

Management of oronasal fistula using L-PRF and palatal flap due to residual cyst in maxilla: A case report

Tratamento de fístula oronasal utilizando L-PRF e retalho palatino devido a cisto residual na maxila: Um relato de caso

Manejo de fístula oronasal mediante L-PRF y colgajo palatino por quiste residual en maxilar superior: Reporte de un caso

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Raissa Dias Fares¹

ORCID: <https://orcid.org/0000-0003-1264-2943>
Centro Universitário Serra dos Órgãos, Brazil
E-mail: raissafares@yahoo.com.br

Sylvio Luiz Costa De-Moraes²

ORCID: <https://orcid.org/0000-0002-8356-069X>
Centro Universitário Serra dos Órgãos, Brazil
E-mail: sdmoraes@yahoo.com.br

Jonathan Ribeiro da Silva³

ORCID: <https://orcid.org/0000-0002-6174-0112>
Centro Universitário Serra dos Órgãos, Brazil
E-mail: bucomaxilofacial@outlook.com

Abstract

Study Design: Case Report. Oronasal communication can be a result of congenital disorders, pathological lesions, or inadequate treatment. It consists of abnormal communication between the nasal and oral cavities. **Objective:** This paper aims to present a case report of a female patient who intended for dental implants but was referred to the maxillofacial surgery department presenting a cone beam computed tomography with incidental finding in the anterior part of the maxilla. **Methods:** The first surgical procedure consisted of the resection of the lesion associated with bone graft with buccal fat pad flap and posterior histopathological study. After three months the patient developed an oronasal fistula. During the second surgical management, the authors chose platelet concentrates (L-PRF) to fill the bone defects associated with the palatal flap. **Results:** After one year of follow-up, the patient presented definitive soft tissue healing, no exposure of bone tissue, and the closure of oronasal communication. The new CT scan and panoramic x-ray showed satisfactory bone healing. **Conclusion:** The present study demonstrated the association of L-PRF with xenograft and palatal flap can be a viable method for the management of patients with oronasal fistula. This report adheres to the SCARE guidelines for the reporting of surgical cases in medical literature.

Keywords: Oral Fistula; Maxillary; Platelet-Rich Fibrin; Case Reports.

Resumo

Desenho do Estudo: Relato de Caso. A comunicação oronasal pode ser resultado de doenças congênitas, lesões patológicas ou tratamento inadequado. Consiste na comunicação anormal entre as cavidades nasal e oral. **Objetivo:** Este trabalho tem como objetivo apresentar um relato de caso de uma paciente do sexo feminino que pretendia realizar implantes dentários, mas foi encaminhada ao serviço de cirurgia bucomaxilofacial apresentando tomografia computadorizada com achado imaginológico na região anterior da maxila. **Métodos:** O primeiro procedimento cirúrgico consistiu na ressecção da lesão associada a enxerto ósseo com retalho de gordura bucal e posterior estudo histopatológico. Após três meses a paciente desenvolveu fístula oronasal. Durante o segundo manejo cirúrgico, os autores escolheram concentrados de plaquetas (L-PRF) para preencher os defeitos ósseos associados ao retalho palatino. **Resultados:** Após um ano de acompanhamento, a paciente apresentou cicatrização definitiva das partes moles, sem exposição de tecido ósseo e fechamento da comunicação oronasal. A nova tomografia computadorizada e a radiografia panorâmica mostraram reparo ósseo satisfatório. **Conclusão:** O presente estudo demonstrou que a associação do L-PRF com xenoenxerto e retalho palatino podem ser um método viável para o manejo de pacientes com fístula oronasal. Este relatório segue as diretrizes SCARE para notificação de casos cirúrgicos na literatura médica.

Palavras-chave: Fístula Bucal; Maxila; Fibrina Rica em Plaquetas; Relatos de Casos.

¹ Department of Oral and Maxillofacial Surgery, Centro Universitário Serra dos Órgãos, Teresópolis, Rio de Janeiro, Brazil.

² Staff/ Professor of Oral and Maxillofacial Surgery at Centro Universitário Serra dos Órgãos, Teresópolis, Rio de Janeiro, Brazil.

³ Coordinator of the Residence Program in Oral and Maxillofacial Surgery, Centro Universitário Serra dos Órgãos, Teresópolis, Rio de Janeiro, Brazil.

Resumen

Diseño del estudio: Informe de caso. La comunicación oronasal puede ser el resultado de trastornos congénitos, lesiones patológicas o un tratamiento inadecuado. Consiste en una comunicación anormal entre las cavidades nasal y oral. **Objetivo:** Este artículo tiene como objetivo presentar el reporte de un caso de una paciente femenina que pretendía implantes dentales pero fue remitida al servicio de cirugía maxilofacial presentando una tomografía computarizada de haz cónico con hallazgo incidental en la parte anterior del maxilar. **Métodos:** El primer procedimiento quirúrgico consistió en la resección de la lesión asociada al injerto óseo con colgajo de almohadilla adiposa bucal y posterior estudio histopatológico. Después de tres meses el paciente desarrolló una fístula oronasal. Durante el segundo manejo quirúrgico, los autores eligieron concentrados de plaquetas (L-PRF) para rellenar los defectos óseos asociados al colgajo palatino. **Resultados:** Luego un año de seguimiento, el paciente presentó cicatrización definitiva de los tejidos blandos, sin exposición del tejido óseo y cierre de la comunicación oronasal. La nueva tomografía computarizada y la radiografía panorámica mostraron una curación ósea satisfactoria. **Conclusión:** El presente estudio demostró que la asociación de L-PRF con xenoinjerto y colgajo palatino puede ser un método viable para el tratamiento de pacientes con fístula oronasal. Este informe cumple con las pautas SCARE para la notificación de casos quirúrgicos en la literatura médica.

Palabras clave: Fístula Oral; Maxilar; Fibrina Rica en Plaquetas; Reporte de Caso.

1. Introduction

Maxillary cysts are pathologic cavities with a liquid or semiliquid content delimited wholly or partially by epithelium; the origin of the latter one allows to distinguish cysts in odontogenic or nonodontogenic. (Ciulli et al., 2009). The residual radicular cyst is a lesion resultant from stimulus to proliferation of epithelial rests of Malassez, because of an inflammatory process of pulpar necrosis, where the tooth has been removed. This cyst tends to regress when there isn't a font of stimulus. However, in some cases, the cyst presents great dimensions, needing a surgical intervention (Oliveira et al., 2011).

The communication is defined as the space created between the maxillary sinus and the buccal cavity (Oroantral, OAC) or between the nasal cavity and buccal cavity (Oronasal, ONC) (Abuabara et al., 2006). The oronasal is an uncommon presentation in day-to-day clinical practice except in some cleft patients. The oral cavity is separated from nasal passage by palatal shelve. Embryonic fusion of the medial nasal and maxillary prominences provides for continuity of the upper jaw and lip and separation of the nasal pits from the stomodeum (Sahoo et al., 2016).

Different techniques have been slated for the closure of the oro-antral and oronasal including buccal or palatal flaps and their modifications. The use of some alloplastic materials has also been admitted as a treatment that ranged from autogenous bone graft to gold foil. The preferred technique may depend on surgeon's choice (Emes et al., 2018).

In recent years, the use of a pedicled buccal fat pad in closure of large oro-antral and oronasal defects has become popular. Anatomically, the buccal fat tissue has a central body and 4 processes: buccal, pterygoid, pterygopalatine, and superficial and deep temporal. The blood supply to the BFP originates from the buccal and deep temporal branches of the maxillary artery. Owing to excellent blood supply, the graft has a low failure rate (Emes et al., 2018). This case report has been reported in line with the SCARE Criteria. (Agha et al., 2020).

2. Methodology

This case report is a qualitative design in which the researchers explored in depth the etiology of pathological alteration and its management in one individual. The case is bound by time and activity, and researchers collected detailed information using a variety of data collection (Priya A., 2021) as patient records and medical scans over a sustained period from 2023 to 2024.

All the procedures of the study follow the Helsinki Declaration for human procedures and experiments. Before the enrolment of the subject, the aim of the study and the procedure were described, and a signed informed consent form was obtained from the patient for study participation.

The feasibility of the study has been endorsed by the Research Ethics Committee of Centro Universitário Serra dos Órgãos/UNIFESO (6.753.142). The case report follows resolution 466/2012, as well the letter CONEP/2018.

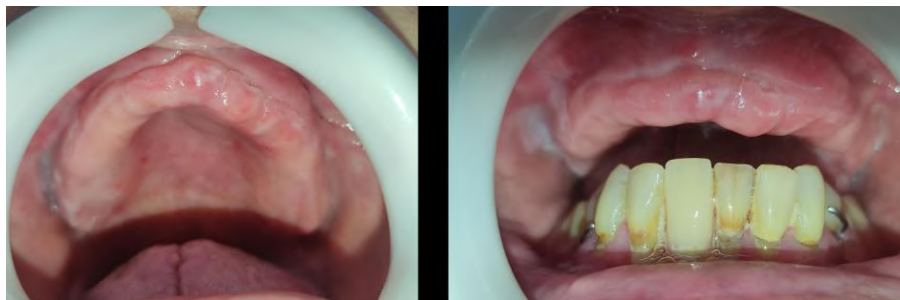
3. Case Report

A female patient, hypertensive, 61-year-old was referred to the Maxillofacial Surgery Department at Hospital das Clínicas de Teresópolis, Rio de Janeiro, Brazil, by a particular prosthodontist. The patient had a heart stroke in 2005. She informs the presence of a coronary stent and the use of *Levamlodipine* and *Valsartan* daily.

The patient affirmed that she never felt alterations inside her mouth and denied pain or swelling in the oral cavity. The objective intra-oral examination exposes the entire mucosa in normal color and the complete absence of teeth associated with an elastic tissue, compatible with the removable prosthesis format. (Figure 1).

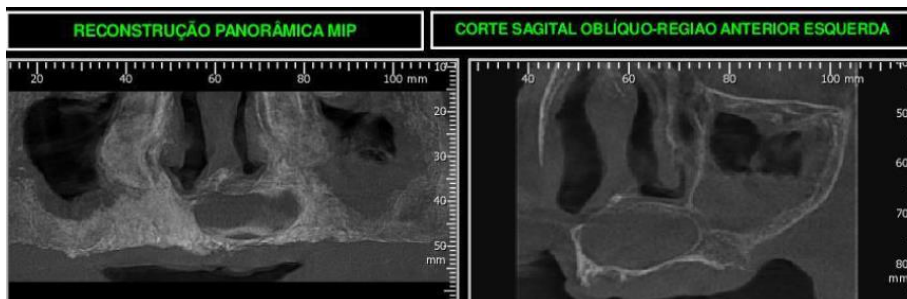
The cone beam computed tomography (CBCT) shows a hyperdense osteolytic lesion between the nasal floor and alveolar process also close to the left maxillary sinus. (Figure 2). The fan beam tomography (FBCT) confirms the extensions of the bone lesion (Figure 3).

Figure 1 - The intra-oral examination before surgical procedures.



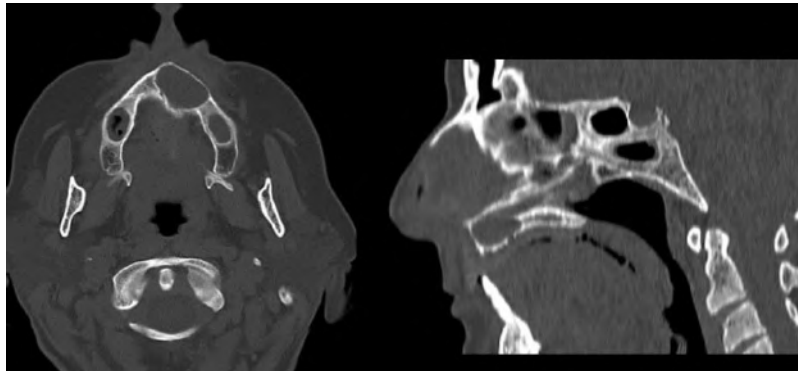
Source: Authors.

Figure 2 - The cone beam CT scan showing osteolytic lesion in anterior region of maxilla.



Source: Authors.

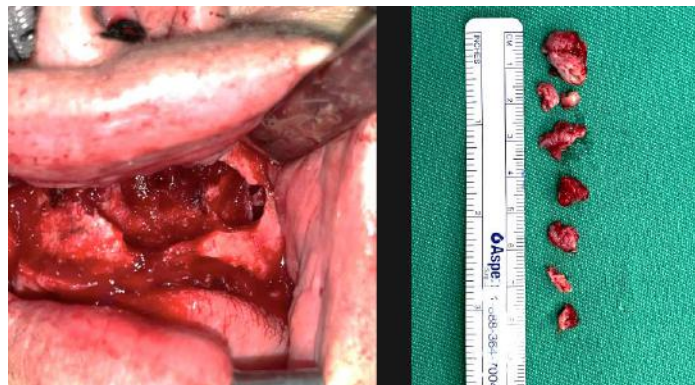
Figure 3 - CT axial and sagittal scan. The osteolytic lesions between nasal and oral cavities.



Source: Authors.

The first surgical approach was under general anesthesia. An *aspiration puncture* was performed, finding some yellowish, serous liquid with traces of hematic components and an oily consistency. The intra-oral approach was extending in the entire left hemiarch, and the lesion was completely removed through resection. At the same moment, the surgeons decided to apply xenograft *Bio-oss* (*Geistlich*[®], *Wolhusen Switzerland*) associated with the buccal fat pad flap and closure with Vicryl (*Ethicon*[®], *New Jersey, USA*). Beyond that, the excess fibrous tissue in the alveolar area was removed too. The two *specimens* were sent for histopathological analysis. (Figures 4-5).

Figure 4 - The cavity after the resection of the lesion and the *specimen*.



Source: Authors.

Figure 5 - The bone graft and the use of buccal fat pad flap.



Source: Authors.

The result of the histological analysis showed the osteolytic lesion as a residual cyst and the elastic tissue compatible with inflammatory fibrous hyperplasia (Figure 6) due to maladapted prosthesis. The cytology informed the absence of malignant cells.

Figure 6 - Simple Cyst and Fibrous hyperplasia.

EXAME ANATOMOPATOLÓGICO

Número exame: AO23-000158 / 1213918651

1 Exame macroscópico:

Material recebido para exame em formalina consta de estrutura cística de conteúdo pastoso e esbranquiçado, que mede 1,7 x 1,4 x 1,4 cm, parcialmente recoberta por retalho elíptico de pele, que mede 1,5 x 1,1 cm, rugosa e acastanhada. Todo material foi submetido ao processo histológico. Acompanham múltiplos fragmentos irregular, medindo em conjunto 3,4 x 1,7 x 0,6 cm, constituído por tecido castanho-esbranquiçado e elástico tendo de permeio tecido ósseo, acastanhado e poroso. O espécime foi parcialmente submetido ao líquido descalcificador, para posterior estudo histológico. Parte do material foi submetido ao processo histológico:

1A e 1B. estrutura cística: (2 bloco(s) / 8 fragmento(s))

1C, fragmentos que acompanham: (1 bloco(s) / múltiplos fragmento(s)).

Exame microscópico:

O exame histológico mostra cápsula de tecido conjuntivo fibroso internamente revestido por epitélio representado por duas camadas sendo a superior cuboidal ou colunar. Não há inflamação circunjacente. Tal lesão cística envolve tecido ósseo.

Topografia: cisto maxilar

DIAGNÓSTICO:

- O QUADRO HISTOLÓGICO É COMPATÍVEL COM CISTO SIMPLES DE EPITÉLIO ESCAMOSO.

EXAME ANATOMOPATOLÓGICO

Número exame: AO23-000158 / 1213918651

2 Exame macroscópico:

Material recebido para exame em formalina consta de fragmento irregular, que mede 2,7 x 0,8 x 0,5 cm, exibindo superfície ora cruenta e acastanhada ora rugosa e castanho-esbranquiçada. Aos cortes é constituído por tecido acastanhado e elástico. Parte do material foi submetido ao processo histológico:

2A e 2B: (2 bloco / 12 fragmento(s)).

Exame microscópico:

Os cortes mostram fragmentos de mucosa malpighiana exibindo lesão elevada caracterizada por hiperplasia do epitélio. No centro, o estroma exhibe aumento do número de fibras colágenas e de vasos que estão permeados por moderada quantidade de plasmócitos e linfócitos.

Não há sinais de malignidade no material examinado.

Topografia: hiperplasia

DIAGNÓSTICO:

- O QUADRO HISTOLÓGICO É COMPATÍVEL COM HIPERPLASIA FIBROEPITELIAL.

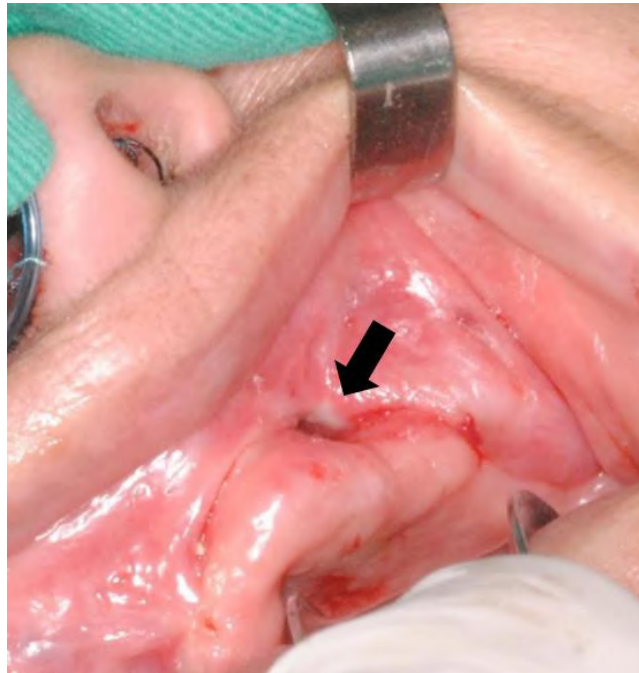
Laudo finalizado por: Dr. Fausto Gonçalves de Carvalho - CRM-SP 120939

Laudo liberado por: Dr. Fausto Gonçalves de Carvalho - CRM-SP 120939

Source: Authors.

After a three-month follow-up, the patient presented with an active fistula. The patient-related communication between the oral and nasal cavities associated to the escape of liquids and semisolid food through the nose. (Figure 7)

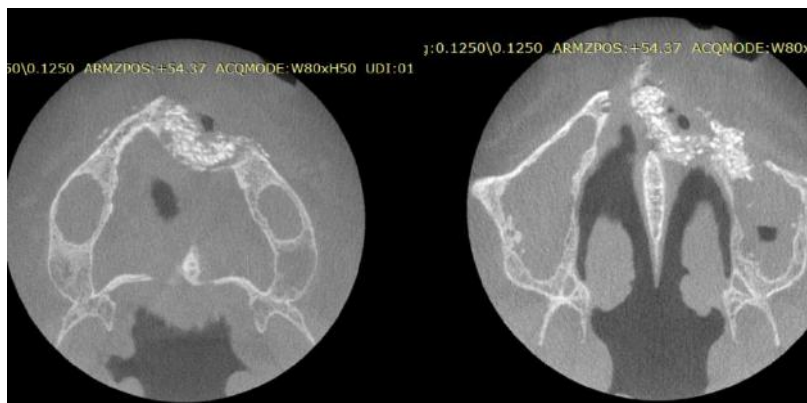
Figure 7 - Naso-oral fistula with an arrow, after three months of the first surgical approach.



Source: Authors.

It happened because of the size of the bone lesion and the quantity of fibrous hyperplasia tissue removed to keep *alveolar ridge* preservation and better prosthetics adaptation. The new FBCT also showed the signs of a failed bone graft (Figure 8) in the anterior region which was the site of the residual cyst.

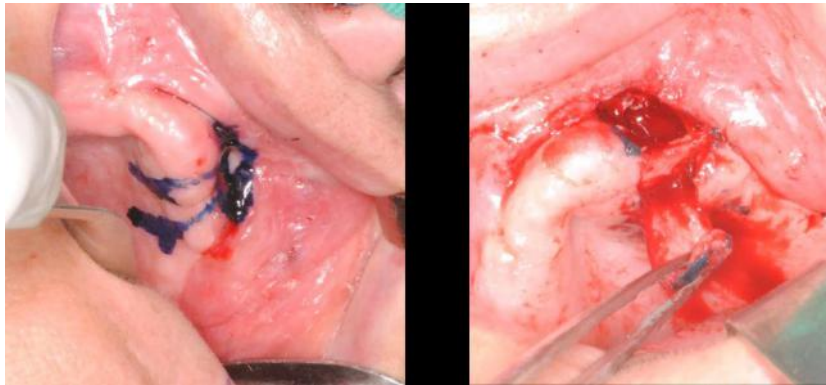
Figure 8 - The bone graft lost.



Source: Authors.

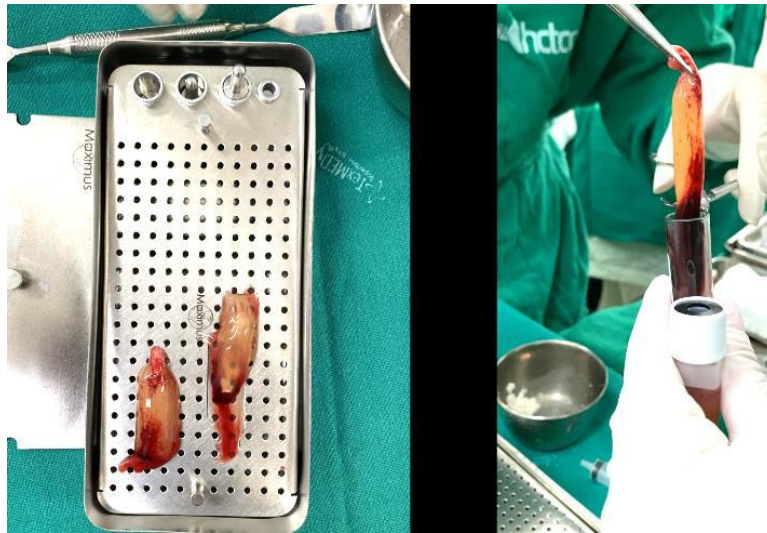
After three months the patient was under a second surgical procedure. At this time, the resection of the fistula was made (Figure 9) associated with the use of L-PRF membranes. The L-PRF was prepared as described by *Choukroun et al* (Dohan et al., 2006). During surgery, 80 mL whole blood was drawn in 8 glass-coated plastic tubes (Becton Dickinson Vacutainer, 10 mL), without anticoagulant, and was immediately centrifuged at 3000 rpm for 10 minutes. The resulting fibrin-rich plasma (L-PRF) was compressed to obtain an autologous fibrin membrane (Fares et al., 2022). (Figure 10).

Figure 9 - Resection of Naso-Oral fistula and Palatal Flap.



Source: Authors.

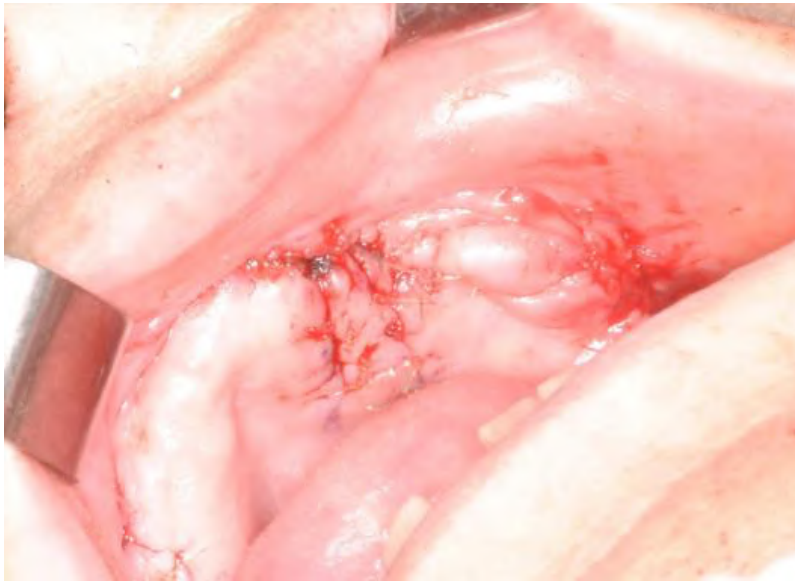
Figure 10 - Use of L-PRF to fill the bone defect.



Source: Authors.

The maxillary defect was filled with L-PRF associated with a xenograft *bio-oss* (*Geistlich*[®], *Wolhusen Switzerland*) and the palatal flap was done to make primary closure. Synthesis was performed with *Monocryl 4.0* (*Ethicon*[®], *New Jersey, USA*). (Figure 11).

Figure 11 - Primary closure with the palatal flap.



Source: Authors.

After one year of follow-up, the patient was satisfied with the surgical procedure, without oronasal communication or fistula. The removal prosthetic adapts better. The FBCT post-operative shows bone healing, and the patient can finally be able to undergo protocol implants. (Figure 12,13,14).

Figure 12 - 6-months follow-up. The intra-oral exam shows closed communication.



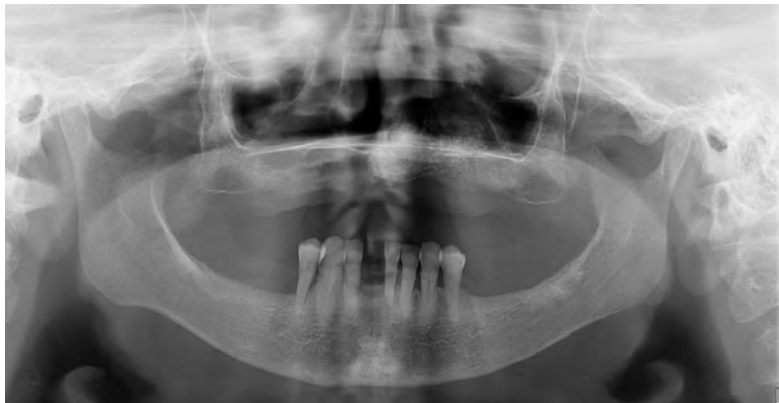
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Figure 13 - Bone graft healing after 6 months.



Source: Authors.

Figure 14 - Bone graft healing after one year. The patient able to perform dental implant placement.



Source: Authors.

4. Discussion

The residual cyst lesions presented in elderly (46.8%), edentulous patients (60.9%) and were most found in the posterior regions of the mandible (51.6%). Clinicopathological features that aided in their diagnosis included long-standing history with slow growing swelling and presence of well-defined, unilocular cystic lesion associated with previously extracted dentition (Titinchi et al., 2020).

These cysts also have a thin epithelial lining which makes their identification by histopathological methods more challenging. Some studies reported that residual cysts show active growth patterns in areas which have been edentulous for several years (Titinchi et al., 2020).

Oronasal communication is a pathological space between the oral and nasal cavities. The fistula is defined as an epithelial lined tract connecting 2 body cavities or 1 body cavity to the exterior. But in oronasal fistula, there is no fistulous tract, the nasal mucosa is fused to oral mucosa creating a communication hence referred to as ONC (Sahoo et al., 2016).

There are several surgical techniques described for closing oronasal or oroantral communications, including: soft tissue flaps (such as Rehrmann or Móczár vestibular flap, palatal flap, tongue flap); autologous bone grafts (e.g., harvested from the mentonian region); adipose tissue grafts (Bichat's fat pad/ buccal adipose body); grafts with allogeneic materials (such as fibrin glue); xenografts (such as collagen); among other techniques (Marques et al., 2020).

The goal of bone grafting is to replace normal bone volume and structure with healthy, well-vascularized bone that will undergo normal remodeling. The ideal bone will regenerate bone and not repair it (Moussa et al., 2020).

Apart from the well-documented causes of oronasal fistulas a few causes have included septal abscess, cocaine abuse, angiocentric T cell, lymphoma, tertiary syphilis, intranasal teeth, and lethal midline granuloma (Arora et al., 2009).

The common occurrence of oronasal fistula is the path between the hard palate and nasal cavity. However, this case reports the presentation of an oronasal fistula in the anterior region of the maxilla due to the resection of the residual cyst. For this reason, this surgical case appears to be unique.

5. Conclusion

The level of experience and dexterity of the surgeon is very important. Many publications claim the buccal flap is the solution for small defects, but in case of unfavorable outcomes, it may be necessary to use the generation of platelet concentrates for the promotion of tissue regeneration associated with palatal flaps and bone grafts.

Further research is needed to encourage the use of *L-PRF associated with a palatal flap* as an alternative to promote wound healing in the management of oronasal fistula.

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