



Outcomes following Surgical Management of Vertebral Osteomyelitis

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Introduction

Vertebral osteomyelitis is characterized by an acute or recurrent infection and the subsequent inflammatory destruction and new apposition of bone. In certain circumstances, instability of the spine or presence of neurologic deficits requires surgical intervention. The associated morbidity and mortality after surgery has not been characterized in the literature. As such, the purpose of this study was to characterize both short- and long-term outcomes following surgically-managed cases of vertebral osteomyelitis, with the specific objective of identifying long-term complications and reoperation rates.

Methods

A retrospective chart review was conducted of all cases of surgically-managed vertebral osteomyelitis at the Cleveland Clinic between 2002 and 2010. At presentation, demographic, symptomatology, past medical and surgical history, substance abuse, and laboratory data were collected. Data regarding surgical and medical management were likewise collected. Primary and secondary outcomes collected included long-term neurologic complications, reoperation for osteomyelitis, and change in a modified neurologic McCormick Scale (MMS).

Results

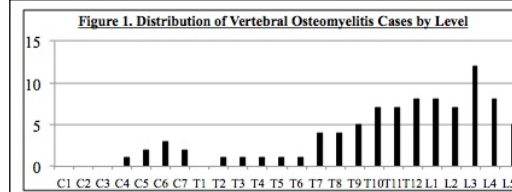
24 patients were included in the study. 53% were male, with an average age of 58 and BMI of 27. 42% were current smokers and 17% had a history of intravenous drug abuse. The most common patient comorbidities were hypertension (54%), dyslipidemia (46%), and diabetes (38%) (Table 1). The most common sites of osteomyelitis were at L3 (50%), T12 (33%), L1 (33%), and L4 (33%), with 12.5% in the cervical spine (Figure 1). The average number of involved levels was 4, while only one individual had single-level involvement. Presenting symptoms included back pain (92%), fever (30%), lower extremity weakness (30%), upper and lower extremity radiculopathy (17%), and urinary incontinence (8%). On-admission, mean ESR was 76 and mean CRP was elevated at 6.9. 25% of individuals had a spine surgery within the previous 6 months. 100% of individuals received IV antibiotics and surgery (Table 2).

Table 1. Presenting Characteristics		Table 2. Medical and Surgical Mgt.	
N	24	Surgery Performed	100
Male (%)	53	Procedure Performed	
Age	58	Corpectomy	33
BMI	27	ALIF	21
Current Smokers (%)	42	Debridement	17
History IVDU (%)	17	ACDF	17
Comorbidities (%)		Abscess Drainage	17
Hypertension	54	Vertebral Biopsy	13
Dyslipidemia	46	PLIF	13
Diabetes	38	Laminectomy	13
CAD	13	Hardware Removal	13
Presenting Symptoms (%)		PTIF	8
Back Pain	92	Preoperative Antibiotics	
Fever	30	Vancomycin	46
LE Weakness	30	Cefazolin	17
Malaise	17	Piperacillin-Tazobactam	17
Lower Limb Edema	21	Ciprofloxacin	13
Chills	17	Cefepime	8
Local Swelling	13	Tobramycin	8
UE Weakness	13	Gentamicin	8
LE Radiculopathy	13	Clindamycin	4
Anorexia	8	Ceftriaxone	4
Urinary Incontinence	8	Metronidazole	4
UE Radiculopathy	4	Nafcillin	4
Labs		Bacitracin	4
ESR (mm/h)	76	None	4
CRP (mg/mL)	6.9	Initial Diagnosis to Surgery (days)	74
WBC (cells/uL)	8.4	Intraoperative Complications (%)	0
No. Levels Involved	4		
Hx Recent Spine Surgery (%)	25		
Duration of Symptoms (days)	79		
MMS (1-5)	2.3		

Results (CONTINUED)

Antibiotic use was varied, and included vancomycin (46%), cefazolin (17%), zosyn (17%), and quinolones (13%). The surgical procedures included corpectomy (33%), ALIF (21%), and ACDF (17%). No intraoperative complications occurred, and individuals were discharged after an average of 13 days. The average follow-up period was 17 months. 42% of individuals received revision surgery at an average of 74 days postoperatively. At last followup, 64% of individuals had long-term complications including chronic back pain or radiculopathy (40%), numbness (20%), and muscle weakness (20%).

Table 3. Outcomes Data	
Hospital Stay (Days)	13
Followup (Months)	17
MMS (1-5)	1.8
Pain	
None	58
Mild	8
Moderate	17
Severe	17
Long-Term Complications (%)	64
Chronic Pain	42
Weakness/Paralysis	21
Urinary Incontinence	13
Paresthesia/Anesthesia	8
Chronic Osteomyelitis	8
Revision Surgery (%)	42
Time to Revision Surgery (days)	74



Conclusions

While the presenting symptoms and surgical management of vertebral osteomyelitis are variable, 40% require revision operation and over 60% experience long-term neurologic complications.

References

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