Posterior fossa tumor surgery

Posterior fossa tumor surgery refers to neurosurgical procedures aimed at removing tumors in the posterior fossa.

This area is critical for motor coordination, autonomic functions, and cranial nerve activity, making surgeries here highly delicate.

Key Points about Posterior Fossa Tumor Surgery

Common Tumor Types Medulloblastoma (most common in children)

Ependymoma

Pilocytic astrocytoma

Hemangioblastoma

Metastases

Meningiomas (posterior fossa or cerebellopontine angle)

Anatomical Considerations

Proximity to the brainstem = high risk for neurological deficits

Obstruction of CSF flow can cause hydrocephalus

Cranial nerves (especially V–XII) are often at risk

Surgical Approaches

Midline suboccipital craniotomy (for vermian/cerebellar tumors)

Retrosigmoid (lateral suboccipital) (for CPA tumors, like vestibular schwannomas)

Far-lateral approach (for foramen magnum and lateral brainstem lesions)

Goals of Surgery

Maximal safe resection

Preservation of neurological function

Relief of hydrocephalus (sometimes requiring external ventricular drain or VP shunt)

Adjuncts to Surgery

Neuronavigation

Intraoperative neuromonitoring (MEPs, SSEPs, cranial nerves)

Ultrasound/MRI guidance

Neuroendoscopy (in selected cases)

⚠ Potential Complications

Posterior fossa tumor surgery complications.

Postoperative Care

ICU monitoring

Imaging (CT/MRI within 24–48 h)

CSF diversion if hydrocephalus persists

Early physical and speech therapy

Posterior fossa tumor surgery is associated with a significant risk of complications, and the complications are typically more frequent than similar supratentorial surgeries. The primary objectives of the present study are to evaluate extent of resection and neurological outcomes and the secondary objective is to evaluate perioperative complications with using minimally invasive approaches for intra-axial posterior fossa tumors from our case series.

All consecutive patients who underwent non-biopsy surgery of a posterior fossa tumor using tubular retractors and exoscopic visualization from January 2016 to May 2018 were prospectively identified and included.

15 patients underwent resection of an intra-axial posterior fossa tumor during the reviewed period. Eight (53%) were male and the median (interquartile range) age was 63.0 (45.0-67.5) years. The location of the pathology was the cerebellar hemisphere in 11 (73%), vermis in 3 (20%), and middle cerebellar peduncle in 1 (7%). The median pre and postoperative lesion volumes were 21.6 (10.1-33.0) 0 (0-1.2) cm3, respectively. The percent resection was 100% (92-100%). Following surgery, 12 (80%) had improved and 3 (20%) had stable KPS, where no patients had a decline in KPS postoperatively. No patients incurred other postoperative regional or medical complications.

Mampre et al. demonstrated the possible efficacy of a minimally invasive approach with the use of tubular retractors and exoscopic visualization for resecting posterior fossa intra-axial tumors with relatively high efficacy and low morbidity [1].

1)

Mampre D, Bechtle A, Chaichana KL. Minimally invasive resection of intra-axial posterior fossa tumors using tubular retractors. World Neurosurg. 2018 Aug 18. pii: S1878-8750(18)31832-1. doi: 10.1016/j.wneu.2018.08.049. [Epub ahead of print] PubMed PMID: 30130571.