Guided Bone Regeneration After Impacted Maxillary Canine Removal: A Case Report

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Abstract

Background: İmplant planning for fixed prosthesis has many difficulties. Especially in anterior region impacted canines may be present. In some cases when orthodontic extrusion is not possible, surgical approach can be a valid treatment plan. But large bone defects created after the extrusion often requires bone grafting. In such cases, guided bone regeneration is a good strategy to form new alveolar bone. **Aim/ hypothesis:** Removing impacted teeth cause large bone defects. In this case report, we increased the bone volume by using bone grafts and membranes. **Material and Methods:** A 55 years old male patient was referred to Istanbul University Dentistry Faculty Department of Oral Implantology due to mobile maxillary teeth. After the clinical and radiological examination, full arch fixed prosthesis was planned. A horizontal impacted canine was present where the implants will be placed. A guided bone regeneration was planned on the same day as tooth extraction. After canine extraction, Xenograft and Collagen membranes were used to increase horizontal volume of alveolar bone and to fill the extraction socket of canine. Membrane was fixed with pins. Two mini-implant were used for temporary fixed prosthesis. After a healing period of six months implants were placed. Screw-retained metal ceramic prosthesis was used for final restoration. Augmented site and implants were controlled regularly with CBCT after surgery. **Results:** During postoperative 1 year controls, there was no change in gingival contour and bone resorption with CBCT. Pink esthetic score was used to evaluate gingival aesthetic. Implants healed without adverse events. The comparison of radiographic images showed physiologic bone remodeling at the implant shoulders without bone resorption. **Conclusion:** Volumetric analysis showed a low degree of contour changes from extraction and implant placement to the follow-ups before final restoration. Surgical extraction of impacted canines may be an alternative treatment option, when orthodontic extraction is not indicated. Although, as always surgical procedures are expensive and patient comfort is lower than orthodontic treatment. **Key words:** guided bone regeneration, impacted tooth, dental implants, esthetic area, extraction socket

Background and Aim:

Adequate hard tissue around a dental implant is crucial for the long term success of the implant placement. However, unfavorable conditions, due to oral infections, bone atrophy after dental extractions, and long term edentulism, may result in insufficient available bone, making implant placement im- possible. Adequate hard tissue around a dental implant is crucial for the long term success of the implant placement. However, unfavorable conditions, due to oral infections, bone atrophy after dental extractions, and long term edentulism, may result in insufficient available bone, making implant placement impossible. In this case there was insufficient bone in anterior region , removing impacted canine would result bigger bone volume loss. The purpose of this presentation is increase the bone volume and prevent alveolar socket resorption by guided bone regeneration.

Case Presentation

55 years old male patient was referred to Istanbul University Dentistry Faculty Oral Implantology Department due to mobile maxillary teeth. After the clinical and radiological examination, full arch fixed prosthesis was planned.

Surgical Procedures

Extra-oral disinfection of the surgical site, the patient was instructed to rinse with 0.12% chlorhexidine solution for 1 min. After local infiltrative anesthesia (Ultracain® D-S Forte, Sanofi-Aventis Deutschland GmbH) 12, 11, 21, 26 teeth were extracted. Crestal and vertical incisions were made along the residual alveolar ridge. A mucoperiosteal flap was elevated to allow complete visualization of the horizontal defect and the surrounding bone. The impacted canine was extracted. For temporary prosthesis two mini-implants (Trias Interim 2.0 mm temporary implant, Germany) were inserted to region 22 and 24. The recipient bone was curetted to remove any soft tissue that may impede bone healing. Resorbable collagen membrane (Jason® Membrane, Botiss, Straumann Group, Switzerland), was trimmed according to the contours of the grafting site and then applied for horizontal augmentation. After grafting (Cerabone®,Botiss, Straumann Group, Switzerland) the resorbable membrane was immobilized with tacks (Pinfix, Sedenta, Istanbul, Turkey) into the palatinal and buccal sites. A periosteal-releasing incision was made to allow passive primary closure of the flap. Wound adaptation was achieved with horizontal mattress and interrupted 4–0 nonabsorbable monofilament sutures (Seralon, Serag-Wiesner, Naila, Germany).

After surgery dental volumetric tomography (DVT) was taken as control radiography. Temporary metal-ceramic cemented prosthesis was loaded in two weeks after guided bone regeneration. At the end of 6 months healing period, dental implants (Camlog ®, Germany) were inserted to 12, 21, 23, 25 teeth regions in maxilla, 33, 34, 35, 37 teeth regions in mandibula. Flaps are closed with 3-0 silk suture (Doğsan, Turkey).

Prosthetic Procedures

At the end of three months healing period of dental implants gingiva formers were applied. Soft tissue healing was waited and gingiva formers were changed with multiunit abutments torked 20 Ncm. Temporary mini implants were removed before impression session. All teeth were restorated and preparated , open impression coppings were used on the multiunit abutments and open-mouth impression was used. Caps used on the multiunit abutments between prosthetic steps.

Metal-Cermic (Noritake Super Porcelain Ex-3, Kuraray Noritake Dental Inc.®) screw retained restoration were used as perminant prosthesis. Panoramic radiography was taken in the session of metal rehearsal. Asymmetry of the occlusal table was fixed and gingival form was given with pink porcelain. Occlusal relation was managed as posterior group function.

Results

During postoperative 1 year controls, there was no change in gingival contour and bone resorption with CBCT. Pink esthetic score was used to evaluate gingival aesthetic. Implants healed without adverse events. The comparison of radiographic images showed physiologic bone remodeling at the implant shoulders without bone resorption. Volumetric analysis showed a low degree of contour changes from extraction and implant placement to the follow-ups before final restoration. Surgical extraction of impacted canines may be an alternative treatment option, when orthodontic extraction is not indicated. Although, as always surgical procedures are expensive and patient comfort is lower than orthodontic treatment.

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