

Complex staged treatment of sequelae of open IIIB/C tibia fracture with the use of an intramedullary nail coated with acrylic cement with antibiotics, negative pressure wound therapy, cross-leg flap with external fixation of both lower limbs and the Masquelet procedure.

Aim: Open tibial fractures grade IIIB and IIIC pose a high risk of complications: infection, non-union and amputation. We present a case of staged and complex treatment of the sequelae of open IIIB/C tibia fracture with combination of intramedullary nail coated with acrylic cement with an antibiotics, negative pressure wound therapy, cross-leg flap with external fixation of both lower limbs and the Masquelet procedure.

Methods and material: Male 26 years old. In 2013 open tibia fracture IIIB/C. Treatment: vascularized free fibular graft; removal of the fibula due to necrosis; Ilizarov, Monotube and ProCallus external fixation; operation according to Masquelet with plate stabilization, filling the 9 cm bone defect in the tibia with acrylic cement. At admission to the clinic - so far a total of 36 treatments. Soft-tissue defect 2x12 cm on the anteromedial side in the middle 1/3 of the tibia, only one artery in the lower leg preserved; no perforators for posterior tibial vessels, no conditions for a local flap or a free vascularized flap. Risk of limb amputation due to extensive segmental defect in the tibia, skin and muscles, damage to 2 out of 3 shin arteries.



5 stages of reconstructive of treatment: 1- removal of the plate and segmental spacer with ALAC from the defect of the right tibia, stabilization with a statically interlocked Expert tibia nail covered with cement with antibiotics, implantation of a cement spacer with antibiotics into the defect, application of an NPWT dressing in the defect. 2 - exchange of the outer layer of the spacer with a new spacer, cross-leg flap from the left calf into the defect and stabilization of both legs with an external fixator.



3 - after 3 weeks dissecting the cross-leg flap and disconnection of the legs, removing the external fixation. 4 -Achilles tendon lengthening. 5 - removal of the spacer from the defect in the tibia, leaving the nail, retrieval of the autologous bone graft using the RIA system from the femur and application to the defect in the tibia.

Results: After 17 months, the infection was controlled, the soft tissue defect was successfully reconstructed, the segmental defect of the tibia was restored, the bone fragments were well stabilized, the foot was positioned in neutral position, and it was possible to walk with weight and support on the entire foot.