Management of peripheral giant cell granuloma in 4½ year old child – a case report

Diwanji Amish,* Mathur Jyoti,† Rindani Kinjal,‡ Patel Hiren§

*Senior Lecturer, †Professor and Head, Department of Pedodontics and Preventive Dentistry, ‡Senior Lecturer, Department of Oral Pathology § Professor and Head, Department of Oral and Maxillofacial surgery, Faculty of Dental Science, Nadiad, India.

Abstract
Peripheral giant cell granuloma is a benign lesion of gingiva which is relatively uncommon in pediatric patient. The present paper focuses on management of peripheral giant cell granuloma in a 4½ year old child by surgical excision under general anesthesia. Patient had complained of swelling in maxillary anterior region following extraction of primary teeth, which increased gradually. Pink, soft, pedunculated mass was noted with bleeding on palpation which was excised surgically. Early detection and diagnosis of such lesion in pediatric patient is very important and its management in early stage helps to minimize the risk of damage to adjacent tooth and hard tissue.

Key words: Giant cell granuloma; Surgical excision; Pediatric significance.

Introduction
There are various lesions in the jaw that contain giant cell. Giant cell lesions may be aggressive in behavior. Peripheral giant cell granuloma (PGCG) in children is relatively uncommon lesion of oral cavity (1), arising from the connective tissue of gingiva, periodontal membrane, periosteum of alveolar ridge or due to local irritation (2). Earlier, central lesions of the jaw were termed as reparative lesions (3), since the reparative response was quite rare; the term “Central Giant cell granuloma” is currently preferred and universally accepted. Giant cell granulomas of the jaw develop in two forms.
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The peripheral type develops in the gingival and alveolar process, while the central type originates from the bone. The PGCGs, also known as osteoclastomas, giant cell reparative granulomas, or giant cell hyperplasias are reactive exophytic lesions found in the oral cavity (4).

The etiology of the lesion is not known. However, according to some authors, local irritating factors like extractions, ill-fitting prosthesis, poor restorations, plaques/calculus, and collection of food remnants may be the cause (5). Choi (2008) has reported the association of peripheral giant cell granuloma with hyperparathyroidism secondary to renal failure (6).

Case report

A 4½ year old male child was referred to the Department of Pedodontics and Preventive Dentistry, Faculty of Dental Science, Dharamsinh Desai University, Nadiad with chief complaint of swelling and difficulty while chewing in upper anterior region since 4 months. Initially, patient had minor swelling and pain in maxillary anterior region associated with primary central incisors and was treated in general hospital; where extraction of both primary maxillary central incisors was done. Swelling was present during extraction which gradually increased after extraction. Patient reported to our department with complain of swelling and pain. On intraoral examination, reddish pink, soft, non-tender, pedunculated mass was noted which showed bleeding on palpation (figure 1). Swelling was hard on palpation with some areas of fluctuance. Swelling was extended from the labial side of maxillary central incisor to the attached gingiva on the palatal surface. The adjacent dentition and the oral mucosa did not reveal any abnormality. Intraoral examination revealed that there was no periapical lesion or bone loss or any other abnormality in the same region. However, it was revealed from a previous intraoral periapical radiograph that a dens in dente was present in central incisor region (figure 2).

No systemic abnormalities were detected. Patient’s hematological report was normal and was noncontributory. A decision was made to excise the lesion under general anesthesia considering the age and uncooperative behavior of child.

Management:

Entire procedure was done under general anesthesia. The growth was excised with a scalpel. Care was taken to remove the entire base, and the excised lesion was stored in 10% formalin and sent for histopathological examination.
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Sutures were given (figure 3). Patient was recalled after a week for suture removal (figure 4) and again after 10 days for follow up. On recall after 9 months, there was no sign of reoccurrence on clinical and radiographic examination (figure 5). Patient did not have any complain or difficulty in chewing.

![Figure 3: Immediate post-operative view](image)

![Figure 4: Post-operative after a week](image)

*Histopathological examination*

The histological section under Hematoxylin and Eosin stain showed nonkeratinized to parakeratinized stratified squamous epithelium with long and broad rete ridges. Underlying connective tissue was having ovoid to spindle shaped fibroblasts along with plenty of multinucleated giant cells and chronic inflammatory cells. Dilated and enlarged capillaries and areas of extravasated RBC’s were seen. Few areas of Osteoid formation were also noticed. Presence of these features was suggestive of Peripheral Giant Cell Granuloma (figure 6).

![Figure 5: Follow up after 9 months](image)

![Figure 6: Microscopic view showing stratified squamous epithelium and osteoid formation (A) and presence of giant cells (B).](image)

*Discussion*

Peripheral giant cell granuloma is commonly seen in young and adult patients with highest prevalence rate in 4th and 6th decade (2). Giansanti (7) noted the prevalence rate of 20%–30% in 1st and 2nd
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decades of life. Pindborg (8) confirmed that common site of PGCG is molar and premolar region. However, Shafer (9) and Giansanti (7) suggest that it generally occurs in the incisor and canine region. In present case, giant cell lesion was found in maxillary anterior region. Giant cell granuloma was believed to be an idiopathic non–neoplastic proliferative lesion and was termed as a reparative granuloma (3). Current theory is that they are not reparative lesion and if they are not treated, they are progressive. The true nature of giant cell lesion is debatable. However it has been suggested that it may be an inflammatory lesion, a reactive lesion, a true tumor, or an endocrine lesion (10). Radiographic features are generally non suggestive, but may show destruction of alveolar margin or crest of bone if granuloma is associated with teeth. However, in the present case, there was no sign of periapical lesion or bone loss or destruction of alveolar margin. In addition, on follow up after 9 months, patient did not have any complaint of pain, there was no sign of recurrence clinically and radiographically.

The differential diagnosis of peripheral giant cell granuloma includes pyogenic granuloma, fibrous epulis, peripheral ossifying fibroma, inflammatory fibrous hyperplasia, peripheral odontogenic fibroma and papilloma (1). All these may show similar clinical and radiographical results and hence, histopathological examination is required.

The histopathological study should be focused on mainly ulcerative changes in epithelium, connective tissue with abundant blood vessels, and presence of giant cells (11,12). In accordance, histopathological examination of lesion in the present case revealed multinucleated giant cells and chronic inflammatory cells. Recommended management of peripheral giant cell granuloma is complete elimination of entire base of the growth, followed by eliminating any local irritating factors. Hence, the lesion was excised in the present case. Various treatment modalities that have been established are use of cold scalpel, electrocautery, lasers etc. The scientific data shows no difference between cold scalpel and CO₂ laser resection of peripheral giant cell granuloma (11).

Pediatric significance

In pediatric patient, early diagnosis and conservative management of such lesion is very important. It helps in preventing long term developmental defects. Peripheral Giant Cell granuloma can show rapid growth and increase in size within few months after its detection. It may arise from the endothelial cells of the capillaries, periosteum, periodontal ligament or connective tissue of the gingiva (13). It may lead to resorption of underlying bone, interfere with eruption of teeth, may produce minor tooth movement (14). Radiographs play an important role to confirm that it arises from mucosa, periosteum or whether it penetrates underlying bone and damaging unerupted tooth.

Conclusions

Early detection and diagnosis of such lesion is very important. It helps in conservative treatment plan and hence, doesn’t allow its penetration in to deeper structure. This helps in surgical management with minimum risk of damage to adjacent tooth and hard tissue.

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