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## LONG TERM TUMOUR CONTROL OF BENIGN INTRACRANIAL MENINGIOMAS AFTER RADIOSURGERY IN A SERIES OF 4565 PATIENTS.

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### Abstract

**BACKGROUND:** Radiosurgery is the main alternative to microsurgical resection for benign meningiomas.

**OBJECTIVE:** To assess the long-term efficacy and safety of radiosurgery for meningiomas with respect to tumour growth and prevention of associated neurological deterioration. Medium to long-term outcomes have been widely reported, but no large multicentre series with long-term follow-up have been published.

**METHODS:** From 15 participating centers we performed a retrospective observational analysis of 4565 consecutive patients harbouring 5300 benign meningiomas. All were treated with Gamma-Knife radiosurgery at least five years prior to assessment for this study. Clinical and imaging data were retrieved from each center and uniformly entered into a database by one author (AS).

**RESULTS:** Median tumour-volume was 4.8cc and median dose to tumour margin was 14Gy. All tumours with imaging follow-up less than 24 months were excluded. Detailed results from 3768 meningiomas (71%) were analyzed. Median imaging follow-up was 63 months. The volume of treated tumours decreased in 2187 (58%), remained unchanged in 1300 (34.5%), and increased in 281 lesions (7.5%), giving a control rate of 92.5%. Only 84 (2.2%) enlarging tumours required further treatment. Five and ten years progression-free-survival (PFS) rates were 95.2% and 88.6%, respectively. Tumour-control was higher for imaging defined tumours vs. Grade-I meningiomas ( $p<0.0001$ ), for females vs. males ( $p<0.0001$ ), for sporadic vs. multiple meningiomas ( $p<0.0001$ ) and for skull-base vs. convexity tumours ( $p<0.0001$ ). Permanent morbidity rate was 6.6% at last follow-up.

**CONCLUSION:** Radiosurgery is a safe and effective method for treating benign meningiomas even in the medium to long-term.

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