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Dental Implant CASE REPORT

Molar Implant Replacement Using "Nature's Surgical Guide": A Step-by-Step Technique



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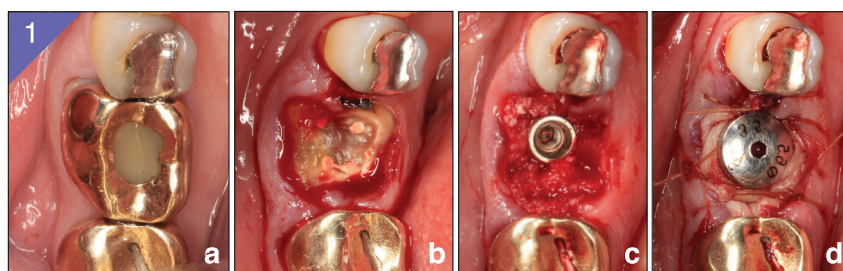


Figure 1a-d. Clinical case progression.

Case History

A 65-year old male visited our dental facility with the complaint of a toothache near the lower right area of the mouth. The pain was described as dull most of the time and sharp when chewing on the right side.

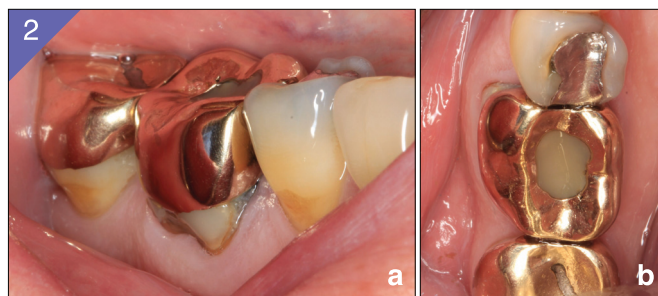


Figure 2a,b. Pre-operative clinical photographs.

On clinical examination, the LR quadrant was found to be heavily restored with a variety of dental fillings and crowns. An endodontic access filling was evident on the mandibular right first molar. (Figure 2)

Several areas showed wear facets that may indicate a history of moderate to severe occlusal forces. Significant findings on the first molar revealed pain with percussion and 5mm plus probing depths at the mesial lingual line angle. The radiographic exam revealed a root canal treated molar with a moderate area of low density along the mesial border of the mesial root. This pattern of bone lesion is typically seen with the propagation of a fracture of the root surface. (Figure 3)





Figure 3a,b. CBCT of right mandibular quadrant showing the peri-radicular lesion of the mesial root of the first molar.

Based on the history and clinical findings, one can conclude a longitudinal fracture of the mesial root on the molar, that is given a poor prognosis for retention. Treatment was recommended with extraction, immediate implant placement, and grafting of the residual socket.

Materials and Methods

A CBCT scan was made prior to surgery to evaluate the quality and quantity of the bone, and to locate the right inferior alveolar nerve. These 3D radiographs allowed us to visualize the root anatomy and to determine if there were adequate bone available to stabilize an endosseous dental implant. (Figure 4)

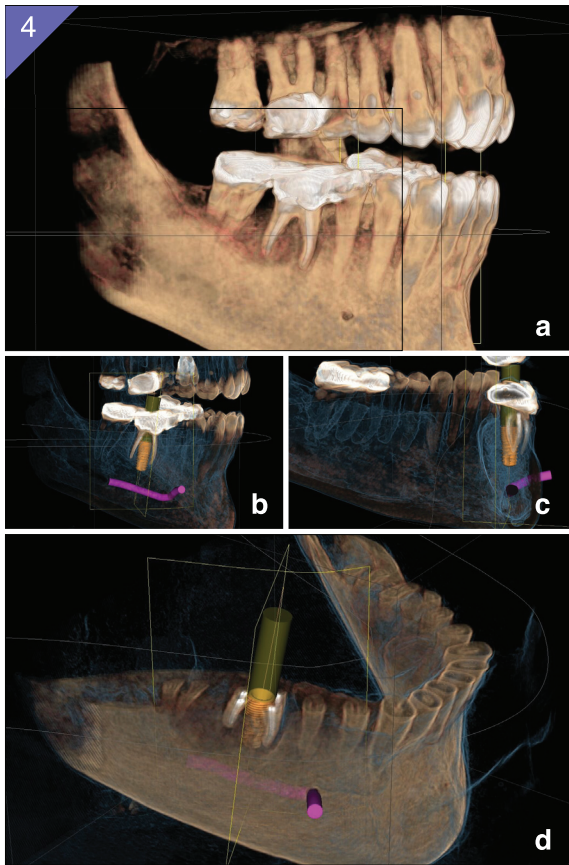


Figure 4a-d. Implant planning using 3D rendering of CBCT scan. The planning software allows for virtual placement of the implant for viewing in relation to anatomical structures.

The surgical procedure involved the removal of the clinical crown to the depth of the root furcation. (Figure 5)

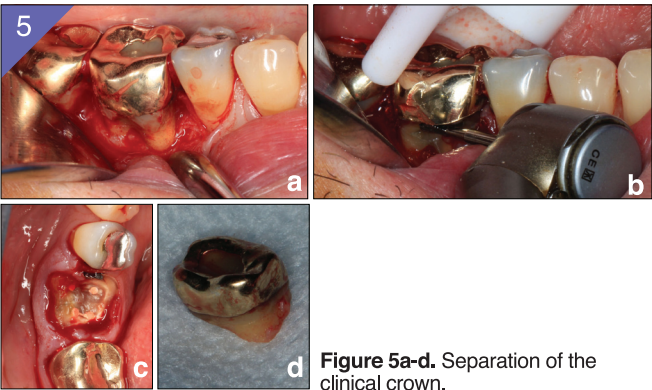


Figure 5a-d. Separation of the clinical crown.

A 2.2mm pilot drill was used to start the osteotomy, centered in the inter-radicular bone. (Figure 6)

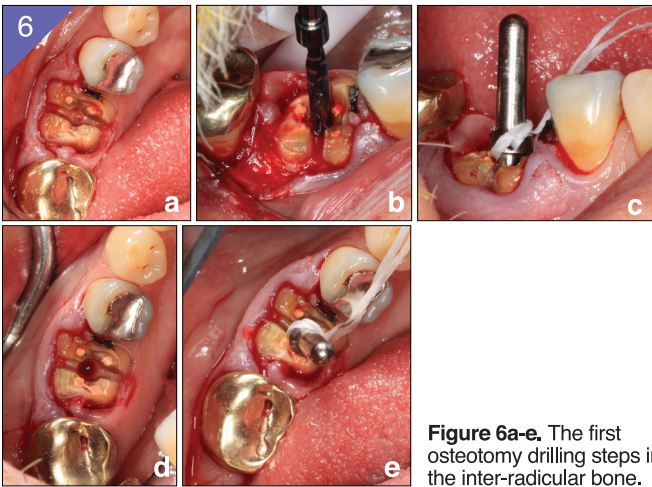


Figure 6a-e. The first osteotomy drilling steps in the inter-radicular bone.

Care was taken to maintain a direction parallel to the long axis of the tooth. A 2.8mm intermediate drill was used to further enlarge the osteotomy. An intra-operative radiograph was made to verify the depth and position. (Figure 7)

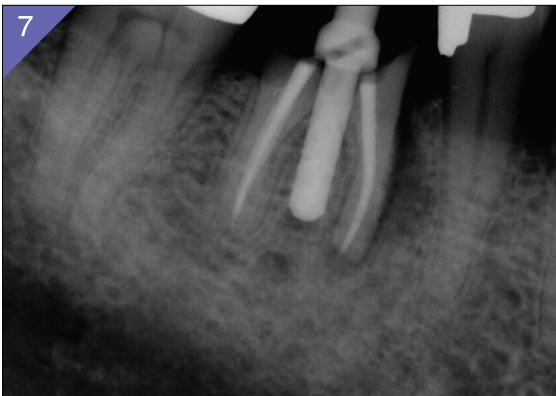


Figure 7. Periapical radiograph of the angulation pin in place.



The remaining roots then were removed, taking care not to damage the surrounding bone. (Figure 8)

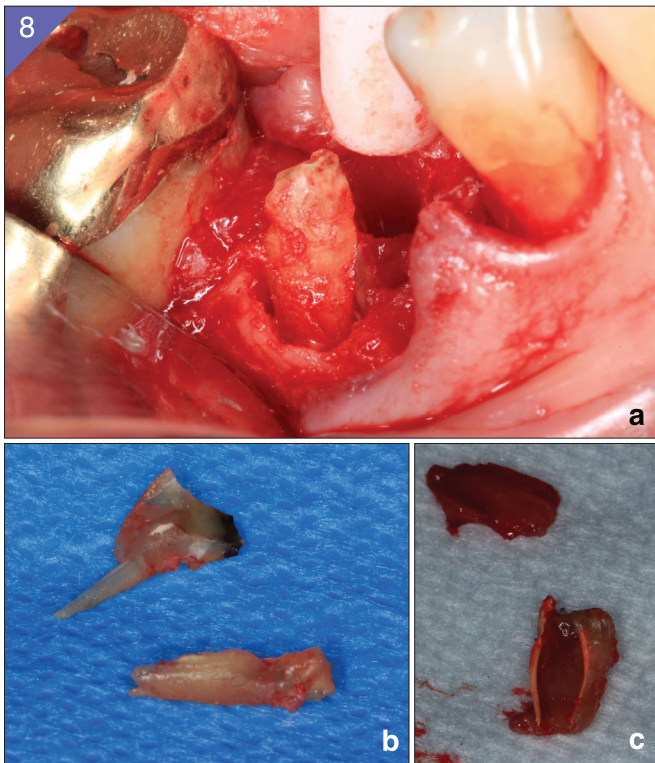


Figure 8a-c. Surgical removal of the molar roots.

The final enlargement of the osteotomy was completed using sequential twist drills at relatively high revolution per minute (RPM). The increased RPM allows the osteotomy in desired position without deviating into the mesial or distal root sockets. A DENTIS™ S-Clean internal hex implant, Ø4.3 x 10.0mm was placed into the prepared site with a torque value of 35 Ncm. (Figure 9)

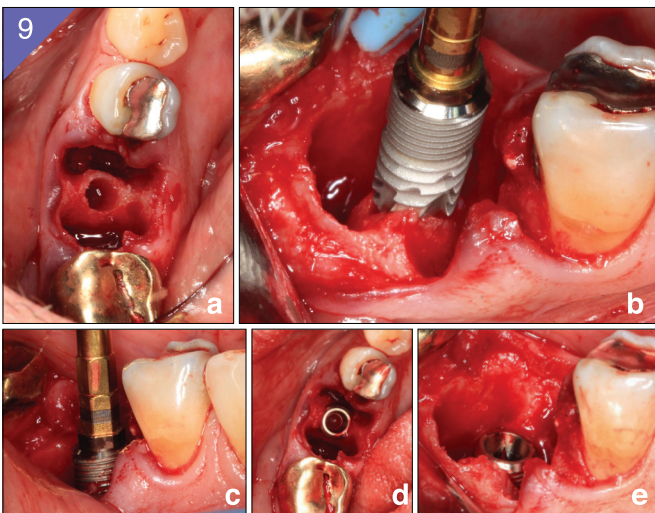


Figure 9a-d. Implant placement in the prepared site.

Since the dental implant doesn't follow the root form of the molar, grafting was required to fill the voids on the mesial and distal of the implant. Concentrated Growth Factor (CGF) combined with a mixture of allograft and xenograft (Sticky Bone™) was used to graft the site. These biologics enhance healing and promote tissue regeneration of the surgical site. (Figure 10)

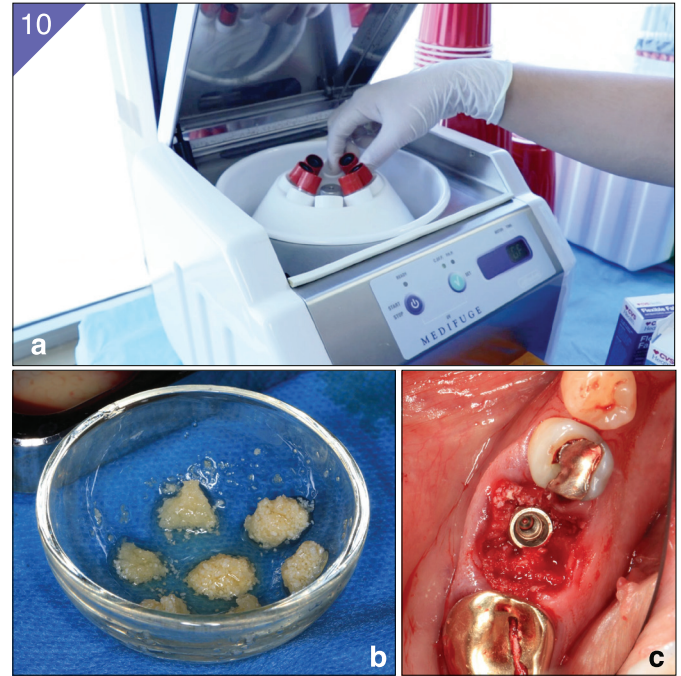


Figure 10a-c. Concentrated Growth Factor (CGF) combined with a mixture of allograft and xenograft (Sticky Bone™).

A Ø5.5 x 3.5mm Healing abutment was then placed and hand tightened. CGF membranes were used to cover the graft site and held in place with 4-0 chromic gut sutures. (Figure 11)

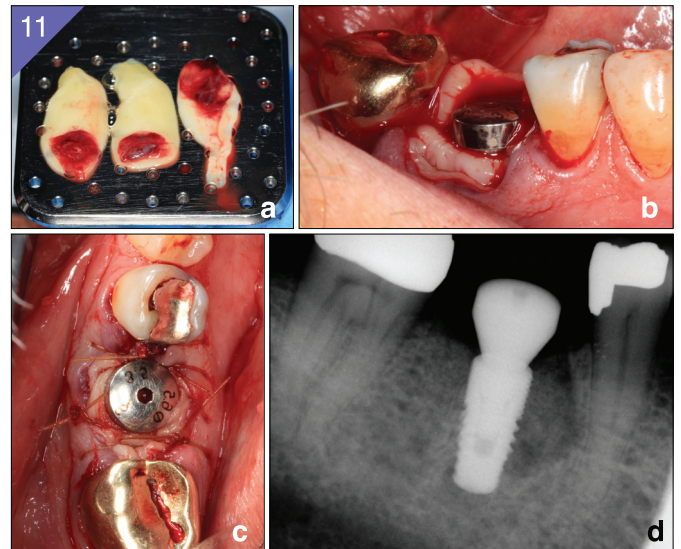


Figure 11a-d. a,b) DENTIS™ S-Clean Implant in place, covered with CGF. c) Chromic gut sutures were used to hold all in place after placing the healing abutment. d) Periapical radiograph of implant position.

Discussion and Conclusion

Delayed implant placement is certainly an option when a tooth must be removed. However, it is favorable to minimize surgical treatment when conditions are capable for immediate implant placement. With today's hustle and bustle, people appreciate fewer appointments and shorter healing time.

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Conflict of interest:

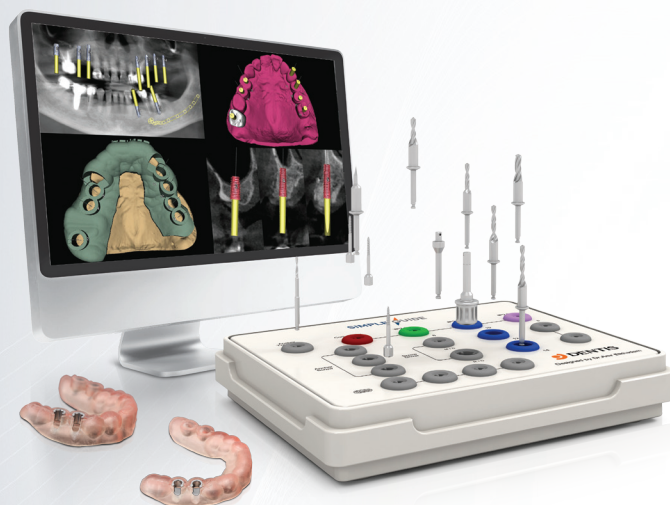
The author declares that he has no conflict of interests relating to this article.

Products Used

- DENTIS™ Cleanlant S-Clean Implant, Ø4.3 x 10.0mm
- DENTIS™ Healing Abutment, Ø5.5 x 3.5mm
- Medifuge™, Silfradent®, Italy



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