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Evolution of neurosurgical advances and nuances in medulloblastoma therapy

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Abstract

Medulloblastoma, the most common malignant brain tumor in children, presents a complex treatment challenge due to its propensity for infiltrative growth within the posterior fossa and its potential attachment to critical anatomical structures. Central to the management of medulloblastoma is the surgical resection of the tumor, which is a key determinant of patient prognosis. However, the extent of surgical resection (EOR), ranging from gross total resection (GTR) to subtotal resection (STR) or even biopsy, has been the subject of extensive debate and investigation within the medical community. Today, the impact of neurosurgical EOR on the prognosis of medulloblastoma patients remains a complex and evolving area of investigation. The conflicting findings in the literature, the challenges posed by critical surrounding anatomical structures, the potential for surgical complications and neurologic morbidity, and the nuanced interactions with molecular subgroups all contribute to the complexity of this issue. As the field continues to advance, the imperative to strike a delicate balance between maximizing resection and preserving quality of life remains central to the management of medulloblastoma patients.

Keywords: Extent of resection; Historical; Intraoperative MRI; Medulloblastoma; Molecular subgroups; Neurosurgery; Second-look surgery.