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The effects of surgical methods and hemorrhage amount on postoperative spinal function after thoracolumbar debridement.

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Abstract

Purpose: This study aims to analyse 63 patients in our hospital during 2015-2017 treated by Thoracolumbar Debridement (TD), and elucidate any significant factors in operation process influencing the spinal recovery.

Methods: Different TD surgeries were performed using four surgical methods: Fenestration Discectomy (FD), Percutaneous Screw Fixation (PSF), Percutaneous Transforaminal Endoscopic Discectomy (PTED) and Percutaneous Interlaminar Endoscopic Discectomy (PIED). The spinal function was evaluated by the Japanese Orthopaedic Association (JOA) scores at three time points: the admission day, discharge day and three months after discharge.

Results: At the discharge time, the following functions were found significantly influenced by the surgical methods: daily activity limitation, standing function, setting posture, and heave function. In particular, for the standing function, the PIED had a significantly higher score than PTED. Three months later, the PSF group showed a better performance in various items regarding to the spinal function, compared to PTED. The hemorrhage volume, which was influenced by the surgical method, showed a correlation with the scores of pace, standing function, setting posture, and daily activity that more blood loss linked to poorer recovery in a short term.

Conclusions: Together, surgical methods, hemorrhage amounts and the spinal function (at the discharge time and three months later) had correlations mutually. The PSF method could still be an optimal choice for the spinal function, despite its disadvantages in the blood loss volume, compared to PTED. Hemorrhage largely influenced the spinal function recovery in the short term after operation and was strongly decided by surgical techniques during TD operation.

Keywords: Thoracolumbar debridement, Hemorrhage, Spinal function, JOA score.

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Introduction

Thoracolumbar Debridement (TD) is a necessary and useful treatment for a serial of thoracic and lumbar diseases, such as lumbar vertebral compression fractures, lumbar disc herniation, lumbar spinal stenosis, lumbar tuberculosis, etc. [1-3]. China is one country with a high incidence of thoracic/lumbar diseases and wide application of TD surgeries [2,4-6]. However, it has been noticed that patients might developed spinal degeneration disorders, osteoporosis, and other secondary hazards, after thoracolumbar debridement [4,7,8]. Therefore, we here aim to probe the major factors which may influence the prognosis especially in spinal function during the operation. For example, surgical strategies could lead to distinct outcomes; and the blood loss is also a potential hazard to the postoperative recovery. We analysed 63 patients in our hospital during 2015-2017 treated by TD, and assessed the spinal function using the Japanese Orthopaedic Association (JOA) scores [9,10], when they discharged and three months later. We carried out this analysis to elucidate any significant factors in operation process influencing the spinal recovery.

Methods

Basic information

Written informed consent was acquired from each patient. The follow-up survey was approved by the Hospital Ethics Committee. After screening from 2015 to 2017, 63 patients averaged 72.27 ± 4.65 y old (25 males and 38 females) with different thoracic or lumbar probability who had received thoracolumbar debridement were enrolled in this study. Those with severe thoracic or lumbar problems or died in six months were excluded out of the cohort. Moreover, the patients failed to complete the JOA survey three months later were also screened out.