Peri-implant biotype enhancement using interpositional connective tissue grafts

Following tooth extraction, physiologic wound healing leads to alterations in gingival architecture including alveolar bone resorption, gingival recession and papilla loss. This is especially common in patients with thin periodontal biotypes.¹ These alterations very often compromise tissue morphology and lead to esthetic challenges with implant restorations.

Numerous surgical techniques are available to reconstruct post extraction defects. However, the old cliché, ‘An ounce of prevention is worth a pound of cure’ very much applies to the extraction defect and all efforts should be made to minimize these morphologic changes.

It is technically easier and less costly to preserve the alveolus at the time of tooth extraction as opposed to enhancing it following physiologic remodeling.

Therefore, various procedures and materials have been recom-
Strategies to manage the extraction defect have been previously published, which provide algorithms to help guide implant treatment procedures immediately following tooth extraction. The present case report describes the benefits of using large, thick interpositional connective tissue grafts in conjunction with tooth extraction and site preservation as well as during immediate implant placement to enhance the peri-implant biotype and improve soft tissue architecture.

Patient 1
A 52-year-old female patient presents with recurrent decay and a failing post and core restoration on tooth No. 8 (Figs. 1a, b). A thin periodontal biotype was recognised as noted by the tapered tooth form and long slender papillae and a high smile line further challenges esthetic management.

Immediately following extraction, the socket was categorised as an EDS Type II defect due to the thin periodontal biotype even though the bony socket was completely intact. Therefore, a staged implant approach was necessary. The site preservation procedure in conjunction with the interpositional connective tissue graft results in improved soft tissue architecture.

Patient 2
A 54-year-old male patient presents with a hard and soft tissue deficit associated with a periodontal abscess secondary to root resorption on tooth No. 9 (Fig. 2a). A flapless surgical technique utilising a surgical template is then used to place the implant including the healing abutment in order to minimise soft tissue resection of the bony socket.

Patient 3
A 42-year-old female patient presents with a periodontal biotype was recognised as noted by the tapered tooth form and long slender papillae and a high smile line further challenges esthetic management.

A large, thick autologous connective tissue graft was harvested from the palate and placed beneath full thickness buccal and palatal tunnels. The great majority of the bone and soft tissue graft complex is allowed to heal for approximately 12 weeks prior to implant placement and results in improved soft tissue architecture with an improved biotype.

A flapless surgical technique utilising a surgical template is then used to place the implant using ovate pontic (Fig. 2g). The implant is allowed to heal for an additional six months and restored with a porcelain fused to metal restoration (Fig. 2h). An ideal restorative outcome was achieved by the maintenance of the gingival margin and papillae.

The site preservation procedure in conjunction with the interpositional connective tissue graft, results in improved soft tissue architecture.

A removable partial denture was used as a provisional appliance (Fig. 2e) and the bone and soft tissue graft complex was allowed to heal for approximately four months prior to implant placement.

The site preservation procedure in conjunction with the interpositional connective tissue graft, results in improved soft tissue architecture.

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achieved using a custom gold abutment (Fig. 3d, e) and porcelain veneers were placed on the maxillary anterior teeth (Fig. 3f). An excellent esthetic outcome was achieved. (Restorations by Dr. Jon Marashi, San Clemente, Calif.).

These three clinical situations demonstrate the clinical benefits of incorporating large, thick interpositional autologous connective tissue grafts during site preservation and immediate implant placement surgery. When used appropriately, these grafts vascularise completely, even without complete primary closure. The grafts seem to improve the soft tissue biotype and enhance soft tissue esthetics adjacent to implant restorations by minimising gingival recession and interproximal papillary loss.

Live surgical demonstration of this technique as well as many others will be showcased during the American Academy of Implant Dentistry’s 57th annual meeting on Oct. 29–Nov. 1 in San Diego. For more information, see www.aaid.com.

References

About the author
Dr. Nick Caplanis
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