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COMPLICATION MANAGEMENT OF MALPOSITIONED DENTAL IMPLANTS IN A LATERAL AGENESIS PATIENT TREATED WITH CANINE SUBSTITUTION

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Introduction

A 26-year-old female presented with an implant in the #6 site with peri-implant mucositis. The patient's past dental history consists of bilateral lateral agenesis, orthodontic treatment positioning the maxillary canines in the lateral position and dental implant placement and restoration bilaterally in the canine sites. A cone beam computed tomography (CBCT) scan was taken. Clinical and radiographic evaluation revealed that the implants were malpositioned with fenestration of buccal bone plate at the apical aspect and substantial crestal bone loss. Tentative treatment plan of #6, 11 implant crown removal, implant submergence, 2-unit distal cantilever fixed dental prostheses (FDP) from #7 and 10 was established.

Materials and Methods

Decoronation of the implant supported crowns were performed in an attempt to submerge #6, 11 dental implants. #7, 10 were prepared to receive distal cantilever provisional restorations. It was determined that submergence of both implants was not possible due to inadequate depth of placement.[1] The implants were subsequently removed with a reverse torque instrument (Salvin Implant Rescue Kit, Salvin Dental Specialties, Charlotte, NC). The extraction sites were grafted with xenogeneic bone substitute (Bio-Oss Collagen®, Geistlich, Princeton, NJ) and rhPDGF-BB (GEM 21S®, Lynch Biologics, Franklin, TN). Provisional restorations with distal cantilever and ovate pontic were delivered.

2 months after implant removal, soft tissue augmentation was done with xenogeneic collagen matrix (Fibro-gide®, Geistlich, Princeton, NJ). Following 4 months of healing, ancillary soft tissue augmentation with autologous connective tissue graft was done to ameliorate insufficient volume gain. Replacement of implants was considered but non-elected on account of inadequate 3-dimensional space.

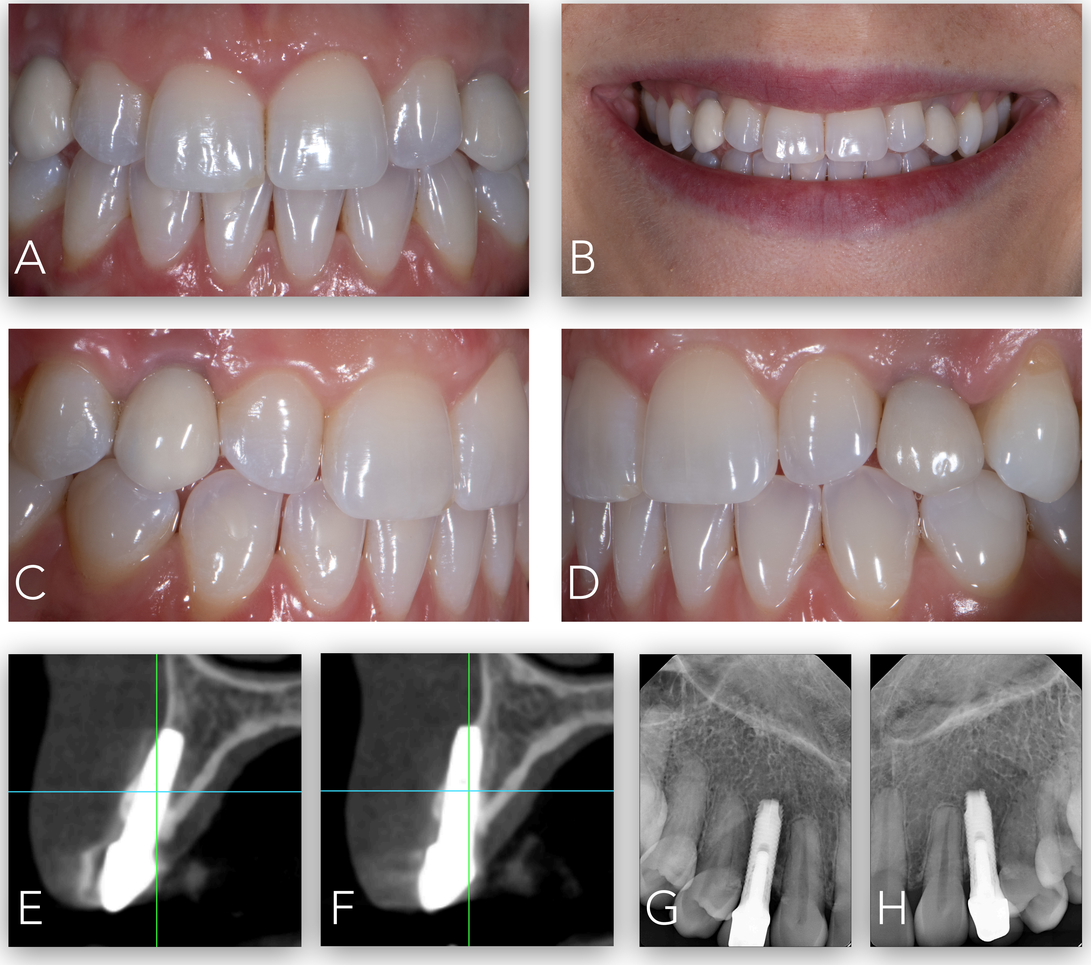


Figure 1. A, frontal view at initial presentation; B, smile line; C, right lateral view; D, left lateral view; E, F #6, 11 sagittal view from CBCT data set; G, H, #6, 11 periapical x-ray.

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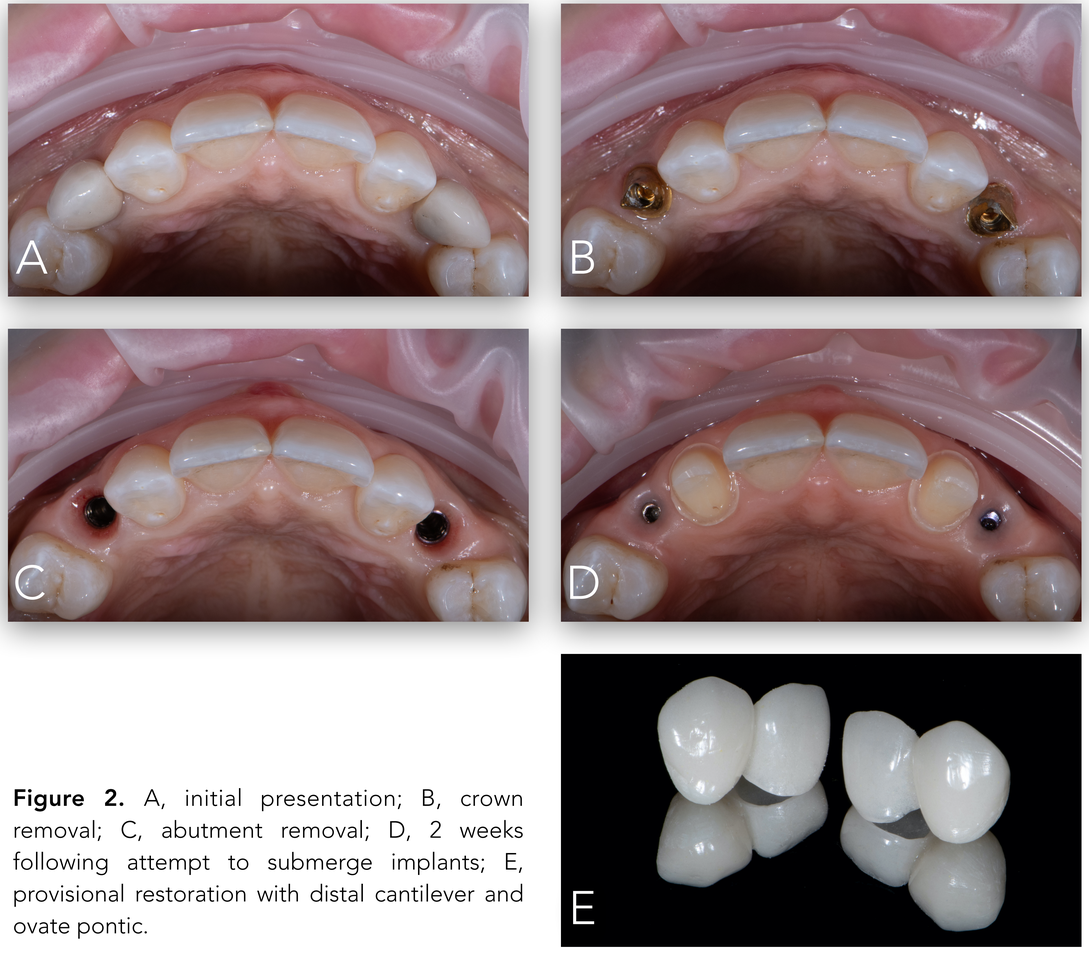


Figure 2. A, initial presentation; B, crown removal; C, abutment removal; D, 2 weeks following attempt to submerge implants; E, provisional restoration with distal cantilever and ovate pontic.

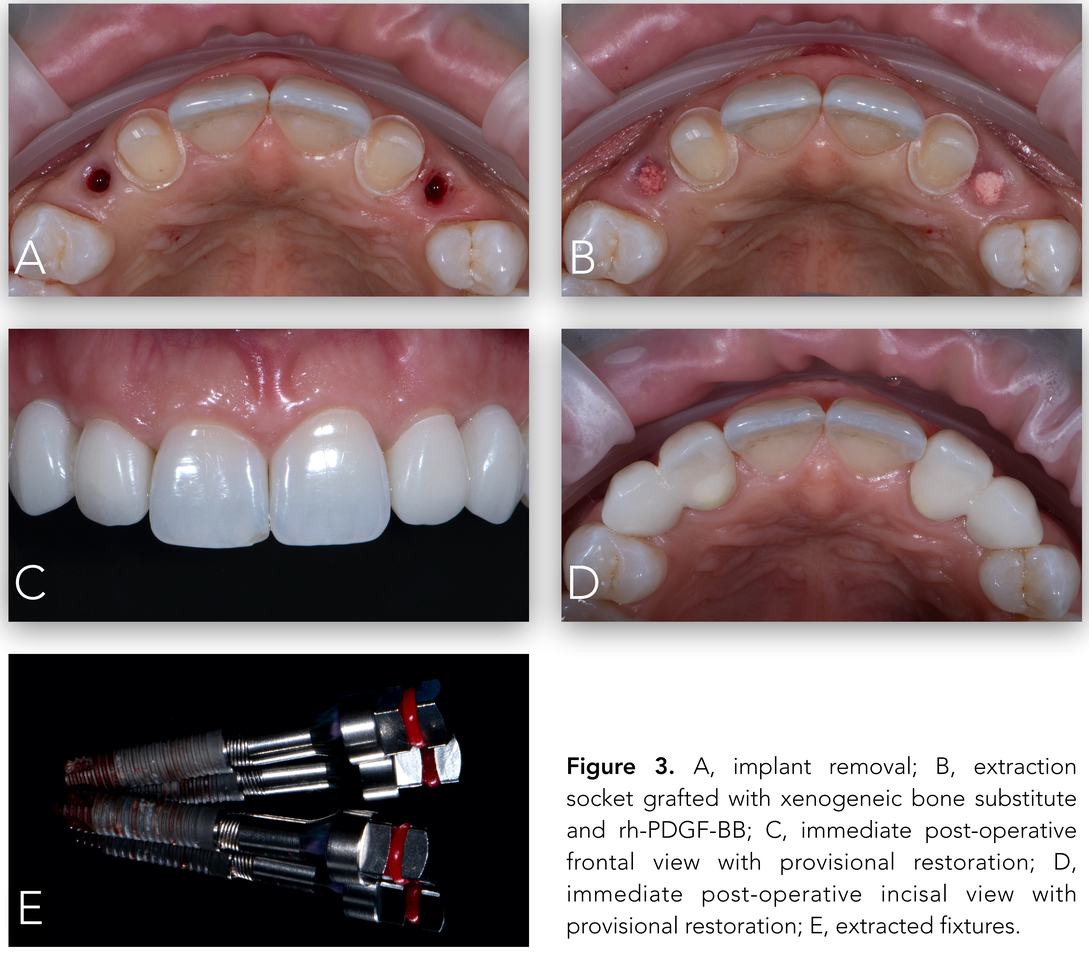


Figure 3. A, implant removal; B, extraction socket grafted with xenogeneic bone substitute and rh-PDGF-BB; C, immediate post-operative frontal view with provisional restoration; D, immediate post-operative incisal view with provisional restoration; E, extracted fixtures.

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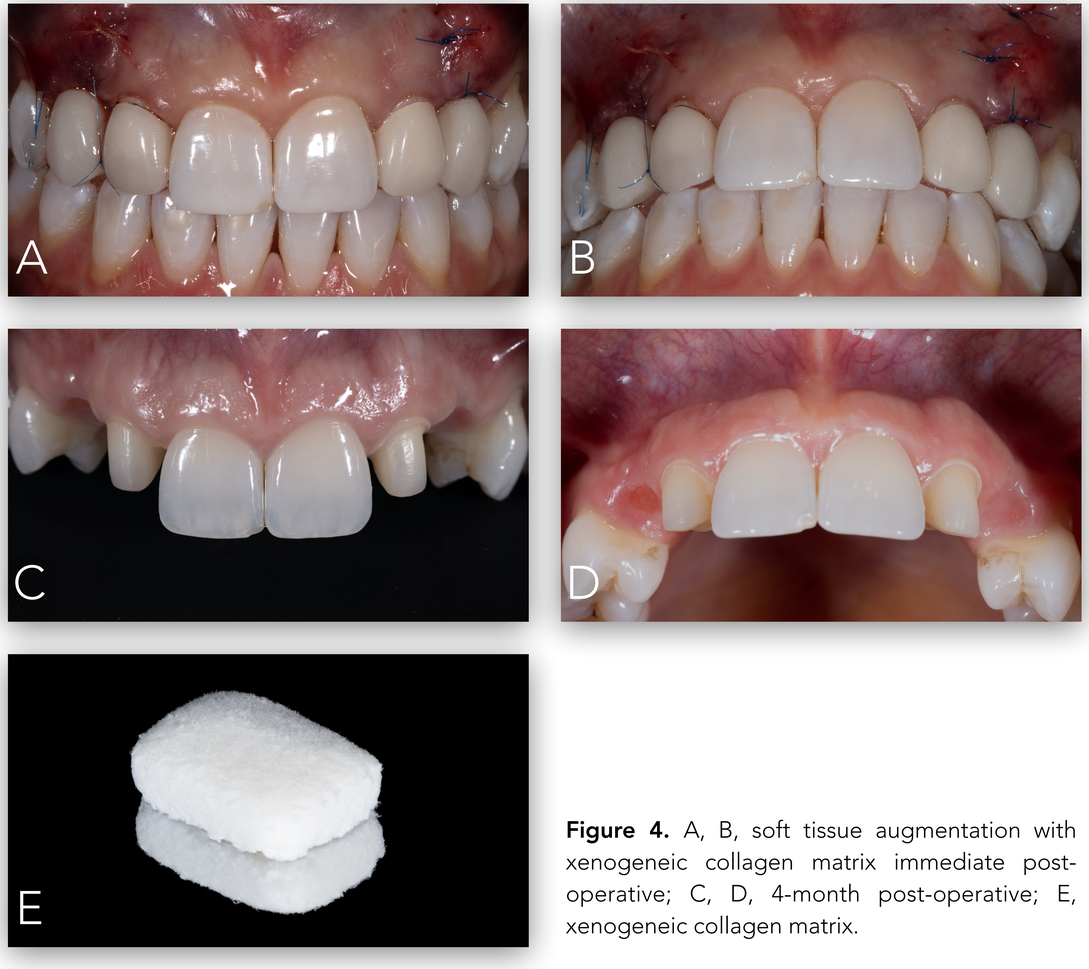


Figure 4. A, B, soft tissue augmentation with xenogeneic collagen matrix immediate post-operative; C, D, 4-month post-operative; E, xenogeneic collagen matrix.

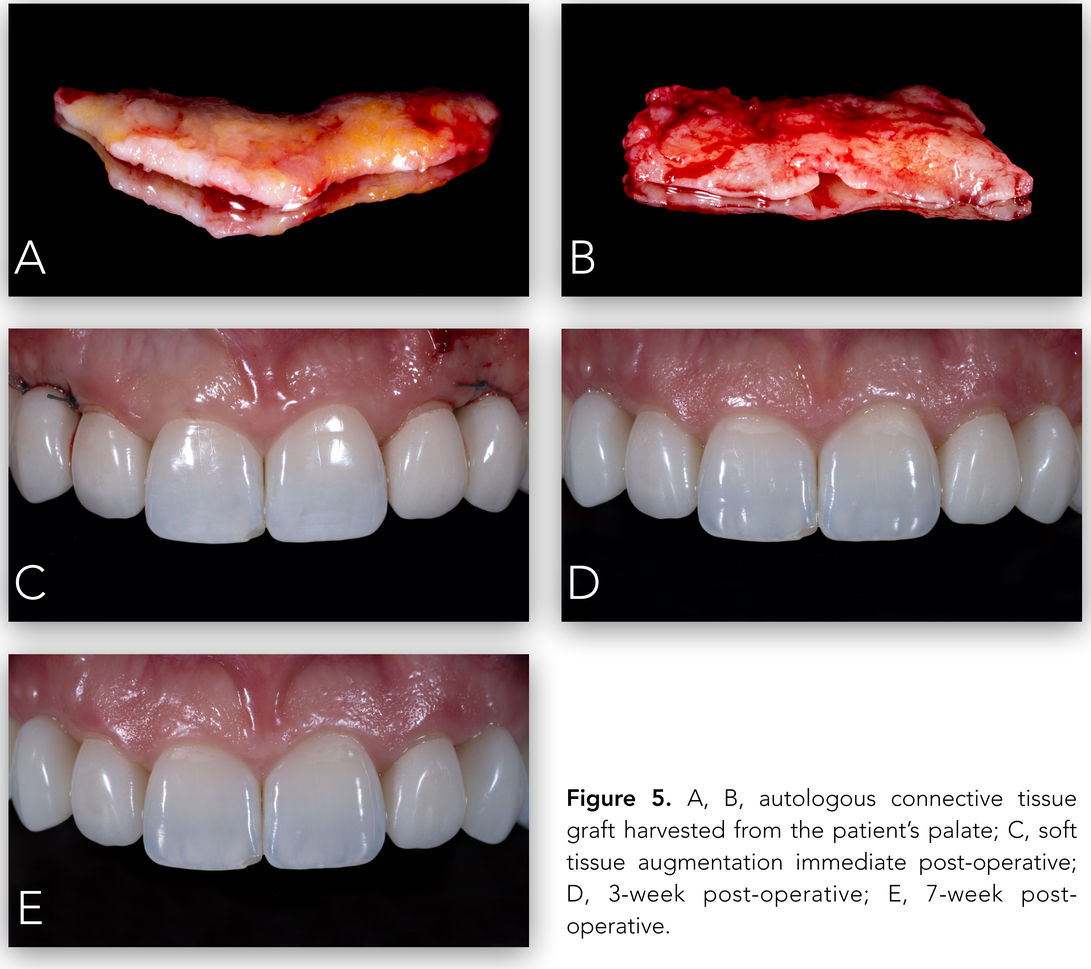


Figure 5. A, B, autologous connective tissue graft harvested from the patient's palate; C, soft tissue augmentation immediate post-operative; D, 3-week post-operative; E, 7-week post-operative.

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Figure 5. A, definitive prostheses delivery; B, C, right and left laterotrusion, mediotrusion; D, incisal view of definitive prostheses; E, F, #7, 10 periapical radiographs post-cementation.

Results

A combined restorative and surgical approach was utilized to replace 2 implant supported crowns. Due to malposition, the implants could not be used for the definitive prostheses. As implant replacement was not elected, conventional 2-unit FDP with a distal cantilever and ovate pontic was employed to provide improved aesthetics, better hygiene, and optimal function. Material of choice was zirconium-oxide framework (KATANA™ Zirconia HTML Plus, Kuraray Noritake Dental Inc., Tokyo, Japan) with layered porcelain (Cerabien™ ZR, Kuraray Noritake Dental Inc., Tokyo, Japan). The occlusal scheme was maintained as unilaterally balanced articulation to lessen the burden on the cantilevered canines.

Conclusions

The maxillary lateral incisor is the second most common congenitally absent tooth.[2] There are three treatment options that exist for replacing missing lateral incisors. They include canine substitution, tooth-supported restoration, or a single tooth implant.[2, 3]

Dental implants have been a revolutionary component in oral rehabilitation and considered ideal for restoring edentulous sites. Consideration of restorative space and prosthetically driven placement should be regarded as a priority for treatment planning and the feasibility of surgical placement. If these parameters cannot be met conventional methods for rehabilitation should be considered.

References

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