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# Intraoperative radiotherapy after resection of brain metastases located in the posterior fossa. Analysis of postoperative morbidity and mortality in a single center cohort

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## Abstract

**Introduction:** In order to improve surgical outcome and accelerate the adjuvant oncologic therapy, intraoperative Radiotherapy (IORT) has become a treatment option in oncologic surgery for various diseases including glioma and brain metastasis (BM). BMs are often located in the cranial posterior fossa (PF) requiring specific surgical considerations due to its complex anatomy. Up until now, data on IORT for BMs is limited and detailed description in the use of IORT for lesions in the PF is lacking. Our aim is to provide more insight into this emerging treatment strategy.

**Methods:** We performed a retrospective analysis of patients receiving surgery for BMs and undergoing IORT at our institution. Each patient was discussed at the interdisciplinary tumor board decision before the intervention. Patient characteristics, functional status (Karnofsky Performance Score, KPS) before and after surgery, disease (recursive partitioning analysis, lesion size) and operative parameters were analyzed. Adverse events (AE) were recorded up until 30 days after the intervention and rated according to the Clavien Dindo Rating scale.

**Results:** Nine patients (5 female) were included. None underwent prior radiotherapy (RT). Mean age was  $66 \pm 11$  years. Preoperative median KPS was 80%. Mean BM diameter was  $3.2 \pm 0.9$  cm. There was no statistically significant deterioration of the functional status after the intervention. Two patients experienced AEs with both of them needing revision surgery.

**Conclusion:** Surgery for BMs with IORT in the PF seems safe and feasible. Further studies are needed to evaluate the influence of IORT on long-term outcome after BM surgery.

**Keywords:** Brain metastasis; IORT; Intraoperative radiotherapy; Neurooncology; Posterior cranial fossa.

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