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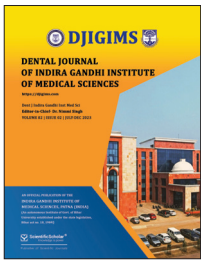

Case Report

A Novel Approach of Microneedling and Glutathione Injection in the Management of Thin Gingival Phenotype – A Case Report

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ABSTRACT

In the period of aesthetic dental therapy, it is more important that a clinician should be aware of all the factors that may affect the final aesthetic outcome treatment. One such factor is the Gingival biotype which influences indications and outcomes of various periodontal, restoratives, surgical, and implant therapy. The thickness of the gingiva has been classified as thin (<1.5 mm) and thick (>1.5 mm). Gingival recession is more found in patients with thin biotype, therefore to the thickness of gingival biotype can result in better treatment outcome of recession coverage procedures. In the study, we reported a case of gingival recession with thin gingival phenotype in a 45-years-old female patient in relation to 13 and treating it by Microneedling procedure followed by injecting 2ml of glutathione which result it increase in gingival phenotype in recession site.

Keywords: Gingival phenotype, gingival recession, microneedling, glutathione, percutaneous collagen induction therapy

INTRODUCTION

Currently, dental practice is more significantly influenced by aesthetics [1] and a clinician should be aware of all the factors that will influence the aesthetic outcome of the treatment.[2] One of the factors is the phenotypic characteristics of the bone and soft tissues, which constitute the periodontium and are described as the periodontal phenotype.[1] The term periodontal biotype, introduced by Seibert and Lindhe, categorized the gingiva into 'thick-at' and 'thin-scalloped' biotypes.[3] Inflammation of the periodontal tissue leads to increased pocket formation and gingival recession, especially in thick and thin biotypes, respectively. So, there are various invasive and non-invasive methods proposed to increase the thickness of the gingival biotype.[4] One such non-invasive technique to increase the gingival phenotype and to prevent the second surgical site during the management of gingival recession is microneedling (MN) and injection glutathione. MN or percutaneous collagen induction therapy creates micro-injuries, resulting in minimal superficial bleeding and a cascade to penetrate the solution deep into the gingival epithelium.[5]

Glutathione, which is a small, water-soluble tripeptide thiol with a low molecular weight compound, is made up of three amino acids and is used for tissue regeneration.

In our study, we reported a case of gingival recession with a thin gingival phenotype in a 45-year-old female patient. She was injected with glutathione 2 ml, with follow-ups for three months.

CASE REPORT

A 45-year-old female patient was referred to the Department of Periodontology and Implantology, Vivekanandha Dental College for Women, Tiruchengode, Namakkal, with chief complaints of deposit in her upper, lower, front, back, right, and left tooth region for the past one year. She also had a complaint of receding gums in her upper right and left front tooth region for the past six months. The patient had no history of any habits. Patient had undergone extraction of 46 and 36 before 8 years. She was moderately built, well-oriented to time and place, and had no signs of cubbing, cyanosis, and anemia. She had no relevant medical history, and blood reports were within the limits. Radiographic findings indicate that there was no bone loss present in 13 region. On co-relating the case history, radiographic findings, clinical examination, and investigation, we arrived at the final diagnosis as generalized chronic gingivitis with localized chronic periodontitis in 13 regions. On intraoral examination, Miller's class II recession in 13 regions with thin gingival phenotype adjacent to the recession area was revealed. The thickness of the gingival phenotype in relation to 13 was measured with the endodontic file, and the points were marked with the stopper [Figure 1] it was found to be 1 mm. In order to increase the thickness of the gingival phenotype and reduce the need for a second surgical site for root coverage procedure in relation to 13, we injected glutathione, a non-invasive therapy, as planned for the patient.

TREATMENT

The patient had gone through scaling and root planning in 13, along with oral hygiene instruction and motivation. After one week of recall, the patient had no signs of inflammation; hence, local anesthesia was given in 13 regions, and microneedling was done using a derma pen [Figure 2]. This was done for better penetration of the solution into the suprabasal level of the gingival epithelium. The bleeding points were obtained in relation to 13, after which 2 ml of glutathione was injected in mesial, mid-buccal, and distal accept [Figure 3], after which a periodontal pack was placed. After one week, the periodontal pack was removed, and saline irrigation was done in relation to 13. Recall after one month revealed that there was an increase in the thickness of the gingival phenotype by 2 mm [Figure 4]. There were no signs of postoperative complication, and the patient was followed up for a period of 32+ three months.

Figure 1: Preoperative 13.

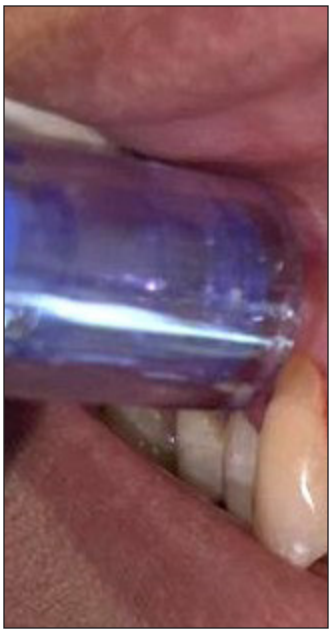

Figure 2: Microneedling.

Figure 3: Glutathione injection.

DISCUSSION

The gingival biotype is considered one of the key factors in influencing treatment outcome. Patients with thick gingiva have been shown to be relatively resistant to gingival recession.[6] The disadvantage of the thin biotype of gingival recession management is the need to elevate the partial thickness flap and the need for a second surgical site (donor site). To eliminate these difficulties, MN, followed by injecting glutathione, is done. The MN or percutaneous collagen induction therapy creates micro-injuries, resulting in minimal superficial bleeding and a cascade to penetrate the solution deep into the epithelium of the gingiva, which helps to absorb the solution. Glutathione has the regenerative

Figure 4: Postoperative – 13.

properties of tissue; hence, when it is injected into the gingival tissue site, it will help to increase the width of the gingival phenotype.[7] Berglundh and Lindhe, in 1996, conducted a study and concluded that when the thickness of the gingival phenotype is thin, it leads to marginal bone loss during the formation of the peri-implant biologic width.[8] Shaily Kavi, 2021, conducted a study on gingival phenotype and stated that there was a statistically significant increase in gingival thickness with i-PRF.[4] Adhikary *et al*., in 2023 [9] conducted a study in 32 healthy patients; they divided them into two groups, where group A underwent I-PRF, and group B underwent MN along with the I-PRF in the thin gingival biotype gingiva. Adhikary *et al*. concluded that there was a statistically significant increase in MN along with I-PRF group B than in group A with only I-PRF. [9]

CONCLUSION

Gingival thickness is an important factor that predicts the outcome of dental-related treatment. In our study, we concluded that glutathione by MN procedure had proven to be the beneficial increase in thickness of the gingival phenotype.

Ethical approval

Institutional Review Board approval is not required.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of AI-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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