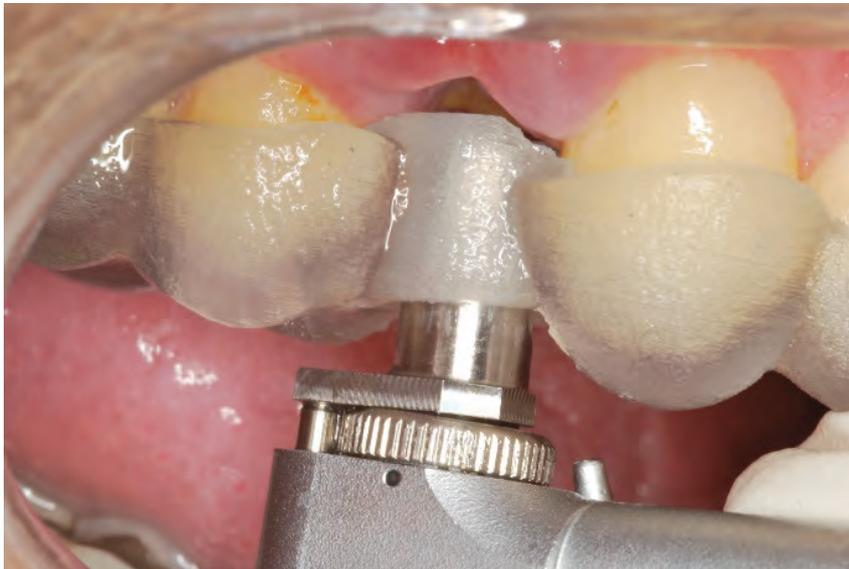


# Extraction with immediate implant placement and Provisionalization using a new fully guided computer generated surgical device



**Surgery:** Dr. Michael Klein

**Restoration:** Dr. Michael Klein

December 15, 2016 - January 3, 2017

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## Patient Information

Female

Age: 65

### Patient complaint:

"I have a loose and painful tooth"

### Past Medical History:

Hypothyroid, mitral valve prolapse, vertigo, ocular migraine headaches (no known trigger), allergy to Levaquin.

### Medications:

synthroid, ASA/day, Toprol, crestor, fioretet

### Clinical Findings:

Tooth #9 has 2+ mobility, supereruption, moderate gingival inflammation, buccal free gingival margin 4mm more coronal than on tooth #8, periodontal probing depths 3-5mm. Radiographic findings include mesial vertical bone loss, distal horizontal bone loss, retained remnant of fractured post and a short radiographic root.

## Diagnosis:

Tooth #9 has a failing restoration, there is a vertical fracture with a vertical bony defect. The tooth is non restorable, nonesthetic and causing alveolar bone loss.



The central incisor has a vertical fracture with horizontal and vertical bone loss and a retained fractured post. The tooth is non-restorable



The free gingival margin is in a significantly more coronal position relative to the adjacent teeth. This is a positive diagnostic finding which can aid the ultimate esthetic outcome

## Treatment Plan

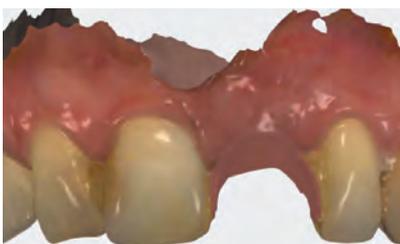
- Conebeam ct scan
- Digital intraoral surface scan
- Computer generated surgical guide
- Extraction #9
- Implant placement #9
- Bone graft #9 (to residual intrabony space)
- Immediate Provisionalization #9

## Materials and Methods

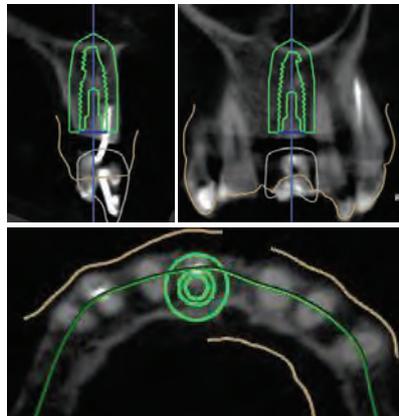
A digital intraoral surface scan was taken



Tooth #9 was virtually extracted. A diagnostic wax up was done using a mirroring function



A cone beam ct scan was taken and was merged with the intraoral surface scan. The ct scan was carefully analyzed, and a virtual implant was positioned relative to the diagnostic waxup and soft tissue position



An stl manufacturing file was produced from the surgical guide design created in 3 Shape Implant Studio software. The surgical guide was then fabricated thru 3-D printing



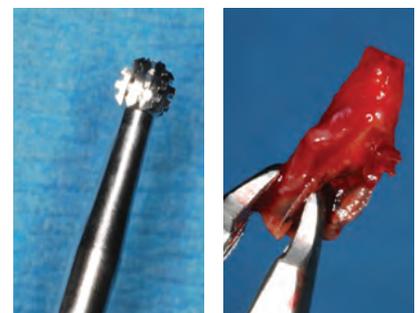
Paltop's innovative DGS fully guided surgical device was used to create the implant osteotomies



The DGS which is fixed to the contrangle fits precisely into the guide sleeve



Tooth #9 was atraumatically extracted and the socket was debrided with a large round bur



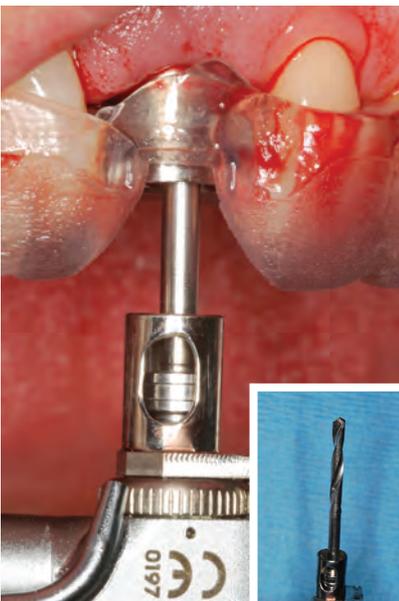
The surgical guide was seated into position



The pilot bur is inserted into the DGS which is guide by the surgical guide



The pilot bur was removed and the 2mm twist drill was inserted and used in the surgical guide



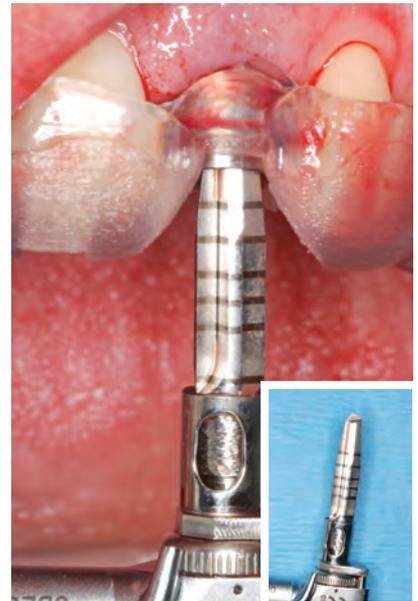
The 2.4/2.0 stepped twist drill was then guided by the DGS



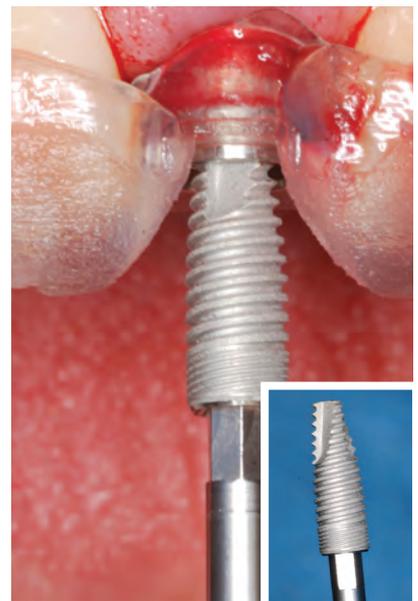
The entire drilling sequence was guided with the DGS



Complete guidance including the final drill is easily and accurately performed by changing the drills in the DGS



A Paltop Advanced Plus implant 4.2x13 was placed thru the surgical guide



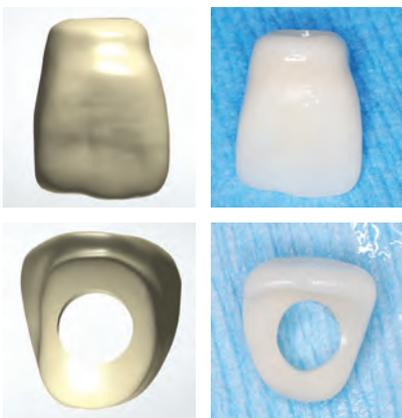
An Osstell reading of 71/75 recorded indicating adequate initial stability for immediate provisionalization



Following placement of a bone graft in the space between the buccal plate and the implant a peak abutment was selected and mechanical retention created. The peak abutment with a 1mm concave collar was seated on the implant



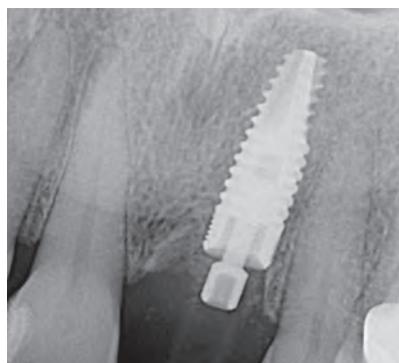
The provisional restoration was designed as a mirror image of the contralateral central incisor. An stl file was created, and a PMMA provisional was milled



The provisional was relined on the peak abutment on the implant. The discrepancies in the relining procedure were then repaired and finished by hand after the provisional secured to the peak abutment was removed from the patients mouth



The provisional was inserted, occlusion adjusted so there was no protrusive, lateral or centric contact under functional movements. A postoperative radiograph was taken to confirm proper seating of the provisional.



Comprehensive surgical and restorative planning utilizing a digital workflow combined with a new fully guided surgical device simplified predictable clinical treatment.