



When free autogenous block grafts can lead to failure?

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Most firearm fractures have a complex pattern of trauma involving comminution, bone loss and soft tissue avulsion (1). Projectiles hit the tissues with a high-energy impact, with the jaw being the most frequently affected body region (2). Secondary tissue damage leads to early ischemia and vascular impairment, which makes treatment difficult (1).

Rigid internal fixation has been the method of choice for the treatment of this type of fracture, as it provides stability, stress absorption and good bone consolidation, minimizing the occurrence of complications (3,4). During surgical planning, a plate should be chosen that is strong and resistant to the functional loads exerted on the jaw and pay attention to an adequate number of screws (5).

Here, we bring a discussion about the failure of free autogenous block graft due to a lack of collaboration of the patient. Furthermore, a patient injured by a high velocity gunshot due to the characteristics of the fracture wound was initially treated incorrectly with only two screws placed on each side of the fracture in a 2.4 mm system plate, generating after 2 years a pseudoarthrosis picture characterized by pain, mobility and drainage of purulent discharge. Among the factors that can cause a pseudoarthrosis, the possible causes considered for this patient were the lack of union between the bone fragments, fracture site instability and tobacco use (6). Because it is a comminuted fracture with a large defect between the bone fragments, there is a need to perform graft surgery in an attempt to approximate it. To analyze the surgical opportunity, consider the situation of the underlying soft tissue and whether there are risks of infection (4,5).

The patient was referred to the operating room, where infection was cleared, plate removed, pseudoarthrosis curettage, and then, a new plate was fixed. After cure of the infection soft tissue repair, the second surgical time was performed. Thus, at 6 months of follow-up with remission of the condition, it was decided to perform a graft with autogenous block graft, collected from the iliac crest. Although the micro vascularized graft is a good option for this case, it was not chosen because it is related to higher morbidity, requiring longer hospitalization and greater patient collaboration, which is not compatible with the patient's history (7-9). For the new fixation, a 2.4 mm diameter reconstruction plate was used, with at least three screws on each side of the fracture, in order to provide better stability and promote resistance to chewing forces (4,5) (*Figure 1*).

Besides being a difficult fracture resolution, the patient was not collaborative, not following the recommendations to avoid chewing and not to use tobacco and narcotics, which led to non-consolidation of the bone graft. Tobacco use increased the odds of complications four-fold and the odds of infections six-fold. This was associated with its ability to lead to delayed healing, decreased collagen production, decreased oxygen supply to tissues, and increased risk of complications. mesenchymal cell degeneration (10).

After 6 months of follow-up, the patient developed a new infectious condition and was reoperated to remove the graft and remained with the fixation system in position, awaiting the opportune moment for the second graft. He was followed for 1 year after graft removal, remaining uneventful. But without collaboration for planning and

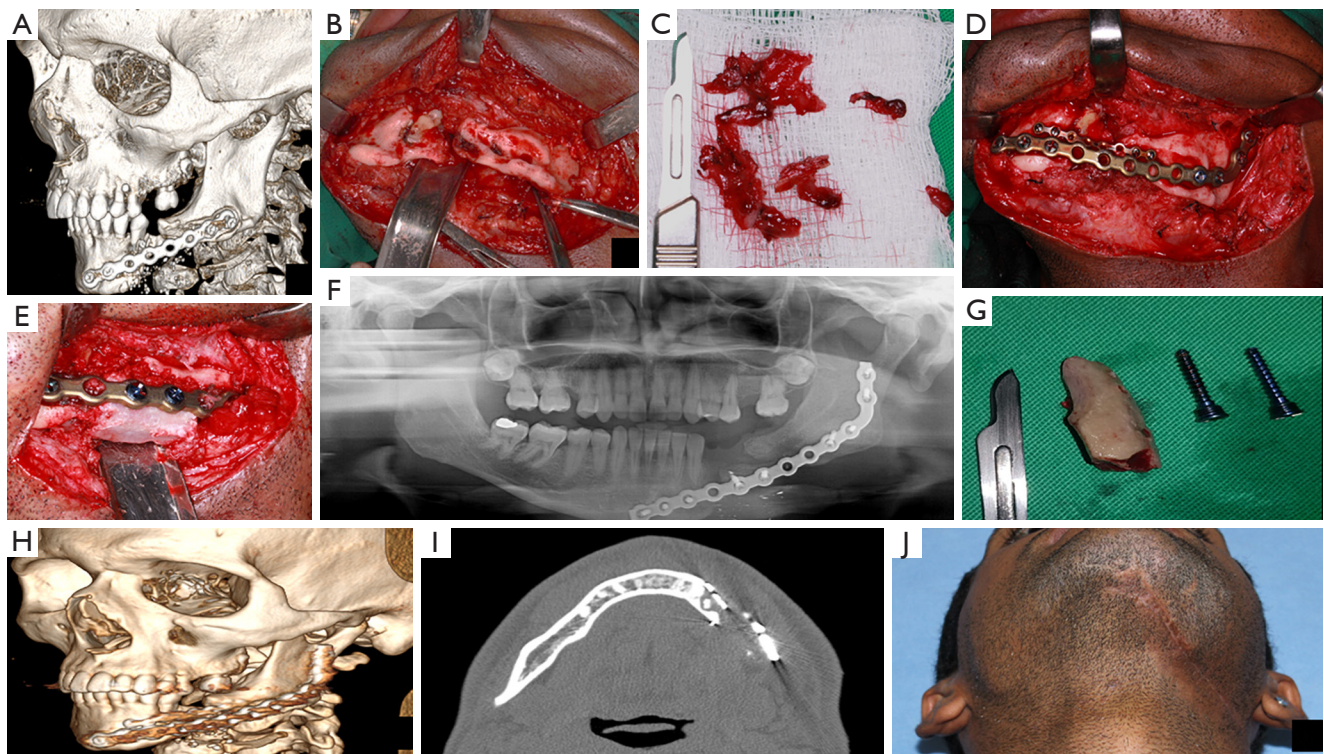


Figure 1 Case presentation. (A) Preoperative tomography showing incorrect fixation, 2.4 mm fixation system with two screws in each fractured; (B) trans-operative, there is a lack of continuity between fractured bone; (C) tissue removed from the region between the stumps (pseudarthrosis); (D) new fixation employing at least 3 screws on each side of the fractured bone; (E) iliac crest graft positioned and fixed with two screws of 2.4 mm locking system. Surgery performed 6 months after pseudoarthrosis removal; (F) panoramic radiograph, 6 months of follow-up, without new bone formation in the region; (G) bone graft and screws removed after treatment failure; (H,I) tridimensional and axial sections tomography immediately after bone graft removal; (J) submandibular postoperative healing showing no infections or any complications.

execution of new treatment (*Figure 1*).

Therefore, mandibular fractures caused by firearms are a trauma that is difficult to treat, and it is essential to make proper planning and to collaborate postoperatively in order to avoid complications and restore mandibular function.

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