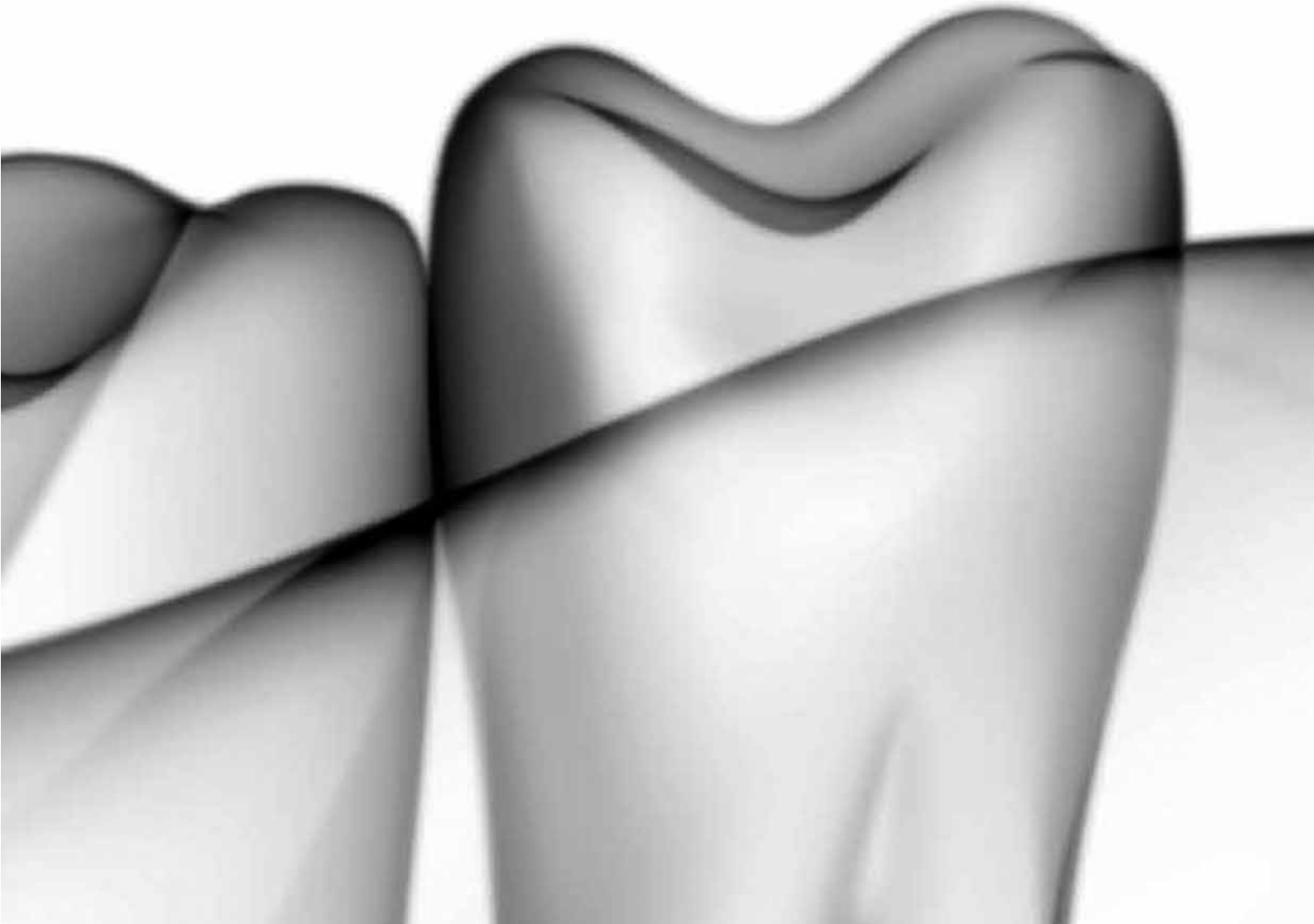
Case Reports

Cerabone & Jason Membrane

Dental Bone & Tissue Regeneration

botiss dental



Sinus Floor Augmentation

The maxillary posterior edentulous region presents a challenging condition for dental implant placement. Alveolar bone resorption and increased pneumatization of the sinus cavity reduce the amount of alveolar bone necessary to maintain a predictable implant-supported prosthesis. This problem can be overcome by grafting the maxillary sinus floor, which provides a sufficient quantity of bone for the placement of dental implants to support a prosthetic reconstruction. Sinus Floor augmentation is considered today as one of the most predictable procedures to build up the posterior maxillary region. The Augmentation can be performed in a two step procedure or in a one step procedure with simultaneous implant placement.

Indication Profile:

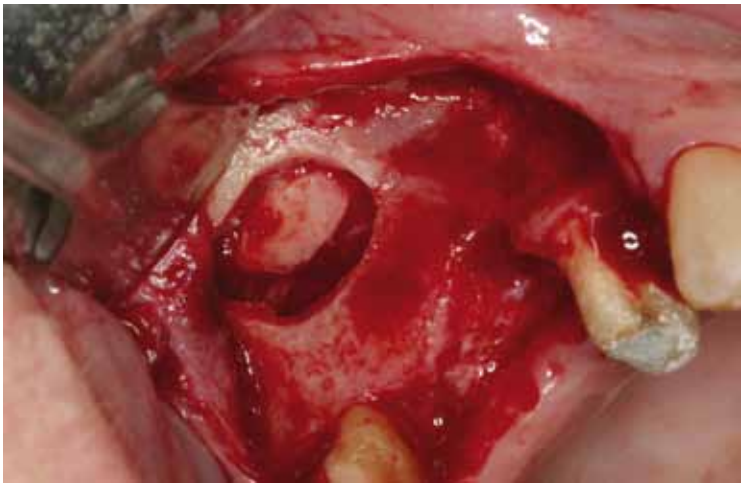
Augmentation of the sinus prior and with simultaneous implant placement.
Cerabone® Particle size: 1-2 mm

Method of preparation:

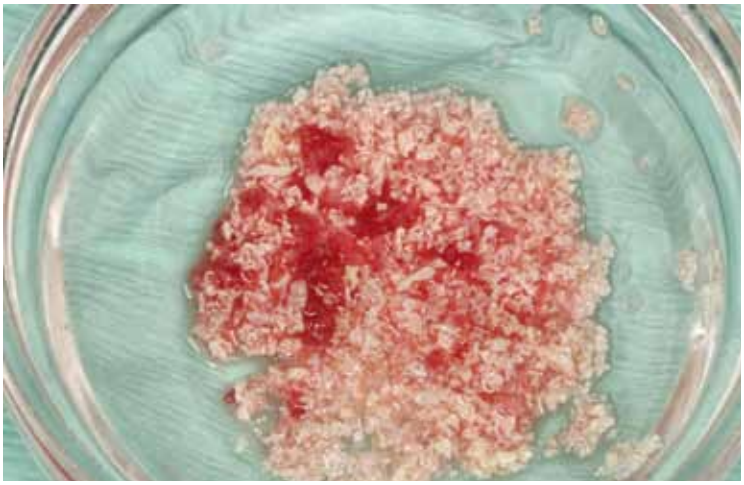
Mixing of Cerabone® with sterile saline solution and blood. The volume of the Cerabone® should be determined according to the sinus compartment size.

Case Description:

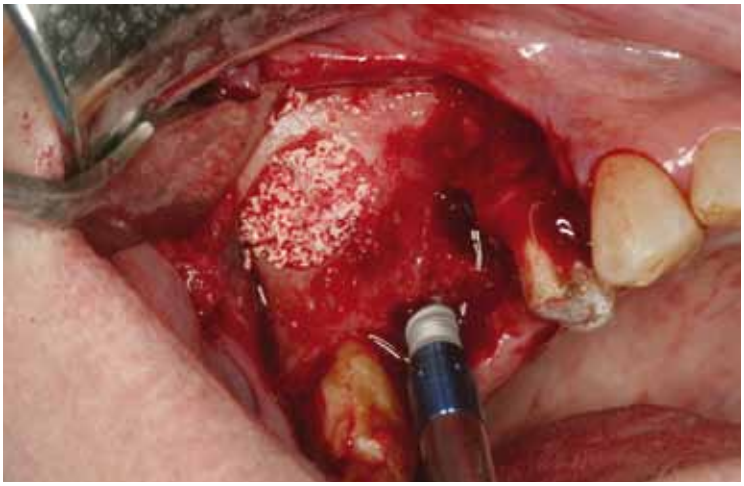
62 year old female patient was scheduled for sinus augmentation. 4 mm of residual alveolar bone was present between the crest and the sinus floor.



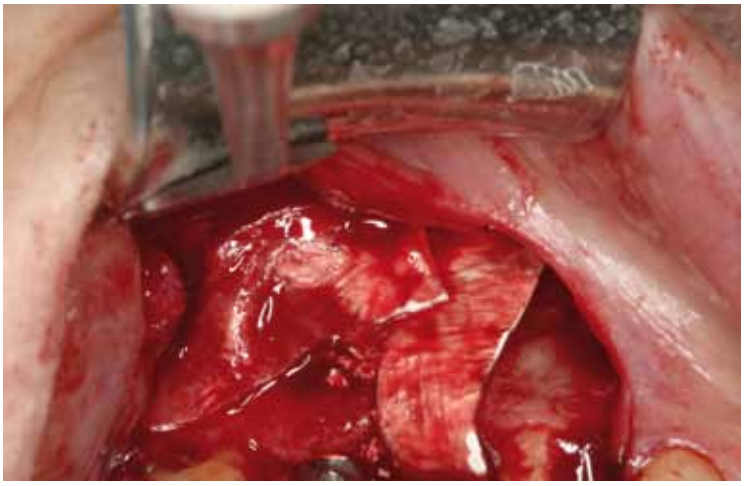
1. Sinus window preparation and elevation. Window was created by Piezosurgery surgical device.



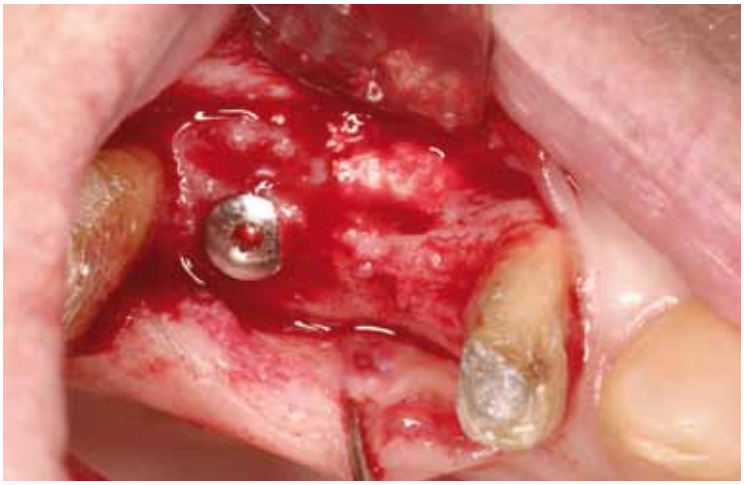
2. Cerabone® was mixed with sterile saline solution and patients own blood.



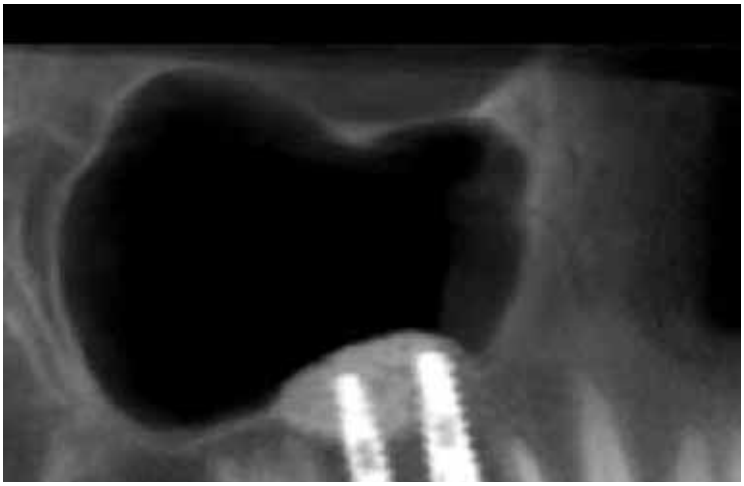
3. Cerabone® was placed into the sinus compartment and dental implants were inserted into the grafted site.



4. Jason® collagen membrane was placed to cover the lateral window as well as buccal defect on the buccal aspect of the anterior implant.



5. Six months re-entry. Note bone growth on top of the anterior implant.



6. CT scan at 6 months post op .Note the radioopacity of the Cerabone® grafting material.

Sinus Floor Augmentation - Two stage

Indication Profile:

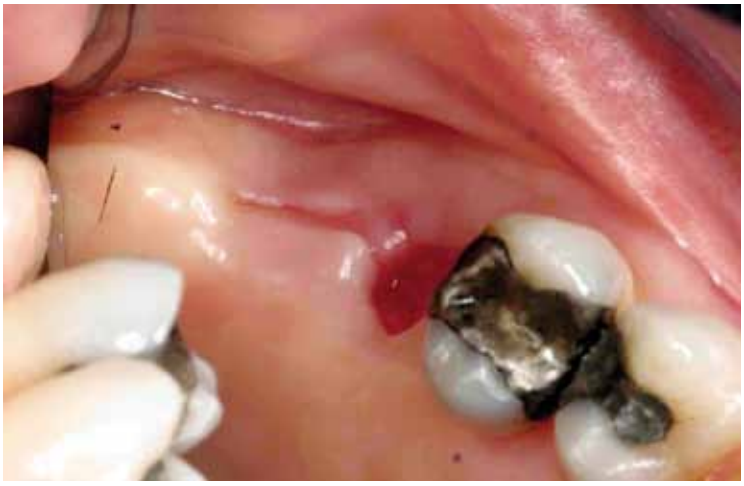
Augmentation of the sinus prior and with simultaneous implant placement.
Cerabone® particle size: 1-2 mm

Method of preparation:

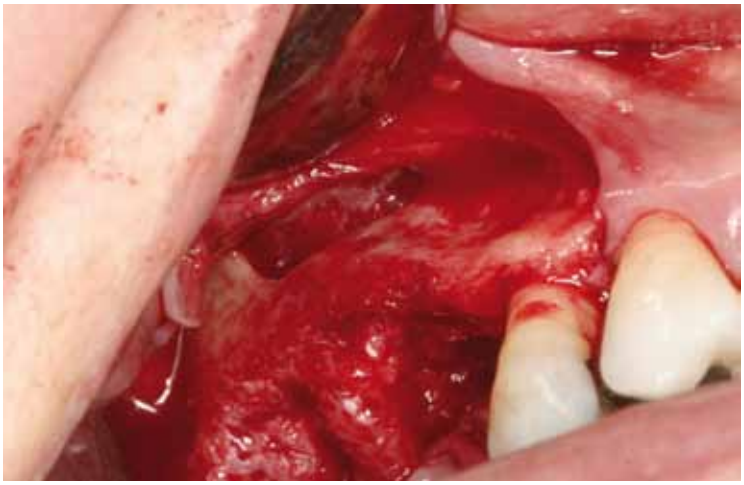
Mixing of Cerabone® with sterile saline solution and blood.

Case Description:

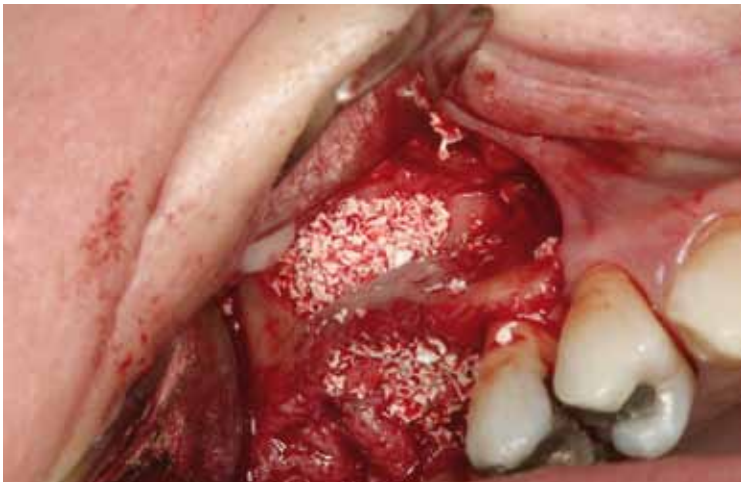
58 year old female patient was scheduled for sinus augmentation. 2 mm of residual alveolar bone was present between the crest and the sinus floor after extraction of her upper molar teeth. She was scheduled for a two stage procedure starting with sinus augmentation followed by implant placement 6 months later.



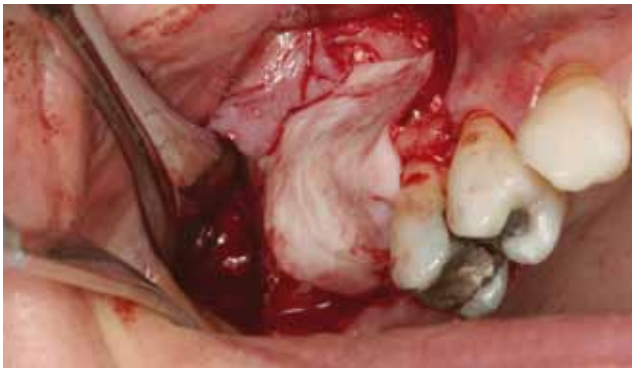
1. Clinical view 1 month after teeth extractions.



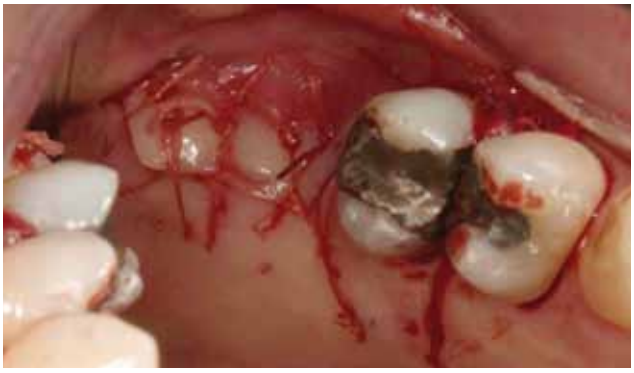
2. Sinus window preparation and elevation. Window was created by Piezosurgery.



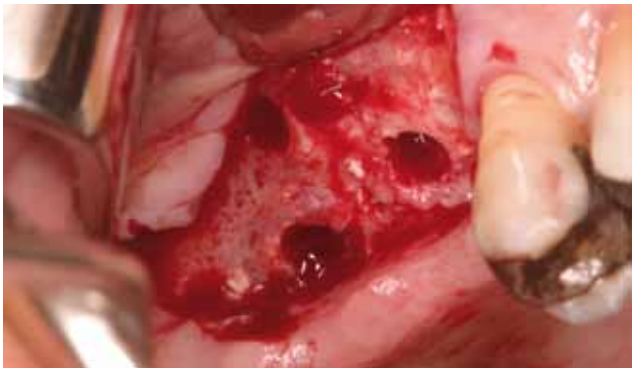
3. Cerabone® was placed into the sinus compartment as well as into the extraction sites.



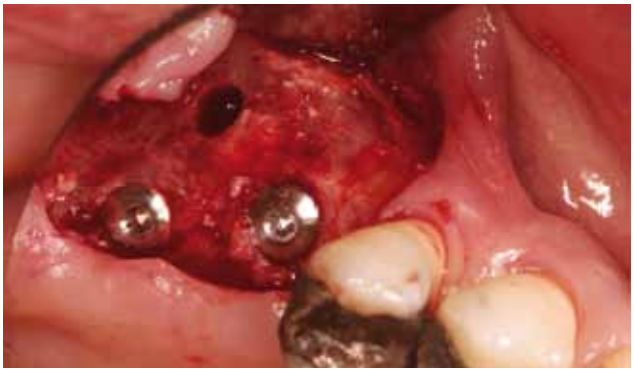
4. Jason® collagen membrane was placed to cover the lateral window as well as the buccal aspect.



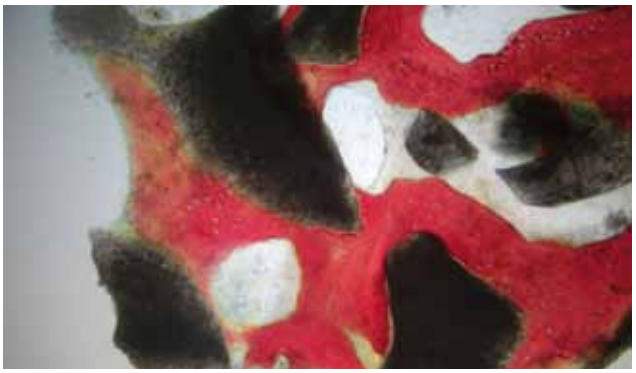
5. Flap sutured with primary closure.



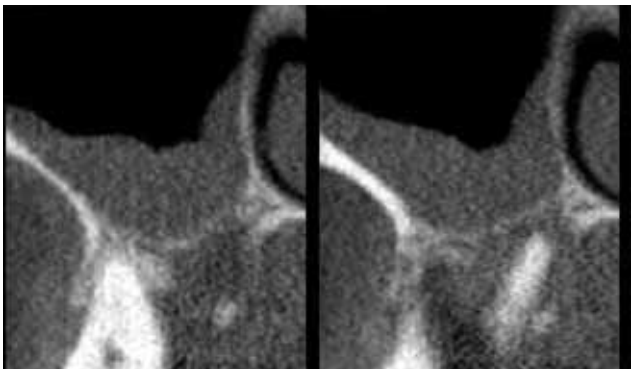
6. Six months re-entry. Note bone fill at the buccal aspect. Histolological core was taken for graft evaluation.



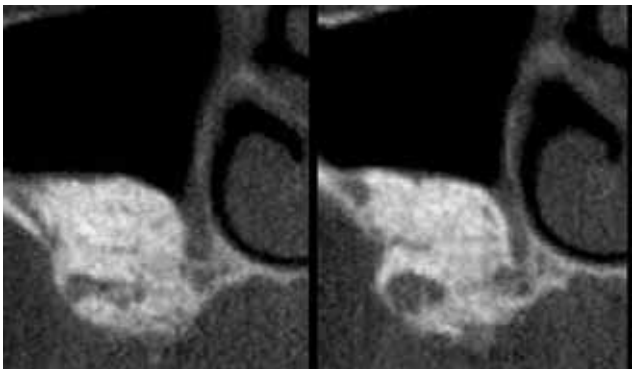
7. Implants placed into the grafted sinus.



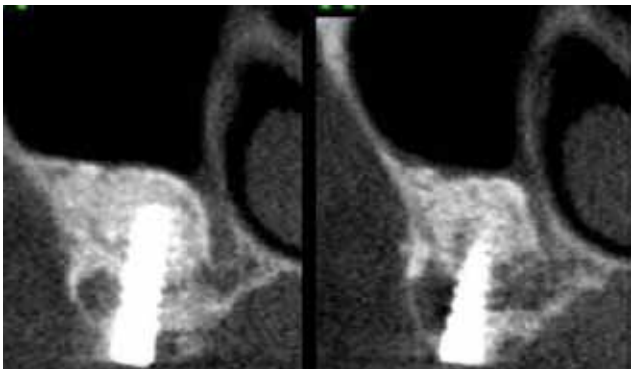
8. Histology reveals new bone formation bridging between the Cerabone® particles (stained in black). 18% of vital bone were noted. Histology was performed by Dr Michael Roher (University of MN, USA.)



9. CT scan before treatment showing minimal bone present 1-2 mm of residual bone.



10. CT scan 6 months post-op showing Cerabone®.



11. CT taken 12 months post-op with implants in place.

Closed Sinus Floor Augmentation

Vertical augmentation using osteotomes has also been selected as a choice of treatment due to less invasive surgery and less postoperative trauma. The osteotome technique enables the surgeon to raise the sinus membrane internally through an implant osteotomy site. Conventional bone-added osteotome technique was first described by Summers. This method is used when patients have at least 5 to 6 mm of bone remaining between the ridge crest and the sinus floor. The objective of this procedure is to maintain and conserve all of the bone in the site and selectively displace it upward. The bone graft material is generously placed via a bone carrier to cushion the force applied by the osteotomes. The hydraulic pressure of graft material raises the floor of the sinus. Once the osteotomy site preparation is completed (slightly narrower than the desired diameter of the chosen implant to be placed), the fixture is seated to the desired depth.

Indication Profile:

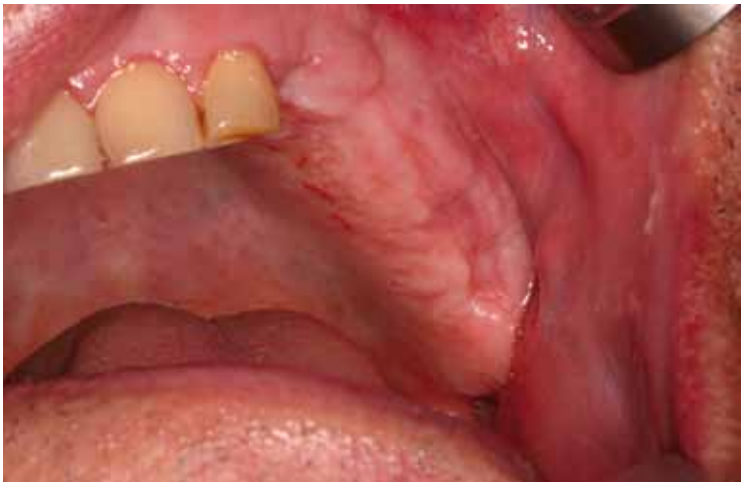
Augmentation of the sinus with simultaneous implant placement in cases of at least 6 mm of residual bone height.
Cerabone® particle size: 0.5-1 mm

Method of preparation:

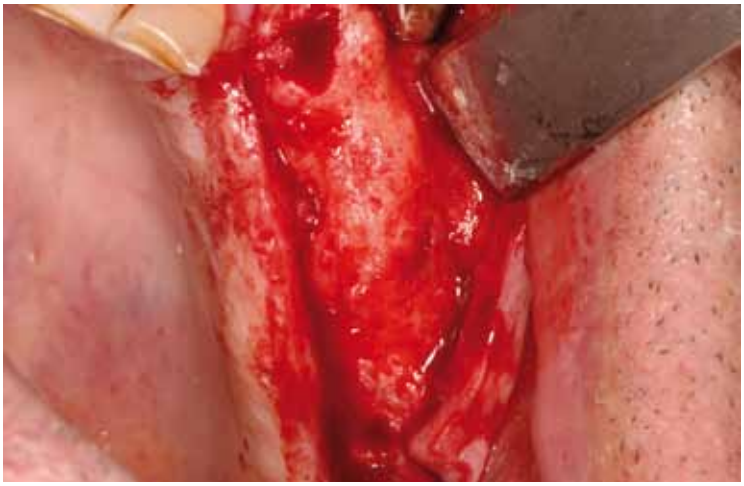
Mixing of the grafting material with sterile saline solution and blood.

Case Description:

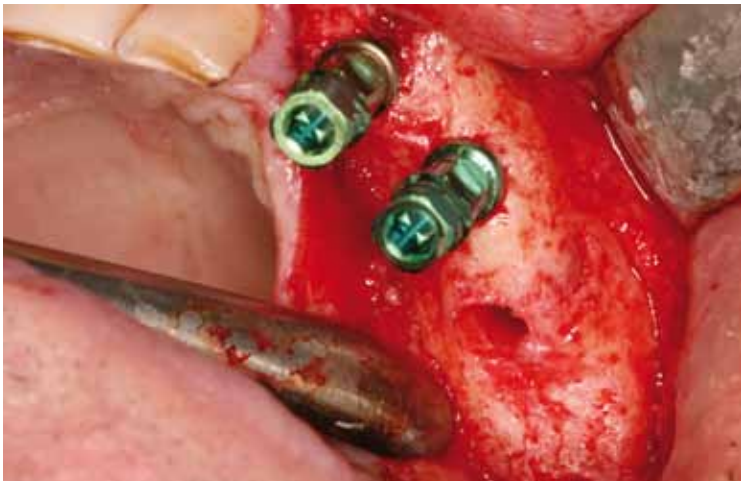
47-year old male patient was scheduled for implant placement and closed sinus augmentation at the area of tooth # 26. 6 mm of residual alveolar bone was present between the crest and the sinus floor.



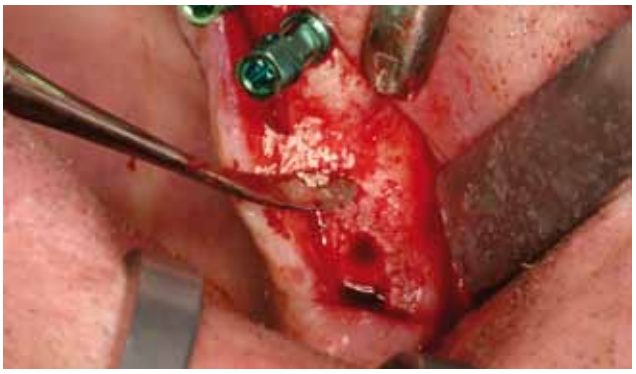
1. Clinical view.



2. Full mucoperiostal flap reflection.



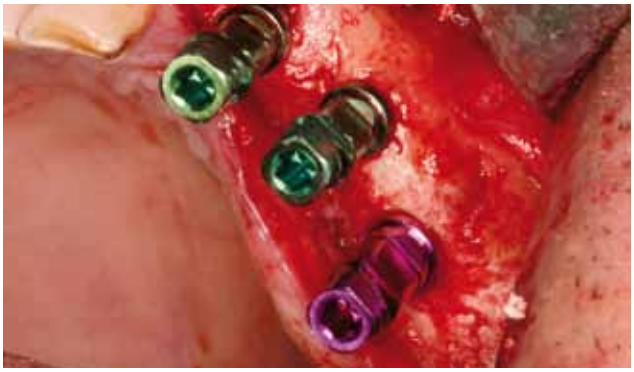
3. Anterior implants placed according to the conventional surgical protocol.



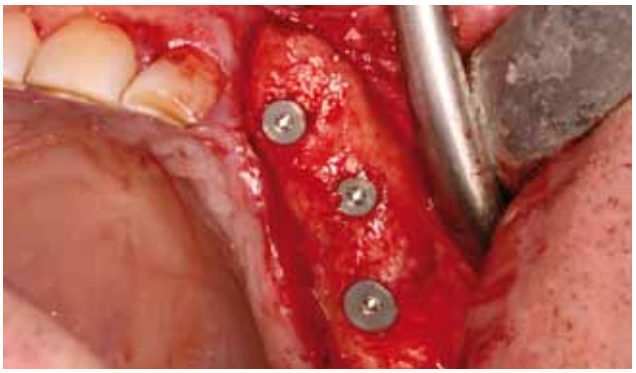
4. Cerabone® particles inserted to the osteotomy site of tooth # 26 after breaking the sinus floor with an osteotome.

5. Cerabone® condensation elevating the sinus membrane.

6. Cerabone® condensation elevating the sinus membrane.

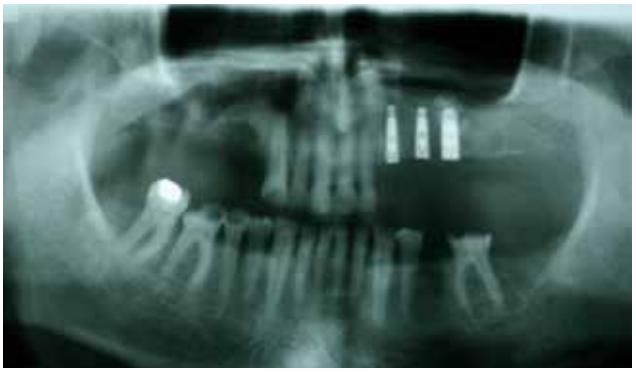


7. Implant inserted



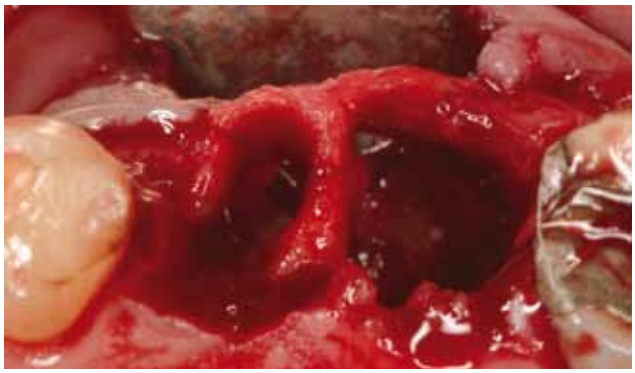
8. Implant inserted

9. Primary closure of the flap.

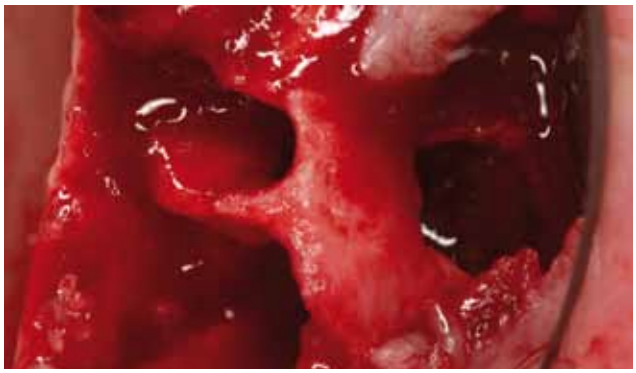


10. Panoramic x-ray showing the amount of sinus elevation

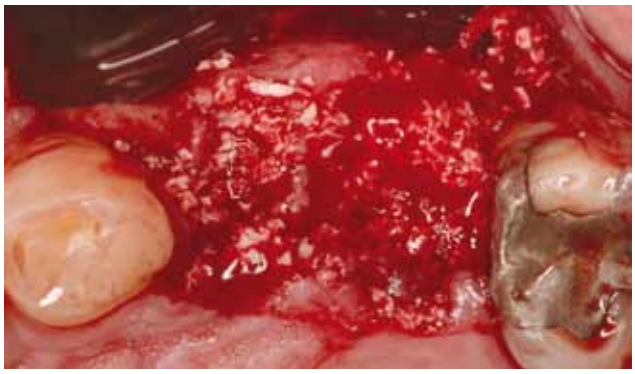
Socket Preservation and implantation



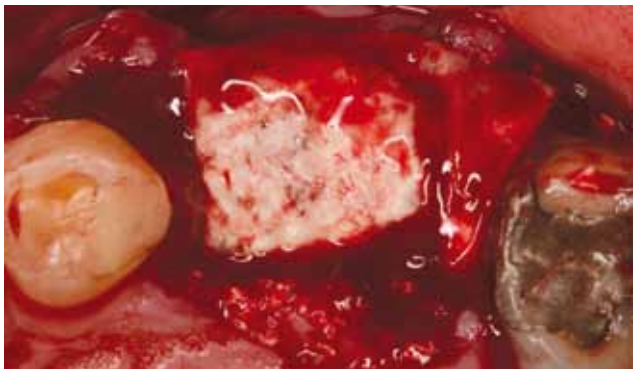
1. 52-year-old female patient with teeth # 24 and # 25 not worth conserving, status post careful extraction with preservation of vestibular lamella.



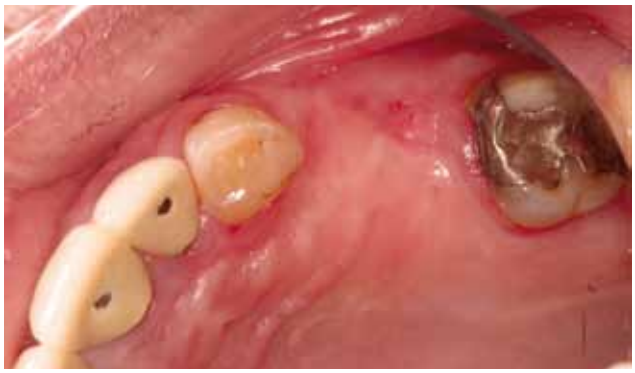
2. Following mucoperiosteal preparation, a large fenestration defect is noticeable in the apical root half of # 25, caused by chronic apical periodontitis existing for many years as a result of insufficient root filling (2nd canal not filled).



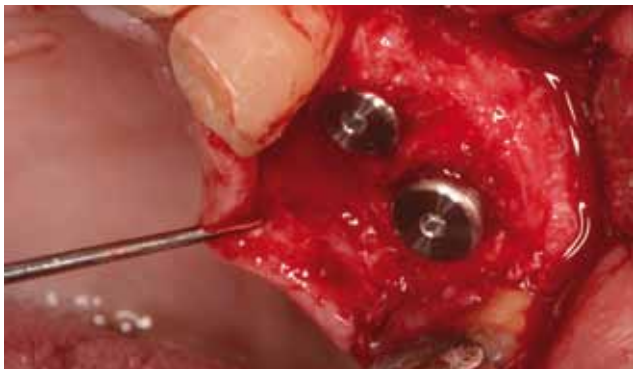
3. Complete filling of the alveoles with Cerabone®.



4. Covering of the buccal and crestal surface with a Jason® collagen membrane.

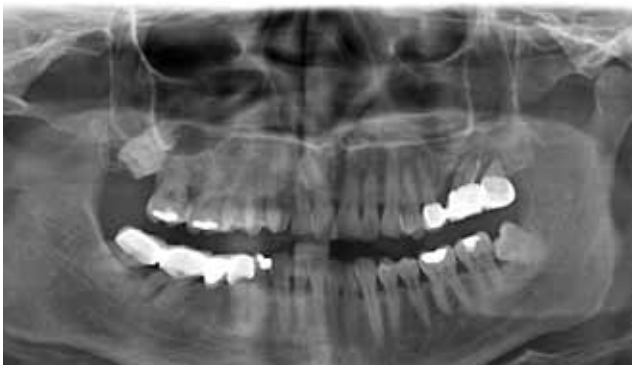


5. In spite of partial open healing, good soft-tissue healing with satisfactory width of keratinized gingiva already occurs after 2 months.

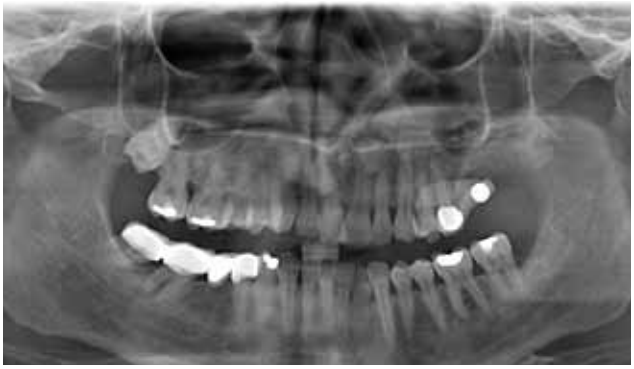


6. After a further four months, re-entry shows a jaw with clearly preserved dimensions, so that implant insertion can be performed without any problems.

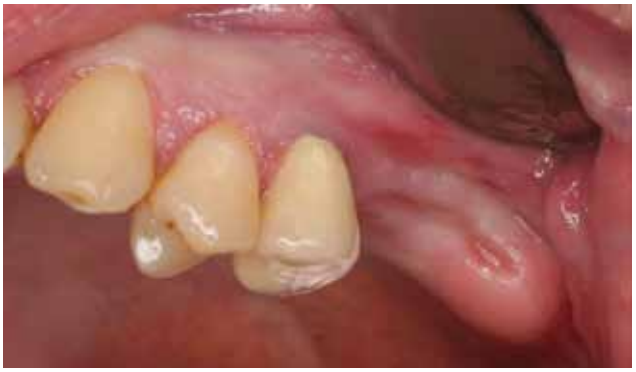
Sinus lift and lateral augmentation



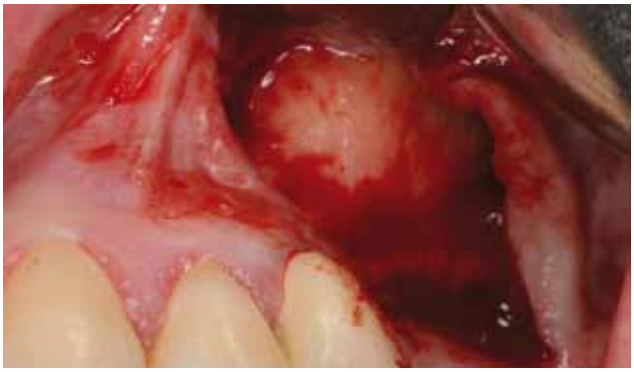
1 66-year-old male patient with fistula formation and chronic secretion in distal left maxilla. The OPTG (panoramic radiograph) obtained after application of a gutta-percha (gp) tip into the fistula shows a periradicular bone loss in situ a perio-endo lesion at # 27 and # 28 (status post extraction # 26 with space closure) and projection of the gutta-percha (gp) tip to # 27.



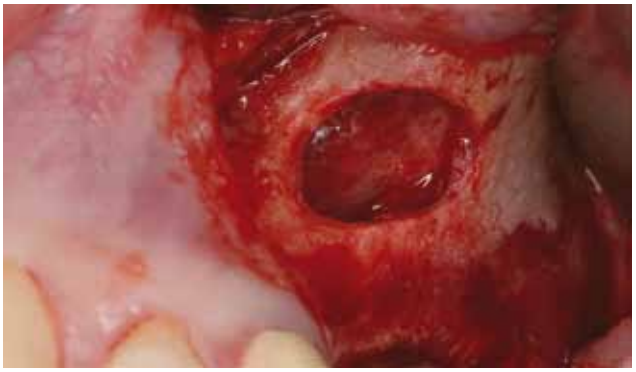
2. Two months after tooth extraction, the area appears free from inflammation with remaining residual bone height of 4 mm.



3. Aveoli with good soft-tissue healing can be recognised clinically.

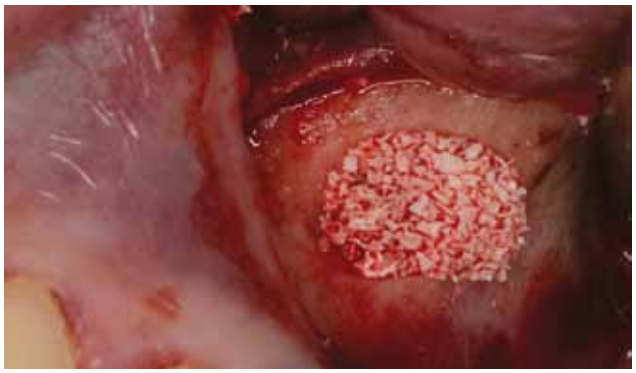


4. An obvious bone deficiency with vertical and horizontal component is apparent after mucoperiosteal preparation.



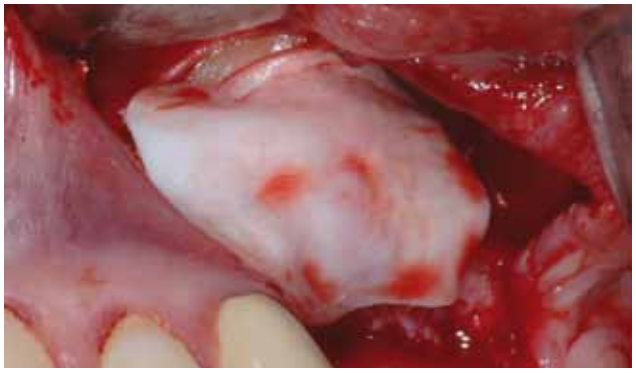
5. The maxillary sinus window is prepared using Piezosurgery.

6. Insertion of a dry Jason® collagen membrane to support the Schneiderian membrane. The membrane rehydrates with blood and, through this, it is self-adaptive.

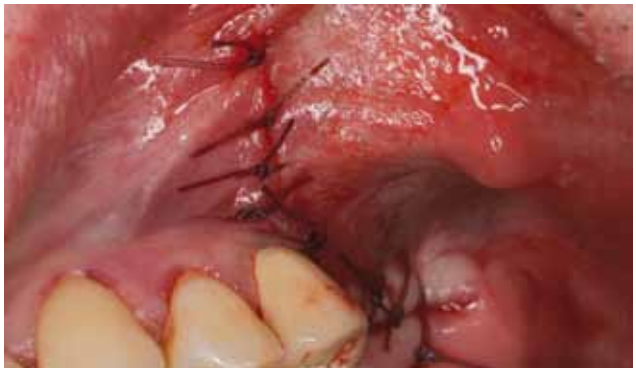


7. Cerabone® granules with particle size 1-2 mm, are applied to the sinus.

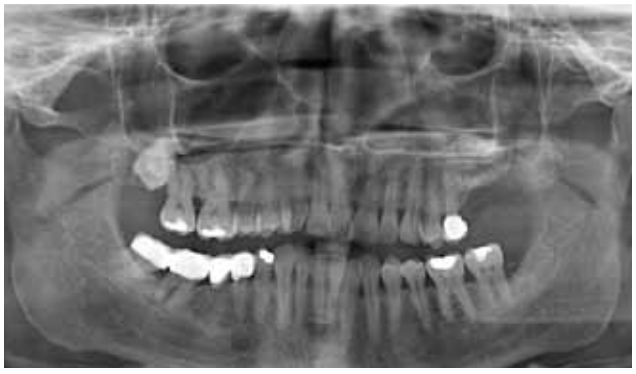
8. In order to widen the ridge, the Cerabone® material is applied to the ridge vestibularly. Because of their spherical form, the granules remain in place after application and do not require further stabilization.



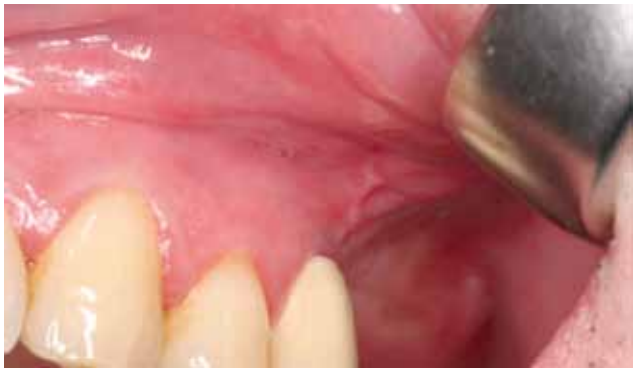
9. Covering of the defect with a Jason® collagen membrane for guided bone regeneration.



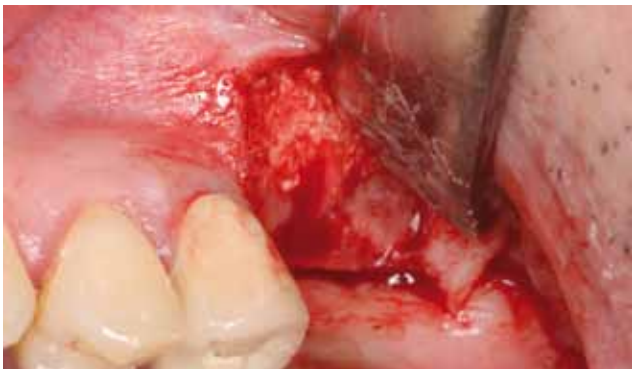
10. Flap extension through horizontal periostal slitting and saliva-proof suture closure with polyester 4-0 polyfilament.



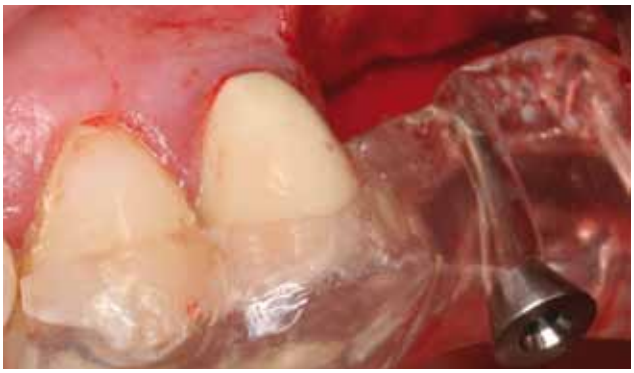
11. Radiological examination shows a vertical (opacity in the left sinus) und horizontal (jaw ridge density increase at region # 26/27) augmented maxilla.



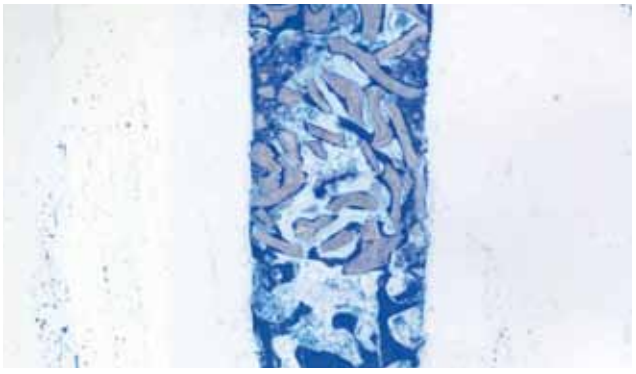
12. Re-entry after 6 months, there is already a noticeable increase in volume in region # 26 compared with that before surgery.



13. The bone bed also appears noticeably widened. Some of the granules, which are embedded in a newly formed hard-tissue matrix, appear in the bucccal part.

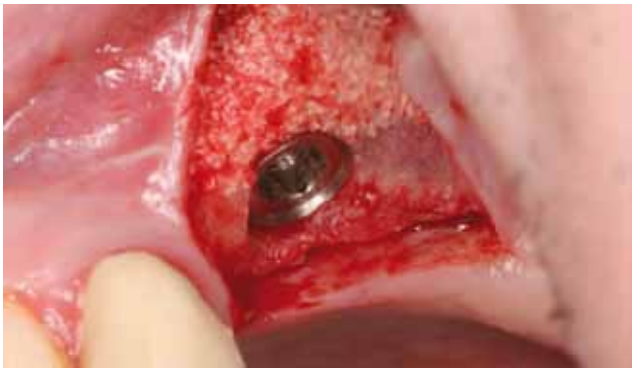


14. A drilling template is used to select the position of implant cavity (more specifically, the trepan cavity).



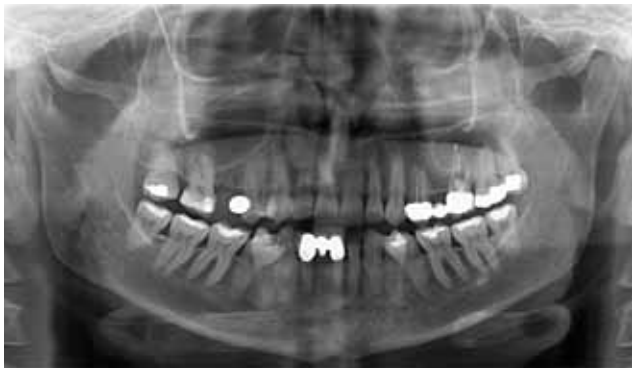
15. The histology of the biopsy shows the bone tissue (blue) of the original bone in the lower part. The maxillary sinus floor is situated near the middle – here the augmented region is now attached. The Cerabone® granules (grey) can be differentiated clearly by the colours. The Cerabone® granules in the entire biopsy are surrounded by a thin layer of newly formed bone tissue (blue) and are interconnected by newly formed trabeculae bone. (Original magnification 12.5x)

16. The individual parts can be differentiated more clearly at higher magnification: The Cerabone® granules (grey) are covered by a newly formed bone layer (bony ongrowth). In addition, the hard tissue is incorporated into the granules (bony ingrowth). There is bone marrow with stroma, blood vessels and fat cells between the mineralized parts. No inflammation can be observed.

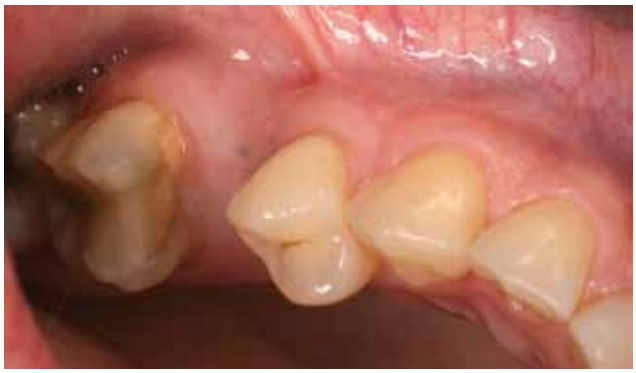


17. The clinical result after implant insertion, shows a horizontal augmented jaw after successful GBR therapy.

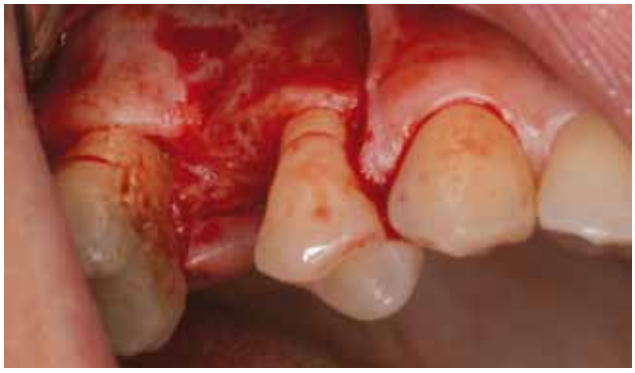
Implantation with simultaneous sinus floor elevation



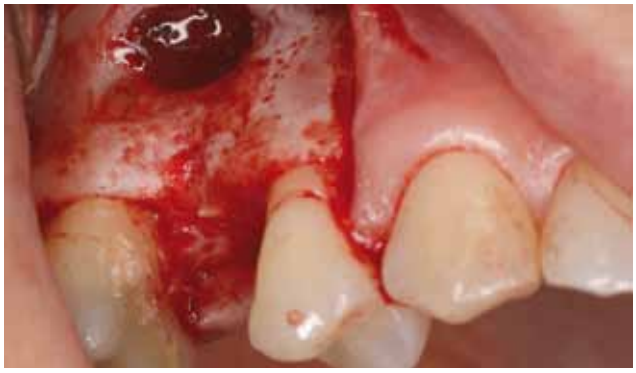
1. In this 53-year-old female patient, an interdental space # 16 with 6 mm residual bone height, existing since three years, is an indication for implantation with simultaneous sinus lift.



2. Uninflammed mucosa with good oral hygiene as a prerequisite for successful implantation.

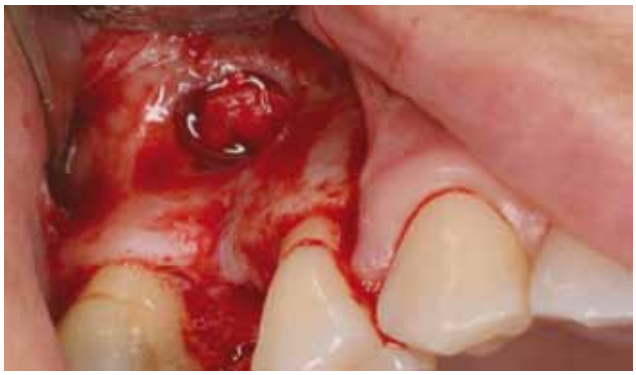


2. After preparation of a mucoperiostal flap, a lighter bone loss arises in vestibular region # 16 with adequate residual bone width.

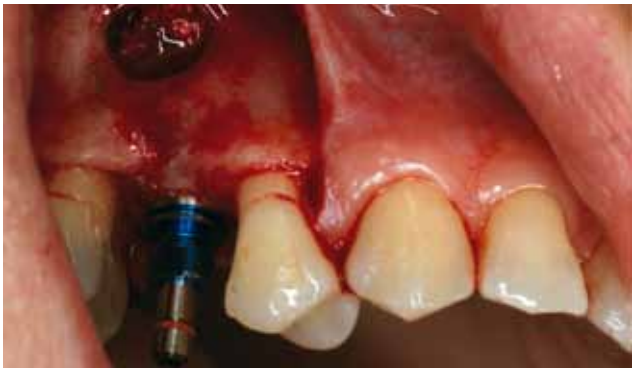


4. The facial maxillary sinus wall is prepared in a minimally invasive manner and the Schneiderian membrane lifted.

5. Cerabone® particles with particle size 1 – 2 mm are mixed with sterile saline solution.

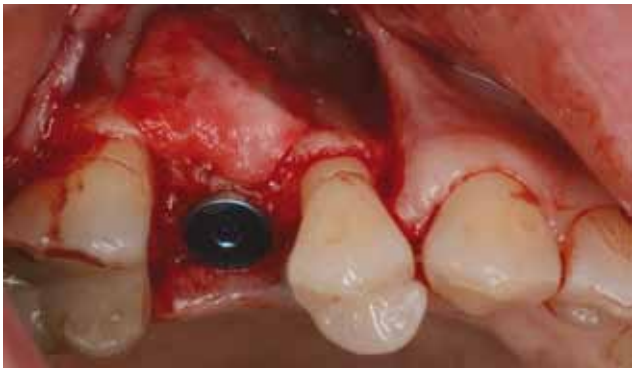


7. The implant cavity is drilled under protection with the raspatory, and a Jason® collagen membrane is inserted under the Schneiderian membrane to protect the thin maxillary sinus mucosa.

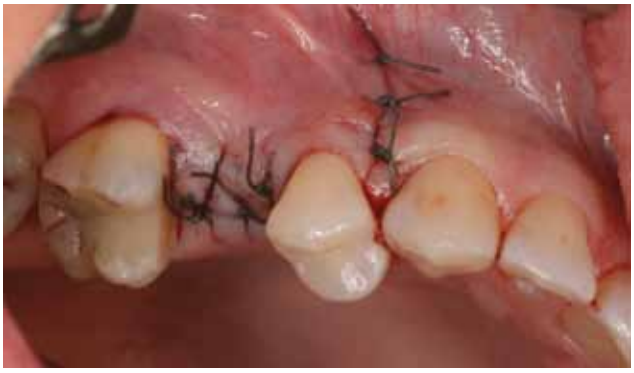


8. After insertion of half of the bone augmentation material, the implant is screwed in epicrestally in accordance with the manufacturer's recommendations.

9. The remaining bone augmentation material is applied subsequently to the height of the level of the maxillary sinus window.

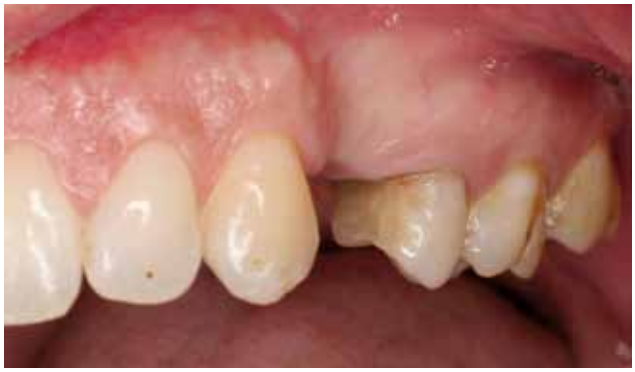


10. In accordance with the principle of guided bone regeneration, the bone augmentation material is covered with the remaining portion of the Jason® collagen membrane.

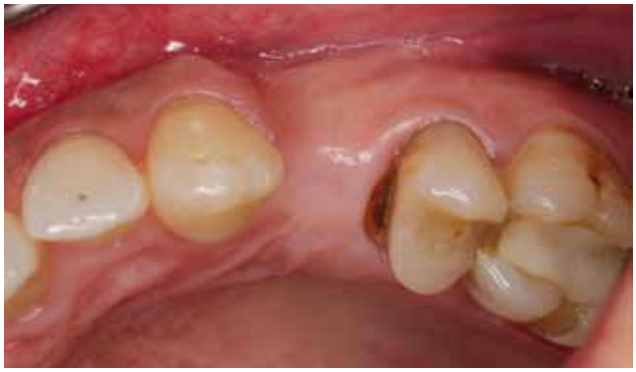


11. Suture repair is then carried out with polyester 4-0 polyfilament.

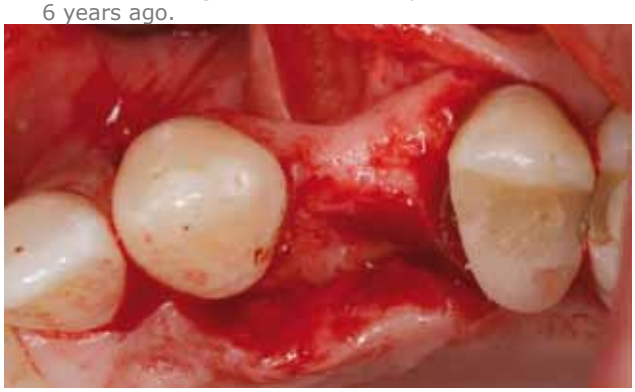
Augmentation dehiscence defect



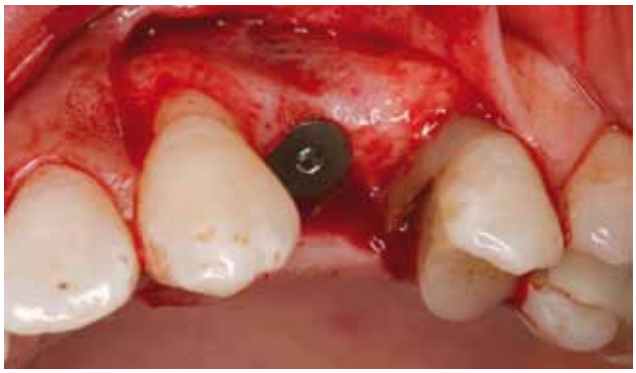
1. In this 26 year old female patient an ampulla-like retraction in region # 24 in status post tooth extraction 6 years ago.



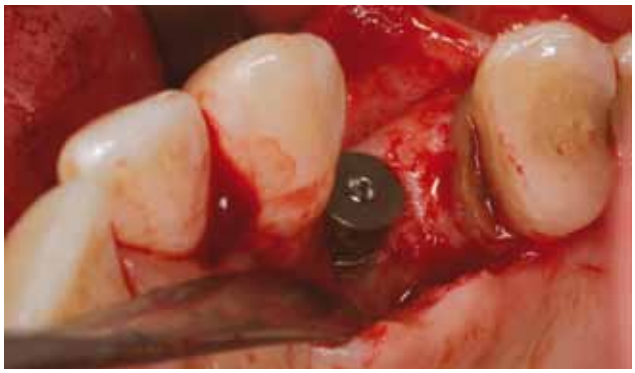
2. The bone defect appears to be mainly vestibular in the occlusal perspective.



3. After soft tissue mobilization, a clear palatal bony crestal retraction can also be diagnosed.

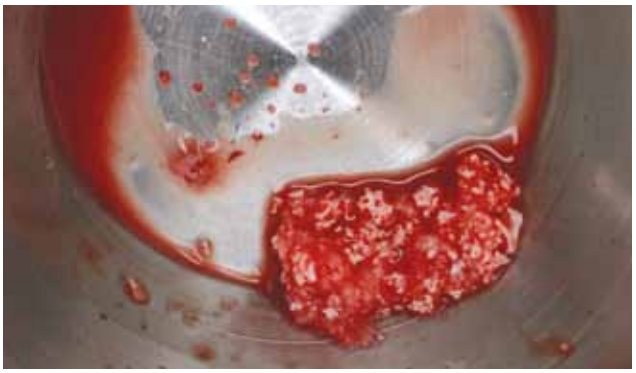


4. Insertion of the implant and harvesting of bone chips by using a bone filter. The vestibular covering osseous lamella is about 1 mm wide, which will be absorbed still further through periosteal detachment.

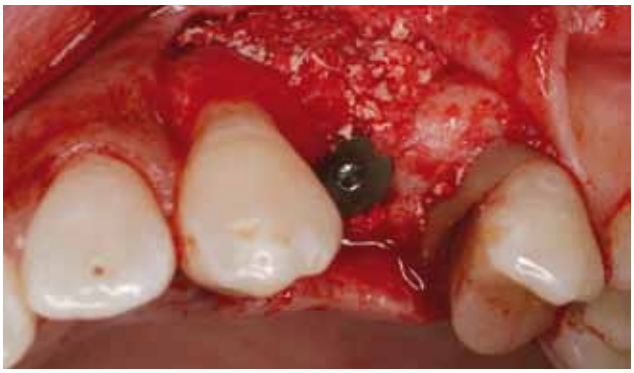


5. There is an obvious palatal dehiscence defect, in which the upper implant turn is not covered by bone.

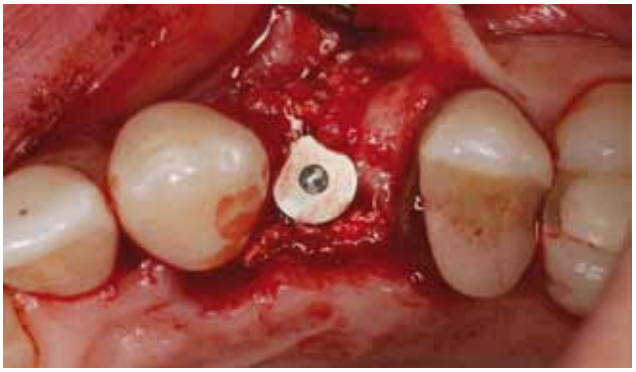
6. The bone chips obtained through implant installation, are mixed with Cerabone® particles with particle size 1 – 2 mm.



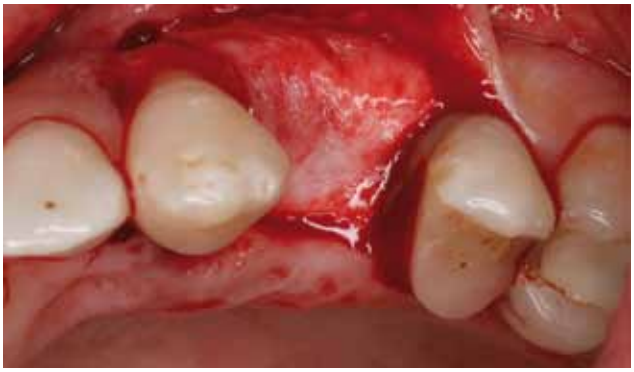
7. In addition, blood that had been taken from the defect area by means of a sterile syringe, is mixed in.



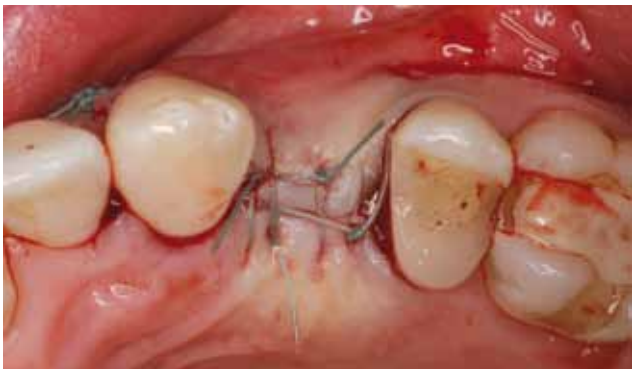
8. Filling of the vestibular bone defect with the prepared augmentation material.



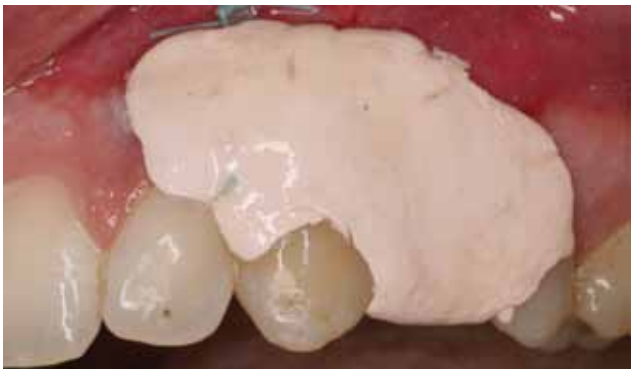
9. The palatal defect is augmented up to the crestal implant edge.



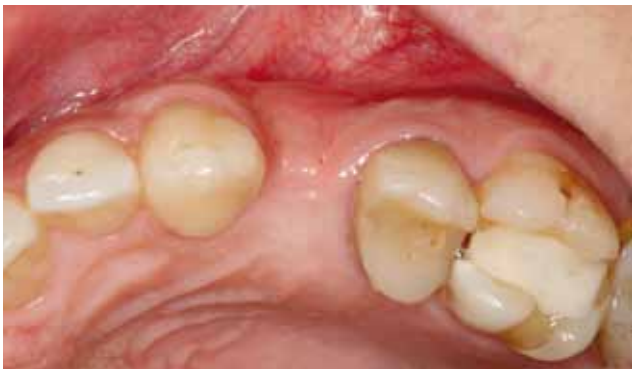
10. Covering with Jason® collagen membrane, which overlaps the Cerabone® augmentate by about 1 mm.



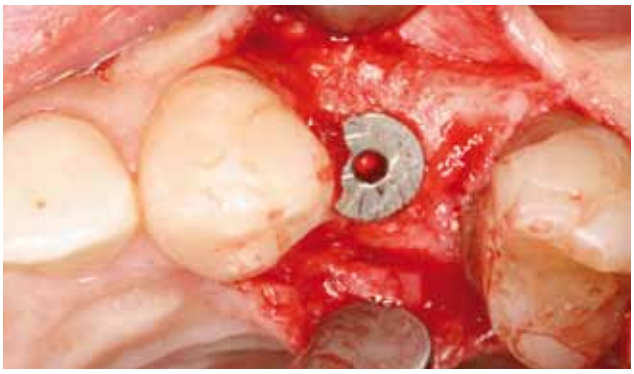
11. Flap extension by horizontal periosteal slitting and suture closure.



13. A periodontal pack is applied for 3-4 days for better soft tissue healing.



14. A stable soft tissue situation is achieved after a healing period of 4 months.



15. Good bone regeneration with hard-tissue covering of the buccal and palatal implant shoulder, is apparent on re-entry

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