Non-syndromic multiple impacted supernumerary teeth with peripheral giant cell granuloma

Pankaj Bansal, Sumidha Rohatgi, Archana Agnihotri[1], Ashish Gupta[2]

Abstract

Peripheral giant cell granuloma (PGCG) is a relatively frequent benign reactive lesion of the gingiva, originating from the periosteum or periodontal membrane following local irritation or chronic trauma. PGCG manifests as a red–purple nodule located in the region of the gingiva or edentulous alveolar margins. The lesion can develop at any age, although it is more common between the second and third decades of life, and shows a slight female predilection. PGCG is a soft tissue lesion that very rarely affects the underlying bone, although the latter may suffer superficial erosion. A supernumerary tooth is one that is additional to the normal series and can be found in almost any region of the dental arch. These teeth may be single, multiple, erupted or unerupted and may or may not be associated with syndrome. Usually, they cause one or the other problem in eruption or alignment of teeth, but may also present without disturbing the normal occlusion or eruption pattern. Management of these teeth depends on the symptoms. Presented here is a case of PGCG in relation to the lower left permanent first molar with three supernumerary teeth in the mandibular arch but no associated syndrome.

Keywords: Non-syndromic, peripheral giant cell granuloma, supernumerary teeth

Introduction

The peripheral giant cell granuloma (PGCG) appears as a nodular red soft tissue mass arising from the gingiva or alveolar mucosa. Usually, the lesion is approximately 1 cm in size, although it may be larger. Most patients are below 30 years of age, and the lesions are more common in females. There is an almost equal distribution between the maxillary and the mandibular gingiva. The term peripheral is included in the name to distinguish this lesion from a histologically similar lesion that occurs inside the jaws, referred to as the central giant cell granuloma. The peripheral granuloma may cause pressure resorption of the underlying alveolar bone and, less commonly, resorption of the adjacent tooth. These granulomas are not painful until they are repeatedly traumatized during biting. The differential diagnosis of PGCG includes lesions with very similar clinical and histological characteristics, such as central giant cell granuloma, which are located within the jaw itself, exhibit a more aggressive behavior and only radiological evaluation can establish a distinction. The early and precise diagnosis of these lesions allows conservative management without risk to the adjacent teeth or bone.[1] Other lesions resembling PGCG clinically are pyogenic granuloma, peripheral ossifying fibroma, inflamed irritational fibroma, etc.

Supernumerary teeth may be encountered by a practitioner as a chance finding on radiograph or while investigating the cause of retained deciduous/impacted tooth. The prevalence of supernumerary teeth ranges from 0.8 to 2.1% in the deciduous and permanent dentition, respectively.[2] Many other studies also prove that they are more commonly seen in the permanent dentition.[3] Multiple supernumerary teeth are usually associated with conditions such as cleft lip and palate or syndromes like cleidocranial dysplasia and Gardner's syndrome. Multiple supernumerary teeth are rare in an individual with no other associated disease or syndromes.[4]

Case Report

A 17-year-old girl was referred for evaluation of her intraoral swelling of size approximately 1 cm × 1.5 cm in relation to the mesial aspect of the permanent lower left first molar [Figure 1]. The swelling was first noticed by the patient 2 months back, and it was gradually growing in size since then. The overlying mucosa was normal in color, with a reddish tinge at its base and sides. On further inspection, it seemed to be a hyperplastic, well-defined, vascular and sessile lesion. On palpation, it was non-tender, soft to firm in consistency, extending to both the buccal and the lingual vestibule and non-ulcerated and was posing no difficulty during function.

Sudha Rustagi College of Dental Sciences and Research, Faridabad, [1]H.S. Judge Institute of Dental Sciences, Panjab University, Chandigarh, [2]S.R. College of Dental Sciences and Research, Faridabad, India

Correspondence: Dr. Pankaj Bansal, House No-363, Sec-19, Faridabad - 121 002, India. E-mail: pankajbansal363@gmail.com

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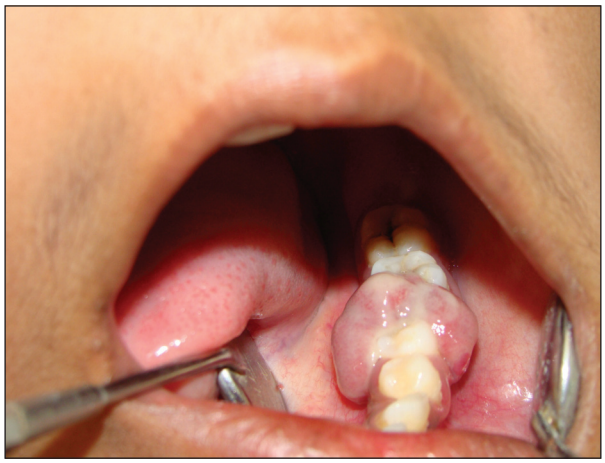

Figure 1: Intraoral swelling in relation to the left permanent lower first molar

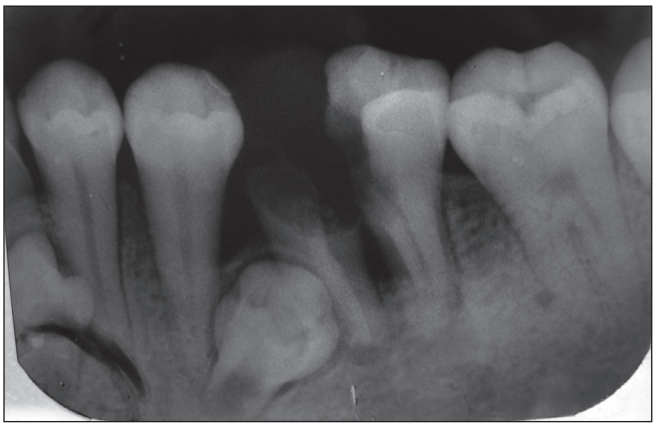

Figure 2: IOPA showing grossly carious lower first molar, resorption of mesial root and bone loss

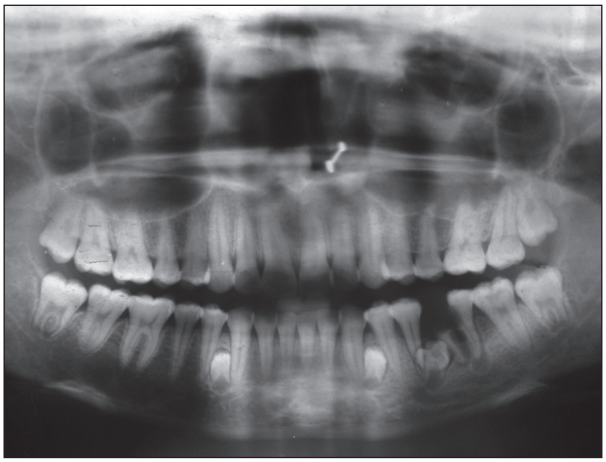

Figure 3: OPG showing presence of three supernumerary teeth along with the normal complement of teeth

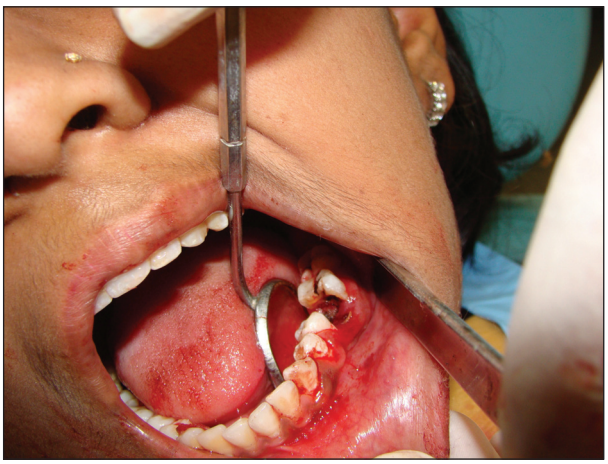

Figure 4: Intraoral view after excision

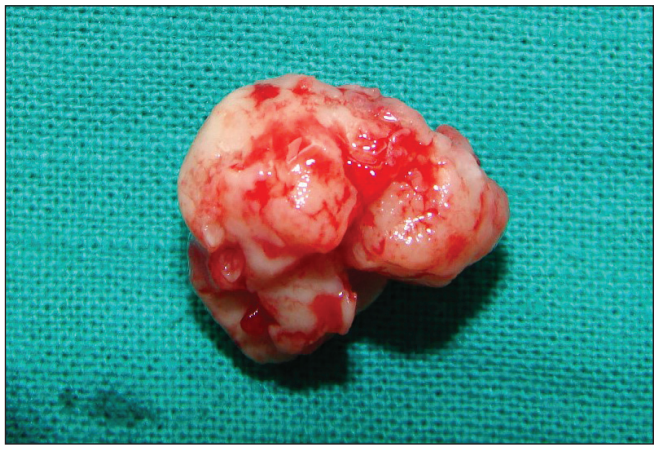

Figure 5: Excised tissue specimen

Complete set of teeth were present in either arch along with satisfactory occlusion. The involved tooth was grossly carious. There was no other significant medical history related to this condition except for the fact that the patient was seemingly undernourished and anemic.

Intra oral periapical radiograph showed grossly carious lower left first molar with furcation involvement, resorption of mesial root and bone loss apical to 36 [Figure 2]. There was a chance finding of supernumerary teeth resembling premolars mesial and apical to the mesial root of the lower left first molar and mesial to the lower first premolar.

An orthopantomogram [Figure 3] was therefore advised to rule out the presence of any other unerupted supernumerary tooth. OPG revealed another supernumerary tooth distal to the right first premolar, amounting to a total of three impacted supernumerary teeth present in the mandible along with all teeth of the normal series being present in their normal position and occlusion. The two supernumerary teeth present on the distal aspect of the canines on either side were still in their formative stages, with almost no root formation. These two looked like mirror images of each other. The third tooth was present distal to the lower left second premolar, and its root formation was almost half complete. The third

molars were erupted and were present in their respective positions. There was no buccal or lingual swelling palpable in relation to the supernumerary teeth. Family history of the patient was non-contributory. A thorough examination was made to rule out the presence of any syndromes. After going through the literature, it was decided to perform excisional biopsy of the swelling. While performing the biopsy, it was noted that the lesion bled profusely, which was more than the expected bleeding considering the size of the lesion. There were two prominent feeding vessels that originated from the base of the mentioned swelling and were bleeding incessantly. It was difficult to ligate them as they were very close to the bone and accessibility was a problem. The lesion was then cauterized at the base and surroundings for at least three times to achieve hemostasis [Figure 4]. This episode further substantiated the diagnosis of PGCG. As the consistency of the swelling was firm, the differential diagnosis also included peripheral ossifying fibroma and fibroma, but absence of ossification in the lesion and presence of vascularity did not support either of the two.

The excised sample [Figure 5] was sent for histopathological examination. It was decided not to extract the supernumerary teeth and the patient was kept on long-term follow-up, which is in line with the recommendation discussed by Garvey and Hugh.[5] Later on, the lower left permanent first molar was extracted. Histopathology of the excised tissue confirmed the lesion as a PGCG.

Discussion

The PGCG is an exophytic lesion of the oral cavity that seems to arise from the periodontal ligament or periosteum and affects mainly the gingival or alveolar mucosa of dentate and edentulous persons. Histologically, the presence of multinucleated giant cells is characteristic of this lesion, and various stages in giant cell evolution from formation to degeneration have been described. Multinucleated giant cells may represent a reaction to unknown stimuli from the stromal components of the PGCG. PGCG is more common than central giant cell granuloma with the peripheral to central ratio being 3–4:1. CGCGs are histologically similar to PGCG; however, CGCGs present frequent bone resorption[6]. Superficial erosion and local bone resorption were observed in 26–28% of the cases. PGCGs are usually localized on the gingiva without adjacent tissue destruction. Dental resorption is extremely rare. Only two cases have been reported in the literature.[7,8]

Impacted supernumerary teeth without symptoms are accidentally discovered on routine radiographs. The case in discussion is again an example of the same.

There are multiple theories explaining the origin of supernumerary teeth. One theory assumes that their formation may be due to dichotomy of the tooth bud,[9] but others like Levine[10] described their origin as local, independent, conditional hyperactivity of the dental lamina. Presence of partially formed supernumerary teeth at the age of 17 years gives credence to this theory as, had it been dichotomy of the tooth bud, they should have been complete by now. Many researchers have also proposed that supernumerary teeth are part of a post-permanent dentition.[11] Approximately 75% of the supernumerary teeth are impacted and asymptomatic, which are found coincidentally.[12]

Four different morphological types of supernumerary teeth have been described by Mitchell.[13] These are: (a) conical, (b) tuberculate, (c) supplemental and (d) odontome. Supernumerary teeth in the present case were of the tuberculate type. This type possesses more then one cusp or tubercle, root formation is delayed and they are often paired.

Problems associated with supernumerary teeth

Failure of eruption

Presence of supernumerary teeth may cause retention of the primary incisors. Otherwise also, it may cause failure of eruption of the concerned or adjacent tooth.

Displacement

Degree of displacement may vary from mild rotation to complete displacement. Incisors are the most common teeth to be affected.[14]

Crowding

May cause crowding if it erupts along with normal dentition. It can be resolved by extraction of the supernumerary tooth followed by orthodontic treatment, if required.

Pathology

Most common pathology is association of dentigerous cyst with supernumerary teeth.[15] It was Primosch[16] who reported that enlarged follicular space is present in 30% of the cases, but histologic evidence of cyst formation was found in only 4–9% of the cases.

Resorption of roots of adjacent teeth: although is know occur, this is extremely rare.[17]

Fortunately, in the present case, we did not encounter any of the above problems.

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