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Perspective

Adverse effects of free gingival grafts.

Efectos adversos de los injertos gingivales libres.

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Free gingival graft is a first choice technique when the goal is to gain keratinized tissue around teeth or peri-implant mucosa.

It is widely used for its predictability and because it does not involve an extra cost for the patient since this technique allows the tissue to be grafted to be obtained from donor areas such as the hard palate, tuberosity of the maxilla and edentulous areas of the patient's mouth. This leads to the need for a second surgical area that will heal by second intention and is sometimes accompanied by pain; the latter, together with cosmetic alterations and excessive bleeding, correspond to adverse effects.

To increase the width of keratinized tissue either preventively or therapeutically, free gingival grafts are one of the techniques with the widest use, first introduced by Bjorn in 1963[1] and supplemented by Sullivan *et al.*[2] Some studies like Buyukozdemir *et al.*,[3] and Schmitt *et al.*,[4] report good keratinized tissue gain using this technique (4.05 mm and 7.76 mm respectively); so it is very predictable due to its stability over time.

Gingival free grafts vary in thickness and this is related to the survival, shrinkage and appearance of the graft, with different authors suggesting different ideal graft size between 0.75-1.25mm.[5] Sullivan *et al.*,[2] reports the grafts must be thin (0.5-0.75mm) because these have been demonstrated to have a higher survival than thicker ones. A thick epithelial graft increases its functional strength but at the same time negatively influences the aesthetics.

The main advantage of free gingival grafts is that it is a predictable and versatile technique to increase keratinized tissue, where the donor area is wide as it is typical of an individual, this graft can be performed on one or more areas at a time.[6] Green *et al.*,[5] mention that free gingival grafts have the potential to deepen the vestibular bottom and modify the gingival phenotype to receive and resist the functional forces of chewing.

Like all surgical procedures, free gingival grafts can present drawbacks. These include aesthetic alterations, bleeding and second-intention healing in the donor area, necrosis of donor tissue due to lack of irrigation, unpredictable contraction and pain.[7]

The adverse effects of any free gingival graft are related to non-survival of the graft and to the aesthetics. This type of graft does not present its original blood supply, it initially survives by plasma irrigation and over time it does so due to neovascularization so the stabilization of the post-surgery graft is vitally important 8, as well as the need for an additional surgical area from which keratinized tissue that heals by second intention is extracted and which can sometimes be painful if not protected by a palatine plate.[6]

The aesthetic alterations are due to the fact that the grafts sometimes do not blend in with the color of the receiving area mainly due to a greater

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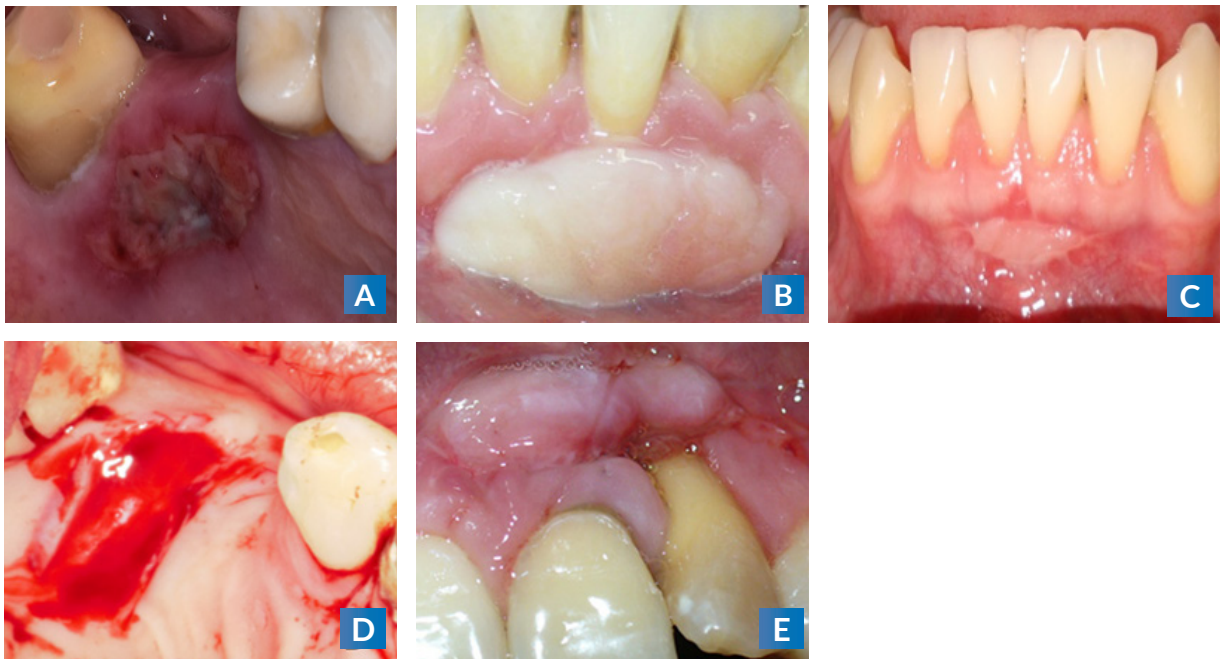
Figure 1. Necrosis and detachment of grafted tissue occurred in non-regular mobile beds and poor adaptation of the graft.



A: Typical scarring by second intention of donor area. **B:** Very notorious graft due to inadequate thickness. **C:** Aesthetic alteration of the graft in terms of color. **D:** Excessive bleeding from the donor area. **E:** Incomplete coating of grafted tissue and shrinkage due to excess thickness.

thickness of the grafted tissue that is evident in the receiving area.[8] When gingival grafts are not of the recommended average thickness, their use can result in an obvious over contoured tissue that alters the aesthetics as well as prolonging the healing time, and there is a greater possibility of contraction, which raises the risk of survival of the grafted tissue.[5] On the other hand, authors like Sullivan *et al*.,[2] mention that very thin grafts are susceptible to necrosis and detachment, so the right thickness of the free epithelial graft is crucial to its survival.

Within the appropriate areas for harvest are the tuberosity of the maxilla, edentulous bridges and part of the palate behind the palatine rugs, although in the latter there may be profuse bleeding if the limits of the major palatine hole are not taken into account.[8] When gingival recessions expose extensive root surfaces, it is difficult to obtain complete cover by free gingival grafts because this are does not provide a bed that guarantees nutrition, so root coverage is not always predictable in this specific clinical landscape.[6] Necrosis and shedding of grafted tissue are common whenever non-regular mobile beds and poor graft adaptation occur (Figure 1).

Graft shrinkage is another functional complication after surgery. Morman *et al*.,[9] mention that the one-year contraction of thin grafts (<1mm) is 42.3%. There are no studies that report in detail the adverse effects in relation to an unfavorable aesthetic and loss of grafted tissue. The presence of a minimum of 2 mm of keratinized tissue associated with proper hygiene ensures the health of periodontal tissues, due to having a good functional resistance of the soft tissue.[10] Free gingival grafts have come to be the first alternative for gaining keratinized tissue in the face of different mucogingival problems, being a predictable and inexpensive technique.

The adverse effects present in epithelial grafts are mainly associated with an alteration of the aesthetics, the possibility of loss of grafted tissue due to different reasons and the need for a donor area that increases clinical time and is uncomfortable at times for the patient, regarding bleeding and postoperative pain, so operator-patient communication is vital for complete pre-surgery information.

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