

# Neurological Outcomes of Adult Patients with Non-latrogenic Spine Infections: An Initial Evaluation of 241 Patients

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## Introduction

Non-iatrogenic spine infections (epidural abscess, diskitis, osteomyelitis) comprise a spectrum of clinical disorders that affect the spinal column, the paravertebral soft tissues, and the spinal cord itself. Although relatively rare, these infections can cause significant morbidity and mortality. We reviewed 241 cases to further elucidate the factors that lead to positive neurological outcomes in patients with non-iatrogenic spine infections.

#### **Methods**

Following IRB approval, a retrospective chart review was performed of inpatients over a 6-year period with a discharge diagnosis of `spinal abscess`. Various factors including change in neurological exam, patient demographics, Charlson Comorbidity Index, hospital course, and method of treatment were assessed. Exclusion criteria included patients in the database with undocumented final neurological exams, patients with baseline limb amputations, or patients with baseline paraplegia.

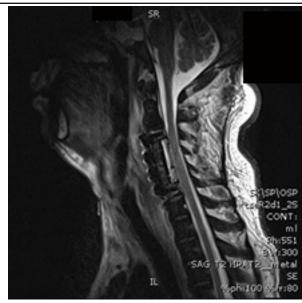
## **Results**

Of the 241 patients initially reviewed, 69 were excluded based on criteria. The factors associated with an improved neurological outcome were male sex (OR 2.27 p = 0.045~95% CI = 1.00~5.11), increased number of operations on logistical regression (Unit OR 1.43 p< 0.005~95% CI 1.13~1.85), and spinal fusion (OR 2.74 p < 0.003~95% CI 1.4~5.35).

Factor	OR	95% CI	p-value
Male Sex (n=126)	2.27	1.00 - 5.11	0.045*
Spinal Fusion Performed	2.74	1.40 - 5.35	<0.003*
Infection Confined to Cervical Spine	2.11	1.01 - 4.15	<0.003*
Number of Spinal Operations	1.43 <sup>†</sup>	1.13 - 1.85	0.003*



T2-weighted MRI of a patient with a documented spine infection prior to surgical intervention



T2-weighted MRI of the same patient following cervical corpectomy and fusion with no radiographic evidence of infection

## **Conclusions**

Multiple factors play a role in the neurological outcomes of patients with spine infections. From our data, male sex, greater number of operations, and spinal fusion were associated with better outcomes. A greater number of operations is somewhat predictably associated with better outcomes, as abscesses in other locations are best treated with thorough evacuation. Fusion also seems advantageous over simple laminectomy in the treatment of spine infections. A possible mechanism of this benefit is the prevention or alleviation of the anatomical deformity often associated with these infections. There are many parameters that will be tested as we continue to analyze the patient database to help develop treatment guidelines and provide optimal management for patients.

## **Learning Objectives**

By the conclusion of this session, participants should be able to 1) Identify the factors that contribute to an improved neurological outcome in patients with spine infection. 2) Recognize the positive association of spinal fusion surgery with an improved neurological outcome in these patients