

Comparison of Transforaminal Endoscopic Surgery and Traditional Posterior Spinal Surgery in Treating the Thoracolumbar Infectious Spondylitis

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INTRODUCTION: To compare the outcomes of transforaminal endoscopic surgery (TES) and traditional posterior spinal surgery (TPSS) in treating thoracolumbar infectious spondylitis.

METHODS: A total of 131 patients with thoracolumbar infectious spondylitis underwent surgical debridement with 63 receiving TPSS and 68 undergoing TES. Blood cultures were performed on all patients prior to surgery, with additional organism cultures and pathological examinations conducted on samples from the infected sites. All patients were followed for at least two years. Clinical and radiological outcomes were assessed and compared both before and after surgery.

RESULTS:

Mean blood loss in the TES group was 23.5 ± 13.2 ml, significantly lower than the 589.6 ± 321.2 ml in the TPSS group ($p < 0.001$). Postoperative drainage volume in the TES group was 120 ± 33.4 ml, compared to 243.6 ± 37.2 ml in the TPSS group ($p < 0.001$). Hospitalization duration was shorter in the TES group (13.5 ± 8.2 days vs. 26.2 ± 10.3 days in TPSS, $p < 0.001$). Erythrocyte sedimentation rate (ESR) returned to normal in the TES group after 7.0 ± 2.1 weeks, significantly faster than in the TPSS group (12.5 ± 2.3 weeks, $p < 0.001$). C-reactive protein (CRP) normalized in 3.9 ± 1.6 weeks in TES patients, compared to 7.4 ± 2.4 weeks in the TPSS group ($p < 0.001$). Postoperative MRI revealed significant reductions in abscesses and infected areas in both groups at three months, with complete or near-complete resolution by the final follow-up. In the TES group, 69.6% of patients achieved spontaneous fusion by the last follow-up, compared to 85.7% in the TPSS group. No complications or secondary surgeries were observed during follow-up.

DISCUSSION AND CONCLUSION: Both TES and TPSS are effective and safe treatments for thoracolumbar and lumbar infectious spondylitis. TES offers advantages in terms of lower trauma, quicker recovery, fewer complications, and less impact on spinal mobility, although its efficacy in correcting kyphotic deformities is inferior. TES is particularly beneficial for early-stage infections and patients with complex diseases.

Table 1. Patients' characteristics.

Characteristics	TES	TPSS	p-Value
Number of patients	73	63	
Gender (Female/Male)	25/48	23/40	$p > 0.001$
Mean age (years)	62.7 ± 10.2	65.1 ± 9.2	$p > 0.001$
Pathologic level			$p > 0.001$
T11-T12	3	4	
T12-L1	3	4	
L1-L2	10	5	
L2-L3	13	12	
L3-L4	16	13	
L4-L5	22	19	
L5-S1	6	6	
Comorbidities			$p > 0.001$
Diabetes	9 (12.3%)	6 (9.5%)	
Hypertension	8 (11.0%)	8 (12.7%)	
Liver cirrhosis	6 (8.2%)	7 (11.1%)	
Coronary artery disease	6 (8.2%)	5 (7.9%)	
Preoperative symptoms			$p > 0.001$
low back pain or back pain	73 (100%)	63 (100%)	
limb weakness	7 (9.6%)	7 (11.1%)	
sciatica	7 (9.6%)	3 (4.8%)	
fever and chills	25 (34.2%)	24 (38.1%)	

Table 2. Clinical and radiographic outcomes.

Characteristics	TES	TPSS	p-Value
Operation times(minutes)	65.0 ± 25.6	119.7 ± 21.9	$*p < 0.001$
Blood losses(ml)	192.0 ± 114.7	499.8 ± 163.7	$*p < 0.001$
Highest preoperative CRP(mg/L)	103.5 ± 57.5	98.3 ± 64.3	$p > 0.001$
CRP return to normal (weeks)	3.9 ± 1.7	5.9 ± 1.8	$*p < 0.001$
Highest preoperative ESR(mm/h)	89.5 ± 27.9	83.2 ± 23.7	$p > 0.001$
ESR return to normal (weeks)	7.2 ± 2.3	10.2 ± 2.9	$*p < 0.001$
Duration of hospitalization (days)	16.0 ± 4.6	24.9 ± 7.2	$*p < 0.001$
VAS			$p > 0.001$
Pre-op	7.4 ± 1.6	7.3 ± 1.3	
Last follow-up	0.3 ± 0.6	0.4 ± 0.5	
ODI			$p > 0.001$
Pre-op	71.2 ± 7.3	74.3 ± 6.7	
Last follow-up	8.6 ± 4.2	10.3 ± 6.2	
Macnab criteria			$p > 0.001$
Excellent	52 (71.2%)	47 (74.6%)	
Good	21 (28.8%)	16 (25.4%)	
Postoperative fusion	43 (58.9%)	59 (93.7%)	$*p < 0.001$

* Statistically significant difference (p -value < 0.05).