Case Report

Management of pyogenic granuloma in pediatric patients using electrocautery—Case reports

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A R T I C L E   I N F O

Article history:
Received 31/10/2019
Accepted 29/11/2019
Available online 07-01-2020

Keywords:
Pyogenic granuloma
Gingival hyperplasia
Hyperactive lesion

A B S T R A C T

The oral pyogenic granuloma, a tumor-like growth is a non-specific infection and considered being non-neoplastic in nature with various clinical and histopathological forms. It occurs mainly in the second decade of life in young individuals and rarely causes significant alveolar bone loss. The present article describes the management of pyogenic granuloma by electrocautery in a 10-year-old male child and an 11-year-old female child.

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1. Introduction

First reported by Hullihen’s in 1844,1 the pyogenic granuloma (granuloma pediculatum benignum, pregnancy tumor or benign vascular tumor) is a reactive localized hyperplastic lesion of the soft tissues. In 1904, the term “pyogenic granuloma” was coined by Hartzell.2 It is also known by other names viz. Hwmgiomatous granuloma (by Angelopoulos AP)3 and Crocker and Hartzell’s disease (by Hartzell ).2 It is the most frequent (75% of the cases) gingival tumor in the oral cavity,4 being more common on the maxillary gingiva than the mandibular gingiva.5–7 Furthermore, these lesions are comparatively more common on the facial aspect of the gingiva than the lingual aspect.6 The word ‘pyogenic granuloma’ is a misnomer because it lacks pus and is not a granuloma in sensu stricto.8 Investigators usually consider chronic low-grade irritation,6,7 hormonal factors,9 and certain drugs10 as causative factors for pyogenic granuloma.

In the present communication, we report two cases of pyogenic granuloma of the gingiva; one located in maxillary buccal area in a ten-year-old male child suffering from arteriovenous (AV) malformation of the upper left lip, and another one located in the lingual side of mandibular anteriors in an eleven-year-old female child.

2. Case History

2.1. Case report 1

A 10-year-old male child with a complaint of swelling in the upper front and left back region of the jaw for seven months, which caused discomfort while eating, reported to the Department of Periodontology. After recording the detailed case history of the patient, it was revealed that the lesion was slow-growing and painless, but caused pain while chewing.

On extraoral examination, the swelling was present on the left upper lip region, which was non-pulsatile and compressible. [Figure 1] On intraoral examination, a solitary lobulated reddish gingival swelling extending on the buccal surface of 22, 23, 24, and 65 teeth were revealed. The lesion was ovoidal in shape, soft in consistency with a smooth surface that measured 17 mm x 8 mm. [Figure 2] The lesion extended beyond the occlusal plane of the teeth...
giving an appearance of missing teeth. [Figure 3] Lymph
node involvement was seen in sub-mandibular regions.
Radiographically, there was no alveolar bone loss in the area
of growth. [Figure 4]

MRI (Magnetic Resonance Imaging) examination of
upper lip revealed multiple linear serpiginous flow void
structures noted scattered in the pre-maxillary region
having derivatives from buccal artery, suggestive of AV
malformation. MRI examination of the lesion revealed
approximately 17 mm x 8 mm sized T2 – hyperintense and
T1- isointense lesions noted anterior to the left maxilla. The
lesion was precisely located between left lateral incisors
and canine and was seen as a focal outpouching into the
pre-maxillary space. The lesion did not exhibit flow voids.
The lesion showed intense enhancement on the post-contrast
study, and no apparent bone erosion was seen.

Based on the clinical presentation of the lesion, the
provisional diagnosis of pyogenic granuloma was made.
The differential diagnosis included hemangioma, fibroma,
peripheral ossifying fibroma, and peripheral giant cell
granuloma.

Based on clinical and MRI evidence, surgical excision
of the lesion was planned, and the treatment and outcome
of the surgery were well explained to the patient and
his accompanying father and mother. The subject being
minor, the consent for surgery was obtained from his father.
Before excision of the lesion, a complete hematological
investigation of the patient was done. The bleeding
time, clotting time, hemoglobin percentage, and total and
differential leukocyte counts were within normal limits.

Full mouth oral prophylaxis was performed. Excisional
biopsy was executed using electrocautery, under infiltration
of local anesthesia with adrenaline (1:100,000). [Figure 5]
The excised specimen [Figure 6] was fixed in 10% formalin
and was submitted to the department of oral pathology for
histopathological analysis. Follow up examination after
a week and six months was done to confirm uneventful
healing and any recurrence. [Figures 7 and 8]
The histopathological analysis of the excised lesion
showed stratified squamous para keratinized atrophic
epithelium with moderate intense infiltration of polymor-
phonuclear leukocytes, lymphocytes, and plasma cells.
Connective tissue comprised of the vast number of
endothelium lined vascular spaces and extreme proliferation
of fibroblast and also budding endothelial cells. The
stroma was typically delicate, although fascicule of collagen
fibers are noted coursing through the tissue. These
features confirmed that the excised lesion was a pyogenic
granuloma. [Figure 9]

2.2. Case report - 2
An 11-year-old female patient reported to the department
of Pediatric and preventive dentistry, with a complaint of
swelling below the tongue in the lower front teeth region for

eight months. After recording the detailed case history of
the patient, it was revealed that the lesion was slow growing
but had grown rapidly to the present size over a duration of
only four weeks.

Intra-oral examination revealed a spherical-shaped,
exophytic, solitary, pedunculated, reddish-pink lesion with
definite borders [Figure 10]. The lesion was located in
the lingual side of the lower anterior teeth and measured
approximately 12 mm x 8 mm in size. The lesion was soft
and firm in consistency, non-tender, and got blanched when
pressure was applied. An intraoral periapical radiograph
showed the bone loss in the area of the lesion. [Figure 11]

Based on the clinical presentation of the lesion, the
provisional diagnosis of pyogenic granuloma was made.
The differential diagnosis was capillary hemangioma,
fibroma, and peripheral giant cell granuloma.
Based on clinical evidence, surgical excision of the lesion was planned, and 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 excision of the lesion, a complete hematological investigation of the patient was done. The bleeding time, clotting time, hemoglobin percentage, and total and differential leukocyte counts were within normal limits.
Oral prophylaxis was done, and excisional biopsy was executed using the electrocautery, under infiltration of local anesthesia with adrenaline (1:100,000). The excised specimen [Figure 12] was fixed in 10% formalin and was submitted to the department of oral pathology for histopathological analysis. Follow up examination after a week and six months was done to confirm uneventful healing and any recurrence. [Figures 13 and 14]

The histopathological analysis of the excised lesion showed stratified squamous para keratinised atrophic epithelium with moderate intense infiltration of inflammatory cells & extreme proliferation of fibroblast and budding endothelial cells. These histopathological features confirmed that the excised lesion was a pyogenic granuloma. [Figure 15]

3. Discussion

The occurrence of oral pyogenic granuloma is reported in persons of all age groups. However, it is regularly encountered in females in their second decade of life mainly due to elevated levels of estrogen and progesterone hormones. Regezi et al., suggested that a known irritant or injury such as calculus, overhanging restorations, due to the exuberant proliferation of connective tissue or foreign material within the gingival crevice may also cause pyogenic granuloma. Aberrant tooth development,
occlusal interferences, trauma to deciduous teeth and release of a variety of angiogenic factors and endogenous substances disrupts the vascularity of the affected area, are the other predisposing factors for pyogenic granuloma.

Clinically, pyogenic granuloma generally represents smooth or lobulated exophytic lesion with a sessile or pedunculated base. These lesions may grow rapidly and attain a larger size. It grows from a few millimeters to several centimeters in dimension but seldom surmounts more than 2.5 cm. Commonly radiographic findings are absent, but in the present case report-2, a significant bone loss could be seen. [Figure 11] This substantiates the findings of Angelopoulos who reported that localized alveolar bone resorption occurred in some cases of long-standing gingival pyogenic granulomas.

In the present cases, full mouth scaling was done to remove all the local irritants, which could have been the primary etiologic factors. The lesion was surgically excised (with electrocautery in both cases) and was sent for histopathological examination.

Recurrence of these lesions is due to inadequate removal of etiological factors, repeated trauma, or failure to maintain oral hygiene. Vilmann et al. emphasized that there is a need for followup, especially in pyogenic granuloma of the gingiva due to its higher recurrence rate. The present cases were followed up for a period of 6 months, and no recurrence was observed.
4. Conclusions
Although pyogenic granuloma arises due to a combination of etiological factors and is non-neoplastic in origin, removal of irritants like plaque, calculus, overhanging restorations, and other foreign substance is a must. Surgical excision of the lesion in toto is the treatment of choice for pyogenic granuloma. Proper oral hygiene maintenance is utmost essential to avoid any chance of recurrence. We describe here the cases of gingival pyogenic granuloma in a 10-year-old male and in an 11-year-old female patients with clinical features, treatment plan, histopathological features, and follow up for six months. Though the term “pyogenic granuloma” is commonly used, it is not associated with pus or granuloma formation and rather histologically resembles with an angiomatous lesion which shows that the term ‘pyogenic granuloma’ is a misnomer. This benign lesion is commonly encountered and excised in day to day dental practice. Therefore, it is utmost necessary to recognize these lesion to avoid misdiagnosis, and it is always advocated to get histopathological confirmation, owing to its close clinical resemblance to neoplastic condition.

5. Source of funding
None

6. Conflict of interest
None

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Cite this article: Razi MA, Debnath S, Qamar S, Tripathi A. Management of pyogenic granuloma in pediatric patients using electrocautery—Case reports. Int J Periodontol Implantol 2019;4(4):141-146,