

Commentary: The Role of Instrumentation in the Surgical Treatment of Spondylodiscitis and Spinal Epidural Abscess: A Single-Center Retrospective Cohort Study

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Spondylodiscitis is an uncommon infection of the intervertebral disc and vertebra with an incidence between 0.2-2.4/100,000 annually¹. Severe cases can lead to spinal epidural abscess with compressive neurological syndromes. In general, risk factors include immunocompromised states or hyperglycemic states. The spread is most commonly hematogenous with cutaneous organisms such as staphylococcus and streptococcus viridians comprising most of the causative organisms². Conservative management with source isolation and targeted antibiotics is often successful. For patients with rapid neurological deterioration, worsening infectious burden despite maximum medical management, or severe compressive spinal epidural abscess, surgical treatment strategies should be considered.

Decompression of the neural elements is often a surgical goal in patients with spondylodiscitis, epidural abscess and neurological deficits or symptoms, but whether spinal stabilization and arthrodesis is necessary in these patients is less clear. Is there a benefit to an upfront fusion in those undergoing laminectomy? Are there specific case factors predicting the development of instability after laminectomy for epidural abscess?

We previously published a retrospective cohort study of 47 patients that underwent decompression alone or decompression with fusion for spinal epidural abscess with associated spondylodiscitis³. In a period spanning from 2011-2018, seventy-four patients with spinal infections were reviewed and 47 met inclusion/exclusion criteria. Inclusion criteria patients who underwent neurosurgical intervention for a spinal epidural abscess. Twenty-seven patients were excluded because they were either lost to follow up or had infections following a prior spinal operation. Of the 47 patients, 27 patients underwent decompression alone while 20 patients underwent primary decompression and fusion. The choice of the operative procedure for each patient was determined by the neurosurgeon treating the patient at the time. Seven patients underwent a posterior decompression and fusion and 11 underwent a circumferential decompression and fusion. Of the 27 patients that underwent decompression alone, 14 required re-operation, most often for intractable axial back pain (11/14). Of those 14 that were re-operated, 11 were ultimately fused. There were no significant differences in patient demographics except there were more men in the decompression alone group (81.5% versus 50% P=0.03).

Overall, of the 47 patients that underwent decompression at our

institution, 33 (70%) of the patients were fused or required fusion at a later date. The re-operation rate was significantly higher in the decompression alone cohort (51.9% vs 10% $P=0.004$). There was no significant difference in fusion/reoperation rates in patients undergoing full laminectomy or hemilaminectomy/laminotomy. The average number of surgeries in the decompression alone cohort was 1.7 versus 1.15 in the decompression and fusion group. Our patients demonstrated similar outcomes in post-operative follow up whether they were initially fused or not. It should be re-iterated that 40% (11/27) of the decompression alone patients ultimately had a fusion at a later date but those outcomes are still grouped with the decompression alone subgroup.

An interesting finding was observed in patients undergoing laminectomy with concurrent discitis at the level of the decompression. In patients with increased MRI T2 signal at the disc at the level of decompression, there was a higher rate of re-operation and fusion, but this did not reach statistical significance ($p=0.1071$). If the analysis included patients that were recommended to have re-operation for fusion, but could not secondary to ongoing medical illness, the finding becomes significant ($P=0.018$). It would be very interesting to see this if this T2 discitis signal becomes an independent predictor for the need for fusion in the future.

The literature regarding re-operation rates following decompression alone or fusion are disparate. A review by Karadimas et al. showed nearly half of patients with spinal infections undergoing decompression alone required a later surgery to fuse the spine which is in line with findings of a similar cohort in our study⁴. In juxtaposition, a national database survey by Chaker et al. found that decompression with fusion had a higher reoperation rate than those that had decompression alone (23.8 vs 12.2%).

In their paper, the higher fusion re-operation rate could be partially explained by a higher American Society of Anesthesiologists (ASA) classification in fusion patients and a significantly higher rate of re-operation in posterior cervical fusion patients alone⁵. Our cohort, in contrast, did not have any significant differences in medical morbidities.

The results of our study suggest decompression with instrumented fusion for patients with spondylodiscitis results in significantly lower reoperation rates when compared with decompression alone. At our institution we favor instrumentation in the treatment of spondylodiscitis if there is significant bony destruction, subluxation, fracture, deformity, or substantial mechanical back pain. A prospective, multicenter, randomized, controlled trial would be beneficial to answer these questions.

Conflict of Interest

The authors have no conflicts of interest to report.

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