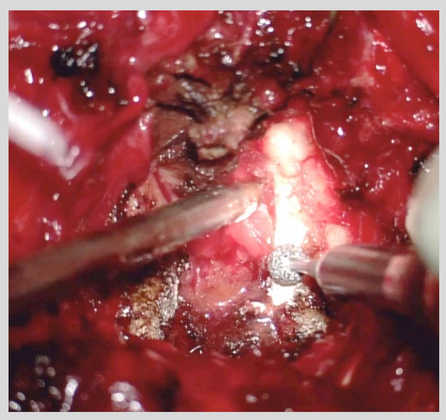




2. Muscle Dissection

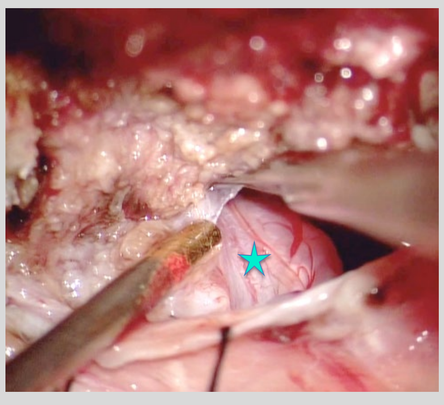
- Rotation of sternocleidomastoid [1] anteriorly
- Splenium capitis [2] and semispinalis capitis [3] rotated inferomedially
- Exposure of longissimus capitis [4], obliquus muscles, suboccipital triangle, and C1 lamina.

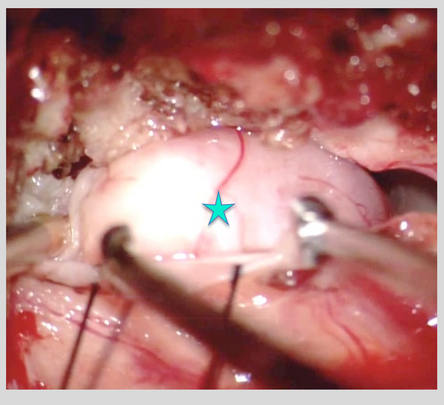




3. Extradural Resection & Hemilaminectomy

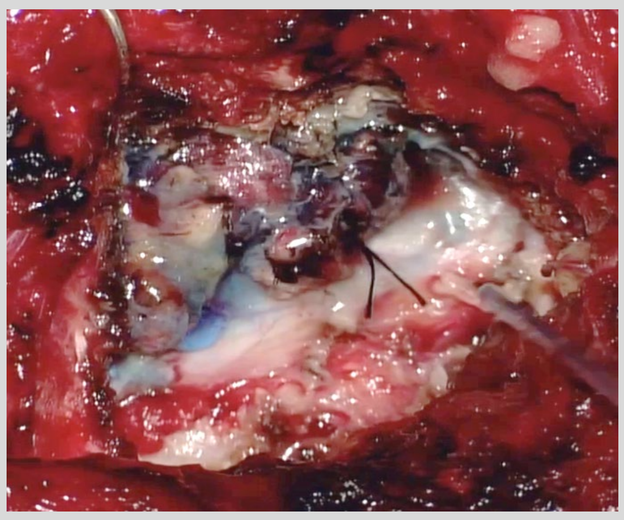
- Ultrasonic aspiration to debulk extradural tumor
- C1 Hemilaminectomy to access the dura
- Dura is opened





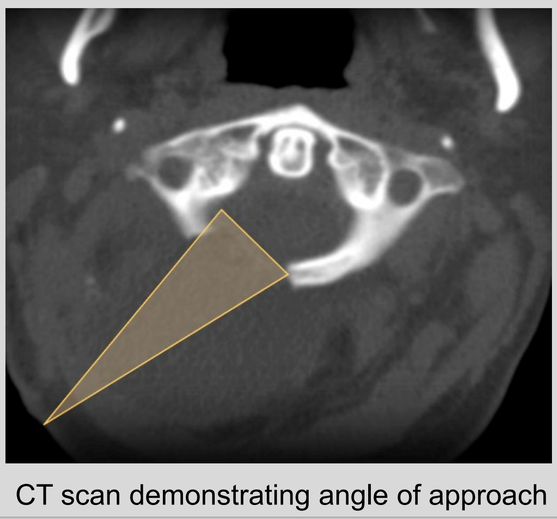
4. Intradural Resection & Removal

- Intradural tumor (*) is mobilized from the dura and debulked
- Assessment for viable motor function of connecting nerve rootlets using 0.1 to 0.5mA stimulation
- Remaining attachments are sharply dissected and the tumor removed



5. Closure

- Dura is closed using 4-0 neuralon suture
- Placement of a muscle graft over the dural defect.
- Dural sealant applied to prevent postoperative CSF leak
- Musculature reapproximated and skin closed



CT scan demonstrating angle of approach

POSTOPERATIVE COURSE:

- No complications encountered during surgery
- Pathology confirmed the tumor as a **schwannoma WHO grade I**
- MRI's taken at 6 months postoperatively demonstrate complete resection
- Complete resolution of symptoms postoperatively
- Denied any pain, neurological deficits, neck swelling, or CSF leaks

Axial T1 w/o contrast

Sagittal T1 SE

DISCUSSION:

A far lateral approach with C-shaped incision proved the optimal approach for complete removal given anatomy and the invasion pattern of the schwannoma:

- Direct line of access to the lesion
- Eliminated the need for spinal cord retraction
- Minimized the risk of postoperative CSF leak or occipital junction and cervical instability

A C1/C2 laminectomy was also considered but was deemed unfavorable in the present case.

- Complete spinal cord compression anterior to posterior.
- Difficulty accessing the anterior component of the tumor

An anterior cervical approach contraindicated for the following reasons:

- Potential swallowing difficulty, CSF leaks, cervical instability, higher morbidity.

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