17. CLINIC DIAGNOSIS AND CONTEMPORARY METHODS OF TREATMENT OF TIBIAL DIAPHYSEAL FRACTURES

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Introduction. Diaphyseal fractures of the tibia represent one of the greatest challenges in modern traumatology. The importance of the topic is supported by the high incidence, reported in the specialized literature between 15.7 and 21.5 cases per 100,000 inhabitants annually. These injuries have a bimodal distribution, preferentially affecting young men exposed to high-energy trauma and elderly women, due to the decrease in bone mineral density. Considering the anatomical peculiarities of the tibia and the precarious vascular risk, choosing an optimal therapeutic strategy is essential for preventing complications and rapid reintegration of patients.

Aim of study. The paper aims to perform a complex analysis of etiopathogenesis, clinical and imaging diagnosis, as well as the evaluation of contemporary surgical treatment methods applied in cases of tibial shaft fractures. The central objective is to identify the optimal treatment algorithm to reduce the consolidation time and the rate of postoperative complications.

Methods and materials. The study is based on a systematic review of the specialized literature from international databases for the period 2016-2026. The retrospective part of the research was carried out within the Institute of Emergency Medicine, Department of Orthopedics and Traumatology, during 2024-2025. The sample included a group of 163 hospitalized patients with diaphyseal tibia fracture.

Results. The analysis of the group revealed a clear male predominance (66.26%), with a male/female ratio close to 2:1. The mean age of the patients was 46.3 years, confirming the major social impact on the economically active population. A slight prevalence was observed in rural areas (55.80%), associated with agricultural activities and accidents on rough terrain. The most common mechanism was falling from the same level (64.4%), while road accidents were the main cause for open fractures (22.09%). Osteosynthesis with a locked centromedullary rod was considered the “gold standard”, being applied in over 77% of cases, ensuring an average hospitalization of 8.1 days. The “Damage Control” strategy using an external fixator was reserved for complex cases (12.88%), requiring a longer hospitalization of 10.8 days.

Conclusions. Modern treatment of tibia fractures is decisively migrating towards minimally invasive techniques, emphasizing mechanical stability and vascular preservation. The study confirms that locked centromedullary osteosynthesis remains the method of choice, allowing early mobilization and reducing hospital costs. Therapeutic success directly depends on the adaptation of the surgical algorithm to the type of fracture and the patient's profile, with an overall average hospitalization of 8.4 days. diaphyseal fracture, centromedullary, osteosynthesis, consolidation.

Keywords. Diaphyseal tibial fracture, centromedullary osteosynthesis, locking rod, traumatological epidemiology.

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