The PubMed/Medline database was systematically searched to identify studies describing oncological and clinical outcomes after Simpson grade I, II, III, or IV resections of spinal meningiomas.

Thirty-two studies describing the outcomes of 896 patients were included in the analysis. Simpson grade I, grade II, and grade III/IV resections were performed in 27.5%, 64.6%, and 7.9% of cases, respectively. The risk of procedure-related complications (OR 4.75, 95% CI 1.27-17.8, p = 0.021) and new, unexpected postoperative neurological deficits (OR ∞, 95% CI NaN-∞, p = 0.009) were both significantly greater for patients undergoing Simpson grade I resections when compared with those undergoing Simpson grade II resections. Tumor recurrence was seen in 2.8%, 4.1%, and 39.4% of patients undergoing Simpson grade I, grade II, and grade III/IV resections over a mean radiographic follow-up period of 99.3 ± 46.4 months, 95.4 ± 57.1 months, and 82.4 ± 49.3 months, respectively. No significant difference was detected between the recurrence rates for Simpson grade I versus Simpson grade II resections (OR 1.43, 95% CI 0.61-3.39, p = 0.43). A meta-analysis of 7 studies directly comparing recurrence rates for Simpson grade I and II resections demonstrated a trend toward a decreased likelihood of recurrence after Simpson grade I resection when compared with Simpson grade II resection, although this trend did not reach statistical significance (OR 0.56, 95% CI 0.23-1.36, p = 0.20).

The results of this analysis suggest with a low level of confidence that the rates of complications and new, unexpected neurological deficits after Simpson grade I resection of spinal meningiomas are greater than those seen with Simpson grade II resections, and that the recurrence rates for Simpson grade I and grade II resections are equivalent, although additional, long-term studies are needed before reliable conclusions may be drawn [1)].

1)
Barber SM, Konakondla S, Nakhla J, Fridley JS, Xia J, Oyelese AA, Telfeian AE, Gokaslan ZL. Oncologic benefits of dural resection in spinal meningiomas: a meta-analysis of Simpson grades and recurrence rates. J Neurosurg Spine. 2019 Nov 8:1-11. doi: 10.3171/2019.8.SPINE19859. [Epub ahead of print] Review. PubMed PMID: 31703204.