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RESEARCH ARTICLE

SURGERY OF MAXILLARY SINUS LIFT WITH USING OF BONE GRAFT AND PLATELET CONCENTRATES RICH IN FIBRIN AND LEUKOCYTES, CASE REPORT

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ABSTRACT

The loss of dental elements is one of the main factors for the pneumatization of the maxillary sinus. The lack of bone crest dimensions in both height and width is an important indication for maxillary sinus lift surgery that aims at future oral rehabilitation. ***Case Report****:* A female patient, leucoderma, 41 years old, sought care at a postgraduate center and complained that she had no dental elements on the right side, claiming that she would like oral rehabilitation. After anamnesis, an accurate clinical examination and volumetric tomographic of the conical bundle, the pneumatization of the maxillary sinus was diagnosed and surgical intervention was required to lift it. ***Final Considerations:*** Maxillary sinus lift surgery using the lateral window technique with the use of L-PRF aides with the bovine matrix xenografts used has an easy surgical feasibility of material handling as well as allows better results for oral rehabilitation, besides allow a quick post surgical.

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INTRODUCTION

The loss of dental elements is one of the main factors for the pneumatization of the maxillary sinus, since the stimulus that impairs bone quantity and quality is lost, the osteoclastic activity is activated and the maxillary sinus undergoes a reanatomization process on the remaining bone, mainly in the posterior region of the maxilla, due to decreased dimensions of the bone crest (Brook, 2006; Abla *et al.,* 2009). Bone grafts with mineralized bovine bone matrix biomaterials (Xenografts) and their concomitant use with Platelet Concentrates Rich in Fibrin and Leucocytes (L-PRF) have been considered highly effective in oral rehabilitation because it is an easy, minimally invasive and highly successful clinical and surgical technique. According to Dos Santos *et al.*, 2017 and Oliveira *et al.*, 2017, knowledge is indispensable about the anatomy of the region to be operated, its vascularization and physiology, as well as the surgical techniques that are divided into traumatic, by the use of Summer osteotome when there is bone remnant between 8 mm and 10 mm. Between 8 mm and 5 mm, indication of traumatic technique with or without bone grafting. 5 mm or below this value, it is considered, as a choice the traumatic technique with bone grafting and as well as the blood collection in the preoperative period of the patient and its centrifugation.

According to studies by Tatum, 1986, Almeida *et al.,* 2006 and Oliveira *et al.*, 2017, lateral antrostomy was configured as a large-scale technique when the bone remnant does not have enough height for the installation of short implants. The technique aims to access the medial wall of the maxillary sinus with rotary or piezometric instruments and placement of bone grafts. Lateral antrostomy is a surgical technique traumatic that brings results of regeneration of the maxillary bone tissue and allows a subantral vertical increase greater than 9 mm. The xenografts of the mineralized bovine bone matrix are the most used biomaterials in surgical procedures for the maxillary sinus floor. Because they present structural similarities with the cortical bone from which they were removed, they offer similar results to autogenous bone grafts, forming the basis for osteogenic and osteoinductioncells (Wu *et al.,* 2004; Almeida *et al.,* 2006). Fibrin and Leukocyte-Rich Platelet Concentrates (L-PRF) were developed in 2006 for maxillofacial and oral surgeries. The technique consists of blood withdrawal, in the preoperative period of the patient, and its centrifugation at up to 3000 rpm in up to 12 minuts. Its use increased in maxillary sinus surgeries because it allows greater revascularization of the bone grafting material, promoting healing in a shorter time with positive results (Camargo *et al.,* 2015; Aldelaimi *et al.,* 2016). Thus, the present work seeks to report a case on

maxillary sinus lift using bone xenograft associated with the Fibrin and Leukocyte Rich Platelet Concentrates (L-PRF).

CASE REPORT

Patientfemale, leucoderma, 41 years old, normossemic, sought care at a postgraduate center and complained of absence of posterior teeth on the right side and desire for oral rehabilitation. After anamnesis, an accurate clinical examination and volumetric tomographic of the conic bundle, which allowed the visualization of anatomical structures as well as the arrangement of the teeth in the dental arch (FIG. IA). In the axial sections, on the right side, there is the visualization of alveolar ridge heights, varying from 1.75 mm to 3.25 mm, with a thickness of 2.25 mm to 3.50 mm (FIG. IB).With thisdiagnosed the pneumatization of the maxillary sinus and the need for surgical intervention to lift it. For better results of healing and post-surgical acceleration, the patient was indicated the use ofL-PRF. The patient was pre-medicated with dexamethasone tablet 4 milligrams one hour before surgery to relieve postoperative swelling. Blood was collected from the right brachiocephalic vein. were withdrawn 6 tubes of 10 mL Vacutainer® type containing Silica additive for coagulation and 2 tubes Vacuettes® of 10 mL that did not have the coagulatory additive, which were arranged for centrifuge in SpinPlus® at 2000 rpm for 9 minutes.The patient was anesthetized with Mepivacaine with 2% epinephrine, using as an anesthetic technique the posterior superior alveolar nerve block, the middle alveolar nerve and the major palatine nerve, subsequently, aincision with scalpel blade number 15 extending from the second molar to the distal region of the canine.

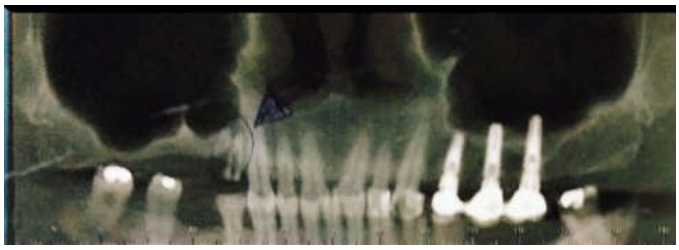

Figure IA. Volumetric tomographic socket of maxillary

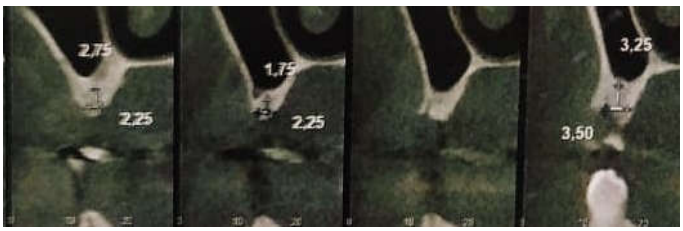

Figure IB. Axial cuts, on the right side, with visualization of the heigth alveolar, varying from 1.75 mm to 3.25 mm, height from 2.25 mm to 3.50 mm

The flap detachment was done with a 2-4 molt detachment, giving envelope format to the flap. With long-spherical spherical drills (3 and 4) diamond piece attached to the straight part and with abundant cooling of sterile serum, a bone window was created in the lateral wall of the right maxillary sinus, having a quadrangular shape (FIG.II). With the sinus lift curettes, specifying curette number 7 (FIG III), the window was fractured and displaced into the sinus interior. With the number 4 curette, the sinus was carefully moved to obtain greater space for the L-PRF and bone graft.

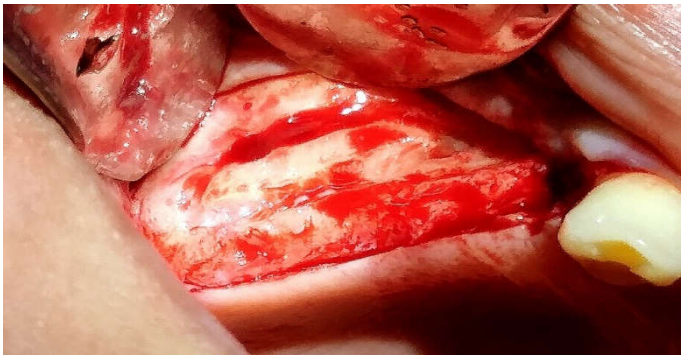

Figure II. Foursquare format of the bone demarcation on the wall of the right maxillary sinus, which allowed insertion of the bone graft and L-PRF

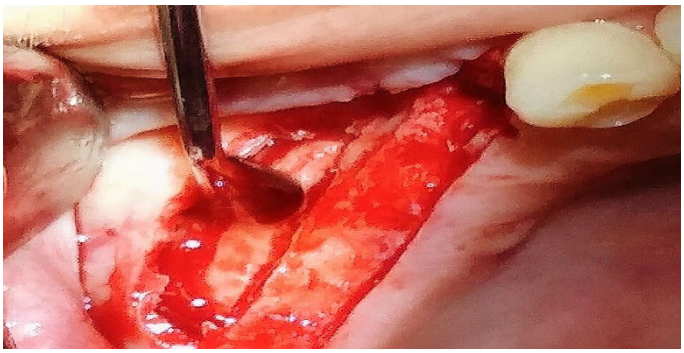

Figure III. Curette number 7 placing the bony window into the sinusmaxilary

The red cover Vacutainer® tubes were opened and the L-PRF clot was withdrawn from the tube with a clinical clamp and spatula, where it was separated from the red series cells and accommodateds in the perforated box. The Vacuettes® tubes were opened and with a sterile 3 mL Pasteur Pipette, the fibrinogen (upper yellow portion in the Vacuettes® tubes) was withdrawn, placed in a sterile vat. 0.5 mg of Bio-Oss® Light was added to the esterile vat and manipulated with fibrinogen for formation of the Sticky Bone. The L-PRF clots were prepared with the spatula, forming of fibrin blades what dispensed onto the perforated box(FIG IV).With a straight forceps, the4 blades were placed into the sinus cavity (FIG V), lining the cavity to receive the Sticky Bone. Posteriorly, 2fibrin blades covered Sticky Bone (FIG VI). Simple suture was performed with 4-0 thread monofilament nylon. (FIG VII).

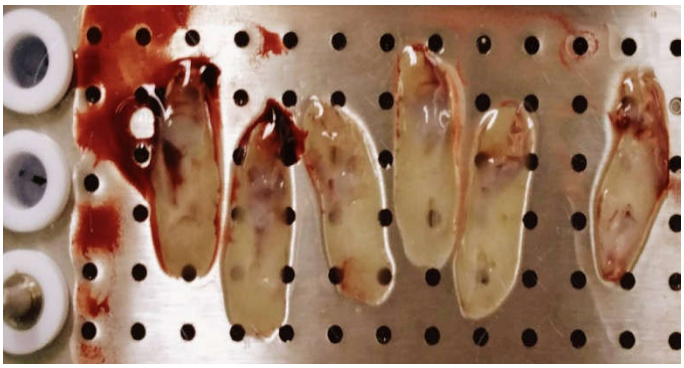

Figure IV. Fibrin slidesdispensed on perforated box

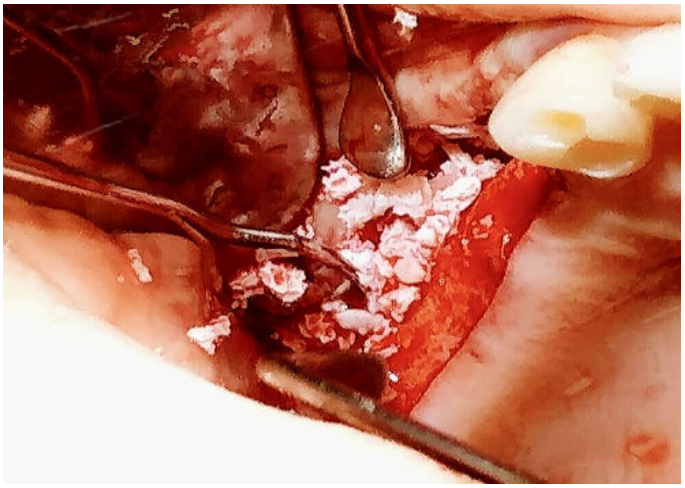

Figure V. Steak Bone in the bone cavity

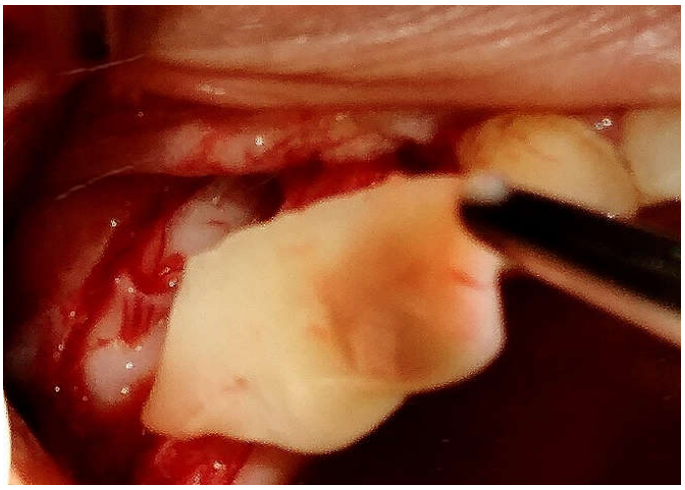

Figure VI. Blades of fibrin covering the Sticky Bone

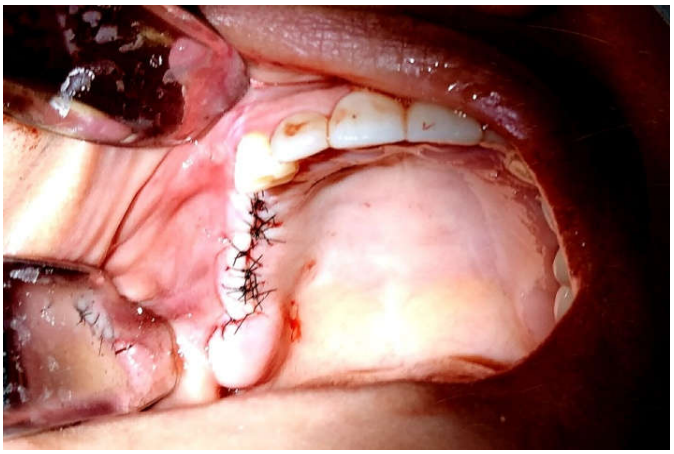

Figure VII. Simple suture was performed with 4-0 thread monofilament nylon

Final considerations

It can be concluded from this study that: Maxillary sinus lift surgery using the lateral window technique with the use of L-PRF aided with the bovine matrix xenografts used has an easy surgical feasibility of material handling as well as allows better results for oralrehabilitation future, besides allow a quick post-surgical. However, more studies need to be done so that there is an increase in the scientific knowledge of professionals and academics.

Conflicts of interest: The authors declare that there are no conflicts of interest.

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