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Review

# Lessons from brain mapping in surgery for low-grade glioma: insights into associations between tumour and brain plasticity

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## Summary

Surgical treatment of low-grade gliomas (LGGs) aims to maximise the amount of tumour tissue resected, while minimising the risk of functional sequelae. In this review I address the issue of how to reconcile these two conflicting goals. First, I review the natural history of LGGâ€”growth, invasion, and anaplastic transformation. Second, I discuss the contribution of new techniques, such as functional mapping, to our understanding of brain reorganisation in response to progressive growth of LGG. Third, I consider the clinical implications of interactions between tumour progression and brain plasticity. In particular, I show how longitudinal studies (preoperative, intraoperative, and postoperative) could allow us to optimise the surgical risk-to-benefit ratios. I will also discuss controversial issues such as defining surgical indications for LGGs, predicting the

risk of postoperative deficit, aspects of operative surgical neuro-oncology (eg, preoperative planning and preservation of functional areas and tracts), and postoperative functional recovery.

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allows to exclude from consideration the breech harmonic interval.
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