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Editorial

Transition from the Periodontally Terminal Natural Tooth to the Implant Supported Restoration

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In the late years there is a growing interest toward the clinical procedure of immediate post extraction implant placement by a one-stage flapless surgical approach, combined with immediate previsualization. The overall implant survival of immediately placed and thus restored implants is excellent, suggesting that such clinical approach can be successfully adopted in order to minimize the treatment time and the number of surgical procedures without reducing the predictability suggested by standard protocols.

The placement of an implant immediately after the extraction in a periodontally compromised site is generally considered a biologically risky procedure due to the existence of bone defects combined with the inflammatory reaction caused by the bacterial spread in the socket. Moreover, the presence of active infection has traditionally been considered a contraindication to immediate implant placement in fresh extraction sockets. Therefore, the implant placement takes place long after the extraction has been executed and the site has completely healed.

After the extraction of a periodontally terminal tooth combined with bone defects, the unsupported by bone soft tissues collapse and a series of hard and soft tissue corrective surgical procedures is required. The aesthetic final outcome is rather uncertain being the wound-healing result of technically sensitive surgical procedures.

A growing body of experimental and clinical evidence sustains that immediate implant placement in infected sites may be successful. Animal studies showed that implants placed in sites with experimentally induced periapical and periodontal lesions may Osseo integrate. A systematic review of the literature on the subject found no differences in outcome as related to the presence of infection.

The subgingival microflora before the extraction of severely periodontally involved teeth and after immediate implant placement without flap elevation, combined with an inorganic filler and previsualization, reveals health improvement in the soft tissues compatible with a less pathogenic flora. The "atraumatic" extraction eliminates the infected cementum of the root surface which was acting as the main source, continuously providing the area with periodontopathogen bacteria. Clinical evaluations reveal a long-term biological success, combined with the preservation of the preoperative soft tissue margin architecture that presents occasionally a minor amount of labial recession over the years.

The intimate adaptation of the soft tissues against the smooth transmucosal abutment surface is firm, presenting a shallow periimplant crevice, stable over the years. While the histologic determination of the nature of this adaptation remains unknown, it has been shown that when traditional surgical procedures are followed a long epithelial attachment is expected to develop against the smooth abutment surface, similar to that which develops around natural teeth.

Denuding the bone from the periosteum by a flap elevation momentarily jeopardizes the normal blood supply to the surgical site and inevitably leads to further bone loss. Avoiding this by not elevating a flap, the host defense mechanism and regenerative potential are brought to the site during wound healing, supporting in action the uninterrupted blood supply.

The labial free gingival margin surrounding a periodontally involved tooth, in spite of the presence of inflammation, attachment loss, and osseous defects, often maintains an esthetically acceptable external morphology. The stability of this morphology is sus-

tained by groups of gingival fibers that are not connected to the tooth. These connective tissue collagen fibers inhabit the gingival tissue and provide the marginal gingiva with a certain rigidity.

The alveologingival fibers (radiating from the remaining alveolar crest to the gingiva), the circular fibers (intertwining with other fibers), the trans septal fibers (extending between the teeth adjacent to the extraction socket), the inter capillary fibers, the inter circular fibers, and the inter gingival fibers are not ruptured by the described flapless surgical procedure. Postoperatively, this fiber network continues to stabilize the marginal peri-implant tissue by uniting it with the tissue of the more rigid attached gingiva and the adjacent teeth.

The soft tissue morphology of a periodontally involved site is also mechanically supported by the root of the terminal tooth. The loss of this support caused by tooth extraction is immediately restored, reestablished by the immediately inserted implant, the transmucosal abutment, the inorganic filler and the provisional crown. Reproducing the full 3D labial contour may also be considered less important than the maintenance of the vertical marginal height. By allowing the restored site to be mildly under contoured labially, the vertical height is maintained, and the frontal esthetic outcome can be accessed as acceptable.

Volumetric CBCT evaluations show that the long-term stability of the soft tissue margin is also supported by a postoperatively appearing radiopaque labial plate structure, extending coronally above the implant shoulder which preoperatively did not exist. While the histologic determination of the nature of this plate remains unknown, volumetric CBCT scans taken immediately postoperatively suggest that its presence is initiated by the insertion of the inorganic filler sealing the socket.

In cases where the preoperative marginal topography of the periodontally terminal tooth is assessed esthetically acceptable in spite the presence of the inflammation, the flapless one-stage immediate approach should be considered a valid alternative restorative treatment leading to predictably acceptable long-term biologic and esthetic results. The minimal amount of the overall surgical intervention should also be positively considered.

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