Posterior Cervical Corpectomy and Decompression for Tumor Resection

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Disclosure

• The authors have no disclosures to report.
Introduction

We present the case of a 70-year-old male with C6, C7 circumferential metastatic epidural disease who underwent a posterior cervical C6, C7 partial corpectomy with reconstruction, and posterior C3-T2 instrumentation. To our knowledge this approach for surgical resection of a sub-axial cervical spine metastasis has not been described in the literature.

Transpedicular corpectomy in the thoracic spine has been widely described in the literature. In those surgeries, the nerve root is usually sacrificed. In our approach, we faced several challenges including the presence of the vertebral arteries, the smaller vertebral body size, and the goal to preserve the nerve roots.

Patient is a 69 year old male who initially presented with numbness and tingling in bilateral upper extremities that was progressive over months. The patient then developed similar symptoms in his lower extremities. The symptoms progressed to weakness in his hands a week before he was evaluated in the Emergency Department. A MRI of the cervical spine demonstrated a right sided mass at the level of C6-C7 with epidural extension causing central stenosis.
The mass extended from the right side of the body of C6 into the C7 transverse process and right lamina causing narrowing of the right C7 foramen. A CT of the cervical spine was obtained which re-demonstrated the mass. A metastatic was completed including a CT guided biopsy. A diagnosis of metastatic poorly differentiated thyroid carcinoma was made. The tumor extended ventrally from the thyroid and was found to be highly vascularized and had extended circumferentially complicating an anterior approach. The decision was made to embolize the feeding arteries of the tumor and proceed with a posterior resection and corpectomy as part of a space clearing procedure, to allow for radiosurgery at a later date.
Embolization

- The thyrocervical branches feeding the tumor were embolized using PVA by vascular interventional radiology.
- Following this, particle embolization was performed to occlude the feeding branches of the tumor followed by vessel occlusion by embolization coils.
- Post-embolization angiography revealed no remnant flow to the tumor.
The patient was taken to the OR for posterior cervical corpectomy and decompression for tumor resection. Exposure of C2-T3 was performed. A right C2 pedicle screw and left C2 laminar screw were placed. Laminectomies from C5-T1 were performed. Dorsalateral epidural tumor was dissected from the thecal sac at C5, C6. The right lateral masses of C5 -C7 were resected, and the C6, 7 nerve roots were exposed out past the neural foramen. All nerve roots were spared. Partial C6, C7 corpectomies were performed. The inferior C5 and superior T1 endplates were exposed. An approximately 1 cm diameter opening was made in the center of the exposed C6 and T1 endplates to accommodate a 28 French chest tube. The chest tube was cut to fit the defect, inserted, and filled with PMMA cement. Titanium rods were placed and the incision closed.
Post-op Imaging

MRI with postsurgical changes, status post laminectomy extending from C5-T2, C6-C7 partial right corpectomy with PMMA chest tube construct in place, showing normal alignment.

Enhancing paraspinal soft tissue on the right at C6 and C7, at the corpectomy site, which represents residual malignancy.

Spinal canal is decompressed. Normal cord signal and morphology.

Post-operative CT showing lateral mass screws a C2-T3 in appropriate position and no evidence of hardware complication.
Post-Operative Course

• The patient tolerated the procedure well with initial weakness in bilateral biceps/triceps that improved. He spent one day in the neurocritical care unit and was discharged on post-operative day seven with trace deficits in bilateral biceps/triceps. He underwent a total thyroidectomy six weeks later, which he tolerated well. At three months follow-up in Neurosurgery clinic, patient had no deficits.

• Patient received CyberKnife radiosurgery and follow-up MRI and PET showed no residual disease, 7 months post-op.
Conclusions

• We present a novel example of a posterior cervical partial corpectomy and reconstruction for a thyroid carcinoma metastasis.

• Pre-operative embolization of the ipsilateral vertebral artery and the use of a chest tube PMMA construct allowed us to successfully reconstruct the corpectomy defect with adequate visualization and minimal nerve root retraction.

• This procedure may be considered in patients with circumferential cervical metastatic epidural disease to minimize surgical time and number of surgical approaches needed to decompress and stabilize the cervical spine.