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Image article

# Fat Grafting Associated with Negative Pressure Wound Therapy

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## ABSTRACT

Complex wounds represent a fundamental and prevalent issue in plastic surgery. In the 21st century, new options of treatment have come up: negative pressure wound therapy (NPWT), fat grafting (FG) and biological matrices. The objective of this previous note is to communicate the first clinical use of FG associated with NPWT for the treatment of a complex wound in the inferior left limb with exposed bone.

## ABOUT TO STUDY

In 04-18-2019, a 59-year-old male patient, with chronic osteomyelitis in the left leg since childhood, was treated with distal tibial bone partial debridement (40% loss of bone in a 10cm segment) and application of bioactive glass S53P4 (BAG S53P4) [1-3] . The posterior medial fasciocutaneous flap, used for primary closure of the surgical wound, failed partially, with necrosis. After debridement of the flap, the infected wound with exposed bone and biomaterial was treated with FG associated with NPWT. After three weeks of treatment, granulation tissue covered all the bone and the BAG S53P4, making skin grafting possible for complete wound healing in Figure1.


**Figure 1:** Sequence of the wound healing during treatment FG+NPWT. In A complex wound with bone, bioactive glass and bone marrow exposure, missing 10 cm of anterior tibial cortical bone, and infection after fasciocutaneous flap partial necrosis and debridement. In B Complex FG + NPWT. In C complex Complete granulation tissue formation over the wound after two sessions of fat graft associated with negative pressure wound treatment. In D complex Skin graft.

The association of both methods (FG and NPWT) is new in clinical application. There is only one experimental research on this procedure, described [4] . In this present case, a very fast granulation tissue formation was noticed, which prevented the utilization of a more complex flap, as the microsurgical ones. It was observed 100% granulation tissue formation over the hole exposed bone, even in the presence of BAG S53P4 and infection. Very low morbidity and no complications were noted with this treatment (FG associated with NPWT). When the grafted fat was pulled against the wound surface, due to the negative pressure therapy, it seemed to be transformed into an autologous biological matrix with large number of mesenchymal cells and adipocytes. The roll of the adipose tissue as a biological matrix can represent a new theme for research in the field of Plastic Surgery.

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