Socket preservation in the daily practice: A clinical case report

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S
S oft tissue contour depends on the underlying bone anatomy, follow-

ing tooth extraction, sockets undergoes a remodeling process that in-

fluences the implant rehabilitation treatment of the edentulous areas.

Socket preservation procedure following tooth extraction will reduce the need for any further ridge augmentation technique prior to implant placement and will con-

serve the existing bone. The aim is to pre-

serve the original bone dimensional con-

tours by limiting the normal post extrac-

tion resorptive process.

The overall goal of this article is to provide the dental professional with valid tools in order to help them make a conscious de-

cision considering the indications of this therapy and dependent on each clinical case.

Keywords: Extraction, socket preservation, implant, resorption process.

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Nowadays the outcome of implant surgery is measured by the long-term esthetic and functional success and not by the survival rate. A correlation exists between the hard and soft tissues in order to assure esthet-

ic outcomes in implant surgery. Significant changes in bone volume and morphology following tooth extraction, can make im-

plant rehabilitation very difficult, as the time from extraction to implant placement increases.

Bone substitute in alveolar ridge preser-

vation and prevention of additional bone grafting is highly supported and has a wide range of advantages. The socket preserva-

tion technique allows the placement of im-

plants in sites that was considered compromised in the past. Following the conserva-

tive extraction (Figure 1.2), a bone filler is placed in the empty socket with a cross or non-cross linked membrane (Figure 3) and closed partially (Figure 4) or totally by a flap. It is stipulated that a provisional preparation is sometimes mandatory in or-

der to guide the healing process of the sur-

rounding tissues (Figure 5.6.7).

It was demonstrated that following tooth extraction the buccal bone plate will un-

dergo some modifications due to bone re-

modeling. In order to reduce the bone loss, several surgical techniques have been pro-

posed. Nowadays it is still possible to min-

imize osseous deformities problems by car-

rying out the ridge preservation techniques in extraction sockets and using bone fillers materials with barrier membranes. Today, the advanced wide range of bone grafting materials and collagen membranes guides us into taking in charge many compromised cases.

It was noted that the resorption of bone ridge is faster during the first six months following extraction, therefore a conser-

vative approach remains necessary. Many measures should be taken into consider-

ation when conducting the socket preser-

vation surgery such as: reducing the ex-

traction trauma and limiting the flare eleva-

tion. It was found histologically that bone formation occurs over the surface of the im-

planted osteoconductive graft fillers. This article goes through the technical basis for socket preservation procedure and ex-

poses its importance as an available treat-

ment in order to prevent ridge atrophy and optimize esthetics in the anterior maxillary area.

Clinical Case:

A 49-year-old female with a noncontribu-

tory medical history, presented to our clin-

ic with a mobile tooth 21 and an apical re-

sorption, the chief complaint was pressure in the upper anterior left area of the cen-

tral incisor. Clinical examination showed tooth 21 mobile with gray coloration. Peri-

apical radiograph examination revealed an apical resorption with an incomplete end-

odontic treatment (Figure 8). The tooth was deemed hopeless and referred for extrac-

tion with socket preservation for future dental implant placement.

After tooth was carefully removed with forceps technique (Figure 9), the extraction site was grafted with an osteoconductive bone graft (Figure 10, 11). A resorbable col-

lagen membrane was placed on the buccal aspect of the extraction socket and sutured to the palatal flap to attempt a primary clo-

sure, with an exposed membrane left on the occlusal aspect of the extraction socket.

A Temporary bridge was placed to guide the healing process and conserve the esthetic in the anterior region (Figure 12). Af-

ter six months surgical re-entry during im-

plant placement showed a good bony heal-

ing, that allowed the placement of a regu-

lar platform implant within the bone en-

velope (Figure 13), and achieved a good pri-

mary stability that allowed the placement of single piece, direct-to-fixture provision-

al screw-retained restoration on site 21 in order to guide the healing process (Figure 14,15,16).

A period of three months elapsed to permit osseointegration, afterwards the patient present for final impression (Figure 17,18), it was noted that the long axis of the im-

plant correlated to the central fossa of the expected final restoration (Figure 19). The final restoration showed an ideal esthetic restoration with healthy surrounding soft tissues.

Discussion:

The failure to preserving the anatomy of hard and soft tissues will result in esthetic failures and compromises the final results. Araujo mentioned in a paper published in 2009, the use of xenograft in socket pres-

ervation techniques will delay the socket healing but will help at the same time to conserving the anatomy. Xenografts are considered the most used bone fillers in the socket preservation procedures due to their osteoconductive matrix framework which enhances the growth of new bone around it, as their name suggests. Following tooth extraction the buccal bone plate formed especial-

ly by bundle bone will experience more re-

sorption than lingual and palatal ones, and is considered the first to be absorbed.

Loss of vertical ridge height will also occur less than the horizontal one, reducing the
The rate of residual ridge resorption is related to the time extended since the tooth was removed. Many factors such as trauma can cause loss of alveolar bone, since many extractions are done with no regard for maintaining the alveolar bone volume. With time bone resorption will evolve up to 2 mm in vertical and 4 mm in horizontal directions the first year following the extraction. An article published by Araujo in 2006, showed that implants placed directly after extraction procedures compared to naturally placed easier and did not required augmentation. Grafting bone after extraction is a common practice similar to implants placed into non-critical sites in terms of survival and marginal bone loss. On the other hand, bone grafting is a complex procedure and requires surgical intervention and patient compliance. The following article offers informations that can help clinicians to implement the socket preservation technique in their daily practice. In conclusion the socket preservation technique should be made on the selecting patients and preserve the anatomy of bone and soft tissues. The following article offers informations that can help clinicians to implement the socket preservation technique in their daily practice. In conclusion the socket preservation technique should be made on the selecting patients and preserve the anatomy of bone and soft tissues.

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Conclusion:

Loss of teeth due to carries or traumas, often result in hard and soft tissue collapse, therefore the preservation of bone volume is of major importance in order to insure the proper implant and esthetic rehabilitations. In order to insure the success of implant therapies, a sufficient volume of healthy bone at recipient site at the time of implant placement is mandatory. Today the commonly used method for ridge preservation procedure is a bone graft material placed in the extraction socket and covered by a cross or non-cross linked membrane followed by complete or partial flap closure. The decision to use socket preservation technique should be made on a case-by-case basis. Surgeons should familiarize with the wide array of techniques and materials used in order to optimize and preserve the anatomy of bone and soft tissues. The following article offers informations that can help clinicians to implement the socket preservation technique in their daily practice. In conclusion the socket preservation technique should be made on the selecting patients and preserve the anatomy of bone and soft tissues.

Another article published by Araujo in 2009, demonstrated that the placement of a biomaterial in an extraction socket will enhance bone remodeling and compensate the marginal ridge contraction. As shown in the clinical case, the socket preservation technique led to an esthetic success for several reasons, the absence of gray hue in the free gingiva with the preservation of the interproximal bone between tooth 10 and implant 21. The dimension of the preserved bone led us to place a narrow neck implant in ideal position, the resulting occlusal forces did not cause any overload and conserved an excellent prognosis. It was noted that ridge resorption in the mandible is more than the maxilla. To-day many have investigated that BIC (Bone Implant Contact) on healing of an extraction socket: an experimental study in dog. Clin Oral Implants Res 2003; 20(6): 545-9.


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