Structured Abstract

Background context: Lumbar spinal stenosis is a common degenerative condition associated with neurogenic claudication and disability. Minimally invasive decompression options are expanding, but quantitative tissue-resection benchmarks for posterior interlaminar decompression remain limited.

Purpose: To evaluate the feasibility of microendoscopic posterior interlaminar decompression performed by interventional pain management (IPM) physicians and to quantify the minimum reproducible unilateral tissue resection volume.

Design: Pilot cadaveric and clinical feasibility study.

Patient sample: Fifty unilateral posterior interlaminar decompressions were performed, including 40 unilateral decompressions at 20 cadaveric lumbar levels and 10 unilateral decompressions at five consecutive clinical lumbar levels.

Outcome measures: The primary outcome was unilateral resected tissue volume, consisting of lamina bone and ligamentum flavum. Cadaveric procedures were assessed for epidural space violation, and clinical procedures were assessed for intraoperative complications.

Methods: Procedures used fluoroscopic access with Jamshidi needle docking, guidewire-assisted working cannula placement, and decompression with Kerrison and pituitary rongeurs. Resected tissue was collected and measured volumetrically using a calibrated syringe.

Results: IPM physicians achieved mean unilateral tissue resection of 2.0 ± 0.5 cc (95% CI, 1.86–2.14 cc; range, 1–3 cc). The minimum reproducible unilateral volume was approximately 1 cc. No cadaveric epidural violations or clinical intraoperative complications occurred.

Conclusions: Microendoscopic posterior interlaminar decompression demonstrated a reproducible minimum unilateral tissue resection volume of approximately 1 cc when performed by IPM physicians. Quantifying resected tissue may provide an objective technical benchmark for training, procedural standardization, and future comparative studies.

Keywords: lumbar spinal stenosis; ligamentum flavum hypertrophy; microendoscopic decompression; posterior interlaminar decompression; tubular decompression; tissue resection volume; interventional pain management; minimally invasive spine surgery.