Case Report

Massive Gingival Enlargement in a Nine-Year-Old Paediatric Patient: A Rare Case Report

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Abstract

Gingival enlargement (GE) is a well-known clinical phenomena with the primary aetiology being plaque and poor oral hygiene. Many reasons for GE have been known. Most of the time good oral hygiene is sufficient to achieve normal healthy gingiva. GE is a heterogeneous group of disorder characterized by progressive enlargement of the gingiva with an increase in submucosal connective tissue elements. Some of them are inherited and iatrogenic while others are idiopathic. In this case, we report a case with massive idiopathic GE in a 9-year-old female child; treatment received, histopathological description and follow-up are discussed.

Keywords: *Gingival hyperplasia, idiopathic fibromatosis, idiopathic gingival enlargement*

Introduction

In clinical term, gingival enlargement (GE) or overgrowth is increase in size of the gingiva.[1,2] It is differentiated by inflation and aggregation of the connective tissue with the scarce presence of an increased number of cells.[3] However, aetiological factors and pathogenesis of GE are not well established till now. GE can be inflammatory, drug-induced and associated with systemic diseases (leukaemia,[4] scurvy,[5] Wegener's granulomatosis,[6] Crohn's disease,[7] juvenile hyaline fibromatosis,[8] sarcoidosis, neoplastic[9] or idiopathic[2]). The administration of systemic drugs that cause GE includes anticonvulsant drugs like phenytoin, immunosuppressant drug, for example cyclosporine, and the calcium channel blocker, for example nifedipine, which have been reported to induce GE.[10] Complications encountered by patients with GE include phonetics, aesthetics, migration of teeth, retained deciduous teeth, delay in eruption of permanent teeth, difficulty in mastication, malocclusion and difficulty in controlling plaque accumulation.[11-15] The condition becomes painful only when the tissue enlarges and partially or fully covers the tooth structure and becomes traumatized during mastication. Inability in chewing and difficulty in swallowing are associated with gingival overgrowth that eventually leads to swallowing of partially crushed food, causing gastric disturbances. All these factors mentioned above favour the accumulation of food debris and plaque that further complicates the existing hyperplastic tissue.[13] Idiopathic gingival enlargement (IGE), also termed as gingivomatosis,[10] diffuse fibroma,[13] idiopathic fibromatosis, hereditary gingival fibromatosis (HGF), and familial elephantiasis,[14] has no known specific cause and is a unique type of enlargement affecting about 1 in 750,000 individuals.[1] In most of the cases, these enlargements are seen by birth, but the condition is usually noticeable when the hyperplastic tissue begins to enlarge with the eruption of deciduous teeth. Though this condition may appear as an isolated disorder, in some instances it is associated with other conditions, viz. hypertrichosis and epilepsy or with syndromes such as Zimmerman Laband, Murray–Puretic–Drescher, Cowden's and Cross syndrome.[13] IGE in the oral cavity may vary from localized (i.e. involving only the tuberosity area of maxilla and buccal gingiva of the mandibular molar teeth) to generalized enlargement hindering the eruption of teeth. The enlarged gingiva is routinely pale pink, firm in consistency and leathery resembling distinctive pebbled leather surface.[14] Enlargement may be mild, involving one quadrant to severe covering all the four quadrants in the oral cavity.

The present case report describes the occurrence and management of generalized IGE in a 9-year-old female child. After treatment, the patient was kept under routine follow-up for 1 year, and no recurrence was noted.

Case History

A nine year old female patient reported to the Department of Dentistry, R. G. Kar Medical College and Hospital, Kolkata, with a chief

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complaint of swollen gums involving all her teeth since last 3 years hindering proper speech and causing inadequate lip apposition and poor aesthetics. The patient gave no history of drugs intake, fever, anorexia, weight loss, seizures or hearing loss. She did not have any physical or mental disorder. Her family history was also non-contributory. On extra-oral examination [Figure 1], she had incompetent, everted lips and a convex profile. There was no lymph node involvement seen in sub-mental or sub-mandibular regions. Intraoral examination [Figure 2] revealed generalized, diffuse, nodular enlargement of the gingiva involving both the upper and lower arches, which were pale pink in colour, firm and fibrous in consistency. Teeth were barely visible as the enlarged gingiva covered till the incisal/occlusal third of the teeth. The provisional diagnosis made was idiopathic gingival hyperplasia. The differential diagnosis was drug-induced GE, hereditary gingival hyperplasia. Upon further investigation, panoramic radiograph revealed no bone loss [Figure 3]. There was no change in dental chronology. Considering the size of the enlargement, gingivectomy was planned. The treatment and outcome of the surgery were well explained to the patient and her accompanying father. The subject being minor, the consent for surgery was obtained from her father.

Before the treatment, a complete haematological investigation of the patient was done. Incisional biopsy was planned before the start of gingivectomy procedure; however, considering apprehension of the child and parent and reducing the number of appointments since the patient was coming a long distance, biopsy was done at the time of treatment. The bleeding time, clotting time, haemoglobin percentage, random blood sugar, total, and differential leukocyte counts were within normal limits.

Under local anaesthesia with adrenaline (1:100,000), quadrant-wise gingivectomy was performed by external bevel using scalpel blade (Blade no. 15), Kirkland knife and Orban's knife. Surgical dressing (Coe-pack; GC India Dental Private Limited) was given in all four quadrants to reduce patient discomfort [Figure 4].

The excised specimen was fixed in 10% formalin and sent to the department of oral pathology for histopathological analysis. Histopathological examination of the tissue revealed epithelial ridges penetrated deep into the connective tissue [Figure 5]. There was a bulbous increase in the connective tissue, which was relatively avascular and had densely arranged collagen-fibre bundles, numerous fibroblasts, and mild chronic inflammatory cells [Figure 6]. Follow-up after 1 month and 1 year revealed there was no recurrence after 1 year [Figures 7–11]. Co-relation of clinical, radiographic, and histopathological examination revealed a final diagnosis of IGE.

Discussion

IGE is a rare condition in paediatric patients. In majority of the reported cases, IGE is correlated with strong genetic influence.[16] The pattern of inheritance is mainly autosomal dominant. The first polymorphic phenotype marker for

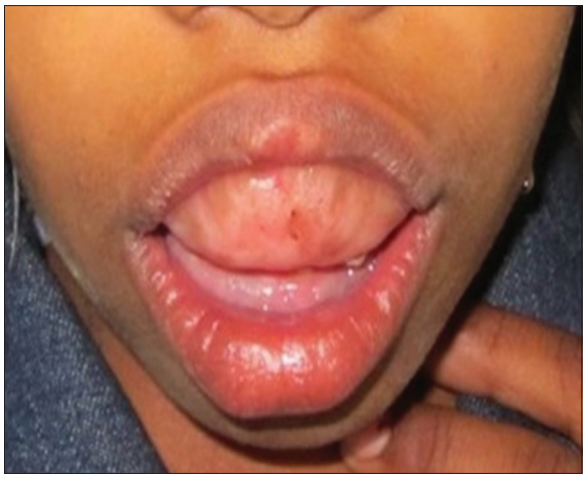

Figure 1: Extra-oral pre-operative photograph showing incompetent lips

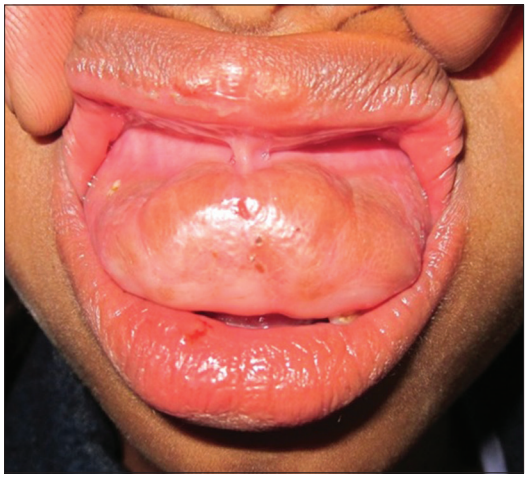

Figure 2: Intra-oral pre-operative photograph showing a generalized diffuse nodular gingival enlargement

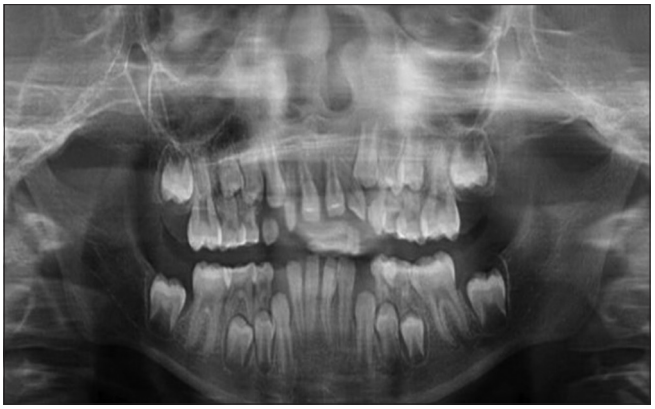

Figure 3: Panoramic radiograph revealing no bone loss and erupting teeth

HGF is chromosome 2p21 bounded by the loci D2S1788 and D2S441.[15] IGEs typically develop with the eruption of the permanent teeth but can also occur with the eruption of deciduous teeth.[11,13] In rare case, the enlargement may be present at birth or may arise in adulthood.[2] This type of enlargement occurs mostly during exfoliation of deciduous teeth or in the early stages of the eruption of permanent teeth.

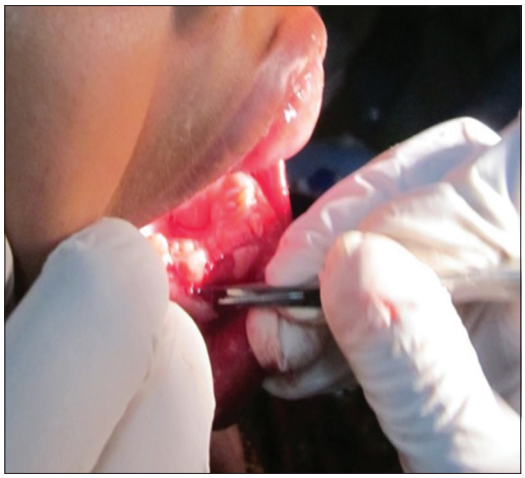

Figure 4: Intra-operative photograph while performing gingivectomy

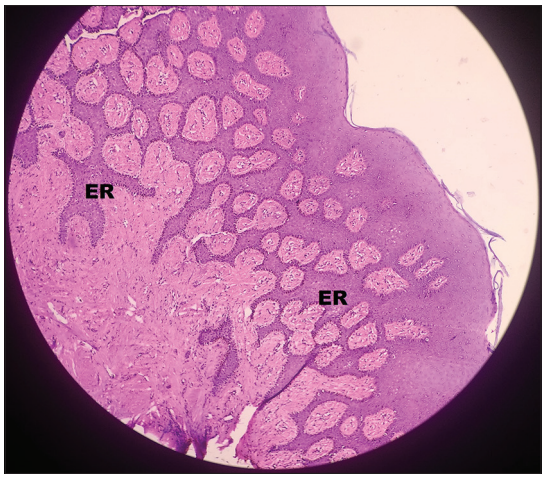

Figure 5: H&E stained histological section (10×) showing epithelial ridges (ER) penetrated deep into the connective tissue

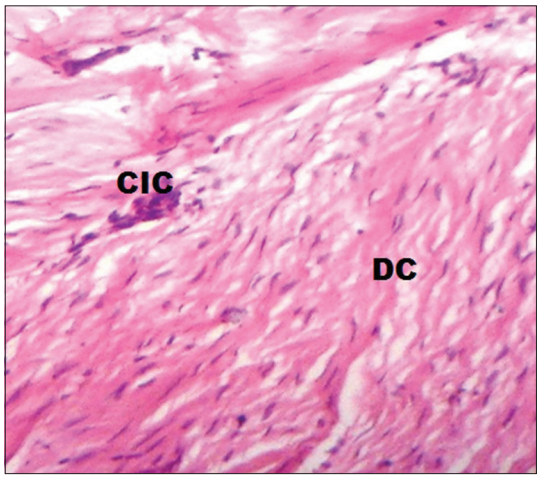

Figure 6: H&E stained histological section (10×) showing focal areas made up of dense collagen (DC) with chronic inflammatory cell infiltrate (CIC)

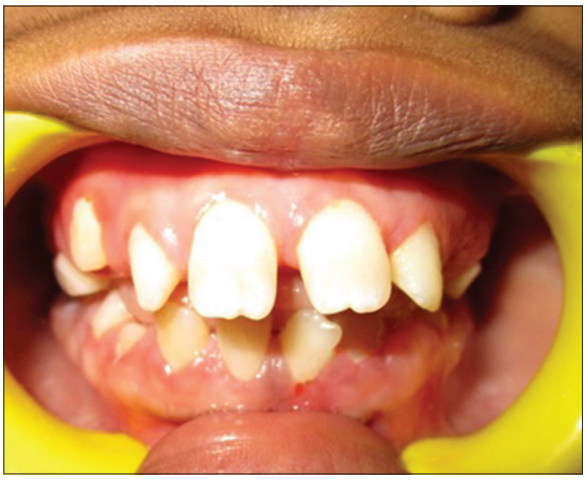

Figure 7: Frontal—in occlusion photograph after 1-year follow-up

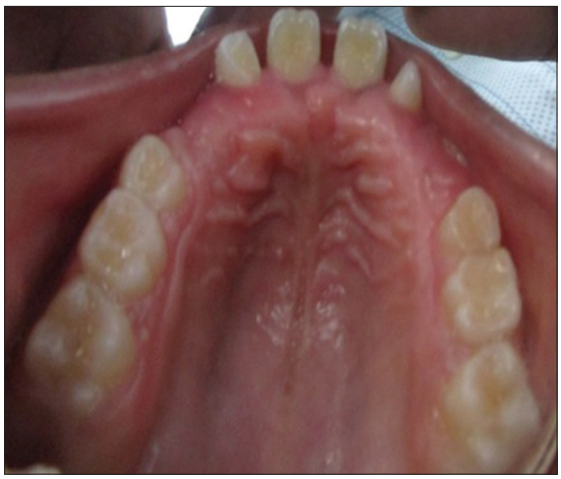

Figure 8: Upper occlusal photograph after 1-year follow-up

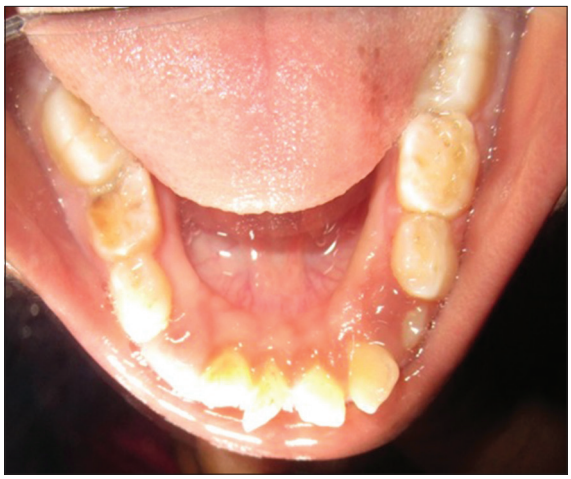

Figure 9: Lower occlusal photograph after 1-year follow-up

During the active eruption of teeth, it progresses rapidly, and at the end of the stage, it decreases.[13] Gingival hyperplasia may be linked with developmental disorders, retardation, and hypertrichosis.[15] However, at birth, gingival tissue appears normal or hyperplastic due to trauma. Idiopathic enlargement may become visible with the eruption of deciduous or permanent dentition, which may induce tissue reaction during the eruption.[11] Many authors suggested that GE may result due to nutritional or hormonal factors but this is yet to be confirmed.[5,6,12,13] Delayed eruption and displacement of

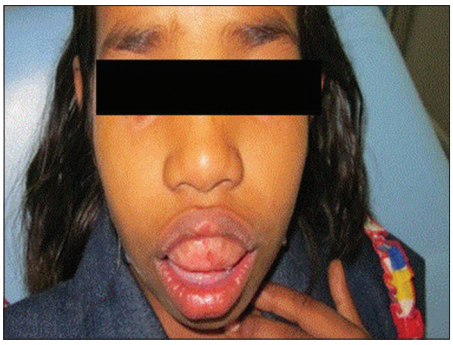

Figure 10: Preoperative photograph—gingiva covering teeth

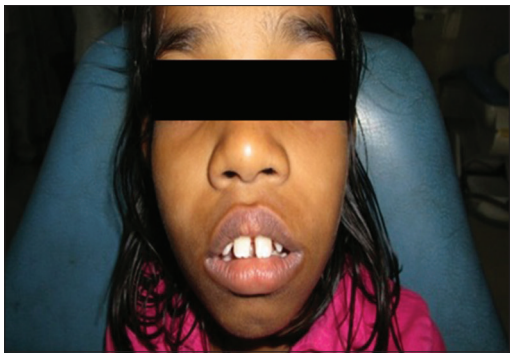

Figure 11: Postoperative photograph after 1 year

teeth, arch deformity, spacing, and migration of teeth may occur due to the constant increase in the tissue mass.[14]

In the present case, the condition was not painful for the child in the beginning until the teeth were partially or completely covered by gingiva and got traumatized during mastication. Due to massive GE, affected female child developed abnormal swallowing pattern, and she also faced difficulty in speech and in chewing food. These favoured accumulations of materia alba and plaque, which further complicated the existing hyperplastic tissue. In the treatment of any GE, good oral hygiene maintenance is a must after gingivectomy procedure with periodic checkup and recall.

One major drawback of this case report is that along with histological report, the diagnosis could have been strengthened by some immunohistochemical markers, e.g., vimentin, S100, CD34 and alpha-SMA.

Conclusion

Surgical intervention outweighs the risk of recurrence of the GE. Even though recurrence can occur, good oral hygiene is a must to avoid recurrence and prevention of plaque accumulation that has a significant effect on the prognosis of IGE. Periodic follow-up is a must to evaluate the predictability of the recurrence.

Declaration of patient consent

The authors certify that they have taken all appropriate patient consent forms. In the consent form, the patient herself and her father have given their consent for images and other information regarding treatment procedures to be reported in the journal. The patient and her father understand that name and initials of her/their ward will not be published, and all efforts will be made to hide the patient's identity, but anonymity cannot be guaranteed.

Key Messages

Gingival enlargement is a prevalent disease in children, adolescent and adults with their referral to the paediatric dentist and periodontist who play an essential role in the correct diagnosis and treatment.

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Conflicts of interest

There are no conflicts of interest.

References

1. Baptista IP. Hereditary gingival fibromatosis: A case report. J Clin Periodontol 2002;29:871-4.
2. Carranza FA, Hogan EL. Gingival enlargement. In: Newman MG, Takei HH, Carranza FA, editors. Clinical Periodontology. 9th ed.. Philadelphia, PA, USA: Saunders; 2002. p. 279-96.
3. Takagi M, Yamamoto H, Mega H, Hsieh KJ, Shioda S, Enomoto S. Heterogeneity in the gingival fibromatoses. Cancer 1991;68:2202-12.
4. Patil S, Kalla N, Ramesh DNSV, Kalla AR. Leukemic gingival enlargement: A report of two cases. Arch Orofac Sci 2010;5:69–72.
5. Omori K, Hanayama Y, Naruishi K, Akiyama K, Maeda H, Otsuka F, *et al*. Gingival overgrowth caused by vitamin C deficiency associated with metabolic syndrome and severe periodontal infection: A case report. Clin Case Rep 2014;2:286–95.
6. Stewart C, Cohen D, Bhattacharyya I, Scheitler L, Riley S, Calamia K, *et al*. Oral manifestations of Wegener's granulomatosis: A report of three cases and a literature review. J Am Dent Assoc 2007;138:338–48.
7. Ejeil AL, Thomas A, Mercier S, Moreau N. Unusual gingival swelling in a 4-year-old child. Oral Surg Oral Med Oral Pathol Oral Radiol 2014;118:627–31.
8. Rajendran P, Karmegaraj B, Vij M, Scott JX. Unusual cause for gum hypertrophy and skin nodules in a child. BMJ Case Rep 2015;2015:bcr2015211506. doi: 10.1136/bcr-2015-211506.
9. Ghattamaneni S, Guttikonda VR, Yeluri S, Kolipara R. Early diagnosis of an isolated primary peripheral T-cell lymphoma masquerading as massive gingival enlargement in a pediatric patient. J Oral Maxillofac Pathol 2017;21:421–4.
10. Ball EL. Case of gingivomatosis or elephantiasis of gingival. J Periodontol 1941;12:26-8.
11. Kavvadia E, Pepelassi E, Alexandridis C, Arkadopoulou A, Polyzois G, Tossios K. Gingival fibromatosis and significant tooth eruption delay in an 11-year-old male: A 30-month follow-up. Int J Paediatr Dent 2005;15:294-302.
12. Gagliano N, Moscheni C, Dellavia C, Masiero S, Torri C, Grizzi F, *et al*. Morphological and molecular analysis of idiopathic gingival fibromatosis: A case report. J Clin Periodontol 2005;32:1116-21.
13. Doufexi A, Mina M, Ioannidou E. Gingival overgrowth in children: Epidemiology, pathogenesis, and complications. A literature review. J Periodontol 2005;76:3-10.
14. Bozzo L, Almedia CP, Seully C, Akfred MJ. Hereditary gingival fibromatosis, report of an extensive 4 generation pedigree. Oral Surg Oral Med Oral Pathol 1998;86:304-7.
15. Hart TC, Pallos D, Bowden DW, Bolyard J, Pettenati MJ, Cortelli JR. Linkage of hereditary gingival fibromatosis to chromosome 2 ~ 21. Am J Hum Genet 1998;62:876–83.
16. Cortelli JR. Evidence of genetic heterogenecity for hereditary gingival fibromatosis. J Dent Res 2000;79:1758–64.