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Management Miller class III recession with tunnel subepithelial connective tissue graft

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Abstract

The main objective of the work is to eliminate tooth hypersensitivity and etiologic factor of miller class III gingival recession and restore the gingival with tunnel subepithelial connective tissue graft and coronally repositioned flap. As a method, the treatment was done by scaling and occlusal adjustment first. One week after this treatment, the surgery was done for treatment of the gingival recession. As a result, the gingival recession was reduced from 2 mm to 0,5 mm and tooth hypersensitivity disappeared. In conclusion, subepithelial connective tissue graft and coronally repositioned flap is the appropriate technique for treat miller class III recession.

Keywords: Gingival, Recession, Tunnel, Subepithelial, Connective.

Manejo de la recesión de clase III de Miller con injerto de tejido conectivo subepitelial de túnel

Resumen

El objetivo principal del trabajo es eliminar la hipersensibilidad dental y el factor etiológico de la recesión gingival miller clase III y restaurar la gingival con un injerto de tejido conectivo subepitelial de túnel y un colgajo reposicionado coronalmente. Como método, el tratamiento se realizó mediante escalado y ajuste oclusal primero. Una

semana después de este tratamiento, la cirugía se realizó para el tratamiento de la recesión gingival. Como resultado, la recesión gingival se redujo de 2 mm a 0,5 mm y la hipersensibilidad dental desapareció. En conclusión, el injerto de tejido conectivo subepitelial y el colgajo reposicionado coronalmente es la técnica apropiada para tratar la recesión de clase III de Miller.

Palabras clave: Gingival, Recesión, Túnel, Subepitelial, Conectivo.

1. INTRODUCTION

Gingival recession is defined as the displacement of marginal tissue apical to the cementoenamel junction (CEJ) (JAIN, KAUR & AGGARWAL, 2017). A gingival recession occurs frequently in adults, has a tendency to increase with age and occurs in populations with both high and low standards of oral hygiene (CORTELLINI, 2018). Many factors have been implicated in gingival recession, such as tooth malpositioning, oral hygiene habits, high muscle attachments, occlusal trauma and iatrogenic factors related to various restorative and periodontal procedures (JATI, 2016).

To categorize the gingival recession, various classifications have been proposed. Miller proposed a classification system in 1985 and it is probably still the most widely used system for describing the gingival recession. There are four types of recession categorized according to Miller: Class I, Class II, Class III, and Class IV. He has primarily based his classification of gingival recession defects on following the extent of gingival recession defects and the extent of

hard and soft tissue loss in interdental areas surrounding the gingival recession defects.

Various surgical techniques and materials have been described for the management of recession defects such as free gingival graft (FGG), subepithelial connective tissue grafts (SCTG) and guided tissue regeneration. In 1994, Allen introduced the tunnel technique for root coverage. This technique has a minimally invasive nature because the interdental papillae are left intact. This technique entailed the placement of a connective tissue graft in the tunnel. Complete graft coverage is not mandatory as long as the graft dimensions are sufficient to ensure its survival. The coronal advancement of marginal tissue was then performed as a modification to the tunnel technique (FAHMY & TAALAB, 2018).

2. METHODOLOGY

A 29-year-old male, systemically healthy, no foods or drugs allergic, smoker patient. The patient's chief complaint is hypersensitivity in lower right central incisivus when he consumed cool meals or beverages. The patient did not receive any periodontal treatment previously. The oral examination revealed light calculus with the complete tooth in mouth (28 teeth), malposition with 1-degree tooth loss in lower right central incisivus (tooth 4.1). There are multiple diastemata in mesial and distal tooth 4.1 (Figure 1). There is a

2 mm recession in buccal and 1 mm recession in mesial and distal tooth 4.1. (Figure 2).



Figure 1: Intraoral image



Figure 2: Two-millimeter recession in tooth 4.1

Furthermore, radiograph examination revealed little bone loss in mesial and distal tooth 4.1 with the widening of periodontal ligament (Figure 3). Initial periodontal therapy, occlusal adjustment, and management recession tooth 4.1 with tunnel epithelial connective tissue graft technique and coronally repositioned flap were planned for the treatment.

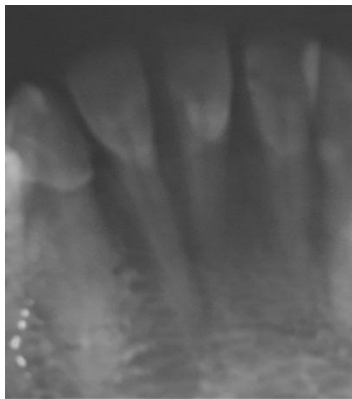


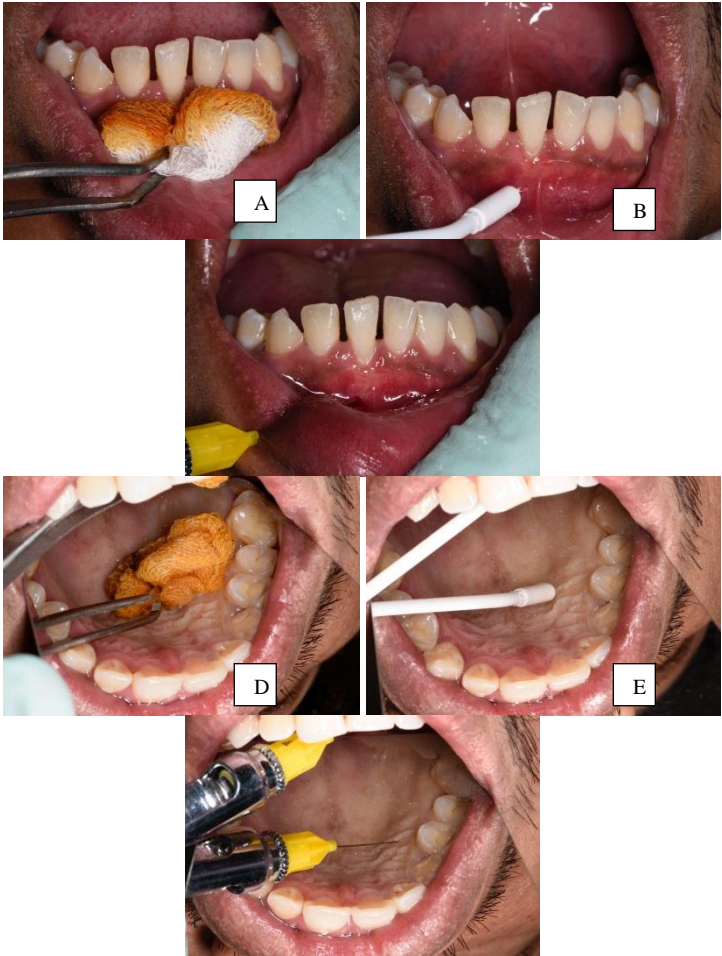
Figure 3: Radiograph image tooth 4.1

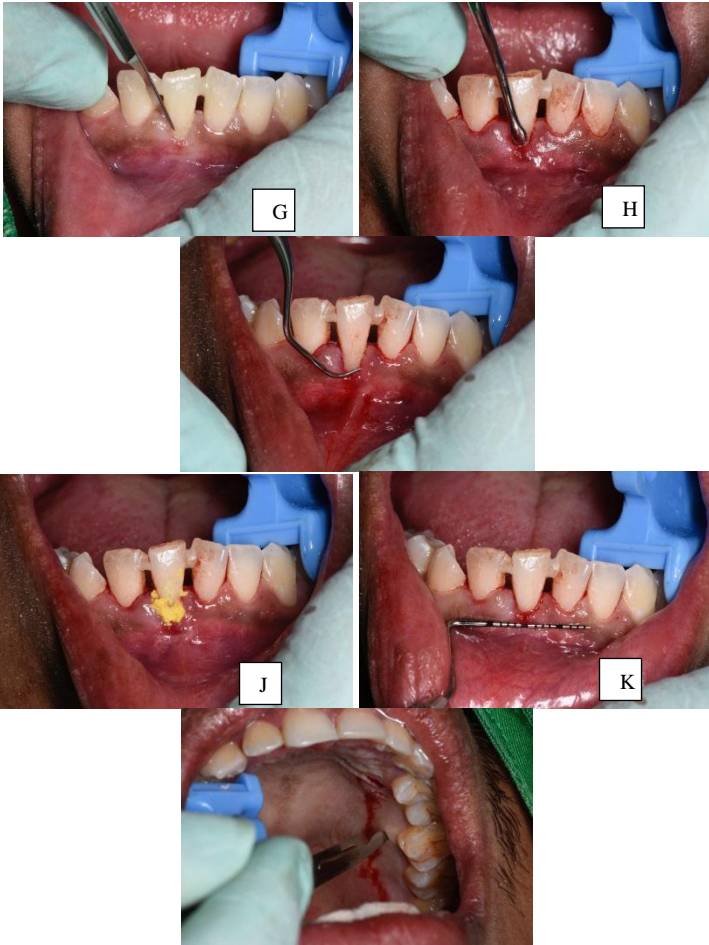
One week after initial treatment with occlusal adjustment, the patient came to control his condition. No loosening in tooth 4.1 and patient ready for surgery. Before the surgery, mesial and distal tooth 4.1 was be given by flow composite to assist the suturing. Surgery was started with asepsis in extraoral and intraoral tooth 4.1 and donor side in palatal with povidone-iodine. After that, topical anesthetize (Xylocaine 10% topical spray) and infiltration anesthetize (Articaine 4% with 1:100.000 adrenaline) were applied in mesiobuccal fold tooth 4.1 and donor side in palatal (Figure 4A-4F). Sulcular incision with a 15C blade followed by tunneling knife did until muscle pull was

released in the recipient site (Figure 4G,4H). The interdental papilla left intact. Root surface treatment by root planning and tetracycline was applied in root surface tooth 4.1 (Figure 4I,4J). After that, tetracycline was rinsed and recipient site preparation was done.

Furthermore, subepithelial connective tissue graft (SECTG) was harvested from the donor site in palatal. Horizontal surgery with number 15 blade did 5 mm from margin gingiva from the first premolar until the mesial first molar (Figure 4L). 1 mm blade penetration perpendicular with palatal bone did with number 15 blade. After that, an incision was continued with the tilt degree of the blade was decreased slowly until blade parallel with palatal bone and the blade continued penetrated 5 mm deeply to median palatal with partial-thickness incision until SECTG was obtained from the palatal side (NICOLAIDES, 2015).

SECTG was applied and sutured in mesial tunneling side tooth 4.1 with 5.0 monofit absorbable silk. After that, flap and SECTG were pulled coronally and sutured with blue nylon 5.0 with double loop suture in mesial and distal tooth 4.1 and composite suture in buccal side tooth 4.1 (Figure 4M,4N). The donor site was sutured by monofit absorbable silk until the flap was intact and primary closure achieved (Figure 4O). The patient was being given instruction post-operation and medicine like Clindamycin 300 mg as antibiotic, Kalium diclofenac 50 mg as anti-inflammation, Mefenamát acid 500 mg as an analgesic for 1 week and Chlorhexidine gluconate 0,12% for 2 weeks.





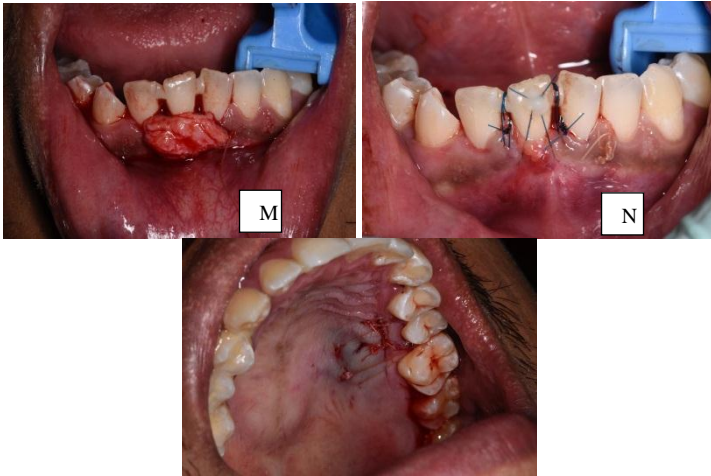


Figure 4: A.asepsis mucobuccalfold tooth 4.1, B.topical anesthetize tooth 4.1, C.infiltration anesthetize tooth 4.1, D.asepsis donor site, E.topical anesthetize donor site, F.infiltration anesthetize donor site, G.sulcular incision with 15C blade, H.incision with tunneling knife, I.root planning with curettage, J.tetracycline applied in root surface, K.measurement of donor tissue, L.harvest donor tissue, M.donor tissue insertion on recipient site, N.suturing with coronally repositioned flap, O.donor site suturing

3. RESULT

One week after treatment, the patient came to control his condition. Gingiva in tooth 4.1 was still swollen and redness but the patient feel comfortable. This side was irrigated with saline sterile to eliminate debris and plaque. Amnion was given on this side (Figure 5).



Figure 5: Gingiva condition in 1 week after treatment that was given by amnion

Two weeks after treatment, the patient came to control again. The patient feels comfortable and gingiva in tooth 4.1 was still redness. This side was irrigated with saline sterile to eliminate debris and plaque (Figure 6).



Figure 6: Gingiva condition in 2 weeks after treatment

One month after treatment, the patient came to control again. The patient feels comfortable and gingiva in tooth 4.1 was in good condition but there is still 0,5 mm gingiva recession. The donor site in

good condition too. The patient said that he does not feel hypersensitivity when eat and drink. This side was irrigated with saline sterile to eliminate debris and plaque. All silk for suture was removed at this time and the patient was being given instructions on how to do brushing and cleaning his tooth after the treatment (Figure 7).



Figure 7. Gingiva condition in 1 month after treatment

Three months after treatment, the patient came to control his condition again and routine scaling. Gingiva was stable with 0,5 mm recession in buccal and the patient do not feel hypersensitivity when he eats or drinks (Figure 8). Pasien was very happy.



Figure 8. Gingiva condition in 3 months after treatment (photo after scaling)

4. DISCUSSION

Gingival recession is represented by atrophic periodontal changes. Atrophic cells have a decrease in volume, they eat themselves up and cause their structural components as well as their organelles to be digested. So, their energy consumption is reduced and they are able to survive within a hostile environment. Once the causal factor is removed, cells might be restored to the normal level, however, it depends on the severity of the tissue lesion and type of tissue involved (JATI, 2016).

This case is Miller Class III recession that did correction from 2 mm gingival recession to 0,5 mm gingival recession. Class III Miller recession is a marginal tissue recession that extends to or beyond the mucogingival junction (MGJ). Bone or soft tissue loss in the interdental area is present or there is a malpositioning of the teeth, which prevents the attempting of 100% of root coverage. Partial root coverage can be anticipated. According to Miller himself, class III recession treatment has unpredictable results because this type of recession has a detrimental factor as malpositioning of the tooth and loss of interdental tissue or bone (ANTONIO & ZORZANO, 2011). Other than that, patient habits like smoking have a negative effect on the healing process because of nicotine-induced vasoconstriction of periodontal tissue and gingival DNA damage (NWHATOR, 2010). Because of that, a full root coverage cannot be achieved in this case but its correct hypersensitivity of the root.

This treatment used a tunnel technique for the incision. The use of this technique not only preserves the papillary between mucogingival defects but also helps maintain adequate blood supply to the underlying graft. It also provides an excellent adaptation of the graft to the recipient site. This procedure has highly esthetic results and also increases the thickness of keratinized gingiva (DANI, DHAGE & GUNDANNAVAR, 2014).

5. CONCLUSION

Coronally advanced flap with subepithelial connective tissue grafts is a gold standard procedure for the management of gingival recession (SHKRETA, 2018). This technique offers higher levels of root coverage than other techniques due to the blood supply is given to the graft (SUMANA, MASULILI & LESSANG, 2017). Other benefits are lower morbidity of the donor site compared with free gingival graft because its healing by primary intention and most importantly it offered excellent predictability of the results.

Experiment by LOPS (2015) in randomized clinical study with patient who received a coronally advanced flap with connective tissue graft (CAF+CTG) compared with coronally advanced flap alone (CAF), obtained the result that CAF+CTG showed a better primary outcome than CAF alone in terms of recession reduction after 12 months of follow-up but both treatments are equally effective in providing a consistent reduction of the baseline recession. A study by

CAIRO (2015) also said CAF+CTG has a stable result after 3 years compared with CAF alone (CAIRO, 2015). The gingival recession caused by many factors. One of them is trauma occlusion aggravated by bad lifestyle like smoking. The successful degree of treatment depends on the class of recession, physician treatment plan, and patient cooperation. At this time, CAF+CTG with tunneling incision is the best treatment option for gingival recession treatment because this technique is minimally invasive and its have a predictable result.

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