

## Usage Of the Transpedicular Screw Fixation Method in the Treatment of Pediatric Patients with Injuries of the Thoracic and Lumbar Spine.

**Authors :** S. D. Zalepugin, A. E. Murzich, D. G. Satskevich, A. B. Palivanov

**Abstract :** Introduction. The incidence of spinal injuries in patients under 18 years of age has increased significantly in recent years, which represents a significant economic, social and medical problem. The most common method of surgical stabilization of spinal fractures in pediatric patients is transpedicular posterior spinal fusion, which is widely used by spinal neurosurgeons in adult patients. Purpose of the study: This study evaluates the results of treatment of thoracolumbar spine lesions in children using the transpedicular screw fixation method. Materials and methods. From 2019 to 2024, 35 children with injuries to the thoracic and lumbar spine underwent surgical treatment using the transpedicular screw fixation method. Among the injured, girls prevailed (21 cases, 60%). The age of the victims ranged from 9 to 17 years. The main causes of damage were: catatrauma (19 cases), road accident (5 cases), sports injury (6 cases), and other reasons - 5 cases. In 5 cases, suicidal attempts occurred. Co-injury was observed in most cases (20 patients, or 57%), which is natural for high-energy injury. Vertebral-spinal injury with neurological disorders was observed in 13 patients, the disorders ranged from mild inferior (4 children) to moderate/severe paraparesis (5 patients) and inferior paraplegia (4 children). 6 children had pelvic organ dysfunction in the form of urinary and fecal retention or incontinence. All thirty-five patients, within a period of 1 to 57 days after the injury, underwent several surgical interventions from the posterior surgical access using a screw fixation method (posterior decompression + spinal fusion). In 12 cases, it was necessary to perform the second stage of surgical treatment - anterior decompression of the spinal cord or its roots. Verticalization of patients was carried out within 1 to 5 days after surgery. Results. In all patients, the nearest, up to 1 year, results were evaluated. In children operated in 2019-2021, the results were studied in terms of 3 to 5 years. The procedures used, clinical results and the quality of the fixative installation were assessed. All patients managed to achieve positive results. The use of internal fixation made it possible to carry out early verticalization of children, eliminate pain syndrome and achieve a regression of neurological disorders in most patients (especially in cases when the operation was performed early after injury - from 1 to 3 days). Within the first month, the ability to self-care was fully restored. Bone fusion was observed within 6-12 months after surgery. There were no complications after surgery. The analysis of postoperative radiographs, CT and MRI images revealed the correct standing of the screws in all cases. Conclusion. The posterior spinal fusion using the new method of screw fixation in pediatric patients allows to achieve durable stabilization of damage, begins early rehabilitation of patients and reduces the duration of hospital treatment by 2-3 times. Thus, we recommend the use of a transpedicular fixator in children as a reliable, technically feasible method for restoring spinal stability with a low risk of intra- and postoperative complications.

**Keywords :** pediatric patients, spinal injuries, transpedicular stabilization, operative treatment

**Conference Title :** ICMHS 2025 : International Conference on Medical and Health Sciences

**Conference Location :** Jeddah, Saudi Arabia

**Conference Dates :** November 15-16, 2025