Case Report

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ACELLULAR DERMAL MATRIX GRAFT FOR MILLER'S CLASS II RECESSION DEFECT: A CASE REPORT

Akash Tripathi[1], Arpita Goswami[2], Deepshikha Singh[3], Amit Kumar Singh[4]

1. Assistant professor at Department of periodontology, Hazaribagh College of dental sciences and Hospital, Jharkhand, India

2,3. Assistant Professor at Department of Periodontology, Rama Dental College Hospital & Research Center, Kanpur, U.P., India.

4. Periodontist, Private Practitioner, Gorakhpur, U.P., India

ABSTRACT:

Root coverage is indicated for esthetics improvement, proper plaque control and root hypersensitivity management. Several techniques have been developed for obtaining predictable and esthetic root coverage. In order to minimize two surgical sites as in autografts, an attempt was made to evaluate the clinical efficacy of Acellular Dermal Matrix Graft in the coverage of denuded roots and also to examine the changes in the clinical attachment level.

Keywords: Alloderm, gingival recession, allograft, aesthetics

INTRODUCTION:

Colour, contour and shape of the gingival tissue greatly influence the aesthetic of smile. Conditions like gingival recession in aesthetic zone poses challenge to a clinician. [1] Root coverage is indicated for aesthetics improvement, proper plaque control and root hypersensitivity management.[2,3]

To date, various surgical techniques that have been employed to achieve this goal including pedicle flaps, epithelialized free palatal grafts, subepithelial connective tissue grafts (CTGs), and guided tissue regeneration. Among these, the subepithelial CTG is considered the gold standard technique for root coverage procedures. However, this graft requires autogenous palatal donor tissue, which causes an additional surgical palatal wound that could increase the risk of complications, and it is directly related to greater postoperative discomfort to the patient.[4]

The literature has reported on the success of an acellular-dermal-matrix (ADM) for periodontal purposes such as root coverage, soft tissue augmentation and guided bone regeneration with a consistent record of excellent results.[5] AlloDerm provides a matrix consisting of collagens, elastin, vascular channels, and proteins that support revascularization, cell repopulation and tissue remodeling.[6] The aim of this case report is to evaluate the clinical effectiveness of

*Corresponding Author Address: Dr. Arpita Goswami Email: arpita41989@gmail.com

Alloderm in treatment of gingival recession defects.

CASE DETAIL:

A healthy 23-year-old female patient reported to the Department of Periodontics, Rama Dental College, Hospital and Research Centre, with the chief complaint of receding gum and hypersensitivity in lower anterior teeth. The patient's medical and dental histories were non-contributory. Upon examination, Miller's class-II recession defect was found in teeth #31 and #41 (Figure 1). Prior to therapy, clinical measurements including probing depth, recession depth, clinical attachment level (CAL) were obtained using a William's periodontal probe. The clinical findings are shown in Table 1.

Surgical procedure

Preoperative intra-oral antisepsis was done using 0.12% chlorhexidine digluconate solution (rinsed for 1min). Following administration of local anesthesia, intrasulcular incision was made in the buccal area of the affected teeth and horizontal incisions at the level of cemento-enamel junction (Figure 2). A split thickness flap was extended apically in order to facilitate its coronal advancement. Epithelium in the adjacent papillae was de-epithelized, followed by scaling of the roots surfaces using Gracey curettes. The Alloderm was hydrated in sterile saline, according to the manufacturer's instructions (Figure 3). It was then trimmed to a shape and size designed to cover the root surface up to cementoenamel junction and extended apically beyond defect area by at least 3mm. The Alloderm was placed with its connective tissue side towards the flap and basement membrane side towards the roots. Then, it was sutured over the defect with 4-0 bioabsorbable sutures. The flap was coronally positioned to completely cover the Alloderm and sutured using a sling suture technique by using 4-0 bioabsorbable sutures.(Figure 4)

Post-surgical care

Immediately after surgery periodontal dressing was placed to protect the wound. Patient was instructed to discontinue tooth brushing and to avoid trauma/pressure at the surgical site. Chlorhexidine digluconate (0.12%) mouth rinse was prescribed 2times daily for 14days. Patient was recalled after 1week and checked for healing. Sutures were removed after 14days (Figure 5) and the patient was instructed to clean the surgical sites with a cotton pellet soaked in 0.12% chlorhexidine digluconate solution 3times daily for 10days. After this period, patient was asked to resume mechanical tooth cleaning of the treated areas using a soft toothbrush with modified Stillman's technique.

Clinical evaluation

The healing process was uneventful, and the patient did not report of any pain or

discomfort overall. The grafted area healed well, with excellent color blend. After 3 months, the Alloderm resulted in an adequate increase in the amount of attached gingiva (Figure 6). Postsurgical clinical measurements including probing depth, recession depth, CAL were obtained using a William's periodontal probe. The clinical findings are shown in Table 2.

Table 1: Pre-surgical clinical findings

	Teeth number	
	31	41
Recession depth	4mm	6mm
Probing depth	1mm	1mm
Clinical attachment loss	5mm	7mm

Table 2: Postsurgical clinical findings

	Teeth number	
	31	41
Recession depth	2mm	3mm
Probing depth	0mm	0mm
Clinical attachment loss	2mm	3mm

DISCUSSION:

In this case report, Alloderm was used in the treatment of gingival recession defects. The result obtained from this study indicated that Alloderm with coronally positioned flap can be successfully used to treat periodontal recession defects. Longitudinal studies have shown a high success rate and predictability with sub epithelial graft procedure.[12-13] However, autografts require a second surgical site for the donor tissue which increases the risk of pain and haemorrhage during the postoperative period. With the availability of an alternative allograft, the need for a second surgical area can be avoided. The use of Alloderm has been shown to be effective for root coverage procedure and can be used as a substitute for connective tissue grafts.[14-15] It has been observed that the root coverage results obtained with Alloderm were predictable, esthetic, and stable over a long period of time.[9] A Recent systematic review concluded that there were no significant differences between Alloderm and connective tissue graft with coronally advanced flap for recession coverage.[16] Joly et al. [17] showed that colour matching and gingival contours seemed to be more favourable at sites treated with ADM. It has been established that a CTG measuring 1mm in thickness is ideal for obtaining better aesthetic outcomes,

although it is difficult to harvest a uniform graft. Moreover, CTG can preserve the characteristics of palatal tissue, which determine gingival keratinization and influence local colour matching. As discussed above, ADM presents several advantages in comparison with CTG, including elimination of a second surgical site for harvesting the graft, reduced postoperative pain and discomfort, less chair time, favourable aesthetic outcomes, and increased acceptance by patients.[18]

Aichelmann Reidy et al [19] suggested that high predictable and effective root coverage can be obtained with Acellular-dermal-matrix-graft when the connective tissue side is placed toward root surface and the basement membrane surface is placed toward the flap. Robin D Henderson et al [2001] [20] studied whether orientation of the Acellular-dermal-graft [i.e., the basement membrane side against the tooth or connective tissue side against the tooth], affected the percentage of root coverage and showed that the orientation of the material did not affect the treatment outcome. In this case report, the connective tissue side/dermal side of the Acellular-dermal-graft is placed towards the defect [tooth] and the basement membrane side was placed away from the defect (similar to the studies reported).

Acellular-dermal-matrix-allograft yielded better colour and tissue blended well into the adjacent tissues. This is because the Acellular-dermal-matrix-allograft is mostly incorporated into the tissue and finally remodelled. The presence of Acellular-dermal-allograft can be identified by the presence of elastin fibres as they are found in the skin but not in oral mucosa. Hence elastin fibres can act as marker for Acellular-dermal-matrix.

Thus, Acellular-dermal-matrix graft can be used as a substitute for autogenous connective tissue graft. The results obtained with the Acellular-dermal graft shows that the surgical procedures with Acellular-dermal graft have a definite therapeutic utility in the clinical practice.

CONCLUSION:

Acellular-dermal graft is a safe, biologically acceptable and effective material that can be used for treatment of gingival recession. There was a significant coverage obtained with Acellular-dermal graft with increase in the width of keratinized gingiva. It can be used as an effective substitute for autologous grafts in the treatment of recession. Acellular-dermal graft used in this report was well tolerated by gingival tissues and had no adverse effects on treated and adjacent non-treated sites. Even though complete coverage was obtained, this report has a limitation as only one patient was treated and we

need more sites and clinical studies in future to prove the efficacy of Acellular-Dermal-Matrix graft.

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FIGURES:

Figure 1: Pre-op photograph

Figure 2: Intrasulcular Incision being made

Figure 3: Acellular Dermal Matrix graft hydrated with saline and trimmed to required dimensions

Figure 4: Flap was coronally advanced and alloderm carefully placed and stabilized by 4-0 bioresorbable sling suture

Figure 5: 14th Day follow-up

Figure 6: 3 Months follow-up