

Surgical site infection following pedicle screw fixation of Thoracic and Lumbar Fractures

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Statement of the Problem: Posterior approach with pedicle screw fixation is widely used for thoracic and lumbar fractures. The urgency of surgery and the use of contact medical devices may lead to an increase in postoperative Surgical Site Infections (SSI). The study objective was to determine risk factors of SSI following a posterior approach with pedicle screw fixation.

Methodology & Theoretical Orientation: A retrospective case-control study aimed to identify characteristics of patients with SSI following an open pedicle screw fixation of thoracic and lumbar fractures. Eighteen patients with a superficial or deep SSI were identified and compared with 150 uninfected control patients. Risk factors for SSI were determined with univariate analyses.

Findings: We reviewed medical records of 168 patients receiving posterior approach with pedicle screw fixation for thoracic and lumbar fractures from 2015 to 2020 in Almaty, Kazakhstan. Eighteen (10.7%) patients with acute postoperative wound infections were identified. These included 7 deep and 11 superficial infections. The majority of patients (61.1%) had cultures of gram-positive microorganisms (i.e., *Staphylococcus aureus* and *Staphylococcus epidermidis*). There were significantly higher risks of SSI in the patients with complete neurologic injury (ASIA A-type) as compared with those with no deficit or incomplete injuries ($p=0.027$). The significant risk factors included laminectomy, delayed dural leak, and the duration of the surgery > 3 hours.

Conclusion & Significance: The risk of SSI is higher in trauma patients than in the other surgery populations. The cases with complete neurologic deficit were at greater risks of having SSI.

Table 1. Significance of differences in outcomes depending on neurological deficit

	No SSI	SSI	<i>p</i> ^a
Neurological intact (ASIA ^b E)	107	9	
Complete neurological dysfunction (ASIA A)	17	6	.027
Incomplete neurological dysfunction (ASIA B-D)	26	3	.940
With neurological deficit (ASIA A-D)	43	9	.115

^a *p*-value - two-tailed Fisher's exact test's *p*-value

^b ASIA - American Spine Injury Association impairment scale

Biography

Ainur Karchalova is a 33 years old young Neurosurgeon studying the problem of infectious complications after spinal operations using instrumentations. She studies the factors that affect these complications and methods of their prevention.

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