

SUBEPITHELIAL CONNECTIVE TISSUE GRAFT IN THE MANAGEMENT OF GINGIVAL RESSION: A 4-YEAR FOLLOW-UP OF A CASE

¹Opeodu O.I., ²Adesakin M.O., ³Arowojolu M.O

¹Department of Periodontology & Community Dentistry,
College of Medicine, University of Ibadan.

²Federal Medical Centre, Nasarawa State.

³Department of Periodontology & Community Dentistry
College of Medicine, University of Ibadan.

ABSTRACT

Gingival recession may cause aesthetic challenge for affected individuals, which may be the reason for definitive treatment. Other possible side effect is that because of the exposure of the root surface, it may predispose to root caries and dentinal hypersensitivity. Many surgical procedures have been described as part of the options for the management of gingival recession, the use of subgingival connective tissue is one of such surgical methods. This report describes a case of a gingival recession managed with the use of subepithelial connective tissue graft. The main reason for the surgical intervention was the concern of the patient and the tendency for progression of the recession. Connective tissue was sourced from the palate and sutured in the recipient site with a 4.0 vicryl suture. The case had been followed up for 4 years with good root coverage (100%) and colour match. The resulting improved aesthetics has enhanced the self-image of the patient.

Keywords: Gingival Recession, Subepithelial Connective Tissue, Surgical management, Root Coverage.

NigerJmed 2019; 548-554
© 2019. Nigerian Journal of Medicine

INTRODUCTION

Gingival recession can be defined as the apical migration of the gingival margin with the subsequent exposure of the cemento-enamel junction and the root of the affected tooth or teeth^{1,2}. It is often called tooth root exposure and considered to be more associated with older people^{3,4}. Recession in one or more sites is reportedly present in about 88 % of people aged 65 years and older, and 50% of people between 18-64 years of age⁵. Gingival recession (GR) is often a clinical manifestation of periodontal disease condition with loss of tissue attachment and root exposure following the apical

migration of free gingival margin extending to or beyond the cemento-enamel junction (CEJ). Some other aetiological factors had been associated with gingival recession, which may include trauma from improper tooth brushing techniques, crowding which predisposes to plaque accumulation and then inflammation, mal-positioned teeth, anatomic defects such as fenestration and dehiscence and high frenal attachment⁵⁻⁷. It may also be due to iatrogenic cause in cases such as orthodontic tooth movement, healing following periodontal surgery or prosthetic treatment. Some other cases are as a result of deleterious habits by the individual patients such as oral piercing and the use of tobacco⁸⁻¹⁰.

The condition on its own is not considered a disease, but probably because facial surfaces are more prone to recession than the other sites, there is associated psychosocial affectation of affected

Correspondence to: Opeodu O.I
Department of Periodontology & Community Dentistry,
College of Medicine, University of Ibadan
Tel.: +2348055217682
e-mail: opeodulanre1971@gmail.com

individuals as it poses aesthetic challenge^{5,8}. Some of the affected individuals may not be able to smile in the public because of the embarrassment of the GR. The root of the affected tooth being exposed to the oral environment may also be predisposed to root caries, dentinal hypersensitivity and tooth wear lesion affecting the cervical region of the tooth⁸.

The cause of GR must be considered when managing the condition which may involve scaling and root planing (SRP) to eliminate gingival inflammation in the adjacent tissue and then breaking of habits. But while some of the cases may resolve spontaneously following the SRP, others will persist due to the severity of the recession and these are the cases that often require surgical correction. Consideration for surgical intervention should be based on some factors as spelt out by Chan et al, 2015¹¹:

- I. Patient's concern such as unsatisfactory aesthetics and dentinal hypersensitivity – this is essential in order to improve the quality of life of the patient.
- ii. Progression of recession – active recession leading to worsening gingival tissue loss may warrant surgical intervention in order to halt the progression and improve aesthetics.
- iii. Restorative or orthodontic needs – an individual with GR requiring orthodontic tooth movement will most likely experience worse recession during tooth movement. Surgical techniques to correct GR may involve sourcing for tissue from adjacent gingiva as in laterally or coronally repositioned flap, free epithelial or connective tissue graft. Free connective tissue graft can easily be obtained from the palate with the following advantages:
 - i. Cost – it is cheap compared to

biomaterials that are quite expensive, which is an added advantage in developing countries¹².

- ii. Colour match – the outcome has good colour match with the recipient site as connective tissue graft takes recipient site's colour compared with the epithelial graft that takes the colour of donor site¹³⁻¹⁵.
- iii. It adds to the level of keratinized gingiva, which had been reported to be essential for gingival health¹⁵.
- iv. Long term stable result in terms of root coverage^{13,16}.

The present case report therefore is to present a case of an isolated gingival recession affecting the lower left central incisor that was managed with autogenous free connective tissue graft sourced from the palate. The case had been followed up for up to four years with improved clinical and emotional results.

Case report

A 34-year old female teacher was referred to the periodontology clinic of the University College Hospital, Ibadan, Nigeria from the oral diagnosis clinic of the same hospital, with a complaint that her gum was receding at a lower front tooth. The problem started about seven years before her presentation and gradually increased to about 7 millimeters when she presented in the clinic. She had visited a private dental clinic where scaling and polishing was done and she was counseled to learn to live with it as there was no improvement. However, due to the fact that she was constantly embarrassed by the recession whenever she smiles, she presented in our clinic about four years ago for remedy. There was no contributory medical history and she was otherwise medically normal at presentation. She brushes her teeth twice daily using soft textured tooth brush with toothpaste.

Intraoral examination revealed full complement of dentition with no carious tooth and good oral hygiene. Labial gingiva in relations to the lower left central incisor (tooth 31) was noticed to have gum receded beyond the mucogingival junction. The gingival margin around the recession was found to be slightly swollen, erythematous and tender to palpation. The gingival recession was wide and long, measuring about 7 by 3 millimeters (figure 1). The lower labial frenum was high in relationship with the gingival recession, which could have been part of the risk factors predisposing the patient to GR. Periapical radiograph of tooth 31 revealed moderate alveolar bone loss, widening of periodontal membrane space but with no periapical pathology. A provisional diagnosis of Miller's grade II gingival recession was made and the patient slated for flap surgery to cover the recession. As a work-up to the surgery, SRP was done with ultrasonic scaler in order to facilitate healing of the soft tissue around the recession. Frenectomy of the lower labial frenum was also done at a later date to prevent recurrence of the gingival recession due to downward pull on the gingival margin by the frenum.

Surgical procedure

The recipient site was prepared by thorough root planning and then root conditioning with the use of 250 mg tetracycline hydrochloride dissolved in 10ml of normal saline and applied for a minute. The soft tissue margin of the recession was incised using #15C surgical blade to refresh the margin and encourage bleeding. The margin of the recession was then undermined by blunt dissection leaving the periosteum overlying the bone intact and creating a pouch that formed an envelope flap, which facilitates placement of the graft.

Obtaining the graft from the palate involved

the use of an aluminium foil template of the recipient site, which was used as a pattern to measure the extent of needed tissue at the recipient site. The foil was used to measure the desired dimension of tissue and sharp dissection of the epithelial tissue in the palatal region, adjacent to teeth 24 - 26, was done to expose the underlying connective tissue. A sling suture was then placed on the exposed connective tissue to facilitate its dissection with a #15C blade. The most as is at the donor site was achieved with application of digital pressure using a piece of gauze and the epithelial tissue was sutured back with 3.0 black silk suture. The connective tissue graft was transferred to the recipient site and adapted firmly in order to eliminate dead space. A figure of eight suturing technique was done to secure the graft in place (Fig. 2). Surgical site was covered with periodontal dressing, which was changed after one week. Warm saline mouthwash was instituted six times daily for two weeks to facilitate cleansing and healing of the surgical site. Maintenance therapy in the form of scaling and polishing was regularly instituted at three monthly intervals for the first 2-years post-operatively, but later at 6 monthly intervals. At the first-year post-operative review, a deep notch was noticed at the site of the initial GR (Fig. 3), which got better at the second-year post-operative review (Fig. 4). There was virtually no sign of the GR at the fourth-year post-operative review (Fig. 5). The case had been followed-up for four years with stability of the gingival margin and good aesthetic result.

Figure 1: Pre-operative Clinical photograph of the patient showing tooth 31 with recession of the marginal gingival tissue extending to the mucogingival junction



Figure 2: Intra-operative clinical photograph showing the connective tissue graft secured to the recipient site with resorbable suture



Figure 3: One-year post-operative clinical photograph showing appreciable regeneration of the previously receded gingival tissue with a residual V-shaped defect



Figure 4: Two-year post-operative clinical photograph showing almost complete restoration of the defect



Figure 5: four-year post-operative clinical photograph with a complete coverage of the gingival recession and a good colour match with adjacent gingival tissue.



Discussion

GR is a physical defect on the gingiva with possible psychologic affectation as experienced by the young woman in this case report who was finding it difficult to smile in the public. Previous counselling from a dentist for her to learn to cope with the GR was not sufficient to help her, which led to her seeking treatment in our center. Complete root coverage was achieved over the four years of follow-up, from the initial diagnosis of Miller's class II gingival recession. This is a better result compared with the outcome reported by Somasheker et al., with the use of alloderm[®], which is quite expensive but gave a less predictive result¹². However, this case being an isolated recession site cannot be effectively compared with that of Somasheker et al.,¹² with multiple recession sites, but the fact that connective tissue graft is far cheaper

than the alloderm[®] is a major advantage that cannot be overlooked. Cost is an essential part of patients' management especially in a developing country such as is the case where the present case was managed. The result achieved in this case report is comparable with that reported by Anand et al., where a connective tissue graft was used in the root coverage of an isolated gingival recession¹⁷. The extent of the recession, which was within Millers grade II, could have been partly responsible for the full coverage that was achieved in this case as it might not be possible to achieve a full coverage of the root in a more severe recession¹³. Other factors responsible for the success achieved in this case may include the fact that the patient maintained optimal oral hygiene throughout the period under review and kept her appointment for regular professional prophylaxis.

The fact that 100% root coverage was achieved has brought a lot of psychological improvement to the patient with the attendant restoration of her lost confidence and so she can smile in the public again. This has greatly improved the quality of life of the patient, with the attendant trust developed in the managing team. A major requirement for treatment of GR, which is the patient's concern was met by the improved aesthetics and psychological wellbeing experienced by the patient following the root coverage¹¹. The improved aesthetics was not dependent only on the extent of the root coverage achieved, but also on the colour match of the grafted site with the adjacent gingival tissue. This is a major advantage of the use of connective tissue graft for root coverage as the connective tissue takes the colour of adjacent gingival tissue as opposed to the use of epithelial graft that will maintain its original colour. Therefore, the outcome achieved when GR is managed with epithelial graft is considered to be poorer in

terms of colour match than when using connective tissue graft¹³⁻¹⁵. The patient in this reported case is definitely satisfied with the outcome, which is a vital point in the assessment of periodontal regenerative procedures^{18,19}.

The root coverage in this report has been followed-up for four years with good result, which is also an advantage of the use of connective tissue graft in root coverage. This was confirmed by Dembowska and Drozdziak, who reported that some of their class II gingival recession achieved 100% root coverage within 12 months of the surgical procedures¹³. Francetti et al., also reported a 15 year follow up of a case which was managed with connective tissue graft with improved outcome²⁰. Though the present case is just four years post-surgical procedure, it shows enough stability, no gingival bleeding, adequate gingival thickness, and with optimal care received presently, should be able to survive for long as had been reported by other studies^{13,20}. The 100% root coverage was achieved over some period of time, which could have been due to a phenomenon described as "creeping attachment" that had been reported to occur following the positioning of free gingival grafts. The phenomenon was described as a "post-operative migration of the gingival margin tissue in a coronal direction over previously denuded root surface"²¹. While creeping attachment was described in the use of free gingival graft, this case was managed with connective tissue graft, which may suggest that the phenomenon is not limited to the use of gingival graft alone but may occur in the use of connective tissue graft also.

Donor site mortality is a major disadvantage of the use of connective tissue graft when compared with the use of biomaterials such as alloderm[®], which does not require any other site but is synthetic

and the size that can be obtained is not limited by the availability at the donor site. The donor site will have to be nursed alongside the recipient site by the patient, when connective tissue is used, while it is only the recipient site that is nursed in the use of alloderm®. Thus alloderm® can easily be utilized in a more extensive recession sites that may not be completely covered by available autogenous connective tissue graft from the patient. Also, alloderm® affords fewer chair-side time, which will be required in the sourcing for the graft from donor site. However, in terms of donor site morbidity, the use of connective tissue graft is better than the use of epithelial graft, as healing by primary intention can be achieved with the former following suturing of the epithelial layer, while the use of epithelial graft leaves the donor site raw and associated with more painful experience especially when chewing^{22,23}.

CONCLUSION

This case report shows that, if patients' satisfaction and the cost of management are the only factors to be considered, the use of subepithelial connective tissue graft in the management of gingival recession is a viable option for the management of GR especially in developing countries.

References

1. Manchala SR, Vandana KL, Mandalapu NB, Mannem S, Dwarakanath CD (2012). Epidemiology of gingival recession and risk indicators in dental hospital population of Bhl mavaram. *J Int Soc Prev Community Dent*, 2(2): 69-74.
2. Roman A, Louise F, M'barek R, Brunel-Trotebas S (2008). Gingival recessions: Epidemiologic, Etiologic and Therapeutic aspects. *The Internet J Dent Sci*, 7(1): 1-12.
3. Gorman WJ (1967). Prevalence and

etiology of gingival recession. *J Periodontol*, 38(4): 316-322.

4. Litonjua LA, Andreana S, Bush PJ, Cohen RE (2003). Toothbrushing and gingival recession. *Int Dent J*, 53(2): 67-72.
5. Kassab MM, Cohen RE (2003). The etiology and prevalence of gingival recession. *The Journal of American Dental Association*, 134(2): 220-225.
6. Wennstrom JL (1996). Mucogingival therapy. *Ann. Periodontol*, 1(1): 671-701
7. Miller PD Jr (1985). A classification of marginal tissue recession. *Int J. Periodontics Restorative Dent*, 5(2): 8-13.
8. Chrysanthakopoulos NA (2014). Gingival recession: Prevalence and risk indicators among young Greek adults. *J Clin Exp Dent*, 6(3): e243-249.
9. Dilsiz A, Aydin T (2009). Self-inflicted gingival injury due to habitual fingernail scratching: A case report with a 1-year follow up. *Eur J Dent*, 3: 150-155.
10. Pattnaik N, Satpathy A, Mohanty R, Nayak R, Sahoo S (2015). interdisciplinary management of gingivitis artefacta major: A case series. *Case Reports Dent*, (Article ID 678504). Retrieved from <http://dx.doi.org/10.1155/2015/678504> on 19/3/2018.
11. Chan H, Chun YP, MacEachern M (2015). Does gingival recession require surgical treatment? *Dent Clin North Am*, 59(4): 981-996.
12. Somasheker G, Ramesh AV, Roopa K, Dwarakanath CD (2017). Clinical evaluation of acellular dermal matrix allograft (Alloderm®) with coronally advanced flap in the treatment of multiple gingival recessions: A clinical study. *Afr J Med Health Sci*, 16(2): 81-88.
13. Dembowska E, Drozdziak A (2007). Subepithelial connective tissue graft in the treatment of multiple gingival

- recession. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*, 104(3): e1-e7.
14. Sağlam M, Köseoğlu S (2012). Treatment of localized gingival recessions with free gingival graft. *Eur J Gen Dent*, 1(1): 10-14.
 15. Rihwani JA, Kini VV, Pereira R, Yadav S (2016). Free gingival autograft and subepithelial connective tissue graft for the treatment of gingival recession: A brief review and report of three cases. *J Contemp Dent*, 6(3): 225-232.
 16. Nemcovsky CE, Artzi Z, Tal H, Kozlovzky A, Moses O (2004). A multicenter comparative study of two root coverage procedures: coronally advanced flap with addition of enamel matrix proteins and subpedicle connective tissue graft. *J Periodontol*, 75(4): 600-7.
 17. Anand V, Gulati M, Bahuguna R, Anand B (2012). Connective tissue graft and root coverage - A case report. *J Clin Den Res*, 1(1):65-67.
 18. Inglehart MR (2015). Enhancing periodontal health through regenerative approaches: a commentary on the need for patient-reported outcomes. *J Periodontol*, 86(2):S4-S7.
 19. Stefanini M, Jepsen K, de Sanctis M, Greven B, Heinz B, Wennström J et al, (2016). Patient-reported outcomes and aesthetic evaluation of root coverage procedures: a 12-month follow-up of a randomized controlled clinical trial. *J Clin Periodontol*, 43(12):1132-1141.
 20. Farnchetti L, Taschieri S, Cavalli N, Corbella S (2018). Fifteen-year follow-up of a case of surgical retreatment of a single gingival recession. *Case Reports Dent*, (Article ID 3735162; <https://doi.org/10.1155/2018/3735162>).
 21. Agudio G, Nieri M, Rotundo R, Cortellini P, Prato GP (2008). Free gingival grafts to increase keratinized tissue: A retrospective longterm evaluation (10 to 25 years) of outcomes. *J Periodontol*, 79(4):587-594.
 22. Zucchelli G, Mele M, Stefanini M, Mazzotti C, Montebugnoli L, de Sanctis M (2010). Patient morbidity and root coverage outcome after subepithelial connective tissue and de-epithelialized grafts: a comparative randomized-controlled clinical trial. *J Clin Periodontol*, 37(8): 728-738.
 23. Gobbato L, Nart J, Bressan E, Mazzocco F, Paniz G, Lops D (2016). Patient morbidity and root coverage outcomes after the application of a subepithelial connective tissue graft in combination with a coronally advanced flap or via a tunneling technique: a randomized controlled clinical trial. *Clin Oral Invest*, (DOI 10.1007/s00784-016-1721-7).