

Examination of result between percutaneous pedicle screw fixation and the Mini-Open Wiltse Approach with pedicle screw fixation for neurologically intact thoracolumbar fractures: A review study

Wenbo Sheng

Seventh People's Hospital of Shanghai University of Traditional Chinese Medicine, China

Background

The purpose of this study was to compare the outcome between percutaneous pedicle screw fixation (PPSF) and the mini-open Wiltse approach with pedicle screw fixation (MWPSF) for neurologically intact thoracolumbar fractures.

Methods

From January 2017 to January 2019, ninety-four patients with neurologically intact thoracolumbar fractures were included in this study. In this retrospective study, forty-nine patients were operated with the PPSF and forty-five patients received MWPSF. The clinical information, surgery-related results and radiographic outcome were collected and compared between the two groups.

Results

There was no significant difference between the two groups in total length of incisions, blood loss, post-operative hospitalization time, visual analog scale (VAS) score and Oswestry disability index (ODI) score. There was also no significant difference in the accuracy rate of pedicle screw placement between two groups; however, the facet joint violation (FJV) was significantly higher in the PPSF group. The atrophic area of multifidus muscle in the PPSF group is significantly larger than that in the MWPSF group and the operative time of MWPSF group was shorter than that in the PPSF group. Meanwhile, the PPSF group obtaining significantly more cumulative exposure to radiation ($p < 0.001$). The result of vertebral body angle (VBA), Cobb's angle and AVH rate in the MWPSF group were significantly better than those in the PPSF group at the last post-operative follow-up.

Conclusions

Both minimally invasive treatment techniques (PPSF and MWPSF) are safe and effective in treatment of neurologically intact thoracolumbar fractures. Nevertheless, our results indicate that MWPSF may be a better choice for neurologically intact thoracolumbar fractures, since it protects multifidus muscle, and decreases facet joint violation, operation time, as well as radiation exposure. In addition, MWPSF was associated with better reduction of kyphosis.