IJIRR

International Journal of Information Research and Review
Vol. 04, Issue, 06, pp.4258-4260, June, 2017

CASE REPORT

SURGERY OF THE MAXILLARY SINUS WITH PIEZOCIRURGIC SYSTEM USE: CASE REPORT

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ARTICLE INFO

Article History:

Received 10th March, 2017
Received in revised form
21st April, 2017
Accepted 14th May, 2017
Published online 30th June, 2017

Keywords:

Implants; Antiplatelet Agents;
Maxillary Sinus.

ABSTRACT

Introduction: It has been discussed about maxillary sinus surgery, with the purpose of placing osseointegrated implants in the posterior maxilla, since it presents unfavorable situations for its implantation.This procedure is indicated when pneumatization of the maxillary sinus is evidenced, bone resorption after extraction and poor quality of the residual bone.

Case Report: Patient M.C.S.S.O, sought dental service for oral rehabilitation with dental implants. Computed tomography was requested and from the analysis of the radiographic examination it was confirmed minimum bone thickness and pneumatization of the maxillary sinus, with that, a surgery was proposed to lift the maxillary sinus with the use of alloplastic graft. He recommended the surgical procedure through the piezoelectric technique, because it was less traumatic and the use of L-PRF, in order to allow a tissue repair in a shorter time, rapid formation of bone, tissue and other structures, as well as a satisfactory postoperative for the patient.

Final Considerations: It is concluded that the advantages of piezoelectric instruments compared to rotary instruments and that to few disadvantages were irrelevant in the present case, however, a learning curve is needed for the adequate handling of the piezo-surgical instruments.

INTRODUCTION

It has been discussed regarding maxillary sinus surgery, with the purpose of placing osseointegrated implants in the posterior maxilla, since it presents unfavorable situations for its implantation. This procedure is indicated when the posterior maxillary region presents phenomena of maxillary sinus pneumatization, bone resorption after extraction and poor quality of residual bone (Gonzáles-Garcia, 2003). The piezoelectric ultrasonic instruments consist of a handpiece and a foot switch connected to the main unit.

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It has several inserts, when actuated create microvibrations, thus, emitting an electric current that generates oscillations between the crystals. These devices in oral surgery are indicated in procedures such as dental extraction, crest expansion, osteogenic distraction, removal of cysts, decompression of the inferior alveolar nerve and maxillary sinus lift (Pavlíková, 2011). In the 1970s, Schlee advocated the modified Caldwell-Luc technique for Schneider's membrane elevation. This technique is performed through fenestrations in the bone of the lateral wall of the maxillary sinus, called lateral approach. However, performing this procedure with the rotating instruments had a high percentage of perforation of the sinus membrane (Schlee, 2006). It is of fundamental importance to maintain the integrity of the sinus membrane,

which is anchored by the grafts and provides the vascularization of the same. When there is a lesion in the membrane, the graft enters the cavity generating a suppurative process in the coating epithelium, once this grafting material goes into a necrosis process, characterizing one of the complications of maxillary sinus surgery (Torella, 1998). Numerous advantages are observed of piezo-surgical instruments compared to rotary instruments, such as: selective cutting and micrometric, since it emits micro vibrations and fine insertions; better histological and morphometric performance of healing and bone formation, as it is observed low marginal osteonecrosis and coagulative necrosis, as well as bone formation (Vercellotti, 2004). The selective cut is due to modulation in the cut, which requires the application of 20-30 khz to perform ostectomy. Already to injure soft tissue requires the application of 50khz, thus, explains the low incidence of sinus membrane perforation. Thus presenting disadvantages of little relevance and which are compensated with their advantages, but requires a learning curve for the use of these instruments (Wallace, 2007 and Pereira, 2017). The objective of the present study is to report a clinical case in which a surgical procedure was performed with the piezoelectric ultrasonic devices for the purpose of lifting the maxillary sinus in order to implant an integrated dental implant in a second surgical time.

Case Report

Patient M.C.S.S.O, sought dental service for oral rehabilitation with dental implants (Fig.1). Computed tomography was requested and from the analysis of the radiographic examination, minimal bone thickness and pneumatization of the maxillary sinus were confirmed, with which, a maxillary sinus surgery was performed with the use of an autogenous graft (Fig. 2).

Figure1. Preoperative oroscopicview

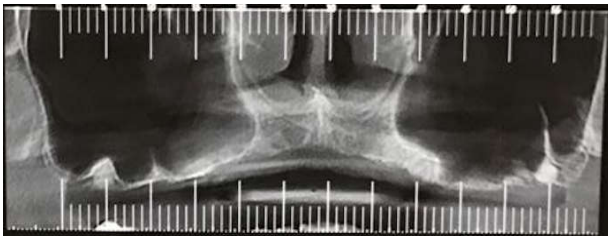

Figure 2. Preoperative computed tomography

It recommended the surgical procedure through the piezoelectric technique, because it was less traumatic and the use of 80 ml of L-PRF (Rich Fibrin in Platelets and Leucocytes), which is a biomaterial derived from blood and rich in growth factors capable of Transform adult stem cells into cells specific for bone or gum formation.

Figure 3. Breast Augmentation Drill, used in the socket of the piezoelectric

Featuring as a matrix of fibrin, in which cytokines and platelets, growth factors and some cells become trapped, functioning as a reabsorbable membrane, being considered basically as a concentrate of growth factors, in addition to other agents that promote healing of Wounds, in this case, as a tissue regenerator, as a material rich in platelets and growth factors, contributing to the process of osteoconduction, which will provide the stimulation of the patient's own cells to generate a regenerative response. A rectilinear incision was made in the alveolar ridge and relaxing incision to the maxillary sinus region, characterizing a trapezoidal flap, exposing the lateral wall of the maxillary sinus, called lateral approach. Afterwards, osteoplasty was performed and when the bone was about 1mm thick, the ostectomy was performed with the piezoelectric device. It is worth mentioning that if you worked with a sequence of drills coupled to the piezoelectric, in this way the first drill has to perform the marking of the osteotomy, the second and third drill are drills in which they are auxiliary, in this way drills that will be used to make the Osteotomy itself.

Figure 4. Elephant's foot tip performing sinus lift, with minimal trauma

Figure 5. Maxillary sinus being filled with bone substitute

Then use the fourth drill in which it is commonly referred to as the "elephant leg" where it serves both to elevate the lateral bone wall of the sinus, and to the fibrillation of the ultrasound apparatus by performing a cavitation process, in turn dislodging the The final three drills serve to elevate Schneider's membrane (FIG. 3) (Fig. 4).

Figure 6. Surgical shop fully filled with autogenous bone

Figure 7. Sutured oral cavity after completion of sinus lift maneuver

After bone elevation was completed, bone substitute allocation (Geistlich Bio-Oss®) was performed in order to support the membrane and subsequently anchor the implants (FIG. 5) (FIG. 6). Afterwards, the suture was performed and the patient was being followed for implant placement after adequate bone thickness (Fig.7).

Final considerations

It can be concluded from this study that: Considering the results presented in the literature and in the clinical case, it was observed that maxillary sinus lift surgery for dental implants is predictable and presents excellent results when using the piezo-surgical system. In this way, the advantages of piezoelectric instruments are numerous, when compared to rotary instruments, and that the minimal disadvantages presented were irrelevant, however, a learning curve is needed for adequate handling of piezo-surgical instruments.

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

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