

Immediate Implant Placement with Osteotomes for Bone Expansion

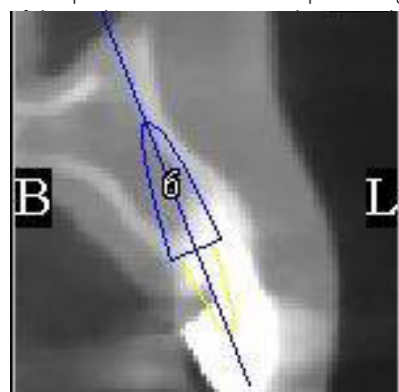


(harvested from the palate) placed in area #6

- Immediate non-functional screw-retained provisional restoration #6

Materials and Methods:

A cone beam CT scan was taken to visualize the implant site. Complete presence of the buccal plate was confirmed. Ideal positioning



Surgery: Dr Michael Klein



Restoration: Dr. Michael Klein

April 22, 2014 - October 10, 2014

Diagnosis

Tooth #6 has a vertical fracture and is non-restorable. There is esthetic complexity due to visualization of the surrounding soft tissue on smiling.

Patient Information

Gender: Female

Age: 55

Patient Complaint:

"I'm having pain on my top right tooth and my dentist told me my tooth is fractured"

Past Medical History:

Allergy to penicillin

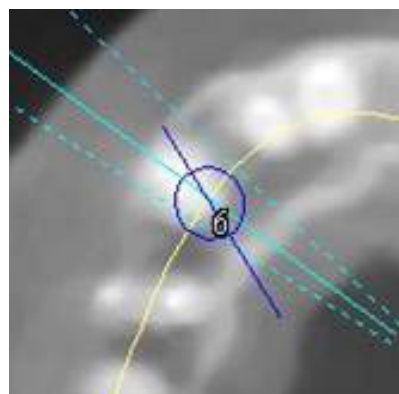
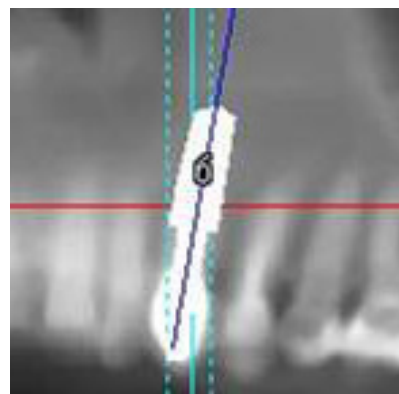
Clinical Findings:

The patient points to tooth #6. A fistula is seen just below the free gingival margin of tooth #6. This tooth was restored with a porcelain fused to metal crown. A 5mm probing depth was measured at the fistula site. A vertical fracture could be felt through the base of the pocket at the fistula site. No tooth mobility was detected. An endodontic post can be seen on the periapical xray. On smiling, the patient has a moderate smile line with the soft tissue exposed apical to the free gingival margin.

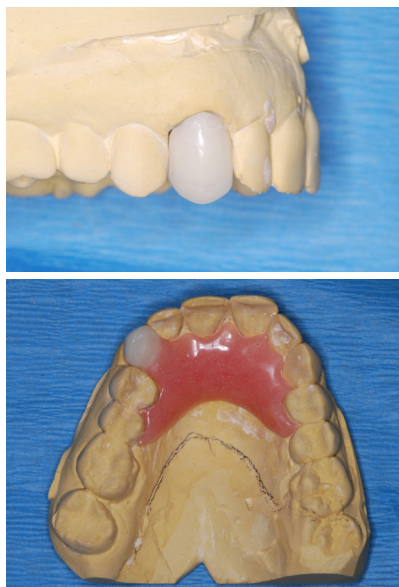


Treatment Plan

- Extraction of non-restorable tooth #6.
- Immediate placement of implant #6
- Bone graft placement in the intrabony space between the implant and the residual extraction socket
- Subepithelial connective tissue graft



Provisional restorations were prepared. An acrylic fixed provisional restoration was prepared for immediate loading. A second restoration was prepared as an acrylic transitional removable partial denture in case immediate provisionalization was not possible.



A clear omnivac surgical guide was fabricated for accurate implant placement. A PALTOP Advanced Dental Implant

5mmx 13mm was selected. The 5mm diameter provided greater surface area and greater initial mechanical stability. The prosthetic platform of the implant allowed for ideal prosthetic component dimension and emergence profile.



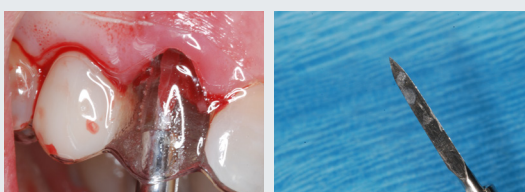
The surgical site was anesthetized with local anesthesia. Upon removal of the restorative crown, no coronal tooth structure was present. A Benex extraction tool was used to atraumatically extract tooth #6.



The extraction socket was thoroughly debrided with a large round carbide bur.



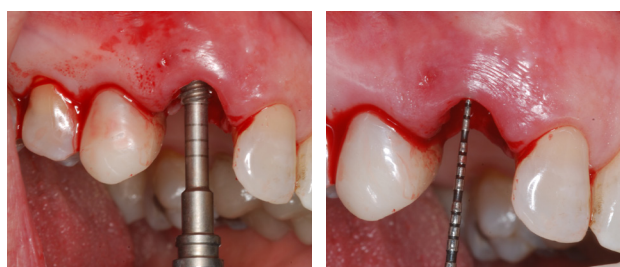
The pilot drill was used with the surgical guide to precisely position the initial osteotomy. This drill was ideally suited to penetrate the palatal socket bone.



After initial use of the pilot bur, the maxillary bone was found to be soft. The decision was made to use the PALTOP Handpiece Driven Osteotomes to expand the initial osteotomy and condense the adjacent bone. This bone condensation provided greater implant stability. The PALTOP osteotome widths corresponded to the PALTOP stepped twist drill diameters.

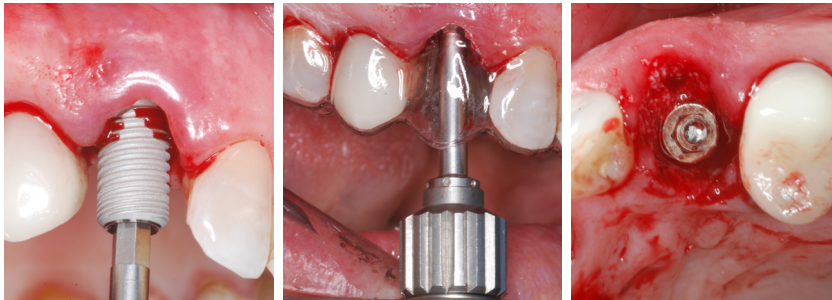


The depth of the buccal bone crest to the free gingival margin was measured to determine the vertical position of the implant head.

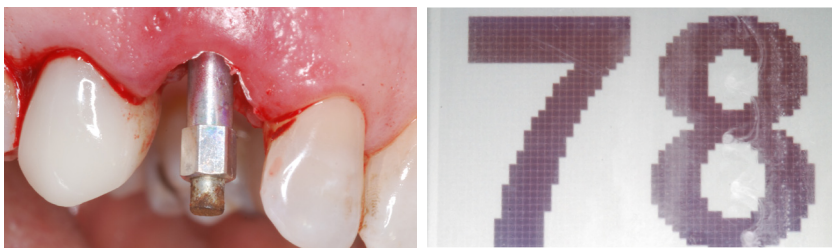


Immediate Implant Placement with Osteotomes for Bone Expansion (Cont.)

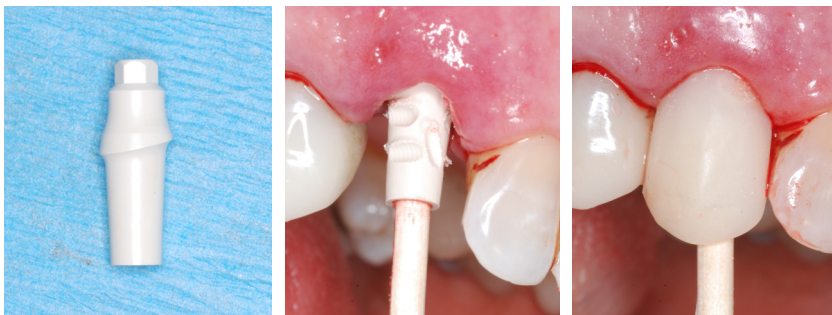
The implant was hand-driven to its final position with the ratchet wrench in order to obtain additional bone condensation. The buccal intrabony defect was grafted with a xenograft (Bio-oss) bone graft material. This xenograft was placed to support the buccal plate in a slowly resorptive manner.



An Osstell measurement was taken to verify mechanical implant stability. A value of 78 was recorded, demonstrating high stability due to the large implant size and osteotome bone condensation. This Osstell value allowed for safe immediate provisionalization of implant #6.



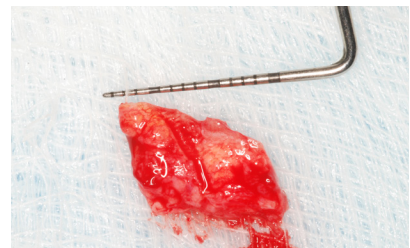
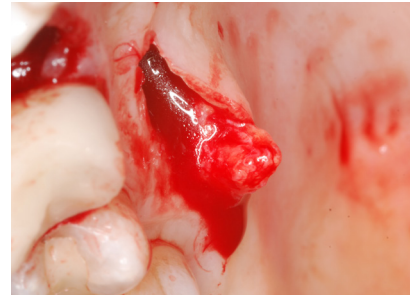
A PALTOP PEEK abutment with a 2mm concave collar height¹ was selected and inserted into the implant. Retention dimples were cut into the PEEK abutment. A cotton tip applicator was inserted into the screw access hole to prevent the relining acrylic from occluding the abutment screw. The acrylic shell provisional was tried in.



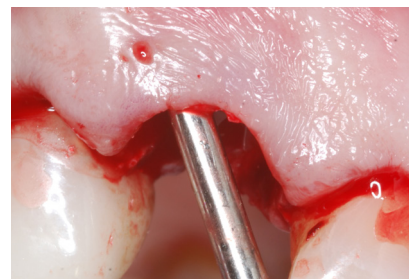
The provisional is relined with acrylic. After complete curing, the provisional is removed and deficiencies in the reline are seen. Acrylic is hand-painted into these deficiencies and the provisional is reshaped and polished.



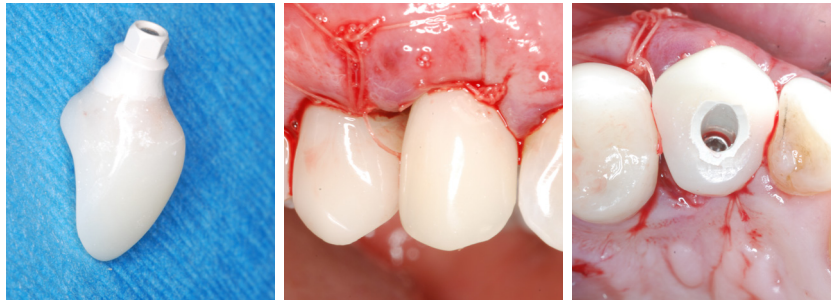
An autogenous subepithelial connective tissue graft was harvested from the patient's right palate.



A buccal pocket is created in area #6 and the connective tissue graft is sutured into position.



The concave PEEK collar design is continued into the relined acrylic provisional to maximize soft tissue healing. Ideal implant placement for a screw-retained restoration is obtained.



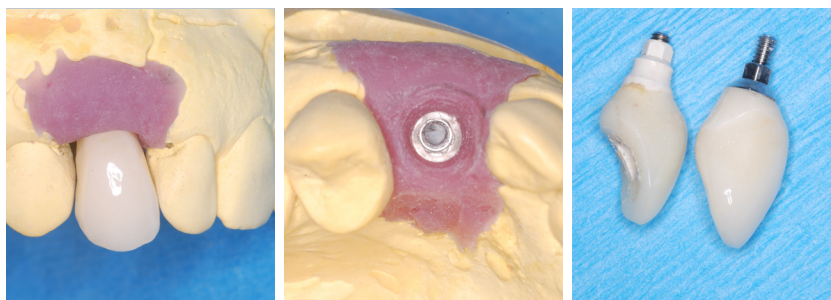
Radiographic confirmation of good implant position is verified. At one week post-implant placement of implant #6, good soft tissue healing is seen.



A full volume of healthy soft tissue can be seen. A nice soft tissue emergence profile was developed by using a **PALTOP concave provisional abutment²** with concave acrylic contours.



After 4 months of healing, a fixture-level impression was taken and a master soft tissue model was poured. A zirconia crown on a ti-base abutment was milled. The provisional crown contours are used to design the final zirconia crown contours.



The final restoration fills out the patient's smile. A soft tissue cuspid eminence can be seen under the patient's upper lip with the cervical soft tissue margin equidistant to the contralateral cuspid.



The mesial and distal papillae appear to be lost. However, probing depth to the bone in the embrasure spaces is 3mm. Over time these papillae will predictably fill to a soft tissue depth of 4 - 5mm from the bone. New soft tissue will fill the mesial and distal embrasure spaces.

