

# EFFICIENCY OF THE ROBOTIC SYSTEM WITH DYNAMIC BODY WEIGHT SUPPORT IN THE REHABILITATION OF A COMPLICATED BIMALLEOLAR ANKLE FRACTURE - CASE REPORT

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## Background

Recent statistics have shown that at European level, bimalleolar fractures represent 20-25% of all ankle fractures. After these fractures, a series of complications can occur including complex regional pain syndrome, deep vein thrombosis, intolerance to osteosynthesis material, vicious callus, but the most common is pseudarthrosis.

## Case report

We present the case of a 43-year-old patient who suffered a fall trauma from the same level one year ago, resulting in a bimalleolar fracture of the right ankle. The patient was admitted to the orthopedics department of the hospital where osteosynthesis with a titanium plate and 9 screws was performed at the distal part of the right tibia. Despite two successive medical rehabilitation programs, the evolution was unfavorable, as the pain persisted during walking. Following other imaging investigations, computed tomography revealed a pseudarthrosis of the right distal tibia and a vicious consolidation of the fibula. As a result, in February 2025, surgical intervention was performed again to cure the pseudarthrosis. After the surgery, the patient followed a complex rehabilitation program in our department, which consisted of high-frequency pulse therapy, conventional physiotherapy and robotic rehabilitation. The use of the robotic system with dynamic body weight support favored the resumption of walking with progressive loading and significantly improved the patient's rehabilitation process. Specific walking parameters were measured before the start of treatment but also at the end of it and the results obtained were significantly improved.

## Conclusion

In this case, the pseudarthrosis led to an increase in the patient's disability and made the patient's rehabilitation process more difficult. Surgical reintervention, followed by a personalized rehabilitation program which included the use of a robotic body weight support system for gait training, were essential elements in the patient's management and favorable outcome.

**Keywords:** Robotic, rehabilitation, fracture, bimalleolar, pseudarthrosis