



Promising treatment option for recession coverage

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ABSTRACT

Introduction: Surgical techniques, including pedicle and free soft-tissue grafting, are offered to treat the exposed root surface in the cosmetic zone of the dentition. A coronally advanced flap is an effective approach for root covering in managing gingival recessions on single or many teeth.

Aim: This case report highlighted the use of a Porcine collagen matrix with a coronally advanced flap technique for covering roots in the upper dentition aesthetic zone.

Materials and methods: Miller's class I gingival recessions on teeth 21, 22, 23, and 24 were identified. To improve the cosmetic covering, a Porcine collagen matrix was combined with a coronally advanced flap.

Results: The results show successful and stable recession coverage and are considered a promising therapeutic option for improving all clinical parameters.

Keywords: Gingival recession, Porcine Collagen Matrix, coronally advanced flap

INTRODUCTION

Gingival recession (GR) is the apical movement of the gingival edge relative to the cemento-enamel junction (CEJ), which is related to loss of attachment and exposure of the root surface to the oral environment¹. It causes dentinal hypersensitivity and an unattractive appearance, and, if left untreated, can develop into caries of root, abrasion or cervical wear, erosion, and increased dental plaque deposition¹. GR can be caused by a variety of causes, including improper tooth cleaning habits, abnormal frenal attachment pull, occlusion stress, thin gingival biotype, and bony plate thinning due to tooth malposition or prominence of the root¹. A variety of surgical methods can be used to treat gingival recessions; however, the

classification of the recession according to Miller must be determined first, followed by the proper surgical therapy and prognosis for each unique instance. Root coverage surgical options include a subepithelial connective tissue graft, a free gingival graft, a subepithelial connective tissue graft technique with a coronally positioned flap, a laterally positioned flap, a double papilla technique, or a combination of two or more techniques. Root covering procedures, like any other, should only be undertaken if the patient has a healthy gingiva and maintains good dental hygiene. In Miller's Class I and II recessions, comprehensive coverage can produce favorable effects. Miller Class III often allows for partial recession coverage and has an uncertain outlook. The subepithelial connective tissue transplant is the most predictable procedure, often regarded as the "gold standard" for root coverage³. However, this procedure has a drawback in terms of morbidity because it requires the removal of connective tissue from the palatal area. Individuals who have had this treatment experience discomfort and subsequent soreness in the palate wound. To meet patient aesthetic expectations, it's important to obtain complete root coverage, optimal graft thickness, and natural color mixing at the surgical site. Developing and evaluating new surgical procedures for treating numerous recession-type abnormalities in patients with aesthetic expectations is necessary. A graft material, such as porcine collagen matrix, is an alternative treatment that eliminates the need for a second surgical location, typically the palate. According to Herford et al. (2012), this matrix is designed for soft tissue augmentation. It has a bilayer structure: a dense layer of compact collagen and a spongy layer of porous collagen. The Root coverage with a coronally positioned flap employing Mucograft® (collagen matrix) for 12 months⁴.

CASE REPORT

A 37-year-old female patient visited Inderprastha Dental College and Hospital and complained of receding gums in the upper left back tooth. The patient was otherwise in good health throughout. There were no reported medical or dental histories provided.

ORAL EXAMINATION

Clinical examination revealed Miller's Class I gingival recessions in 21,22,23 and 24. Radiographically, there were no caries or periapical changes. After receiving informed consent, the patient underwent the coronally advanced flap procedure with a Porcine collagen matrix.

PRESURGICAL PHASE

- Routine laboratory blood tests were performed.
- Phase I therapy included of dental hygiene recommendations, scaling, and root planing with hand ultrasonic devices.
- Patients underwent re-evaluation 3-4 weeks following phase I therapy to ensure plaque maintenance.
- Only patients with Plaque index scores <1.0 were included in this study.
- The patient had appropriate antibiotic prophylaxis before surgery.

PRESURGICAL EVALUATION

Gingival recession depth and KTW were measured using a UNC-15 probe, While gingival thickness was measured using 20 no. reamer the penetration depth of the reamer was measured with a digital electronic caliper. The treatment strategy was to cover the recession using a 15-20 mm collagen matrix and coronally advanced flap.

TABLE 1: PRESURGICAL MEASUREMENT AT BASELINE

TOOTH NO.	RECESSION DEPTH (mm)	KTW (mm)	GINGIVA THICKNESS (mm)
21	1	2.5	0.9
22	1	3	0.9
23	1	4	0.8
24	3	4	0.9

SURGICAL PROCEDURE

The surgical region was anesthetized with 2% lignocaine hydrochloride and 1:80,000 epinephrine. Before raising the flap, both exposed root surfaces will be lightly planned using a sharp Gracey curette to decrease root convexity. Following that, root conditioning with 24% EDTA will take place for 2-3 minutes, followed by profuse irrigation with normal saline lasting 30-60 seconds. B P BLADE (no. 15) will be used to make an intrasulcular incision on the affected tooth's buccal aspect. This incision will be made horizontally to the adjacent papillae, avoiding the gingival margins of the surrounding teeth. Two vertical releasing incisions will be made from the mesial and distal ends of the horizontal incision, sufficiently beyond the mucogingival junction. Using a periosteal elevator, raise a trapezoidal full-thickness flap 3-4 mm beyond the apical crest of osseous dehiscence. The underlying periosteum will then be preserved by doing a partial thickness dissection apically to get flexibility in the flap so that, it can be advanced coronally. After de-epithelialization, a Porcine collagen matrix was stabilized over the exposed root surfaces and continuous sling suturing done using Ethicon vicryl 4-0 resorbable suture. The flap was then advanced coronally and sutured with 4-0 black silk sutures.

POST-OPERATIVE INSTRUCTIONS

Antibiotics (Amoxicillin 500mg, recommended every 8 hourly for five days) Anti-inflammatory (Nimesulide 100mg, every 12 hourly for five days).

Anti-analgesics (500mg of paracetamol every 6 hourly for three days)

Oral hygiene measures were given

For seven days, a mouthwash containing 0.12% chlorhexidine was provided twice daily.

The patient was told to avoid brushing on the operated site.

The sutures were removed fourteen days following the procedure.

The parameters (recession depth, keratinized tissue width, and gingival thickness) were measured at baseline, six months, and twelve months.

FIGURES**Fig 1: Pre-operative view****Fig 2: Full thickness & Partial thickness flap raised**



Fig 3: Porcine Collagen Matrix stabilized



Fig 4: 14th day post-operative



Fig 5: After suture removal



Fig 6: Six- months follow-up



Fig 7: one-year follow-up

RESULTS

At 12 months, the patient is satisfied with the cosmetic outcome and reports stable outcomes in all clinical measures (complete root coverage, an increase in KTW, and enhancement of GT).

Tooth No.	RD	KTW	GT
21 BASELINE	1	2.5	0.9
6 MONTHS	0	4	1.6
12 MONTHS	0	4.5	1.6
22 BASELINE	1	3	0.9
6 MONTHS	0	4.4	1.7
12 MONTHS	0	4.5	1.8
23 BASELINE	1	4	0.8
6 MONTHS	0	5	1.4
12 MONTHS	0	5.5	1.8
24 BASELINE	3	4	0.9

6 MONTHS	0	5	1.2
12 MONTHS	0	5	1.2

DISCUSSION

In this case, we chose the Mucograft with a Coronally positioned flap approach due to the nearby area's good periodontal characteristics, which included a significant vestibule depth and keratinized gingiva. The gingival recession has been treated using a variety of periodontal plastic surgery techniques, including pedicle soft tissue grafts and guided tissue regeneration treatments⁵. Several randomized control trial studies found that adding autogenous CTG to CAF and GTR resulted in a statistically significant difference in recession coverage, recession depth reduction, and gain in gingival thickness when compared to CAF alone, CAF + GTR, CAF + Alloderm, and CAF + Enamel matrix proteins⁴. CAF is a commonly used recession coverage procedure when there is the presence of adequate width of keratinized gingiva. This surgical method can be used to avoid a second surgical site, provide extensive root coverage, and provide effective color mixing of the surgical site comparable to nearby soft tissues. According to Zucchelli and De Sanctis, various investigations using CAF have found mean root coverage ranging from 45% to 95% in Miller's Class 1 and 2 GR⁶. Lee et al claimed that histologically, collagen membrane + CAF showed a considerable enhancement of new attachment and connective tissue generated when compared to CAF alone in the treatment of gingival recession⁷. Collagen matrices have been proposed as a limitless alternative to autogenous connective tissue grafting, and they have been used successfully for soft tissue augmentation around dental implants and recession covering.

The recession depth reduction from baseline to six months and from baseline to twelve months show predictable results. Similar findings were obtained with PCM in the study reported by Molnar et al (2013)⁸. We can see from baseline to six-month follow-up in all clinical parameters, that we have achieved a stable result as evidenced by a reduction in recession depth, gain in WKG, and increase in gingival thickness.

CONCLUSION

For this clinical example, root coverage was achieved using a coronally positioned flap and Mucograft, a bilayered collagen matrix. There was a considerable reduction in recession depth, as well as an increase in keratinized zone and gingival thickness, indicating that it is a viable treatment of choice for soft tissue augmentation. However, further long-term studies with larger sample sizes are required to confirm the efficacy and therapeutic effects of PCM.

REFERENCES

1. Cairo F, Pagliaro U, Nieri M. Treatment of gingival recession with coronally advanced flap procedures: A systematic review. *J Clin Periodontol* 2008;35 :136-62.
2. Highfield J. Diagnosis and classification of periodontal disease. *Aust Dent J* 2009;54:11-26.
3. Chambrone L, Chambrone D, Pustiglioni FE, Chambrone LA, Lima LA. Can subepithelial connective tissue grafts be considered the gold standard procedure in the treatment of miller class I and class II recession type defects. *J Dent* 2008;36 :659-71.
4. Herford, P., Alessandri, R., Laugisch, O., Aroca, S., Salvi, G. E., Stavropoulos, A. & Sculean, A. (2012) Predictability of surgical techniques used for coverage of multiple adjacent gingival recessions. A systematic review. *Quintessence International* 43, 545–554.
5. Cairo F, Pagliaro U, Nieri M. Treatment of gingival recession with coronally advanced flap procedures: A systematic review. *J Clin Periodontol* 2008;35 :136-62.

6. Zucchelli G, Clauser C, De Sanctis M, and Calandriello M. Mucogingival versus guided tissue regeneration procedure in the treatment of deep recession type defects. *J Periodontol.* 1998;69: 138-45.
7. Lee EJ, Meraw SJ, Oh TJ, Giannobile WV, Wang HL. Comparative histologic analysis of coronally advanced flap with or without collagen membrane for root coverage. *J Periodontol* 2002; 73: 779-788.
8. Aroca S, Molnar B, Windisch P, Gera I, Salvi GE, Nikolidakis D. Treatment of multiple adjacent Miller Class I and II gingival recessions with a Modified Coronally Advanced Tunnel (MCAT) technique and a collagen matrix or palatal connective tissue graft: a randomized, controlled clinical trial. *J Clin Periodontol* 2013;40:713– 720
9. McGuire MK, Scheyer ET. Long-Term Results Comparing Xenogeneic Collagen Matrix and Autogenous Connective Tissue Grafts With Coronally Advanced Flaps for Treatment of Dehiscence-Type Recession Defects. *J Periodontol.* 2016;87(3):221-7.
10. Schmitt CM, Tudor C, Kiener K, Wehrhan F, Schmitt J, Eitner S, Agaimy A, Schlegel KA. (2012) Vestibuloplasty: Porcine Collagen Matrix Versus Free Gingival Graft. A Clinical and Histological Study. *J Periodontol.*