

# Alveolar preservation technique with phenotype increase: A case report

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## Keywords

Alveolar Soft Tissue Volume, Phenotype, Plasma Rich In Growth Factors, Connective Tissue Graft, Alveolar Preservation

## Introduction

Alveolar bone preservation techniques are the surgical acts that are performed during the extraction of a tooth to prevent the loss of alveolar bone and gingival volume.

In a systematic review Van Der Weijden et al. Found If after extraction an alveolar preservation technique is not performed, an average reduction in width of the alveolar ridge was 3.87 mm and height was 1.67 mm. The main reason for this collapse is the vestibular bone wall, which is almost always very thin or in some cases absent, which causes it to have very little blood supply due to the cortical nature of this bone.

After extraction, the irrigation from the periodontal ligament is eliminated and this leads to reabsorption and clinical collapse horizontally and vertically. Due to the loss of dental volume, the gum loses its insertion of the fibers above the bone crest and the junctional epithelium, promoting the collapse of gingival height. The blood clot formed after extraction is not enough to preserve the vertical and horizontal dimensions of the alveolar process, which is why alveolar preservation techniques are justified.

Plasma rich in growth factors (PRGF) is a technique where blood is obtained from the patient prior to surgery in order to obtain platelet-rich plasma that has proven to be a predictable technique to promote healing of soft and hard tissues as well as a increase the phenotype. Gingival thickness and keratinized tissue width are important parameters used to determine the periodontal phenotype. Subjects with a thin gum have been shown to tend to have more gingival recession compared to those with a wide gum.

The aesthetic result of the anterior maxilla is particularly related to the soft tissue profile in the buccal area, although alveolar preservation techniques reduce bone remodeling after extraction, there is still few research on techniques that improve the profile of soft tissue in the mouth. Vanhoutte et al. described a alveolar preservation technique using a "saddled" connective tissue graft (CTG) combined with the insertion of slowly resorbable biomaterials into the alveolus.

In this article we present the alveolar preservation technique with phenotype increase. In this post-extraction technique, we use PRGF and CTG obtained from the palate or tuberosity to invaginated it in the buccal area and suture it coronally.

## Material and Methods

**CASE 1:** 15-year-old woman without systemic diseases suffering trauma that results in root fracture in the middle third where extraction and orthodontic treatment is indicated to resolve malocclusion.



After atraumatic extraction and alveolar cleaning, (Fig 1) and after the CTG of the palate was obtained a partial thickness incision is made through the vestibular and palatine in order to create a pocket for the invagination of the CTG first by the buccal area, using a horizontal mattress suture. (Fig.2)

Subsequently, the bone graft embedded in plasma rich in growth factors is placed in cases where the implant will not be placed or the implant will be placed in more than six months, in cases where the patient is undergoing orthodontist treatment, if the implant will be placed soon we will use only PRGF, then we suture the connective tissue graft for palatine (Fig. 3). In the healing at three months an increase in the phenotype and in the height where the CTG was placed is observed. (Fig. 4)



**CASE 2:** 38-year-old woman without systemic diseases where the extraction of the right upper central and the right upper canine for prosthetic reasons must be performed (Fig. 5). In the central, a xenograft embedded in rich in PRGF and a CTG are placed after the extraction, in the canine only bone graft and PRGF (Fig. 6). Three months later, the height gain of the center where the CTG was placed and invaginated was observed, unlike the canine where the same height was maintained but with no increase in height. (Fig. 7).




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### Result

In both cases, the increase in tissue vertically and a maintenance of the volume of the alveolar process are

observed clinically.

The reasoning of inserting the CTG by buccal with a partial thickness incision is not to lift the periosteum that gives irrigation to the bone crest and to increase the phenotype in the supra-osseous component, which is the critical area for margin stability gingival and bone crest.

Three months is enough time for implant placement when only PRGF is placed as it is sufficient for bone and soft tissue maturation with this technique, in cases where the patient will receive orthodontic treatment or a fixed bridge will be chosen as a rehabilitation option, we recommend using a slowly reabsorbed xenograft for long-term space maintenance.

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### Conclusions

With the limitations of case reports, we found that the alveolar preservation technique with increased phenotype can be a predictable option to maintain tissues and even increase them after extraction. The placement of the buccal invaginated CTG seems to improve the soft tissue profile in the anterior maxilla,