CASE REPORT

LEDGE & WEDGE TECHNIQUE - A CLASSIC WAY FOR MANAGEMENT OF GINGIVAL ENLARGEMENT

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ABSTRACT

Idiopathic gingival enlargement is a rare condition of unknown origin. It is a proliferation of fibrous tissue caused by an increase in submucosal connective tissue elements. It is an autosomal dominant condition or very rarely an autosomal recessive mode of inheritance.

A 24-year old female patient reported to the Department of Periodontics, Guru Nanak Institute of Dental Sciences and Research, Kolkata, with swelling of gums since 2 years. Orthopantomogram shows generalized bone loss. Scalpel and Electrocautery assisted surgical excision by Ledge and Wedge technique was performed after Phase I therapy.

There are various treatment modalities for management of gingival enlargement like external bevel gingivectomy, periodontal flap technique, ledge and wedge technique, etc. Out of these, ledge and wedge technique was selected because it helps in placement of primary incision precisely as opposed to the conventional external bevel gingivectomy procedure. Moreover, this procedure does not leave a large external bevel and therefore results in less postoperative pain and bleeding.

The outcome of this surgical procedure was satisfactory in both the treatment modalities, i.e., scalpel and electrosurgery. In addition, there is a need to explain the importance of maintenance of oral hygiene and regular follow up visits to the patients.

KEY WORDS

Idiopathic, Scalpel, electrocautery

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INTRODUCTION

Increase in size of the gingiva referred to as gingival enlargement or overgrowth. It may occur as localized enlargement in relation to a single tooth, a group of teeth or may be generalized involving the entire dentition. Under this category, idiopathic gingival fibromatosis (IGF) is an uncommon, benign, asymptomatic, non-exudative and proliferative lesion of gingival tissue.[1] The cause of this condition is undetermined so it is designated as "Idiopathic".[2]

Gingival enlargement is an unusual condition causing esthetic, functional, masticatory and psychological disturbances in individuals.

The hyperplastic gingiva is usually pale pink, firm, leathery in consistency and presents a characteristic pebbled surface.[3] The condition has been classified into two types: Nodular form and other form. Nodular form is characterized by presence of multiple tumors in the dental papillae and other form that is symmetric resulting in uniform enlargement of gingiva and represents the most common type.[4]

Gingival enlargement has been seen to be associated with aggressive periodontitis but very few reported it with chronic periodontitis in a non-syndromic patient.[5]

Diagnosis is based on the patient's medical, dental and family history along with histopathological examination.[6]

Surgical interventions with scalpel, electrosurgery and laser is advocated for enlargement.[7]

Ledge and Wedge technique, an approach employing in Gingivectomy procedure, can be done by both scalpel and electrocautery. This technique along with internal bevel gingivectomy helps in the placement of primary incisions precisely as opposed to the conventional external bevel gingivectomy procedure. Moreover, this procedure does not leave a large external bevel and therefore results in less post-operative pain and bleeding.[8]

Hereby, we present a rare case of a 30-year-old female diagnosed with IGF involving both the arches. We had carried out the ledge and wedge

procedure with scalpel and electrocautery with an aim to observe the convenience of the operator as well as the post-operative comfort to the patient.

CASE REPORT

A 24-year-old female patient reported to the Department of Periodontics, Guru Nanak Institute of Dental Sciences and Research, Kolkata with a chief complaint of gingival bleeding, difficulty in eating and esthetic concerns due to gingival enlargement. She did not appear to have any mental impairment and her height and weight were within normal limits. Her medical and family history was also non-contributory. On intraoral examination, massive, painless, grade III type3 of gingival enlargement involving both arches was found. Periodontal examination revealed presence of thick band of subgingival calculus, bleeding on probing, Grade II mobility of few teeth and generalized probing pocket depth in the range of 8-10 mm. Orthopantomogram showed a generalized horizontal bone loss. Laboratory investigations, which included complete hemogram, thyroid test, calcium and alkaline phosphatase levels were made. All the reports were within physiological limits. Based on history and clinical features, a provisional diagnosis of IGF was made. Complete treatment plan was explained to the patient. A written informed consent was taken before carrying out the procedure.

SURGICAL TECHNIQUE

After Phase I therapy (Figure 1), Gingivectomy, a combined approach employing both ledge and wedge technique by Scalpel and electrosurgery was planned for the patient.

Surgery using an electrocautery device (Servotome) with a medium size loop electrode was performed in the first quadrant (Figure 2). Loop electrode was used in "Paint-brush" like strokes to trim the excessive gingival overgrowth (Figure 3). After the procedure, periodontal dressing was placed (Figure 4). Antibiotics and Non-steroidal anti-inflammatory drugs (NSAIDS) were prescribed. The excised tissue was sent for histopathological examination. Post-operative instructions were given and the patient was recalled after 7 days. After 7 days, periodontal dressing was removed and the patient was instructed for proper oral hygiene maintenance. The deciduous carious tooth was also extracted during the procedure. The post-operative course was uneventful.

Ten days later, the second quadrant was treated by Ledge and wedge technique using scalpel under local anaesthesia (2% Lignocaine with 1:80,000 adrenaline). No. 15 blades were used for incisions on facial and lingual surfaces (Figure 5). Orban's periodontal knives were used for interdental incisions. After scalpel surgery, the area was thoroughly debrided and gingivoplasty was done to

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

Figure 9 : 3 MONTHS FOLLOW - UP

Figure 10: 6 MONTHS FOLLOW-UP

PRE-OPERATIVE

POST-OPERATIVE

recontour the tissue (Figure 6). After the procedure, sutures were given (Figure 8). Antibiotics and Non-steroidal anti-inflammatory drugs (NSAIDS) were prescribed. The excised tissue was sent for histopathological examination (Figure 7). After 7 days, sutures were removed and the patient was instructed for proper oral hygiene maintenance.

The patient was re-evaluated after one week, three months (Figure 9) and six months (Figure 10) after completion of gingivectomy by Ledge and Wedge technique. It was observed that the patient maintained her oral hygiene properly for this period and the recurrence of growth was not reported at the end of six months

DISCUSSION

Gagliano et al.,[9] suggested that gingival hyperplasia of different etiologies may have different mechanism of overgrowth. This includes an increase in proliferation of resident tissue fibroblast, a reduced level of metalloproteinase synthesis (MMP1 and MMP2) resulting in low levels of extracellular matrix degradation and an increase in collagen Type I production.[10] Though the cause of IGF is unknown, there appears to be a genetic predisposition. The condition may manifest as an autosomal dominant or very rarely as an autosomal recessive mode of inheritance.

Histologically, gingival hyperplasia is mainly due to an increase and thickening of mature collage

bundles in the connective tissue stroma and numerous fibroblasts. The surface epithelium is thickened and acanthotic with elongated retepegs.

Among the suggested treatment protocols, ledge and wedge technique along with internal bevel gingivectomy was selected as it helps in placement of primary incisions as opposed to the conventional external bevel gingivectomy procedure. This technique allows the reflection of conventional flap to permit access to the underlying bone for resective osseous surgery.[8] We treated this case with scalpel and electrosurgery and followed the patients for 6 months. Both the procedure was satisfactory but it should be noted that although reduced bleeding at the electrosurgery site was an advantage but fumes and burning smell makes the patient uncomfortable. Overall, better healing and compliance was observed at the scalpel site as compared to the electrosurgical site.

In the literature, several IGF cases are reported. Similar to this case, Vandana et al.,[11] reported an IGF case in a 26-year old woman, the postoperative results were found to be same with the use of scalpel and electrocautery in Ledge and Wedge technique. Regarding the recurrence of this lesion, conflicting studies have been reported in the literature.[12] In this case, no recurrence was seen at the end of six months follow-up. The patient was satisfied with esthetic and functional result of the treatment.

CONCLUSION

Since, this is a single case study; no consensus among authors related to the mode of treatment could be made. Long-term follow-up will be required to evaluate the predictability of the different surgical techniques. In summary, the best treatment technique to prevent recurrence of Idiopathic gingival enlargement in clinical practise is still unknown. But practical techniques such as Ledge and Wedge procedures could be considered as one of the best treatment modality in treating such cases. It is also said that scalpel method can be preferred over electrosurgery. Patient education, periodic recall and proper oral hygiene maintenance delay the chances of recurrence.

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