The retention of vital submucosal roots under immediate dentures: A surgical procedure

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The use of submucosal vital roots under complete dentures appears to retard the resorption of residual alveolar bone.1,5 This procedure also eliminates the patient's responsibility for maintenance of gingival sulcus health, as required for overdenture abutments. Clinical experience with this technique suggests that thorough diagnosis, followed by a correct surgical technique and the fabrication of optimal prostheses, is essential if adequate residual alveolar ridge preservation is to be expected.

In this article we describe a surgical technique for the retention of vital submucosal roots for a patient treated with a complete maxillary immediate denture (Fig. 1).

METHOD

A surgically clean operating space and sterile technique must be used throughout the surgical procedure. A sufficient number of teeth should be selected to help

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Fig. 1. Six maxillary teeth selected for submucosal vital root retention.

Fig. 2. Internal beveled incision.

Fig. 3. Soft tissue and calculi deposit removal.
was made, while ensuring that the incision involved the
crevicular epithelium and ended at the level of ade-
quate bony formation (Fig. 2). The attached gingiva
was elevated; and unattached gingival crest tissues,
subgingival calculus deposits, and any granulomatous
tissues were removed with a spoon-type excavator
(Fig. 3).

Diseased hard and soft tissue adjacent to the retained
teeth was removed, and the teeth were sectioned on a
horizontal plane at the level of healthy residual bone
(Fig. 4). A tethering suture was placed through a hole
cut in the incisal/occlusal edge of each tooth and
attached to a patient drape using a needle holder (Fig.
5) to eliminate the risk of accidental aspiration of the
sectioned crown. Oral cavity gauze packing is also a good preventive method to minimize risks of such surgical emergency. The circumferential sectioning technique probably reduces pulpal trauma (Fig. 6), and bleeding pulpal tissue should be evident and appears essential for the continued vitality of the retained root. Endodontic therapy may be necessary and depends on the diagnosis of the pulpal condition at this time, although careful preliminary evaluation with radiographs and vitality tests should prepare the operator for any possible endodontic intervention.

The surface of the sectioned root was made smooth and contiguous with the healthy adjacent bony crest (Fig. 7). Deep submucosal blunt dissection for the purpose of relaxing the mucobuccal fold tissues may sometimes be necessary to provide sufficient loosened tissues for suturing without excessive suture tension (Figs. 8 and 9). Tissue closure was accomplished using a mattress suturing technique to approximate the wound edges (Fig. 10) and then by oversewing with a continuous suture over the retained roots (Fig. 11).

The subsequent prosthodontic sequence followed conventional protocol and objectives.

The fit of the inserted immediate denture was refined with a tissue treatment lining material (Fig. 12), and the patient was instructed to apply external ice packs in a 30-minute time interval program for the next 4 to 6 hours. The patient was further instructed to leave the prosthesis in place and to return the next day for prosthesis removal, denture base adjustments, and soft tissue evaluation so as to avoid denture irritations.
or wound edge separations, which should be dealt with as soon as possible following surgery. Harmonization of occlusal relationships in all eccentric positions is essential and best accomplished by occlusal adjustment 48 hours following surgery and during subsequent recall appointments.

The described procedure evolved over a 6-year evaluation period of different surgical and postsurgical treatment methods and has proved reliable, with a predictably comfortable postoperative experience for the patient.

Immediate postsurgical radiographs show root surfaces that are contiguous with adjacent bony formation in most instances (Fig. 13). The areas that do not completely conform to this root/bone contour are probably of little concern. Cook et al.\(^4\) reported new bone formation in bony defects that were free of epithelial proliferation and inflammation. Long range results have been previously reported and are favorable for alveolar ridge preservation (Fig. 14).\(^4\)

**SUMMARY**

An approach to soft tissue management and surgical crown/root sectioning for submucosal vital root retention has been presented. Attention to detail during soft tissue reflection, tooth sectioning, and the relaxing of attached mucogingival tissues is very important. Adequate healthy soft tissue is necessary for proper suturing over the retained roots. Postoperative complications are reduced by placement of well-fitted prostheses. Clinical evaluation of this technique has proved it to be highly successful.

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**REFERENCES**


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