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SURGICAL INTERVENTION OF IDIOPATHIC GINGIVAL ENLARGEMENT BY LEGDE AND WEDGE TECHNIQUE

Periodontology

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ABSTRACT

Increase in the size of gingiva referred to as "gingival enlargement," usually overfills the interproximal spaces, ballooning out over the teeth and sometimes even protruding into the oral cavity. It may occur as localized enlargement in relation to a single tooth, a group of teeth, or may be generalized involving the entire dentition. Sometimes, it may appear as diffuse enlargement of gingiva without any specific etiologic factor. It is then considered as idiopathic enlargement. Patient with gingival hyperplasia should be examined to exclude other reasons to determine the idiopathic gingival fibromatosis or not. Treatment is not required in all cases of idiopathic gingival hyperplasia. Surgical excision is indicated if mechanical problems exist. In this case report, an idiopathic gingival enlargement was successfully treated using gingivectomy by ledge and wedge procedure. This describes an unusual case of non-syndromic generalized idiopathic gingival fibromatosis in a 19-year-old female. Surgical treatment in the form of ledge and wedge procedure with internal bevel gingivectomy was performed .The surgical technique performed yielded functionally as well as esthetically satisfying results and at the same time, it maintains the integrity of periodontium.

KEYWORDS

Gingival enlargement, gingival fibromatosis, ledge and wedge, idiopathic

INTRODUCTION

Gingival enlargement (GE) is defined as an abnormal overgrowth of gingival tissues. Under this category, gingival fibromatosis is a heterogeneous group of disorders characterized by progressive enlargement of the gingiva caused by an increase in submucosal connective tissue elements. [1] The etiology of GE is poorly understood but can be attributed to factors like plaque accumulation, systemic hormonal stimulation, blood dyscrasias, drugs, or idiopathic.[2]

Gingival enlargement is an unusual condition causing esthetic, functional, masticatory and psychological disturbances in individuals. It may be easy to arrive at a clinical diagnosis of GE if the etiology is clearly evident; sometimes medical opinion is seeked to explore the cause and identify the underlying diseases, drug interactions or the natural body changes to develop an effective treatment plan. When the exact cause cannot be elucidated, it becomes challenging to establish an accurate diagnosis and hence the prognosis.[3]

Gingival fibromatosis may manifest either as the nodular form or the symmetric form resulting in the uniform enlargement of the gingiva and represents the most common type.[1,3] The hyperplastic gingiva in idiopathic gingival fibromatosis usually presents a normal color and has a firm consistency with abundant stippling. Gingival enlargement can be generalized or localized. The idiopathic gingival enlargement may occur alone or as part of a syndrome which include autosomal-dominant (Laband, Rutherford) or autosomal-recessive syndromes (Cross, Murray-Puretic-Drescher, Ramon).

Idiopathic gingival enlargement is a rare type of gingival enlargement (about one in 750,000 individuals).[4] that has no definite cause and is also known as gingivomatosis[5], diffuse fibroma[6], idiopathic fibromtosis, hereditary gingival fibromatosis, familial elephantiasis.[7] The idiopathic gingival enlargement may occur alone or as part of a syndrome which include autosomal-dominant (Laband, Rutherford) or autosomal-recessive syndromes (Cross, Murray-Puretic-Drescher, Ramon).[8]

Oral manifestations may vary from minimal involvement of only the tuberosity area and the buccal gingiva around the lower molars to generalized enlargement inhibiting eruption of teeth. The hyperplastic gingiva is usually pale pink, firm, leathery in consistency, and presents a characteristic pebbled surface. The condition has been classified into two types. Nodular form characterized by presence of multiple tumors in the dental papillae and other form which is symmetric resulting in uniform enlargement. of gingiva and represents the most common type.[9] There may be a combination of both types. The hyperplastic gingival tissues appear normal at birth but began to enlarge with eruption of primary teeth. Histologically, it is described as a moderate hyperplasia of the epithelium with hyperkeratosis and elongation of rete pegs. The increase in the tissue mass is primarily the result of an increase in thickening of the collagen bundles in the connective tissue stroma.[10] The cause of gingival overgrowth is unknown.

Here we report an unusual case of a non-syndromic, idiopathic gingival enlargement in which surgical intervention in the form of ledge and wedge procedure was done resulting in remarkable improvements in aesthetic and function.

CASE REPORT

A 19-year-old female patient accompanied by his father reported to the Department of Periodontics and Oral Implantology with a chief complaint of enlarged gums in upper and lower arches which caused difficulties in speech, mastication, and complete closure of lips, thereby leading to esthetic impairment. History revealed that enlargement was present since birth and has progressed slowly since then. She did not appear to have any mental impairment and his weight and height were within normal limits. His medical and family history was also non-contributory. Intraoral examination revealed generalized severe gingival overgrowth involving both the maxillary and mandibular arches.[Fig 1].

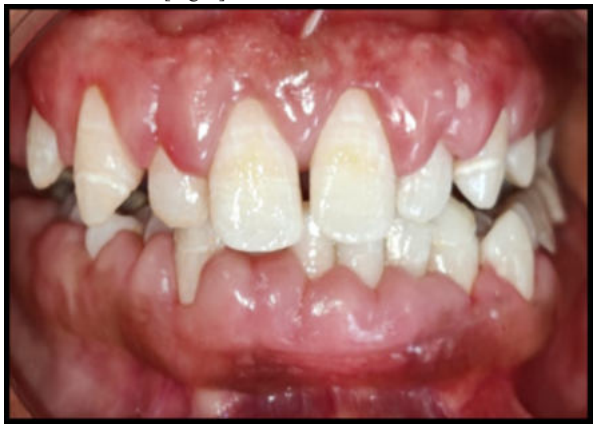

Fig 1: Preoperative View Of The Gingival Enlargement In The Mandibular Anterior Region

The gingiva was firm, dense, and fibrous in consistency. Bleeding on probing and no suppuration were noticed. Pseudopockets ranging from

7 mm to 10 mm were observed. Orthopantomograph revealed generalized horizontal bone loss [Fig 2]. Over the course of 3 months, non-surgical periodontal therapy was performed on the patient.Three months post non-surgical therapy, quadrant wise gingivectomy using the ledge and wedge technique was planned for the patient.

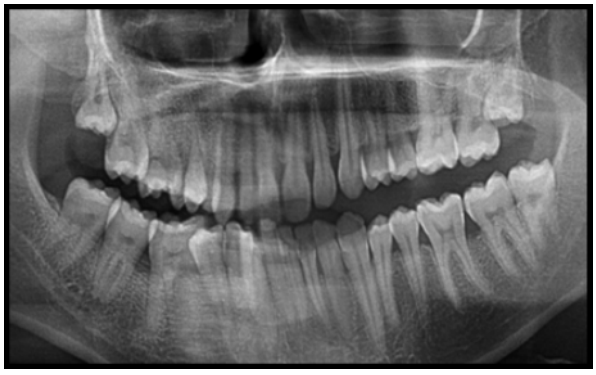

Fig 2: Orthopantomograph Revealed Generalized Horizontal Bone Loss

TREATMENT

The surgical intervention was initiated after obtaining a written informed consent from the patient. Local anesthesia with 2% lignocaine, 1:80,000 epinephrine was administered. After marking the bleeding points, scalpel using No 15 blades were used to place the surgical incisions on the labial/ buccal aspects [Fig 3]. The ledge and wedge technique was employed by first placing horizontal incisions to excise the bulbous gingival interdental papilla [Fig 4]. An internal bevel incision was placed next followed by sulcular incision thereby reflecting the remaining hyperplastic attached gingiva. A full thickness flap was reflected to expose the root surfaces and the underlying bone [Fig 5]. The exposed root surfaces were then thoroughly debrided to eliminate all granulation tissue and recontouring of the gingival tissue was done. 3-0 black silk non-resorbable sutures using continuous sling suture technique were then placed after surgery [Fig 6]. Post-operative instructions were given and patient was instructed to maintain immaculate oral hygiene. Antibiotics (Amoxicillin 500 mg three times a day (TID) for 5 days) and non-steroidal anti-inflammatory drug (NSAID) was prescribed. About 0.2% chlorhexidine mouthwash and interdental brush were given for plaque control. The oral hygiene instructions were reinforced at every visit.

Fig 3: Initial Horizontal Incisions Of The Surgical Phase

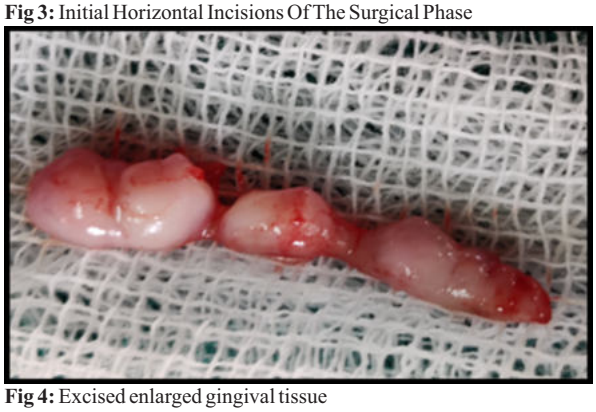

Fig 4: Excised enlarged gingival tissue

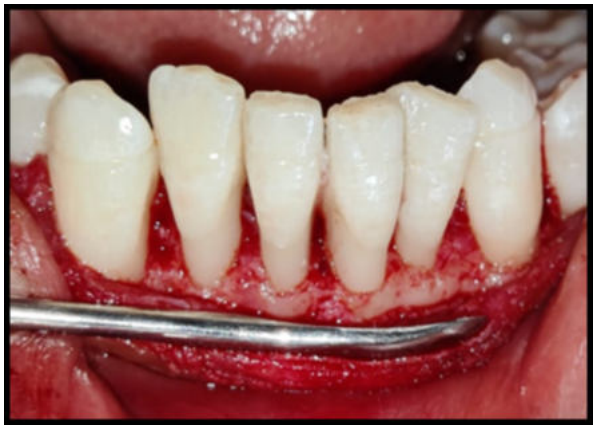

Fig 5: Flap reflection after excision

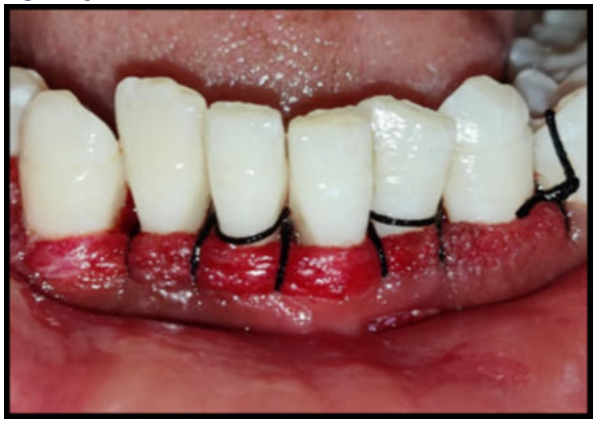

Fig 6: Continuous Sling Sutures placed after surgery

Patient was recalled after 7 days for suture removal.

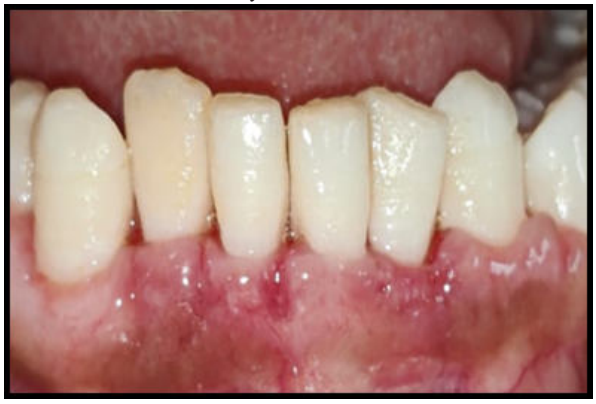

Fig 7: One week follow up

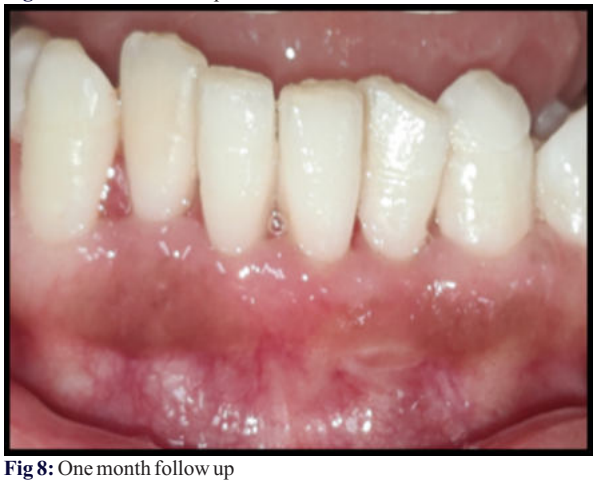

Fig 8: One month follow up

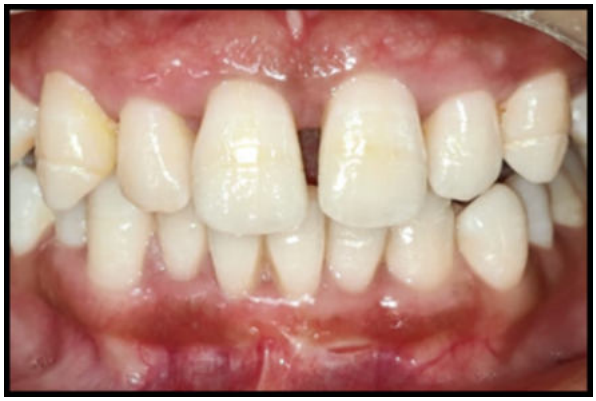

Fig 9: 3 month follow up

Patient was re-evaluated after 1 week [Fig 7], 1 month [Fig 8], and 3 months [Fig 9] after completion of surgical procedure. It was observed that the patient maintained her oral hygiene properly for this period and no recurrence of overgrowth was observed by the end of 6 months.

DISCUSSION

Gingival enlargement, either localized or generalized might be attributed to a number of reasons, ranging from inflammation, leukemic infiltration, and association with use of medicines like phenytoin, cyclosporine, and nifedipine etc. [11]. The patient's weight, height, and psychomotor development were considered to be within normal limits for her age. Furthermore, with no family history and no apparent association with any medical syndromes, the impression is that the gingival hyperplasia is idiopathic in nature and hence, the case was diagnosed as a non-syndromic case of idiopathic gingival fibromatosis.The etiology of the patient's gingival hyperplasia remains unknown.

Gingival fibromatosis may exist as an isolated abnormality or as part of a syndrome (12,13). As an isolated finding, it is mostly sporadic, but an autosomal dominant inheritance pattern is also possible. Rarely, autosomal recessive inheritance is found. Autosomal dominant non-syndromic form has been genetically linked to the chromosome 2p21-p22 and 5q13-q22.[14] The syndrome most commonly associated with gingival hyperplasia is gingival fibromatosis with generalized hypertrichosis, mental retardation, and tonicclonic seizures.[15,16] Isolated cases of gingival fibromatosis associated with amelogenesis imperfecta and aggressive periodontitis have also been reported.[17,18]

Gagliano et al.[19] suggested that gingival hyperplasia of different etiologies may have different mechanisms of overgrowth. These include an increase in proliferation of resident tissue fibroblasts, a reduced level of metalloproteinase synthesis (matrix metalloproteinases (MMP)-1 and MMP-2), resulting in low levels of extracellular matrix degrading, an increase in collagen type I production, heat-shock protein 47 (hsp47) production, and other extracellular matrix components.[20]

In the present case,the results of a complete blood count indicated no significant abnormalities and a slight elevation of PMN cells.Among the suggested treatment protocols, ledge and wedge technique along with internal bevel gingivectomy was selected as it helps in eliminating the guesswork involved with placement of primary incisions as opposed to the conventional external bevel gingivectomy procedure. Moreover, this procedure does not leave a large external bevel and therefore result in less post-operative pain and bleeding.Also, this technique allows the reflection of conventional flap to permit access to the underlying bone and removal of subgingival calculus. [21]

Recurrence following surgical intervention is unpredictable. It is most commonly seen in children and teenagers rather than adults. Recurrence is minimal or delayed if good oral hygiene is achieved by a combination of monthly examinations with professional cleaning and oral hygiene instructions. Benefits of surgical intervention are well-known to improve patient's quality of life since removal of hyperplastic gingival tissue eliminates difficulties in eating and speaking, improves access for plaque control, and leads to psychological benefits due to esthetic improvement. [22] In our case, after 6 month of follow-up, no recurrence of gingival overgrowth was observed.

CONCLUSION:

The present case describes a patient with an undiagnosed medical condition associated with idiopathic gingival hyperplasia and its management. It demonstrates the complex nature of many genetic disorders that have not yet been described but present treatment challenges.

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