

UDC: 616.718.5/.6-018-002.3-089.84

[https://doi.org/10.32345/USMYJ.1\(144\).2024.125-127](https://doi.org/10.32345/USMYJ.1(144).2024.125-127)

Received: November 21, 2023

Accepted: February 14, 2024

Clinical case of treatment of septic defect of bone and soft tissues of the lower leg

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Abstract: the clinical case is an example of complex reconstruction of septic defect of the tibia tissues, the main principles of which were the reduction of traumatic interventions, the choice of optimal multistage tactics; adequate medication. The soft tissue defect was closed with a rotational sural flap, and the bone defect was replaced with a distraction regenerate with the subsequent use of a semi-rigid system of fixation Softcast-Skotchkast; the data of the EFI and Karlstrom-Olerud external fixation index scales with regard to the complexity of the case according to NUSS objectively confirm this.

Keywords: [Therapeutics](#), [Patients](#), [Index](#), [Bone and Bones](#), [Bony Apophysis](#), lower limb defects, external fixation

Introduction

The complexity of reconstructions of lower leg tissue defects is due to the presence of many unfavorable aspects. Initially, pathological changes are restorative in nature, but then they become persistent or even irreversible. Attempts to achieve a radical and simultaneous restoration of all structures of the segment can be quite traumatic; lead to decompensation of recovery capabilities. Therefore, it is fundamentally important to reduce the trauma of tibia reconstruction, to choose the most optimal tactics for the implementation of these principles; adequate medication support. The report is devoted to the consideration of a clinical case with the use of our proposed pledges.

Aim

To demonstrate the effectiveness of the proposed phased tactics of reconstruction of septic defect of the tibia tissues.

Description of the clinical case

Patient L., 18 years old, presented with a diagnosis: Septic nonunion of bones n/3 of the left

tibia with tissue defect, peroneal nerve neuropathy. He had been injured for 3 months. The patient was examined.

The first stage was white: Treatment of the bone lesion by the type of segmental resection with extrafocal fixation with a spoke and rod apparatus with the possibility of distraction replacement of the defect. The fragments were isolated atraumatically, and no layer-by-layer tissue separation was performed. Segmental resection was performed within healthy tissues using an oscillating saw or a Gigli saw.

The soft tissue defect was closed with a rotational sural flap. The so-called blood-saving tactics were used. A compression and hemostatic tourniquet, tranexamic acid, and a topical hemostatic sponge were used.

In 3 days, a minimally traumatic osteotomy of the tibia with reassembly of the apparatus was performed and the bone defect was replaced with a distraction regenerate in the mode of 1 mm per day.

After replacement of the defect and alignment of the ends of the fragment and the «transport», the soft-tissue «meniscus» was isolated from the lumbar incision using a rasp, bit, and Folkman spoon. The parts of the bones that were to be fused were overdrilled with an Ilizarov needle.

Reconstruction of the nonunions of the tibia bones required active medical therapy. In all cases, there was primary massive tissue destruction with impaired nutrition. The interventions were quite traumatic, despite the staged nature of their implementation. Targeted antibiotic therapy was performed after obtaining a bacterial culture and antibiogram with sulperazone 2.0 g intramuscularly for 7 days. The intervention was performed under multimodal anesthesia. Peridural anesthesia with Marcaine solution was supplemented by intramuscular double injection of dexketaprofen (Dexalgin) and intravenous paracetamol solution (Infulgan); subsequently, Dexalgin was administered intramuscularly for 3 days. Normalization of metabolic disorders was carried out by prescribing complexes of vitamins of group B and C, the complex included nucleotides (keltikan), antioxidants (berlition), endothelioprotectors (pentoxifylline).

The bone defect amounted to 7 cm. Fixation in the apparatus was carried out for 196 days, after which the apparatus was dismantled and fixed with a semi-rigid Scotchcast-Softcast dressing. This made it possible to begin full load on the limb, phonophoresis of the ankle-foot joint with Fistum gel (10 procedures).

Discussion of the results

The treatment results were assessed as good. The assessment took into account both the structure of nonunions according to the Non Union Scoring System (NUSS) and the data of the Karlstrom-Olerud anatomical and functional assessment scale (Clausen J. D., 2022).

The external fixation index (EFI) was also used as criteria for evaluating the results (Matsubara H., 2006, Catagni M. A., 2016). In our patient, it was 1.5, which is a good result. Radiological and functional results are shown in Figure 1.

In the patient, narcotic painkillers were used only on the first day after the first intervention; in all other cases, pain relief with Dexalgin and Infulgan solution was quite effective.

Conclusions

1. The proposed phased tactics for the treatment of septic defect of the tissues of the lower leg in the patient was effective.
2. The data of the EFI, Karlstrom-Olerud scores, taking into account the complexity of the case according to NUSS, confirm this.

Financing

This research did not receive external funding.

Conflict of interests

There are no conflicts of interests.

Consent to publication

All authors have read the text of the article and gave consent to its publication.

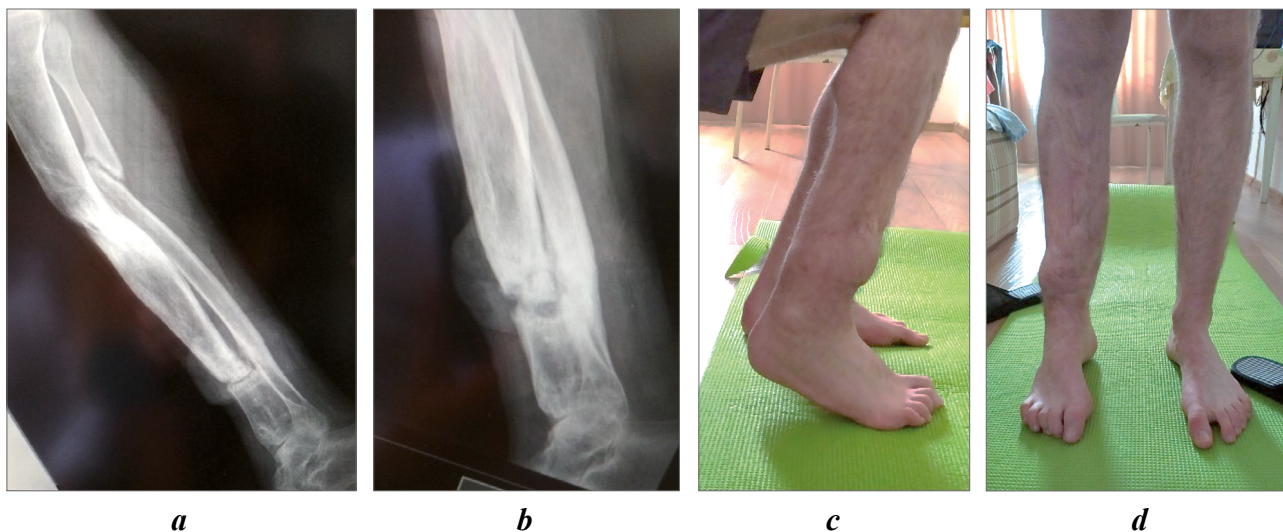


Figure 1. Radiological (a, b) and functional (c, d) results.

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A – Research concept and design, B – Collection and/or assembly of data, C – Data analysis and interpretation, D – Writing the article, E – Critical revision of the article, F – Final approval of article

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Клінічний випадок лікування септичного дефекту кісткових та м'яких тканин гомілки**Байда Максим, Рушай Анатолій, Мартинчук Олександр**

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Анотація: клінічний випадок є прикладом складної реконструкції септичного дефекту тканин гомілки, основними принципами проведення якої було зниження травматичності втручань, вибір оптимальної багатоетапної тактики; адекватне медикаментозне забезпечення. М'якотканинний дефект був закритий ротаційним суральним клаптом, а кістковий дефект було заміщено дистракційним регенератом з подальшим використанням напівжорсткої системи фіксації Софткаст-Скотчкаст; дані оціночних шкал індексу зовнішньої фіксації EFI, Karlstrom-Olerud з урахуванням складності випадку за NUSS об'єктивно це підтверджують.

Ключові слова: дефекти нижньої кінцівки, зовнішня фіксація, кістка.

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