CLINICAL TECHNIQUE

Interradicular Septum as Guide for Pilot Drill in Postextractive Implantology: A Technical Note

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ABSTRACT

The extraction of teeth results in rapid bone resorption both vertically and horizontally in the first month. The loss of alveolar ridge reduces the chance of implant rehabilitation. The atraumatic extraction, implant placement in extraction socket, and an immediate prosthesis have been proposed as alternative therapies to maintain the volume and contours tissue and reduce time and cost of treatment. Thus, this paper aims to present a clinical case where the extraction was performed using interradicular septum as guide for pilot drill in postextractive implantology with implant placement and immediate provisionalization in a inferior molar. The advantages of this technique are to place the implant exactly in the center of the alveolar ridge, to maintain the edges of the alveolar ridge and reduce postextractive bone resorption, and has great advantages in final prosthetic rehabilitation.

Keywords: Postextractive implantology, Bone resorption, Immediate loading, Preservation of bone, Alveolar crestal.

How to cite this article: Haddad EE, Lauritano D, Carinci F. Interradicular Septum as Guide for Pilot Drill in Postextractive Implantology: A Technical Note. *J Contemp Dent Pract* 2015;16(1):81-84.

Source of support: Nil

Conflict of interest: None

INTRODUCTION

The extraction of teeth results in rapid bone resorption both vertically and horizontally in the first month.¹ The loss of alveolar ridge reduces the chance of implant rehabilitation, so implants insertion in postextractive represents a solution to preserve the loss of bone.²⁻⁴ Bone loss is an important problem which can limit the placement of the implants for conspicuous resorption after extraction of teeth. The thinning of the ridges, the changes in gingival contour and the loss of interdental

papilla with appearance of unsightly black spaces are the characteristics observed in these cases. The atraumatic extraction, implant placement in extraction socket and an immediate prosthetic, have been proposed as alternative therapies to maintain the volume and contours tissue and reduce time and cost of treatment.^{5,6}

The maintenance of the ridges of bone during extraction, the primary stability of the implant, a careful control of the soft tissues, proper manufacturing of the provisional prosthesis are important factors for long-term clinical success.⁷⁻⁹ A proper control of biofilm with good oral hygiene during the healing period, is considered a key factor in the positive outcome for the postextraction implants.¹⁰ Thus, this paper aims to present a clinical case where the extraction was performed using interradicular septum as guide for pilot drill in postextractive implantology with implant placement and immediate provisionalization in an inferior molar. The advantages of this technique are to place the implant exactly in the center of the alveolar ridge, to maintain the edges of the alveolar ridge and reduce postextractive bone resorption. Indeed an immediate loading of the bone, after extraction of the tooth, reduces the degree of resorption for mechanical stimulation of bone.

TECHNIQUE

A 57-year-old male came to our dental clinic for an examination. The medical history did not reveal any systemic diseases and the patient confirmed he did not take any kind of medication. The patient reported mobility of the fixed prosthesis between 45 and 47, and an examination with intraoral radiography revealed the presence of periapical granulomas corresponding to 45 and 47 (Figs 1A and B). The patient required a fixed rehabilitation. The removal of the fixed prosthesis showed dental caries of tooth 47 and coronal fracture of 45 (Figs 2A and B). We proceeded to the complete removal of carious dentin till to expose the pulp chamber and to identify the interradicular septum (Figs 3A and B). The anesthesia of the jaw was obtained by the injection of articaine and postsurgical analgesic treatment was performed with 100 mg of ketoprofene 3 times a day if necessary. An antimicrobial prophylaxis was

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administred with 1 gm amoxycillin twice daily for 5 days starting 1 hour before surgery. Subsequently, the implant site was prepared using a pilot drill that was inserted in the septum in the middle of the mesial and distal roots of tooth 47 (Figs 4A and B). After inserting the pilot drill, the roots of 47 and 45 were extracted, and the preparation of the implant sites were completed with the insertion of implants (Fig. 5). Finally sutures were placed (Fig. 6).

DISCUSSION

The postextraction implant placement is a surgical technique that has great advantages in the clinical outcome of the final prosthetic rehabilitation, and allows a greater preservation of soft and hard tissues.^{11,12} This technique allows a modest change in the volume and contour of the tissues and, consequently, longer lasting results over time. The creation of the implant site with the pilot drill before extraction can influence the degree of preservation of alveolar bone and in particular the edges of the bone crest. Many techniques have been proposed for this purpose; this method allows a minimum of trauma maintaining the integrity of the alveolar bone

and anatomical landmarks for proper implant placement.

The literature shows that postextraction and immediate loading may be indicated especially to preserve bone tissue.^{13,14}

At the same time the implant placement after tooth extraction has been proposed in order to avoid resorption and breakdown of the tissues and reduce treatment times.¹⁵

The postextraction implant also allows the maintenance of biological distance of 5 mm from the bone crest to contact point for obtaining papillae that fill the interproximal space.¹⁶ The platform of the implant should be placed at a minimum of 3 mm apical to the cement-enamel line of the adjacent tooth. These measures ensure an appropriate emergence profile and facilitate acquisitions of interproximal spaces adequate for good oral hygiene.¹⁷

Another very important aspect of postextraction implantology is in proper preparation and placement of the temporary prosthesis. The immediate prosthesis allowing immediate loading that is one of the fundamental factors for maintaining length and width of bone crest.⁹

Thus, in order to obtain successful treatment of tooth extraction, immediate installation and provisionaliza-

Figs 1A and B: Endoral X-ray showing periapical granulomas corresponding to 45 and 47 teeth

Figs 2A and B: Dental caries of tooth 47 and coronal fracture of 45 after removal of fixed prosthesis

Figs 3A and B: Complete removal of carious dentin exposing pulp chamber and identifying the interradicular septum

Figs 4A and B: Pilot drill inserted in the septum in the middle of the mesial and distal roots of tooth 47

Fig. 5: Extraction of 47 and 45 roots and septum partially prepared for implant insertion

Fig. 6: Final sutures

tion, it must be made an appropriate choice of the case, surgical and prosthetic planning, not neglecting the postoperative care.

CONCLUSION

From the clinical case presented and the literature reviewed it is possible to conclude that with an adequate surgical-prosthetic planning associated with the prepa-

ration of implant site along with a pilot drill inserted in the septum favors a better implant positioning in jaws allowing to maintain bone crests.

CLINICAL SIGNIFICANCE

This new surgical technique presents clinical results that allow maintaining bone crests in postextractions implants.

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