EXCISION OF PYOGENIC GRANULOMA: LOBULAR CAPILLARY HEMANGIOMA IN A PERMANENT TOOTH ERUPTING SITE BY DIODE LASER IN 6 YEAR OLD CHILD

A RARE CASE REPORT

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ABSTRACT: In humans, occurrence of pyogenic granuloma was first observed in 1897 by Poncet and Dor., which was called then botryomycosis hominis. Some other names are granuloma pediculatum benignum, benign vascular tumor, pregnancy tumor, vascular epulis, Crocker and Hartzell's disease. The present name was given by Crocker in 1903. Nowadays pyogenic granuloma is thought to represent an exuberant tissue response to local irritation or trauma. This article aims to present a case of pyogenic granuloma in a 6 year old child patient associated with obstruction of eruption of permanent tooth in that region. Recently, new technologies such as laser surgery permits simpler treatment modalities to be carried out than with conventional techniques. But it is essential to have a good knowledge of laser operation, intra-operative precautions and of which type of laser is most appropriate for each lesion.

KEYWORDS: pyogenic granuloma, children, eruption, diode laser.

1. INTRODUCTION

Pyogenic granuloma or granuloma pyogenicum is known as a relatively common benign mucocutaneous lesion. The term pyogenic is a misnomer in that as the lesion does not contain pus. Because of that, the term lobular capillary hemangioma has been often used for this condition.
This reaction lesion caused by several factors such as local irritation, traumatic injuries (5,6,7,8), hormonal changes (3,7,9), viral (3,9), and bacterial infections (13), injury to a primary tooth, chronic irritation, drugs, gingival inflammation, preexisting vascular lesions, chronic irritation due to exfoliation of primary teeth, eruption of permanent teeth, defective fillings, food impaction, chronic periodontitis, toothbrush trauma etc. The most frequent location is the gingiva's anterior region (8,10-12) but other areas such as the tongue, oral mucosa, and lips can also be affected (7,10,13,14). Incidence is higher in females (by a 1.5:1 ratio) and occurs more frequently between the second and third decades of life (1,2,3,14). Clinically, it is characterized by soft to firm consistency, pink to purple-red color, smooth or lobulated, sessile or pediculated, painless, fast growing (2,4,5,8) mass. Spontaneously or after a small trauma a hemorrhage may occur (7,13,14) and its size may vary (1) with the mean size of the lesion being 7.3 mm.

As it is a benign lesion; surgical excision is the treatment of choice. The lesion must be excised down to the underlying periosteum and predisposing irritants must be removed to avoid the possibilities of recurrence. Conventional treatment options includes cold knife, cautery knife (electrocautery) or cryosurgery (15) sclerotherapy; curettage or a combination of methods. Recent researches proves that laser treatment can be added as an alternative or complement to conventional methods (16). According to Boj et al., 2011 (17), laser reduces the amount of local analgesia (18), eliminates the need for sutures, reduce the requirement for antibiotics, improves wound healing which occurs faster and with less scarring than after conventional treatments, reduces postsurgical pain and less time spent in the dental chair (19-22). The final diagnosis is only possible through histopathologic examination.

In 1999, Diode laser was introduced in dentistry, (20) the wavelengths of which ranging from 810 -980 nm & it is used as a possible modality for soft tissue surgery in the oral cavity (20,21). By it’s photo thermal effect, lesions of the oral mucosa are removed with an excision technique or by ablation/vaporization procedures(20). Heat production causes an excellent haemostasis in blood vessels at this wavelength (21,22).

Case Report:

History

A 6 year old male patient reported to us with the chief complaint of a growth in the right lower retromolar region since two months. It was reported that initially the growth was small in size and had enlarged progressively to a size large enough to interfere with her normal occlusion. The patient
admitted to habitual biting on the growth (FIGURE 5) but reported no occasional bleeding from the lesion & gives no history of pain.

Clinical presentation

Clinical examination revealed presence of a round to ovoid, small, whitish pink, nodular, smooth surfaced pedunculated growth (FIGURE : 4) in the right mandibular retromolar region just behind the deciduous 2nd molar(FIGURE: 1,2,3) measuring around 4 mm X 4 mm X 5 mm. No sign of eruption of 1st permanent mandibular molar on this side whereas on the contra lateral side 1st permanent mandibular molar was already erupted. On palpation, we found that the lesion was firm in consistency, non tender with no signs of hemorrhage/discharge. No visible or palpable pulsations observed. Radiologically we have seen that root completion of 1st mandibular molar of that side was already completed except the apical closure and the tooth emerged through the bony lining (FIGURE: 6) . So we assumed that the growth itself hampered the eruption.

Evaluating the history and clinical presentation, we arrived at a provisional diagnosis of irritational fibroma.

Figure 1: occlusal view of the growth
FIGURE 2: buccal view of the growth

FIGURE 3: lingual view of the growth
FIGURE 4: note the pedunculated nature of the mass

Figure 5: biting on the mass on occlusion

Figure 6: IOPA in the region of the mass
Differential diagnosis

Due to the history of occasional bleeding, the differential diagnosis included vascular malformation and pyogenic granuloma and by considering the patient’s age & co operation level, we decided to excise the lesion with diode laser.

Treatment

The lesion was excised under local anaesthesia using diode laser focalized at 810 nm (Doctor Smile D5 diode laser, Lambda Spa, Italy) in contact mode, 0.8 W power with a 300µm fiber, 40 s timer was set (FIGURE: 7,8). There was no significant amount of hemorrhage during the procedure was noticed (FIGURE 10,11). Usual precautions for the patient, operator and the assistant were taken (FIGURE 9). Post-operative instructions were given to the patient. No antibiotics and analgesics were prescribed. The excised tissue (FIGURE:12) was sent for histopathological examination. The patient was advised to come for a post operative check up after 7 days.

Figure 7,8: Doctor Smile D5 diode laser
Figure 9: patient with proper precaution before laser treatment.

Figure 10,11 : per operative images of excision by diode laser
HISTOPATHOLOGY

The histopathological analysis revealed the presence of parakeratotic hyperplastic stratified squamous surface epithelium with blunt & bulbous rete-ridges & acanthosis at places. Scattered areas of vacuolated spaces noted within the keratinized & granular cell layers. Sub-epithelial connective
tissue is loose & edematous with numerous endothelial-lined proliferating blood capillaries and extravasated erythrocytes. Intense non specific chronic inflammatory cell infiltrations chiefly composed of lymphocytes noted within the connective tissue (FIGURE 14,15.16.17).

No sign of malignancy could be detected in these sections. The overall light microscopic features are suggestive of Pyogenic Granuloma.

Figure 14: histological section prepared after H & E staining.

Figure 15 & 16 : Light microscopic view (10X & 4X) confirms pyogenic granuloma
Figure 17: Histopathological Report

Patient came for post operative check up after 7 days. No pain, scarring, redness or swelling was present & mesiobuccal cusp of permanent 1st molar tooth was erupting (FIGURE: 18).
II. DISCUSSION

Shamim et al. found that among 244 cases of gingival lesions in south Indian population, nonneoplastic lesions accounted for 75.5% of cases with oral pyogenic granuloma being most frequent lesion, accounting for 52.71% cases (23).

Retromolar region is a rare site of PG. Chronic irritation due to eruption of permanent teeth is the probable cause of this case.

Young pyogenic granulomas are more vascular in appearance because of the prominent capillaries and they bleed spontaneously or upon the slightest provocation whereas older lesions are more collagenized & pink because of more fibrous nature (7). This explains the atypical appearance and non-hemorrhagic clinical presentation of the current case.

Slight intra-operative haemorrhage that occurred was significantly controlled by laser excision as compared to that anticipated by scalpel excision. According to White et al., because of the above stated advantages, treatment by laser application generally improve patient compliance, which was particularly desirable in this case since the patient was very young (7). This method also enables patients to enjoy a more relaxed dental experience, reducing their fears (21).

The only subtle difference between capillary haemangiomas & Pyogenic granulomas is that the former have more plump, histiocytoid endothelial cell proliferation without presence of acute inflammation (7). History plays a vital role in their differentiation. Haemangiomas are mainly
developmental in origin, usually beginning a few weeks after birth and growing rapidly thereafter. on the other hand, tend to develop suddenly.

III. CONCLUSION

In the above case report, successful excision of the lesion was performed using diode laser and the post-operative outcome was found to be encouraging. Delayed diagnosis & postponement of treatment can precipitate delayed eruption & further malalignment of teeth. This highlights the importance of thorough history and clinical examination in the formulation of a diagnosis and sound knowledge of atypical lesion presentations helps to prevent inaccurate diagnoses and disastrous consequences.

REFERENCES