

Pulp Polyp Exhibiting a Unique Worm-shaped Presentation in an Ectopic Deciduous Tooth: A Novel Case Report

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ABSTRACT

Pulp polyp is a reactive lesion that occurs as a result of chronic long standing caries. Dental caries is common in children for a variety of reasons, including increased bacterial colonisation, frequent exposure to dietary sugars, improper bottle feeding technique, low community water fluoride levels, inadequate tooth brushing, and a lack of parental knowledge about oral health. Failure to treat such carious lesions during childhood will result in chronic long-term caries leading to pulpal necrosis or reactionary proliferations of pulpal tissue, known as pulp polyp. Apart from caries, trauma can also lead to hyperplastic behaviour of the pulp. Pulp polyps are most commonly found in the molars due to their abundant blood supply, whereas their presence in the anterior teeth is considered uncommon. Pulp polyp can cause anxiety among parents when they spot it in their child's oral cavity. This is due to the unique clinical appearance, discomfort while having food and occasional bleeding, when irritated. This case report presents an unusual presentation of pulp polyp in an 11-year-old female patient with chief complaints of pain, discomfort, and bleeding on irritation. Its peculiar worm-shaped clinical appearance in the anterior attached gingival region imposed a diagnostic dilemma which on histological examination was confirmed to be pulp polyp and was subsequently excised. Therefore, this emphasises the fact that pulp polyps are not only limited to the occlusal surface of posterior teeth with a typical mushroom-shaped appearance, but also have a wide range of presentations regardless of their location and appearance.

Keywords: Dental pulp diseases, Stomatognathic diseases, Tooth diseases

CASE REPORT

An 11-year-old female patient reported with a complaint of growth in the anterior gingival region for the past two years, which interfered with mastication and was associated with moderate intermittent pain and bleeding during brushing. She elicited a past dental history of carious deciduous anterior tooth 51 that had gone untreated for about four years despite intermittent pain. The patient did not reveal any history of trauma in the anterior gingival region. On intraoral examination, a linear bulbous growth curved on the end giving the appearance of a worm was evident on the attached gingiva about 1 cm above the gingival margin between the incisors of size approximately 2×1 cm and pink in colour. The base of the growth had a shell of hard tissue and calculus along with areas of inflammation. On palpation, the growth was tender, soft in consistency, and readily bled while lifting with the probe. The surface texture was smooth [Table/Fig-1]. Correlating the clinical findings, a provisional diagnosis of inflammatory hyperplastic lesion was given.

Radiographic examination of 11, 21 revealed normal anatomical structures with irregular radiopacity corresponding to the base of the growth [Table/Fig-2]. Considering the clinical and radiological findings, the following differential diagnoses were given- Irritational fibroma, pulp polyp, pyogenic granuloma, and peripheral giant cell granuloma. Laboratory investigations disclosed that haemoglobin was 12 g/dL, total leucocyte count was 7600 cells/cu mm, differential count of neutrophils was 31.13%, lymphocytes were 51.12%, eosinophils were 8.45%, monocytes were 8.65%, basophils were 0.65%, bleeding time was 1 minute 10 seconds and clotting time was 3 minutes 40 seconds. Afterwards, an excisional biopsy along with the hard tissue at the base of the growth was done [Table/Fig-3,4].

Histopathological examination of soft and hard tissue specimens revealed inflamed fibrovascular connective tissue associated with non keratinised stratified epithelium exhibiting numerous dilated capillaries and dense diffuse mixed inflammatory cells and dentin respectively [Table/Fig-5]. Therefore, the final diagnosis of chronic hyperplastic pulpitis in an ectopic deciduous 51 was given. Follow-up after 2 weeks presented complete healing of the site [Table/Fig-6].



[Table/Fig-1]: Intraoral picture revealing a linear growth on the attached gingiva. **[Table/Fig-2]:** Intraoral periapical (IOPA) radiograph of 11, 21 region revealing no traces of radiopacity corresponding to the base of the growth. (Images from left to right)



[Table/Fig-3]: Postoperative pictures showing excised site. **[Table/Fig-4]:** Excised pulp polyp showing unusual linear growth. (Images from left to right)



[Table/Fig-5]: Photomicrograph of soft tissue specimen showing features of non keratinized stratified epithelium, numerous dilated capillaries and dense diffuse mixed inflammatory cells; H&E stain;10x. **[Table/Fig-6]:** Follow-up picture showing complete healing of excised site. (Images from left to right)

DISCUSSION

Pulp polyp, otherwise referred to as proliferative pulpitis, chronic hyperplastic pulpitis is a reactionary lesion of pulpal tissue that manifests as a proliferative granulation growth from the pulp occluding the carious defect with intact walls surrounding it. The colour of the pulp polyp may vary from cherry red of the granulation tissue to opaque whiteness of moist keratinised epithelium, depending on the duration, and presence of dilated blood vessels [1]. In the presented case, it is assumed that the colour was pink due to the nearly two year process of epithelialisation to cover underlying granulation tissue. An unusual presentation regarding the size of the pulp polyp was reported by Faryabi J and Adhami S (2008) in which the pulp polyp enlarged beyond its cavity as a polypoid mass, interfering with the occlusion [2]. Similarly, the presentation, in this case, is quite unique in terms of location, size, and shape. Its location in the anterior attached gingival region could be due to the ectopic malposition of a carious deciduous tooth in that region during the eruption of permanent central incisors, which later resorbed, leaving behind a thin shell of dentin that was detectable on the radiograph. The presence of a pulp polyp in such ectopic malposition tooth is new, and no reports have yet been published.

Dental caries might not be the only etiological factor of pulp polyp. Trauma to the primary anterior dentition especially primary maxillary anteriors can assault the pulp to have a hyperplastic behaviour [3]. Studies were conducted to study the influence of sex hormones, such as estrogen, progesterone and androgen on pulpal lesions like pulp polyp in which they concluded the unique receptor-hormone interactions modify the physiologic character of these tissues [3]. The presence of estrogen receptors (ER- α) and progesterone receptors (PR) in the pulp tissue were found, thus paving the way for the possibility of hormone influenced development of pulp polyp [4].

The defence cells in the pulp play a huge role in the pathogenesis of pulp polyp due to the difference in the amount of immune cells and mediators in carious lesion from time to time. The substantial amount of immunoglobulins (IgE), CD8+ T-cells, CD4+ T-cells, B-cells in an enlarged cavity would elicit a Type 1 hypersensitivity reaction to deal with the inflammation. However, in shallow cavities, only CD8+ T-cells are present exclusively [5].

The radiographic features of teeth with pulp polyp may vary from normal to periapical radiolucency, widening of Periapical Ligament (PDL) space, discontinuity in lamina dura, periapical rarefying osteitis, condensing osteitis, periapical granuloma, hypercementosis, and root resorption [6].

Another lesion which has a similar appearance to pulp polyp is the gingival polyp, distinguished by attachment, colour, friability. Pulp polyp has its origin from the centre of the tooth, friable whereas gingival polyp from the gingiva, non friable and occupies the carious cavity of adjacent teeth. Both of these have to be extirpated in case of managing permanent dentition [7].

A study conducted by Attar et al., concluded that cells isolated from pulp polyp have the potency to form Colony Forming Unit (CFU), the presence of cell surface markers panel (CD73, CD90, CD44,

and CD166) and differentiating potential, culminating that dental pulp polyps have higher stem cell counts and pluripotency when compared to normal dental pulp [8].

Management of pulp polyp differs from primary to permanent dentition. In deciduous teeth, the treatment would be extraction of the deciduous teeth with placement of a space maintainer till underlying permanent teeth would erupt. In permanent teeth, endodontic therapy after excision of the polyp would be ideal. If necessary crown length is insufficient for crown luting, crown lengthening procedure should be carried out [1]. However, bleeding could be a drawback in scalpel incision which can be avoided by using diode lasers that help to remove the polyp and assist vital pulp therapy in a bloodless and painless field. Later, the canal orifices should be disinfected by laser and low level laser therapy can be given to induce biomodulation [9].

CONCLUSION(S)

From this case report, we can conclude that pulp polyp is not just limited to the carious tooth, but has a wide range of different presentations which should be unveiled by further evaluation to avoid misdiagnosis. Management will always be a concern in case of young permanent teeth which should be dealt carefully. The use of laser in treating pulp polyp has gained attention recently due to its benefits. Furthermore, studies are needed to know the nature of pulp in depth. Advancement in the field of dental pulp stem cell therapy can be beneficial in cancer therapies.

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