Case Report

Pediatric oral pulse granuloma: A rare entity

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ABSTRACT

A pulse granuloma is nothing but a reaction of the foreign body to any vegetable which is characterized by a collection of the hyaline; a hyaline is a transparent substance that is formed from the pathological degeneration of the tissue. These granulomatous rings may be oral or extra‑oral. It is important to recognize such a type of granuloma because it may resemble serious pathological processes or may clinically stimulate neoplasia. It might also be confused morphologically with hyaline vasculopathy. The following manuscript presents a rare case of oral pulse granuloma. As going by the literature‑search, the following being the only case to have been occurred in a pediatric patient. The authors therefore aim to bring awareness amongst the pediatric dentists about its etiology, occurrence, clinical features and thereby management of the same.

Key Words: Giant cell angiopathy, hyaline rings, multinuclear giant cells, oral pulse granuloma

INTRODUCTION

Foreign bodies and tissue reactions to foreign materials are commonly encountered in the oral cavity. Exogenous materials most commonly causing foreign body reactions are metallic in origin (usually amalgam). Of the non‑metallic materials seen during biopsies, suture materials and vegetable matter are most often observed.¹⁴ For the tissue reactions involving vegetable matter, Oral pulse granuloma has been used most often.

Oral Pulse Granuloma has been described in literature under variety of names. It appears to be closely related to Periapical Granuloma.¹² It was originally described, by Lewars in 1970, as inflammatory lesions in the buccal sulcus of lower denture wearers. In 1975, Rannie described these kinds of lesions as “chronic mandibular periostitis associated with vasculitis”, Dunlap and Barker (1977) used the terminology ‘Giant cell Angiopathy’, King (1978) first termed it as “Pulse granuloma”, for the lesions occurring in the oral cavity.³¹

Chou et al. proposed the descriptive term ‘Hyaline Ring Granuloma’ (HRG), ‘Chronic Periostitis’, ‘Granuloma in edentulous jaws’, and ‘Oral Vegetable Granuloma’ or ‘Food Induced Granuloma’. He further, described these lesions as a distinct entity and classified them into central and peripheral according to the location. Central lesions are asymptomatic, whereas peripheral lesion present as painless sub‑mucosal swellings.²³,⁴³

Based on the histochemical and immunohistochemical analyses, it was concluded that oral lesions are caused by traumatic implantation of vegetable particles in the extraction socket or oral ulcer with cellulose being responsible for granuloma formation. In order of descending frequency, the commonest sites where the lesions of Oral Pulse Granuloma were found in:

1. Edentulous portions of the alveolar ridge which had history of extraction,
2. In periapical lesions, associated with teeth which had been subjected to endodontic therapy or which had a history of prolonged open drainage
3. In the walls of dentigerous, residual and

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nasopalatine cysts,
4. In association with retained tooth roots, impacted lower third molar teeth with history of pericoronitis and
5. As a complication of periodontal surgery.\(^{[5]}\)

The following case is a rare entity in itself as a lesion. It is the most unusual and rarest of its kind in pediatric cases till date as per the available literature is concerned. More so, also the site of occurrence being the lower lip in the present case makes it more unique and significant.

**CASE REPORT**

An 8 year old young boy patient reported to our department of Pedodontics and Preventive Dentistry in College of Dental Sciences, Davangere, with a chief complaint of swelling on the lower lip region and interference in closing of mouth.

Case history revealed the growth to be initiated as a small nodule over the lower lip, which gradually increased in size within 3 weeks. The patient’s parents also revealed a failed attempt for removal of the growth by tying a horse’s tail hair around it - a popular superstitious belief [Figure 1]. Clinical examination, intra-orally revealed, a nodule on the right side of lower lip measuring about \(1 \times 0.8 \text{ cm}\), which was round in shape with a pedunculated base, non-tender on palpation. The growth was reddish brown in color, firm in consistency with smooth borders. Secondary infection was seen with pus discharge due to the tying of horse’s tail hair [Figure 2]. The other intra-oral clinical findings revealed generalized hypoplasia of the teeth.

After complete haemogram, surgical excision of the nodule [Figure 3] was done followed by curettage of the excised area [Figure 4] followed by prescription of antibiotics and anti-inflammatory drugs.

Based on history and clinical features, a provisional diagnosis of Irritational Fibroma was made. Upon histological examination of the excised lesion, the slide exhibited compartmentalized spaces with enveloping giant cells. Polarized lenses were used to detect the foreign material which was not readily identifiable otherwise [Figure 5].

The patient was recalled after a week. The excised area exhibited complete healing with proper lip seal [Figure 6].

**DISCUSSION**

Pulse granuloma is a rare oral inflammatory lesion histologically characterized by the presence of giant cells, foreign body type, associated with hyaline rings and chronic inflammatory fibrous tissue.\(^{[6]}\)

The pathogenesis of oral pulse granuloma is very controversial; thus, this condition has received numerous terms over time (1971-2008).\(^{[2,3]}\) One hundred seventy-three cases of oral hyaline ring granuloma have been retrieved from the literature. In the mandible, 72.3% occurred, most commonly in the posterior region due to common site for food stagnation.\(^{[7]}\)

Clinically, it appears as a nonspecific mass, with an inflammatory aspect, that is asymptomatic, firm or fluctuating, painful to touch, and located in the oral cavity.

Two theories for *etiopathogenesis* have been proposed:
1. The origin of the hyaline rings is due to a foreign material (pulse and legumes) having penetrated the oral mucosa or gastrointestinal tract and lungs (exogenous theory) and
2. The rings are due to hyaline degenerative changes in walls of blood vessels, degraded collagen or fibrosed extravasated serum proteins of these lesions. (Endogenous theory).\(^{[7]}\)

Based on the suggestion of implantation of food particles of plant origin, through extraction sockets, deep periodontal pockets, unfilled root canals and grossly decayed teeth, animal experiments have lent evidence to this concept.\(^{[8]}\) It is further suggested that, implanted food particles in Pulse Granuloma or Vegetable Granuloma get rapidly digested and also get altered by host responses. The cellulose part of plant foods being indigestible persists in the form of hyaline material, whereas the starch matter gets digested. This cellulose moiety invokes chronic granulomatous response.\(^{[9]}\)

The histopathological features of Oral Pulse Granuloma described in the literature were similar, irrespective of clinical manifestations. Constant features were the presence of hyaline rings or amorphous hyaline masses lying within a fibrous connective tissue stroma of varying maturity and vascularity with variable numbers of acute and chronic inflammatory tissue cells and foreign-body giant cells. The giant cells were seen at the periphery of the hyaline structures and within the lumen of the hyaline rings. Connective tissue and inflammatory cells were observed within the rings.\(^{[10]}\)
Other features inconsistently noted were, the presence of small, round calcified basophilic bodies within the amorphous hyaline material, calcification of the entire hyaline structure, and clearly identifiable vegetable cells.

**CONCLUSION**

Pulse or hyaline ring granulomas are rare but are well-defined oral and extraoral lesions due to
implantation of the cellulose moiety of plant foods in contrast to the starch components.

In the pediatric population, a rapidly growing polypoidal lesion requires a thorough clinical and radiological assessment and prompt histological diagnosis in order to exclude the possibility of a malignant lesion. Oral pulse granuloma should be also considered in the differential diagnosis of children presenting with polypoidal lesions of the lower lip.

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REFERENCES

1. Watson RE, Stewart C. Experimental oral foreign body reactions: Vegetable materials. Oral Surg Oral Med Oral Pathol 1991;71:312-6.
2. Manjunatha BS, Kumar GS, Raghunath V. Histochemical and polarization microscopic study of two cases of vegetable/pulse granuloma. Indian J Dent Res 2008;19:74-7.
3. Chou L, Ficarra G, Hansen LS. Hyaline ring granuloma: A distinct oral entity. Oral Surg Oral Med Oral Pathol 1990;70:318-24.
4. Kotrashetti VS, Angadi PV, Mane DR, Hallikerimath SR. Oral pulse granuloma associated with keratocystic odontogenic tumor: Report of a case and review on etiopathogenesis. Ann Maxillo Fac Surg 2011;1:83-6.
5. Gueiros LA, Santos Silva AR, Romañach MJ, Leon JE, Lopes MA, Jorge J. Distinctive aspects of oral hyaline ring granulomas. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2008;106:e35-9.
6. Harrison JD, Martin IC. Oral vegetable granuloma: Ultrastructural and histological study. J Oral Pathol 1986;15:322-6.
7. Philipsen HP, Reichart PA. Pulse or hyaline ring granuloma. Review of the literature on etiopathogenesis of oral and extraoral lesions. Clin Oral Investig 2010;14:121-8.
8. Talacko AA, Radden BG. The pathogenesis of oral pulse granuloma: An animal model. J Oral Pathol 1988;17:99-105.
9. Talacko AA, Radden BG. Oral pulse granuloma: Clinical and histopathological features. A review of 62 cases. Int J Oral Maxillofac Surg 1988;17:343-6.
10. Scivetti M, Lucchese A, Ficarra G, Giuliani M, Lajolo C, Maiorano E, et al. Oral pulse granuloma: Histological findings by confocal laser scanning microscopy. Ultrastruct Pathol 2009;33:155-9.

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