Three Different Surgical Approaches and Treatment Options for Thoracolumbar Burst Fractures

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Objective: To explore the advantages, disadvantages and indications of anterior, posterior and paraspinal (wiltse) approach in the treatment of thoracolumbar fracture, provide the treatment options for thoracolumbar fractures.

Methods: From March 2008 to September 2010, 64 patients were selected with thoracolumbar fractures (all cases were single Vertebral fractures), in which 36 males and 28 females, aged 18 to 77 years, average 44 years old. 22 cases were selected by anterior resection with titanium mesh plate and Z-plate fixation, 28 cases with Median posterior reduction and pedicle screw fixation. The average follow-up was 18 months. Clinical effects were compared by blood loss, after bed time, vertebral body height restoration, preoperative and postoperative JOA scores and other indicators were statistically analyzed.

Results: Average Blood loss in paraspinal (wiltse) approach was 91.6 ± 16.9 ml, incision length was 7.6 ± 0.8 cm, operation time was 94.1 ± 13.7 min. Average Blood loss in traditional posterior approach was 218.7 ± 32.3 ml, incision length was 17.4 ± 2.1 cm, operation time was 141.8 ± 19.6 min. Average Blood loss in anterior approach was 225.1 ± 38.4 ml, incision length was 18.6 ± 2.4 cm, operation time was 156.3 ± 20.7 min. All the difference was statistically significant (P < 0.05). And no significant differences were found in cobb angle and Vertebral body height restoration (P > 0.05).

Conclusion: Anterior approach fits for severe vertebral fractures of AO classification of C class, which will help vertebral height restoration and reconstruction, but requires relatively complicated procedure and large side-injury. The traditional surgical approach is applicable to most of the thoracolumbar fractures, which help restore vertebral fractures and retain the structures, especially for intra-spinal occupation to facilitate decompression. By wiltse approach, the facet joints can be explored easily and completely, and a clear surgical field will be provided for the placement of pedicle screws. As a minimally invasive approach with less bleeding and op-time, it can be widely used on thoracolumbar fractures with no decompression.

Keywords: Thoracolumbar fractures; Surgical approach; Treatment methods