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RESEARCH ARTICLE
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"DIFFERENT TREATMENT MODALITIES FOR INCREASING VESTIBULAR DEPTH: A CASE SERIES"

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Abstract
Aberrant frenum along with shallow vestibule is a common cause of gingival recession. Vestibular Deepening procedures have always been a point of concern for periodontal surgeon. The aim of this case report is to prevent the progression of gingival recession, to increase the width of attached gingiva and to remove aberrant frenum in single visit by vestibular deepening procedure. Patients reported with chief complaint of unesthetic appearance in lower front tooth & lower midline diastema. Three different treatment modalities were utilized and all three vestibular deepening modalities successfully obtained adequate vestibular depth after 6 months. Both surgical approaches of conventional vestibular deepening and continuous suturing method has led to an innovation in the field of Periodontal Plastic Surgery and is a successful procedure for gaining adequate vestibular depth & to prevent progression of gingival recession.

Keywords: Vestibular Deepening, Width of attached gingiva, Continuous locking sutures, lead foil, PRF Membrane.

INTRODUCTION:

Periodontal Plastic Surgery is defined as the procedures performed to correct the anatomical, developmental and traumatic deformities of gingiva and alveolar mucosa. These surgeries emphasize both on biological and functional problems as well as improve the aesthetic appearance.[1] Gingival Recession is defined as the exposure of the root surface by an apical shift in position of the gingiva (American academy of periodontology 1992). Understanding of the different stages and conditions of

gingival recession is necessary for predictable root coverage. [2] Aberrant frenum along with shallow vestibule is a common cause of gingival recession in lower front tooth region.[3] The term mucogingival surgery was introduced in literature by Friedman 1957 and renamed as Periodontal Plastic Surgery, a term originally proposed by: P.D Miller in 1993. These surgeries emphasize on correcting the relationship between the gingival and oral mucous membrane such as:

- ✓ Attached gingiva
- ✓ Shallow vestibule
- ✓ Aberrant frenum

Shallow vestibular depth leads to food impaction against the gingival margin and into the interproximal area and usually interferes with the oral hygiene procedure causing ineffective plaque control (Goldman,1953).[4]

However multiple surgical techniques have been developed to increase the depth of shallow vestibule and width of attached gingiva. This case report including three cases showing three different modalities out of which first report utilizes conventional method , second report utilizes separating media along with continuous locking sutures and in third report adequate vestibular depth was achieved along with recession coverage using PRF membrane.

CASE REPORTS

CASE 1

A female patient aged 21 years reported with chief complaint of unesthetic appearance and receding gums in lower front tooth region. Intraoral examination revealed Miller's Class II gingival recession due to shallow vestibular depth and inadequate width of attached gingiva (Fig 1). Therefore to prevent the progression of gingival recession and to increase the width of attached gingiva, vestibular deepening procedure was planned. The patient was informed about the procedure and an informed consent was signed by the patient. Before surgery, Phase-1 therapy was performed which consisted of scaling and root planing, oral hygiene instructions, motivation and education.

SURGICAL PROCEDURE

Adequate anaesthesia was achieved by administering 2% xylocaine HCl with adrenaline 1:80, 000. Pre-operative view with shallow vestibular depth of 2mm can be seen (Fig 1 & 2). After giving horizontal incision with Bard Parker knife (No. 15), a split thickness flap was reflected sharply towards alveolar mucosa along with dissection of muscle fibres. Undermining of flap was done to change the direction of epithelium inwards (Fig.3). The operated areas was then covered with coe-pack. Patient was advised not to do brushing in that region and not to consume any hot & spicy food for at least 10 days postoperatively and asked to take antibiotics and anti-inflammatory drugs as recommended. 10 days postoperatively patient recalled for follow up. No postoperative complications were seen & healing was proceeded uneventfully and satisfactory. Adequate vestibular depth of 5mm was achieved and no relapse was seen after 6 months. (Fig 4).

Fig. 1 Pre-operative view

Fig. 2 Vestibular Depth measured

Fig. 3 Undermining of flap

Fig.4 Post - operative view

CASE 2

A male patient aged 25 years reported with chief complaint of lower midline diastema and was unable to do normal brushing movements in lower anterior region. Intraoral examination revealed aberrant frenum 3and inadequate width of attached gingiva. Further to increase the width of attached gingiva, vestibular deepening procedure was planned. The patient was informed about the procedure and an informed consent was signed by the patient. Before surgery, Phase-1 therapy was performed which consisted of scaling and root planing, oral hygiene instructions, motivation and education.

SURGICAL PROCEDURE

Adequate anaesthesia was achieved by administering 2% xylocaine HCl with adrenaline 1:80, 000. Pre- operative view with shallow vestibular depth and aberrant frenum can be seen (Fig 5). After giving horizontal incision with Bard Parker knife (No. 15) a split thickness flap was reflected sharply towards alveolar mucosa along with dissection of muscle fibres. Undermining of flap was done to change the direction of epithelium inwards (Fig 6) and continuous locking sutures (5-0 absorbable vicryl) were given (Fig.7). A separating media ,ie, Lead foil was placed to prevent both edges of epithelial attachment(Fig.8). The operated areas was then covered with coe-pack. After surgery postoperative instructions were given and prophylactic antibiotics for 7 days was prescribed; 10 days postoperatively patient was recalled for follow up . Healing was satisfactory with secondary wound closure and adequate vestibular depth as well as width of attached gingiva was obtained (Fig.9). No post operative complications and relapse was seen after 3 months.

Fig.5 Vestibular Depth Measured

Fig.6 Undermining of flap

Fig.7 Continuous Locking Sutures

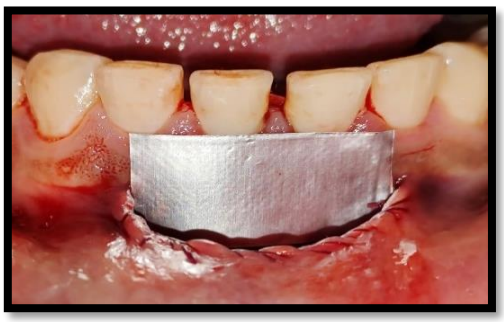

Fig.8 Lead Foil

Fig.9 Post operative view

CASE 3

A male patient aged 22 years reported with a chief complaint of lower anterior recession and difficulty in normal brushing movements in lower anterior region. Intraoral examination revealed aberrant frenum and inadequate width of attached gingiva. Further to increase the width of attached gingiva and to obtain recession coverage, vestibular deepening procedure along with PRF membrane was planned. The patient was informed about the procedure and an informed consent was signed by the patient. Before surgery, Phase-1 therapy was performed which consisted of scaling and root planing, oral hygiene instructions, motivation and education.

SURGICAL PROCEDURE

Adequate anaesthesia was achieved by administering 2% xylocaine HCl with adrenaline 1:80, 000. Pre- operative view with shallow vestibular depth and Miller's Class 2 recession can be seen (Fig 10). After giving horizontal incision with Bard Parker knife (No. 15) a split thickness flap was reflected sharply towards alveolar mucosa along with dissection of muscle fibres and undermining of flap was done to change the direction of epithelium inwards as Case 1 and 2(Fig.11). Platelet rich fibrin membrane was placed and sutured.(Fig.12 & 13) The operated areas was then covered with coe-pack. After surgery postoperative instructions were given and prophylactic antibiotics for 7 days was prescribed; 10 days postoperatively patient was recalled for follow up. Healing was satisfactory with secondary wound closure and adequate vestibular depth as well as recession coverage was obtained. No post operative complications and relapse was seen after 6 months(Fig.14).

Fig.10 Pre-operative view

Fig.11 Undermining of flap

Fig.12 Placement of PRF membrane

Fig.13 PRF membrane sutured

Fig.14 6 months follow up

CASE 4

A male patient aged 25 years reported with a chief complaint of difficulty in normal brushing movements in lower anterior region. Intraoral examination revealed inadequate width of attached gingiva. Further to increase the width of attached gingiva, vestibular deepening procedure with diode laser was planned. The patient was informed about the procedure and an informed consent was signed by the patient. Before surgery, Phase-1 therapy was performed which consisted of scaling and root planing, oral hygiene instructions, motivation and education.

SURGICAL PROCEDURE

Adequate anaesthesia was achieved by administering 2% xylocaine HCl with adrenaline 1:80, 000. Pre- operative view with shallow vestibular depth can be seen (Fig 15). With the help of soft tissue diode laser, horizontal incision along with dissection of muscle fibres and undermining of flap was done to change the direction of epithelium inwards (Fig.16&17). Continous locking sutures were given(Fig 18) and coe-pack was placed(Fig.19). After surgery postoperative instructions were given and prophylactic antibiotics for 7 days was prescribed; 10 days postoperatively patient was recalled for follow up. Healing was satisfactory with secondary wound closure and adequate vestibular depth. No post operative complications and no relapse was seen after 6 months(Fig.14).

Fig.15 Pre-operative view

Fig.16 Diode Laser in use

Fig.17 Diode Laser in use

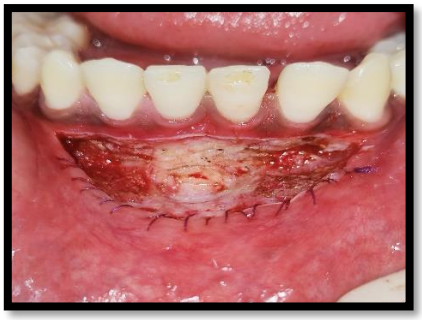

Fig.18 Continous locking Sutures

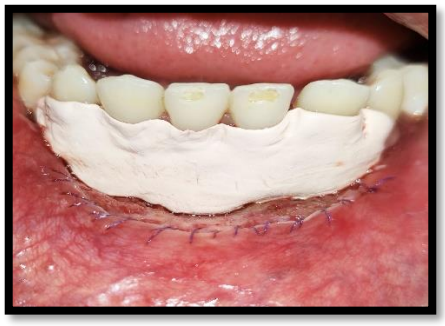

Fig.19 Coe-Pack placed

DISCUSSION

Several studies concluded that all three treatment modalities of vestibular deepening procedures ,ie, conventional, conventional along with continuous locking sutures and placement of PRF membrane has led to an increase in depth of shallow vestibule and gingival recession especially in lower front tooth region.[6]

In this case series, adequate vestibular depth has been achieved by adopting three different surgical treatment modalities. Using conventional method along with continuous locking sutures and separating media which does not allow both the edges of epithelium to come in contact during the process of secondary healing and using PRF membrane to increase vestibular depth has shown faster healing and patient experienced less pain.[7] Shallow vestibule along with inadequate width of attached gingiva has been a cause for toothbrushing trauma and causes problems while mastication. In 1953, Goldman emphasized that a shallow vestibule leads to food impaction against the gingival margin and into the interproximal spaces which makes it difficult for the patient to clean the area.[7] The presence of "adequate" zone of gingiva was considered critical for the maintenance of marginal tissue health and for the prevention of continuous loss of connective tissue attachment (Naber's 1954). The prevailing concept is thus that a narrow zone of gingiva was insufficient (a) to protect the periodontium from injury caused by friction forces encountered during mastication and (b) to dissipate the pull on the gingival margin created by the muscles of the adjacent alveolar mucosa.[8]

Shallow vestibule is a limited zone of keratinized gingiva and high frena attachments frequently occur.[9] In present case report, adequate vestibular depth and width of attached gingiva has been achieved as we can appreciate in (Fig. 4,9,14). Distinct surgical treatment approaches of conventional vestibular deepening, continuous suturing method and using PRF membrane to achieve adequate vestibular depth has led to an innovation in the field of Periodontal Plastic Surgery and is a successful procedure for gaining adequate vestibular depth & to prevent progression of gingival recession.[10]

CONCLUSION

The combination of conventional vestibular deepening and various other modalities have led to an innovation in the field of Periodontal Plastic surgery and are successful procedures for gaining the depth of the vestibule and width of attached gingiva and to prevent progression of gingival recession.

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