Periodontal Plastic Surgery: Made Easy with Acellular Dermal Matrix

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Abstract

Esthetics has become an important part in periodontal plastic surgery, and soft-tissue architecture plays an important role in achieving it. Among the various techniques, the use of autogenous connective tissue graft has been proved to be an effective and a successful approach in treating gingival recession. Recently, acellular dermal matrix (ADM) allograft has been used as a substitute for palatal connective tissue and it has shown to be a successful alternative for root coverage. This case report is an effort to evaluate the clinical effectiveness of ADM in coverage of denuded root with 6-month follow-up.

Keywords: Acellular dermal matrix, gingival recession, recession coverage

Introduction

Gingival recession can be defined as the displacement of the marginal tissue apical to the cementoenamel junction (CEJ) and is a frequent clinical feature in populations with both good and poor standards of oral hygiene.[1] Root coverage is indicated to prevent the further progression of recession, to decrease sensitivity, and to improve the esthetic. Several mucogingival surgical procedures have been proved successful and predictable; among them, most popular is subepithelial connective tissue graft, described by Langer and Langer in 1985.[2] One of the main disadvantage of subepithelial connective tissue graft is that it needs a second wound on the palate which can cause pain and hemorrhage. These limitations led to a search for an alternative graft material for root coverage procedures. Freeze-dried acellular dermal matrix (ADM) allograft was first used in plastic surgery for the treatment of full-thickness burn wounds.[3] ADM allografts were subsequently introduced in periodontal surgery in 1994 as an alternative to autogenous free-gingival grafts to achieve increased attachment of keratinized gingiva around natural teeth or implants and root coverage. The unique properties of ADM are that they are acellular, nonimmunogenic, uniform thickness, well-adapted, easily trimmed, and it requires less surgical time.[4]

Case Report

A 28-year-old male patient presented to the Department of Periodontics with a chief complaint of increased sensitivity in the upper right back tooth while drinking cold water for the past 1 year. His medical history was noncontributory. A thorough clinical oral examination and periodontal charting and radiographic evaluation were performed. 3 mm × 3 mm recession [Figure 1a and b] was observed and was classified as Miller’s Class I.[5] Coronally advanced flap with ADM (AlloDerm, BioHorizons) graft procedure was planned as it was less traumatic. The patient agreed to the intervention and gave written consent. Before the surgical appointment, the patient underwent Phase 1 periodontal therapy which includes scaling and root planing. The surgery was performed under local anesthesia (2% lignocaine with 1:80000 adrenaline, Lignox 2% A, Indoco Remedies Ltd). An intrasulcular incision was made at the buccal aspect of the involved tooth. Two horizontal incisions were made at right angles to the adjacent interdental papillae, at the level of

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the CEJ, without interfering with the gingival margin of the neighboring teeth [Figure 2a]. Two oblique vertical incisions were extended beyond the mucogingival junction (MGJ), and a trapezoidal mucoperiosteal flap was raised up to MGJ [Figure 2b]. Beyond MGJ, a partial thickness flap is elevated which releases the tension and aids in the coronal repositioning of the elevated flap. The connective tissue on the adjacent papillae were exposed by stripping away the epithelium. Then, root planing followed by root conditioning was performed with 24.5% ethylenediaminetetraacetic acid for 3 min [Figure 3]. The tooth surface was then thoroughly flushed with sterile saline.

ADM was trimmed (8 mm × 10 mm) according to the dimension of the recipient site. ADM was rehydrated in normal sterile saline as per manufacturer’s instruction for 20 min [Figure 4]. ADM has two sides, i.e. the connective tissue side [Figure 5a] and the basement membrane side [Figure 5b]. Then, the trimmed ADM was transferred aseptically to the site of the interest and placed into the defect. The connective tissue side was placed against the root surface, and the basement membrane side was placed against the flap. The borders of the graft were secured with resorbable polyglactin 910 4-0 sutures [Figure 6a]. The flap was coronally positioned and sutured to completely cover the allograft [Figure 6b] and was protected with a noneugenol dressing. Postoperative instructions were given, and antibiotics were prescribed. During the postoperative period, plaque control was achieved mechanically and chemically with 0.2% chlorhexidine. Ten days following the surgery, the dressing was removed and the surgical site was irrigated with normal saline. The areas were checked for any membrane exposure. The recall appointments of the patients were made after 6 weeks, 4 months, and finally, at 6 months [Figure 7a and b]. At each visit, oral hygiene instructions were reinforced and supragingival scaling was done if required.

**Discussion**

Although there are many techniques for recession coverage, subepithelial connective tissue graft is the most predictable one. The main drawback is that it needs a second surgical site that increases the patient morbidity and discomfort and increases chairside time. The use of ADM eliminates the above-mentioned drawbacks. The ADM allograft was found to be biocompatible and nonallergenic and did not produce any inflammatory response. Therefore, ADM has been considered an alternative to palatal donor tissue. The connective tissue
Harris et al. reported that they were able to obtain 100% root coverage with volumetric changes in gingival biotype after using ADM graft. In the current case, 2-mm coverage was obtained which is approximately 70% coverage of original recession. Color blending between the treated and untreated areas of gingiva was good as a report by Aichelmann-Reidy et al.

ADM graft is a safe, biologically acceptable material which can be used as a substitute of autogenous connective tissue graft. Nowadays, patients prefer a less traumatic procedure with the good esthetic outcome, which can be easily fulfilled with the use of ADM. In this case, a significant root coverage with a good color match between the treated and untreated areas of gingiva was obtained. More clinical studies are needed to prove the efficacy of ADM.

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**Conflicts of interest**
There are no conflicts of interest.

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