Maximizing implant esthetics by preservation, regeneration of the alveolar bone

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The differences between natural teeth and dental implants are vast. The lack of a periodontal ligament (PDL) not only results in total immobility or functional ankylosis, but eliminates one of the two sources of blood supply to the marginal mucosa.

The only source of vascularity is derived from suprapериosteal vessels, making the presence and thickness of facial bone crucial for the long-term stability of soft tissues. It is therefore paramount importance for the surgeon to take all steps possible to perform minimally-traumatic extractions, without inducing trauma to the osseous tissue.

This is extremely important when placing immediate implants in the esthetic zone. Trauma to the often-thin buccal plate of bone, composed mainly of bundle bone, compromises blood supply. This can lead to impaired wound healing and unpredictable soft tissue levels following implant placement.

Unlike conventional extraction procedures, where the primary goal is to remove the involved tooth, extractions followed by implant placement require more sophisticated instrumentation geared toward minimizing trauma to the alveolar bone, without complicating tooth removal.

The introduction of the Periotome was a significant advancement in the evolution of the extraction armamentarium. Severing PDL fibers, without distortion of the thin socket walls, offered clinicians an opportunity to extract teeth with more precision and less surgical trauma. The necessity for leverage, after severing these PDL fibers, created the need for an instrument that functioned similar to a thinly designed Periotome, but one that provided more strength for luxation, without creating minor fractures of the alveolar plate.

The XOtomes by A. Titan Instruments are the logical choice for this step. With their thin, concave design and various angulations, the sharp instruments of choice to separate the tooth from the alveolar walls. The application of X-Trac Forceps by A. Titan Instruments, with their modified beak designs, are geared toward root engagement, without alveolus distortion, to perform this type of extraction.

A screw-retained provisional bridge, free of occlusal contacts, is delivered. This temporary FPD is fabricated using a vacuum-formed template, also used as a surgical guide. The composite resin material is mechanically retained on to provisional abutments. Screw-retention is preferred rather than cementation to eliminate the adverse events associated with residual cement remaining after wound closure.

After placement of this temporary restoration and tightening to 15 Ncm, bone augmentation, both into the residual sockets and over the thin facial plate, is done with freeze-dried, allograft bone and a resorbable collagen membrane. The area is closed with resorbable, monofilament sutures. After 12 weeks of healing, a three-unit ceramic FPD, cemented on two CAD/CAM (Etkon/Straumann) abutments is fabricated.