Outcomes Following Decompression versus Combined Decompression and Fusion for the Treatment of Spine Infections: Are They Different?

Zachary Crawford[1], Jorge Figueras, Brian Micheal Johnson, Cameron G Thomson[1], Anthony F Guanciale
[1]University of Cincinnati

INTRODUCTION:

Spine infection including epidural abscess, vertebral osteomyelitis, and diskitis is a major cause of morbidity in the United States with potential for significant complications. Previous literature has shown delayed diagnosis can increase mortality and patients treated with decompression alone have higher complications including reoperation rates. The purpose of this study is to further evaluate the outcomes of spine infection comparing decompression versus decompression and fusion.

METHODS:

This retrospective chart review was completed on patients presenting to a single level 1, tertiary medical center between January 2010 and June 2021 for osteomyelitis, diskitis, or epidural abscess. Electronic medical record chart review was completed by searching for associated appropriate ICD-9 or ICD-10 codes and CPT codes for orthopaedic and neurosurgery spine attendings during study period. Demographic information including age, sex, insurance carrier, and co-morbidities including history of intravenous drug use, tobacco use, and Charleston Comorbidity Index were collected on all patients. Additional information including levels and location of epidural abscess, deformity, instability, serum infectious markers, and culture data were also collected. Outcome measures included length of antibiotic regimen, discharge location, ED admissions, complications, and reoperations.

RESULTS:

There were a total of 163 patients identified and 111 patients included for study review. There were 58 patients in decompression alone (60% male, n = 35) and 53 in decompression and fusion (60% male, n = 32). The average age was 54 years and 53 years respectively in each group (p=0.988) and there was no statistical difference in rates of osteomyelitis, diskitis, and epidural abscess in each group. Additionally, there was no statistical difference in instability, deformity, and Charleston Comorbidity Index in each group. Patients in decompression alone averaged 4.2 spine levels of epidural abscess while those in decompression and fusion averaged 2.8 levels (p = 0.008). There was no difference in erythrocyte sedimentation rate, c-reactive protein, or white blood cell count levels between groups, however patients with decompression alone were more likely to have concomitant bacteremia (n=48, 82.7% compared to n=28, 52.8% in decompression and fusion, p =0.00018). There were 10 reoperations (17%) in decompression alone with 4 to complete fusion, while decompression and fusion had 13 reoperations (24.5%) with 3 to extend or revise previous fusion.

DISCUSSION AND CONCLUSION:

Patients with spine infection including osteomyelitis, diskitis, and epidural abscess have a high morbidity with numerus complications. In this retrospective, single center study of spine we found there was no significant difference in outcomes between decompression versus decompression and fusion for spine infection. Patients who underwent decompression alone were more likely to have higher burden of infection and concomitant bacteremia compared to those with decompression and fusion.