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Modified Technique for Root Coverage

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Abstract

Gingival recession and inadequate keratinized tissue are prevalent problems encountered in dental practice and negatively impact prosthodontic and esthetic outcomes.

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Introduction

Gingival recession is a multifactorial and relatively common problem among patients. Newman et al. outlines numerous etiological factors for gingival recession which include gingival abrasion from improper tooth brushing, tooth malposition, gingival ablation, gingival inflammation, abnormal frenum attachment, and iatrogenic dentistry [1]. Prior to performing esthetic periodontal surgery, it is important to identify the precise cause of the recession. For example, if the patient presents with an abfraction, the patient's occlusion should be adjusted in addition to soft tissue augmentation. Gingival recession is a significant problem for dental practitioners as patients may complain of increased sensitivity, caries, and unpleasant esthetics. The literature discusses many techniques for the treatment of gingival recession such as autogenous gingival grafts, autogenous connective tissue grafts, and pedicle autografts. In 1985, Tarnow described the utilization of a semilunar incision and coronally positioned flap to treat gingival recession [2]. The technique described in this article encompasses the same basic principles with the addition of tricalcium phosphate which increases the amount of attached gingiva.

Technique

One of the most significant parameters for success is case selection; this procedure is most successful at achieving root coverage in patients that present with Miller Class I and select Class II defects [3]. In patients presenting with more extensive gingival recession, the procedure can be repeated in stages, gaining root coverage with each attempt and eventually the desired end result. Prior to performing surgery, the patient must adhere to strict oral hygiene protocol and there must be an absence of inflammatory periodontal disease. The root surface is scaled and debrided, and the surface is etched with 37% phosphoric acid. A semilunar incision is made following the contour of the gingival margin. An intrasulcular incision is made along the gingival margin as well as a full thickness incision that extends from the free gingival margin to the semilunar incision; this allows for the maintenance of the interproximal papillae [2]. Ideally, the tissue is positioned coronally to the cemento-enamel junction, but this can be modified based on the amount of recession and position of the interproximal papilla. The tissue is then held in this new position for five to ten minutes using digital pressure. Tricalcium phosphate is then placed apical to the semilunar incision, this serves to increase the amount of attached gingiva and promote hemostasis. The patient is then advised not to brush, examine, or touch the area during healing for one to two weeks. Patients experience minimal to no post- operative discomfort and generally do not require analgesics or antibiotics.

Discussion

There are numerous indications for root coverage procedures including sensitivity and esthetics. Esthetics may range from recession on a natural tooth to a newly visible margin on porcelain fused to metal crown. The semilunar coronally advanced flap with the utilization of tricalcium phosphate has numerous advantages over other techniques for root coverage. First, by utilizing a conservative incision and maintaining the integrity of the interproximal papillae, the blood supply is preserved. This significantly improves healing time and overall success of the procedure. Furthermore, this technique does not require the use of sutures which has multiple advantages: it minimizes tissue trauma, maintains the integrity of the blood supply, and allows for faster healing. The utilization of sutures in soft tissue augmentation procedures has multiple negative side effects such as post-operative tissue shrinkage and acting as a reservoir for bacteria and food; this induces further inflammation of the tissue and causes delayed healing. The additional use of tricalcium phosphate has numerous benefits. The tricalcium phosphate dually functions as a graft and membrane, promotes the establishment of hemostasis, and leads to the development of keratinized tissue.

While this procedure has the best prognosis in cases that present with Miller Class I defects and select Class II defects, it can be performed in patients with more extensive recession. In more severe cases, the procedure can be done multiple times, each time gaining

Figure 1: Patient presents with Miller Class I defects on the maxillary right first and second premolar.

Figure 2: The same patient from figure 1 approximately two weeks post-operatively.

Figure 3: The same patient approximately 4 weeks post-operatively.

approximately 1-2 mm of gingival coverage until the desired gingival margin is achieved. It is important to note that this technique can be performed on single teeth or two adjacent teeth simultaneously. Achieving root coverage on adjacent teeth using other techniques becomes more difficult due to donor site morbidity, lack of blood supply, and predictability. Patient selection is crucial to the success of this procedure. Patients must demonstrate diligent oral hygiene compliance to ensure a predictable outcome. Additionally, this technique is well accepted by patients and is a practice builder for many reasons. The procedure can be performed in approximately fifteen minutes and patients do not require analgesics or antibiotics. As there is minimum post-operative discomfort, patients can engage in their daily activities with no impediment.

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