USE OF EXOSKELETON IN PATIENTS WITH COMPLICATED INJURIES OF THE THORACOLUMBAR SPINE

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Abstract: *Patients with complicated spinal injuries after surgery require additional fixation devices. Previously, corsets of various forms were used, but nowadays exoskeletons have been developed that not only fix the patient's body but also support restoration of motor functions. The aim of this study was to improve rehabilitation outcomes in patients with complicated spinal injuries by using exoskeleton assistance at the early stages. We analyzed 82 patients divided into two groups: the main group (42 patients, complex rehabilitation with exoskeleton) and the control group (40 patients, standard therapy). Outcomes were assessed with the Frankel scale. Patients in the main group demonstrated significant improvement in motor function compared to controls.*

Keywords: *exoskeleton, spinal column, complicated injury, disability.*

Introduction

Spinal and spinal cord injuries are among the most severe musculoskeletal disorders. Complicated thoracolumbar injuries carry a high risk of disability. In recent years, exoskeletons have been developed that not only immobilize the patient but also activate motor functions early in the process.

Purpose of the study

Improving the results of rehabilitation in patients with complicated spinal injuries using an exoskeleton.

Materials and methods

An analysis of the treatment of 82 patients (66 men, 16 women) in the period 2023–2025 was carried out. The control group (40 patients) – only standard treatment without an exoskeleton. Efficacy was assessed by the Frankel scale, as well as by radiography, MSCT, MRI, and EMG.

Results and discussion

After treatment, the patients in the study group showed a significant improvement in motor function compared to the control group. Improvements on the Frankel scale were more pronounced, which confirms the effectiveness of including the exoskeleton in the rehabilitation complex.

Findings

1. The use of an exoskeleton improves the results of rehabilitation in patients with complicated spinal injuries.2. Patients in the study group showed a significant improvement in the Frankel score compared to the control3. Exoskeleton reduces the burden on medical personnel and accelerates the recovery of motor functions.

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