

Digital Approach to Maxillary Lateral Incisor Replacement: Clinical Implications

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Introduction

Prior to the surgical appointment, diagnostic periapical radiographs, a CBCT Scan, and an intraoral scan were taken to virtually plan dental implants, to design and 3D print a surgical guide, and create temporary restorations. With these materials developed from the Planning Stage it was possible to approach the Clinical Procedure with greater confidence. The Surgical Guide was the critical component and this would be used with the Camlog Guide Pilot drills. Also prepared from the planning stage were provisional abutments and crowns as well as temporary bonded bridges.

Clinical Situation

The existing Maryland Bridges were still in place so these needed to be removed. This was accomplished by tapping them off with a crown and bridge tapper. The residual cement on the teeth was then removed with an ultrasonic device. The Surgical Guide was then tried in. It fit precisely and this was verified by observing contact with the teeth through the windows in the Guide. It was also stable with no detectable rocking.

Surgical Procedure

As the request was for a minimally invasive procedure, a "Flapless" approach was chosen. Surgical Guide Pilot drills were used with increasing depth to get to the desired channel depth. Form drills were not used. Once the pilot channel was established the channel was expanded with a 2.8mm Camlog® Osteotome. This approach was chosen for three reasons. First, to make a minimal perforation of the gingiva and to preserve the soft tissue complex in the region. Second, to expand the channel without increasing the potential for perforation out of the alveolus or into the adjacent teeth. Third, to generate a channel into which a 3.3mm x 13 Camlog® Promote® Plus implant would fit. Once the channel was established in this way, Camlog® Promote® Plus 3.3 x 13mm implants mounted on Surgical Guide mounts were placed into the channel and then taken to the pre-planned depth using the Camlog® handpiece insertion driver at very slow speed.

Procedure

Final adjustments of height and rotation were made with the Camlog® Torque Wrench. Once placed, the implants had the insertion tool unscrewed, the surgical guide removed and Camlog® Bottleneck Gingivaformers placed.

This protocol allowed for expansion of both the bone channel and the soft tissue complex. This was extra security for ensuring that the adjacent teeth were not encroached upon and that the alveolus was not perforated. In addition, it ensured that the implants were more stable than if they had been placed into full-sized channels.

Temporary bonded bridges were placed to restore the aesthetics but not to load the implants. Some adjustment to the anterior cosmetics was provided by making bonded additions to the adjacent teeth. At a later time, when healing was complete, abutment connections to the implants were made and provisional restorations placed.

Conclusions

This was a complex case with the potential for complications if the implants were not placed precisely. It would have been very difficult to position the implants as precisely if the implants had been placed freehand.

The procedure was managed with minimal surgical intervention. The patient had no post-surgical complications. It was possible to move rapidly to the final restorations. The total treatment time was just over four months.

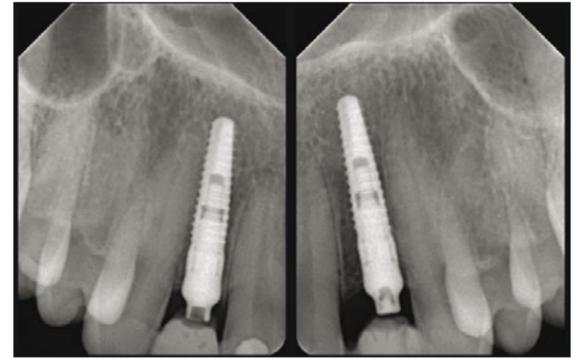
This therapy was made much simpler, easier, safer and more predictable by means of the Guided Surgery protocol that was used.



With the Maryland Bridges removed.



Surgical Guide and implants in place.



Post placement radiographs.



Post-placement situation with gingivaformers.



Healing two weeks later.



Emergence profiles three months later.



Final abutments in place.



Try-in of final restorations.



Final smile view.