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Percutaneous Transpedicular Fixation for Thoracic and Lumbar Vertebral Fractures

Open transpedicular fixation is still the standard procedure for thoracic and lumbar vertebral fractures. This study was driven by the global trend towards minimally invasive techniques.

Materials and methods: This study included 165 patients with fractures of thoracic and lumbar vertebrae, who have been treated on an inpatient basis at State Budgetary Healthcare Institution Tyumen Regional Clinical Hospital No. 2 in the City of Tyumen from March 2006 to December 2021. The average age of the patients was 42.34 years (from 18 to 70 years). The majority of patients were male (103), the rest were female (62). The most common cause of injury was falling from height in 82 (49.7 %) cases, followed by falling from standing height in 53 (32.1 %) cases, and car accident in 30 (18.2 %) cases. By localization, injuries were distributed as follows: Th12 in 38 (23 %) cases, L1 in 52 (31.5 %) cases, L2 in 36 (21.8 %) cases. The nature of spinal injuries was assessed using the AOSpine classification. Type A2 injuries were diagnosed in 29 (17.6 %) patients, A3 in 42 (25.5 %), A4 in 10 (6.1 %), and B2 in 76 (46.0 %). All patients received percutaneous transpedicular fixation (TPF). Isolated percutaneous transpedicular fixation was used in 85 (54 %) patients, in 80 patients it was combined with anterior spinal fusion.

Results and discussion: The primary endpoint was postoperative pain. The visual analogue scale (VAS) was used for its evaluation. Secondary endpoints were intraoperative blood loss, operating time, postoperative scar length, length of hospital stay, SF-36, EQ-5D-5L scores, Cobb angle, vertebral fracture height, spinal canal compression, screw placement accuracy.

Conclusions: Percutaneous transpedicular fixation is a reliable and safe treatment for thoracic and lumbar vertebral fractures. It can alleviate postoperative pain, reduce blood loss, and shorten the hospital stay.

Recent Publications

1. Defino, Helton LA et al. "Open versus minimally invasive percutaneous surgery for surgical treatment of thoracolumbar spine fractures-a multicenter randomized controlled trial: study protocol." BMC musculoskeletal disorders vol. 20,1 397. 31 Aug. 2019, doi:10.1186/s12891-019-2763-1
2. Fu, Zhiguo et al. "Comparison of Surgical Outcomes Between Short-Segment Open and Percutaneous Pedicle Screw Fixation Techniques for Thoracolumbar Fractures." Medical science monitor: international medical journal of experimental and clinical research vol. 22 3177-85. 7 Sep. 2016, doi:10.12659/msm.896882
3. Kocis, Jan et al. "Percutaneous versus open pedicle screw fixation for treatment of type A thoracolumbar fractures." European journal of trauma and emergency surgery: official publication of the European Trauma Society vol. 46,1 (2020): 147-152. doi:10.1007/s00068-018-0998-4

Biography

Alexey Faryon was graduated from the Tyumen State Medical Academy in 2003. From 2003 to 2005, he has been doing his Clinical Residency. In 2007, he defended his PhD thesis. Since 2005, he has been employed as an Orthopedic Traumatologist by Regional Clinical Hospital No. 2 in Tyumen. Since 2019, he has served as the Head of the Department. Alexey Faryon's main focus is the treatment of patients with musculoskeletal disorders, including those with spinal injuries. He conducts the research and teaching. He is eager for the latest scientific achievements and an active conference participant. At the moment, he is working as the Head of a Trauma Center at Tyumen Regional Clinical Hospital No. 2, Tyumen, Russia.

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