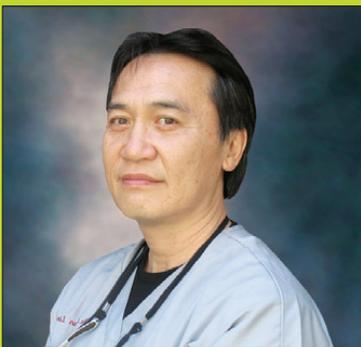


CLINICAL CASE REPORT

SINUS AUGMENTATION WITH
IMMEDIATE IMPLANT INSERTION

MULTIDISCIPLINARY APPROACH TO
ANTERIOR IMPLANT THERAPY

IMMEDIATE IMPLANT AFTER
EXTRACTION OF LOWER MOLAR TOOTH



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IMMEDIATE IMPLANT AFTER EXTRACTION OF LOWER MOLAR TOOTH

Patient History

A 67 year old female of no known significant medical conditions was admitted to the clinic for evaluation of lower right first molar (#30). Her chief complaint was chronic suppuration extruding from bucal gingiva of tooth #30, and painful upon biting. Clinical evaluation revealed 9+ mm of perio pocket depth around the distal root, and the tooth was mobile. The clinical crown was also fractured on the distal side involving the bucal cusp. Patient also showed history of bruxism by the severely worn dentitions in her mouth. A periapical radiograph was taken which revealed radiolucency surrounding the distal root (Fig.1), a possible suggestion of perio-endo lesion. Treatment options of 1) Extraction, followed by a fixed 3 unit bridge, 2) Root Canal therapy and perio surgery with bone graft for tissue regeneration and crown, 3) Extraction and implant, were given to the patient. The pros

and cons of each treatment options were explained to the patient. Patient decided to go with extraction and implant on the basis of long term success rate, and preservation of adjacent teeth.



FIGURE 1
Pre-op

Materials and Methods

Patient was prepped for implant surgery. 2g of Amoxicillin 500 was given for pre-op prophylaxis. Patient was anesthetized with Inferior alveolar nerve block and local infiltration around the tooth (2 carpules of 2% lidocaine ,1:100,00 epinephrine). sulcular incision was made around the entire circumference of tooth #30. The tooth was sectioned in half separating the mesial and bucal roots completely with a surgical carbide bur. The separated roots were carefully luxated and elevated out of the sockets with minimal trauma using periosteal and elevator instruments. The socket was left as well intact as it could be.

Thorough debridement and degranulation of the socket was done with Chlorohexidine solution and surgical spoon instrument. A trephine bur of 4mm in diameter was used to prepare the implant osteotomy (Fig.2) to the depth of 11 mm apically measuring from the crest of the intact lingual wall. The osteotomy was made through the center of the furcation of the socket (Fig.3).



FIGURE 2
Trephine osteotomy



FIGURE 3
Post trephine osteotomy



FIGURE 4
Bone core from trephine osteotomy



FIGURE 5
Particulate bone

A bone core was harvested from the osteotomy and left in a saline dish (Fig.4). An implant fixture of 4.8mm body size, 6.0mm platform size, and 10mm in length was taped into the osteotomy site with the implant motor at 30Nm torque and final torquing to full depth with the torque wrench. Excellent primary stability was attained . Using a small hand held bone mill, the harvested bony core was crushed into particulates (fig.5).

The surrounding space of the implant fixture and bony defects were filled with these autogenous particulates as the graft material (Fig.6). A nonresorbable membrane (PTFE) was tucked under the gingiva and sutured in place to cover the implant site (Fig.7). Post-op radiograph was taken (Fig.8). Patient was dismissed with post- op care instruction and the follow up antibiotic regiment and pain medications (Amox.500mg and Vicodin as needed). Patient was recalled in one week for evaluation and the following week to remove the suture. One month later patient returned for membrane removal. 4 months later the implant was uncovered with minimal crestal incision and flap.

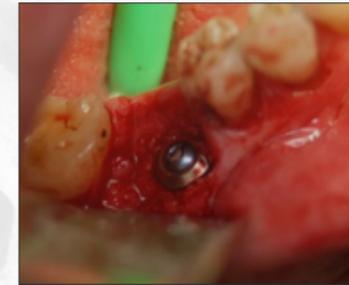


FIGURE 6
Filled defect and space with particulate autogenous bone



FIGURE 7
Sutured membrane on site



FIGURE 10
4 months post-op showing good bone regeneration



FIGURE 11
Post insertion of crown



FIGURE 8
immediate post-op



FIGURE 9
4 months post-op photo



FIGURE 12
Post insertion of crown



FIGURE 13
2 year post-op

The implant site was evaluated (Fig.9, Fig.10) , then an healing screw of 5.0mm diameter and 2.5 gingival height was screwed on to the fixture, and the site was suture closed with chromic gut suture.

Two weeks later, the Final impression was taken at fixture level using the transfer post (Dentium company). Gingival height was measure with a perio-probe. Abutment selection was made. The case was sent to the lab for fabrication of the final crown. Patient was dismissed with a healing abutment screw back in place. Ten days later, the patient returned for delivery of the final prosthesis. The selected abutment of 2.5 mm in gingival

height and 5.5mm in diameter (Dual abutment by Dentium) was screwed in place at 25 N-m. the final PFM crown was cemented on to the abutment (Fig11). A peri-apical radiograph was taken for evaluation before the final cementation (Fig12). A night guard was fabricated for the patient as part of post-op care. Patient was scheduled for follow up appointments at 6months intervals during the hygiene appointments. A two year post-prosthetic radiograph was taken on record (Fig.13).

Results

The entire healing phase of the implant therapy was uneventful. 4 Months post-op show good soft issue healing and new bone regeneration. The prosthetic was in good function and stable after 2 years follow up. Patient was pleased with the outcome, especially the less than expected pain level of the therapy. The two year follow up radiograph showed good preservation of the crestal bone, and cortication.

MULTIDISCIPLINARY APPROACH TO ANTERIOR IMPLANT THERAPY

Patient History

A 44 years old male in good physical condition was admitted to the clinic for a loose crown on left central incisor (#9). The patient also wished to have a better alignment and esthetics of his anterior teeth. Clinical and radiographic evaluation revealed a fracture tooth that was endodontically treated many years ago (Fig.1). The clinical crown had fractured to the gum line. The tooth was nonrestorable without undergoing crown lengthening to expose more tooth structure. In doing so, however, the esthetic result would have been severely compromised. Patient agreed and chose to do other

available options. A limited orthodontic therapy to better aligned the anterior teeth followed by extraction and immediate implantation and temporization of tooth #9 was proposed to the patient. Patient concurred and wished to proceed with the treatment plan.



FIGURE 1
Pre-op

Materials and Methods

The crown of tooth #9 was removed, an endodontic post was placed (fig.2), and a temporary composite crown was fabricated on top of the post (Fig.3). Orthodontic brackets with straight arch wire were placed from tooth #6 to tooth #11 to better align the anterior teeth (Fig.4). After 6 months of limited orthodontic treatment, patient was satisfied with alignment of his anterior teeth (Fig.5). Occlusion was checked and remained uneventful. Patient was then prepped for extraction of tooth #9 with immediate implantation. Orthodontic wire was removed. Tooth number #9 was carefully elevated out of the socket with minimal trauma by using periosteal instruments and piezoelectric unit. No gingival flap was raised. The socket was left well intact, with slight bucal dehiscence detected. A titanium fixture (Dentium Company) of 4.3mm body, 4.5 mm platform, and 10mm in length was inserted into the socket. Excellent primary stability was achieved .

The surrounding socket space around the fixture was filled with allograft bone graft material (Oragraft by Salvin Dental) that consists of 50/50 mixture of cortical and cancellous particles of 250 to 500 microns. A collagen membrane was sutured in place with 5-0 chromic gut resorbable suture to cover the socket opening and contain the graft within . Orthodontic arch wire was placed back on the anterior teeth with a temporary crown attached to the wire on the #9 position. Radiograph was taken following surgery (Fig.6), and patient was dismissed with



FIGURE 2
Post insertion



FIGURE 3
Temporary Crown placed



FIGURE 4
Ortho wire placement



FIGURE 5
6 month post-ortho

post-operative instructions and antibiotic regiment. 10 days follow up check revealed uneventful. Patient was checked one month later. At 5 months after the initial placement of implant, patient was recalled for restorative procedure of tooth #9. The arch orthodontic was removed. A Round tissue punch of 4.5 mm in diameter was used to uncover the implant. Final impression was taken at implant level with transfer post. Gingival depth was measured, and appropriate shade was selected. The case was sent to lab for fabrication of final crown. The patient was dismissed with a temporary abutment and a composite temporary crown.

The orthodontic arch wire was reattached to the anterior teeth. Ten days later patient was readmitted for final cementation of the crown. A 4.5mm diameter Dual abutment (Dentium) and gingival height of 2.5mm was screw retained on to the fixture and the final crown was cemented on to the abutment (Fig7).



FIGURE 6
immediate post-op

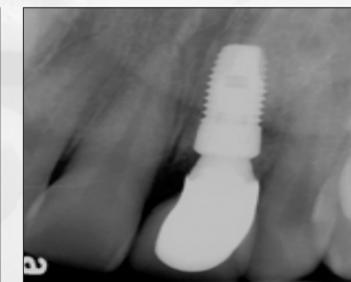


FIGURE 7
immediate post crown cementation

Gingival recontouring of teeth # 7 ,#8, and #10 were done with electrosurge unit for more esthetic gingival architecture (Fig.8). All orthodontic apparatus were removed and teeth polished. A radiograph was taken for evaluation prior to cementing to check the fit. Patient was dismissed with a prefabricated orthodontic retainer and instructions for care. Patient was scheduled to be checked at every 6 month interval during the hygiene recall visits. A 3year (Fig.9), and a 7 year post- op radiograph and photograph was taken and shown on record (Fig.10, 11).



FIGURE 8
Gingivectomy of teeth 7, 8, 10



FIGURE 9
3 years post-op



FIGURE 10
7 years post-op



FIGURE 11
7 years post-op photo

Results

Patient was very pleased with the final treatment result. The recovery phase of implant therapy was uneventful. Radiographic analysis of subsequent years showed well preserved crestal bone level. Dense cortical formation of the crestal bone surrounding the implant was also evident.

SINUS AUGMENTATION WITH IMMEDIATE IMPLANT INSERTION

PATIENT HISTORY

A 59 years old man in good physical condition and medical health was admitted to the clinic for implant consultation regarding missing maxillary molar (tooth #3). The patient gave history of prior extraction and socket graft of a fractured tooth. Clinical evaluation gave a well healed post extraction site covered with healthy attached gingiva. The bucal-lingual width appeared adequate for wide diameter implants (4.5+mm) upon measurement with bone caliber. A Panoramic and periapical x rays (Fig.1) were taken for evaluation of bone quality and height. The X rays showed inadequate bone height for desired length of dental implant (Fig.1). A sinus lift and augmentation was needed to achieve optimal osseointegration of the implant for function. The sinus lift and augmentation procedure was explained to the patient and patient concurred. Patient was also informed that if primary stability of implant insertion was achievable during surgery, implant were to be inserted at the same time. This will save patient time and subsequent second surgery for implantation. Patient agreed and liked the treatment plan.



FIGURE 1
Pre-op

MATERIALS AND METHODS

Patient was instructed to take 2 grams of Amoxicillin 500 one hour before surgery for prophylaxis. Patient was surgically prepped and anesthetized. A full thickness flap was made from distal of tooth #2 to distal of tooth #5 by combination of sulcular, crestal, and vertical incision to gain access for lateral window sinus augmentation technique. Piezoelectric surgical unit was used for the osteotomy of sinus window. Using a specially designed sinus lifting elevator, the sinus membrane was fully lifted without any perforation nor tears in all dimensions of the sinus space. 6cc of pure phase Beta-Tricalcium phosphate (B-TCP) particulate of 500-1000 um in size were syringed into the prepared sinus cavity; care was taken not to over condense the graft material to ensure space for angiogenesis and cellular apposition. An implant fixture of 4.8mm body diameter, 10mm height, and 5.0mm diameter platform by Implantium (Dentium) company was inserted simultaneously at the implant site. Excellent primary stability was achieved. The sinus window was covered with resorbable collagen membrane and primary closure of the surgical site was achieved with 4-0 PTFE suture. An immediate post op X-ray was taken for evaluation (Fig.2).



FIGURE 2
Immediate post-op



FIGURE 3
Immediate post crown cementation

Patient was dismissed after post- op instructions and follow up antibiotic regiment and pain medication (Vicodin) were given. Patient was readmitted 10 days later for post-op check. Healing was uneventful and the Patient claimed to have minimal swelling and almost no pain. The suture was removed. Patient was followed up one month later. The surgical site was left undisturbed for 4 months. Restorative procedure was performed 4 months after the initial surgery. Implant was uncovered with a 5 mm in diameter tissue punch and transfer impression technique was made at the fixture level with the compatible impression transfer post. A healing abutment of 5mm in diameter and 1.5 mm in gingival height was placed on top of the fixture in place of cover screw. Abutment of 5mm in diameter and 1.5mm was selected (Dual abutment, Dentium), and the case was sent to lab for final fabrication of PFM crown. After two weeks, the patient was readmitted for delivery of the crown. The crown was adjusted for interproximal contacts and occlusion. Post op X-rays were taken for evaluation (Fig.3), then the crown was cemented permanently. Patient was followed up for one year (Fig. 4), and 6, and 7 years later clinically and with radiographs (Fig. 5, 6, 7).



FIGURE 4
1 year post-op



FIGURE 5
6 years post-op



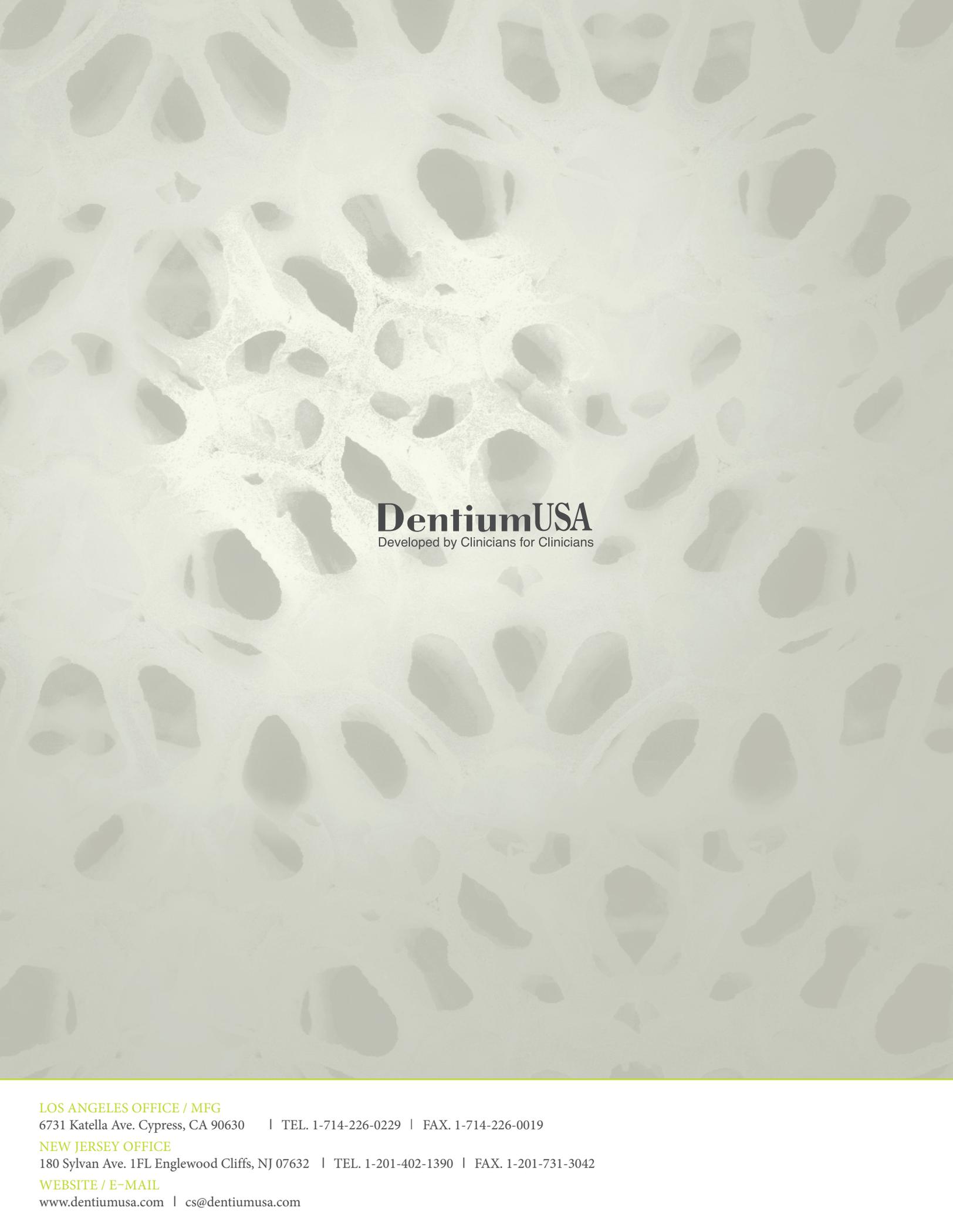
FIGURE 6
7 years post-op



FIGURE 7
7 years post-op clinical

RESULTS

Healing and patient progress was monitored periodically from post-surgical phase to final restorative phase and was uneventful. No complications were noted. The prosthesis remained stable and fully functional for 6 years, and the surrounding gingival tissue as well. In the radiographs taken during the 7 years interval, preservation of the bone level is well observed.



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