

Clinical Sheet

POST-EXTRACTIVE SOCKET MANAGEMENT

Grafting post-extractive sockets with a slow resorption bone substitute in a case of partially edentulous maxilla with thin vestibular cortical bone.



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The tooth extraction is associated with the loss of bone ridge volume. During site healing, the alveolar bone in fact undergoes a process of atrophy due to its natural remodeling processes that may lead to resorption up to 50% of ridge volume in 3 months from extraction.¹

The post-extractive socket resorption may have a significant impact on the ability to perform implant rehabilitation procedures, because the presence of a sufficient amount of bone and preservation of the correct ridge profile are essential requirements for the achievement of a good clinical and aesthetic result.

In recent years, several post-extractive socket preservation techniques have therefore been developed, aimed at maintaining the alveolar bone volume over time.

¹ Schropp, L., et al. Bone healing and soft tissue contour changes following single-tooth extraction: a clinical and radiographic 12-month prospective study. *Int. J. Periodontics Restorative Dent.* 23, 313–323 (2003).

Materials

Calcitos (OMC-30, Bioteck, Italy) was used as grafting material to preserve the sockets. The Biocollagen membrane (BCG-01, Bioteck, Italy) was also applied to cover some of the sites.

Calcitos is an equine origin bone substitute obtained by a high temperature treatment that assures long resorption times and long-lasting permanence in the grafted site.

The Biocollagen membrane is produced from equine collagen.

Used dry, it features fair rigidity and good hydrophilicity.

Once in contact with blood, it features adhesive properties that allow it to be positioned without any stitches.

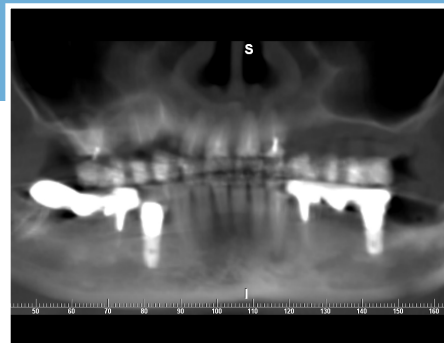


Fig. 1 – Preoperative panoramic CT scan showing the residual dental elements and the anatomy of the maxillary sinuses.

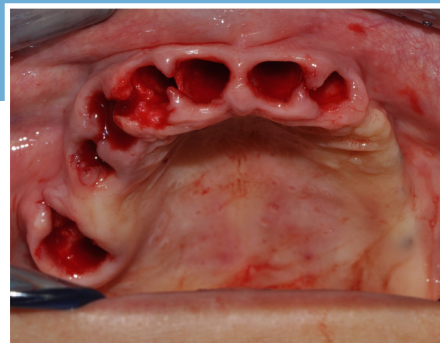


Fig. 2 – Sockets after extraction of the seven residual dental elements (elements from 1.1 to 1.4; elements 1.6, 2.1 and 2.2).

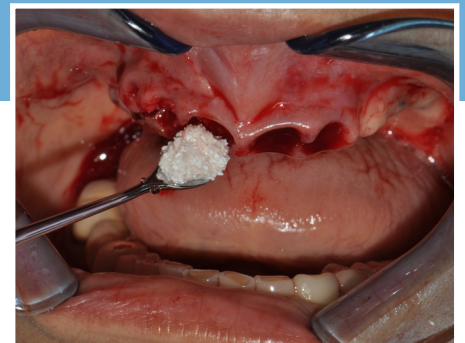


Fig. 3 – Placing Calcitos in the sockets. It should be noted that hydration tends to make granules adhere to one another, making application in the receiving site easier.

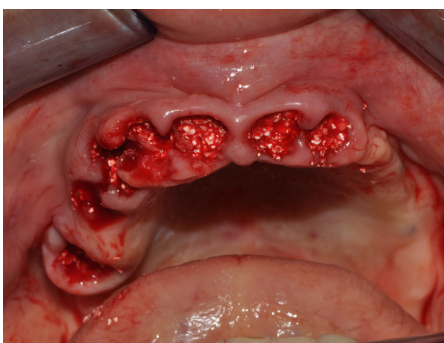


Fig. 4 – The grafted sockets.



Fig. 5 – The case in question is part of a case series on post-extractive socket preservation.

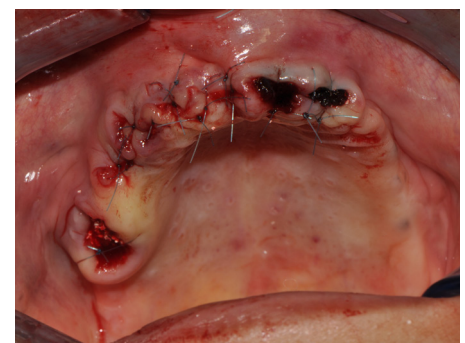


Fig. 6 – Closure of the surgery site with non-resorbable single stitches.

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Results

The case concerns a patient who required rehabilitation of the upper jaw, almost completely edentulous.

The clinical and radiographic examination revealed thin tissue biotype and vestibular cortical bone. The bone loss resulting from the extraction of the residual dental elements, deemed irrecoverable, would therefore have prevented the possibility of implant rehabilitation.

A two-step action plan was therefore scheduled, with extraction of the seven remaining teeth, curettage and filling of the sockets in order to maintain bone volume. Eight months later, the implant site was exposed, bone biopsies were taken and the implants were placed.

Upon completing the extractions, careful curettage and flushing of the sockets was performed. The preservation treatment was performed with Calcitos low-resorption graft, after hydration with saline.

The chosen granule size was 0.5-1 mm as it is more suitable for conveniently filling small-sized defects. The sockets were then covered with Biocollagen membrane and sutured with non-resorbable single stitches.

Eight months later, the graft site was opened up again to place the implants as well as to take bone biopsies to assess the histologic quality of the regenerated site. Cone Beam CT made it possible to ascertain the socket's bone volume had been preserved over time.



Fig. 7 – Appearance of soft tissue at the time of implant placement, eight months after the extractions.

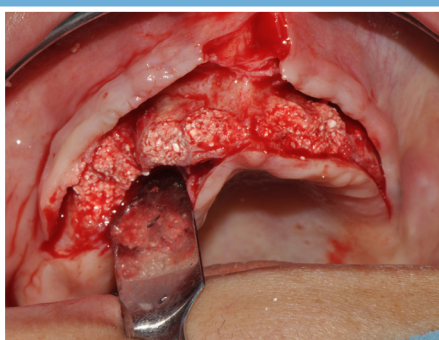


Fig. 8 – Detachment of the periosteal mucosal flap that shows the appearance of the bone in the graft site.



Fig. 9 – One of the bone cores taken at the implant sites. Notice the more granular appearance of the coronal portion, and the greater compactness of the apical one.



Fig. 10 – Hematoxylin and eosin staining of a paraffin section of the bone biopsies. Histologic examination shows the newly formed bone plus some particles of residual biomaterial.



Fig. 11 – Cone Beam computerized tomography of dental element 2.1 showing maintenance of ridge dimensions 3 months after grafting the socket with Calcitos.



Fig. 12 – Cone Beam computerized tomography of dental element 2.1 at implant placement, 8 months after grafting the socket.