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Case Report

Dentistry Section

Pyogenic Granuloma or Haemangioma- A Diagnostic Dilemma in a 13-year-old Female

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ABSTRACT

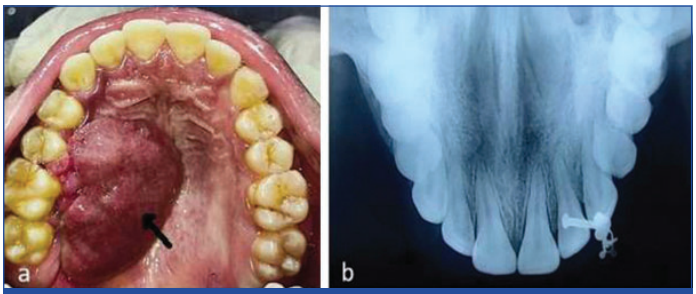
Pyogenic granulomas and haemangiomas are well-known benign lesions of the oral cavity. Although pyogenic granulomas are known to have a gingival preference, while capillary haemangiomas are more commonly found on the lips, cheeks, tongue, and palate. There are several lesions in the oral cavity that resemble haemangiomas microscopically. Pyogenic granuloma is one of these lesions, characterised by the proliferation of endothelial cells, and is often indistinguishable from true haemangiomas microscopically. The clinical diagnosis of such a rare phenomenon can be quite difficult, as they can sometimes resemble more serious lesions, such as malignancies. Hereby, the authors present a case report of capillary haemangioma in the maxillary left posterior region of the jaw in a 13-year-old female, which was clinically diagnosed as pyogenic granuloma. The patient presented with a painless swelling, and no significant findings were observed on radiographic examination. The present case report aimed to resolve the dilemma in the diagnosis of vascular tumours and malformations, and to assess their histological, biological behaviour, and clinical presentation.

Keywords: Benign tumour, Oral haemangioma, Vascular lesions

CASE REPORT

A 13-year-old female patient complained primarily of a painless swelling in the left posterior maxillary region for five years. The swelling started at the size of a peanut and slowly grew to a large size, which was associated with bleeding while brushing and eating.

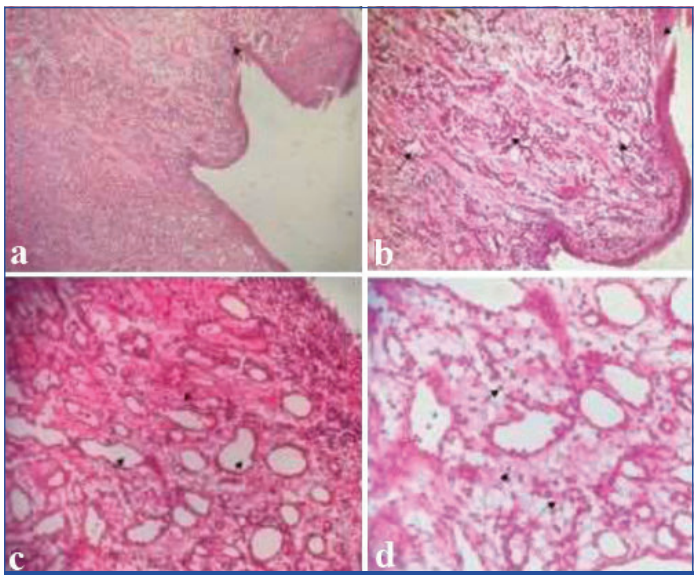
On clinical examination, the growth was pedunculated, showing a lobular pattern intraorally, completely occupying the left palatal region. The lesion measured about 4.5×3 cm in diameter, extending anteroposteriorly from 24-27 and mesiodistally from the free gingival margin to the midline of the palate, extending 1 cm towards the right side of the palate. The surface of the growth was smooth with small red to pink dots known as petechiae. On palpation, the swelling was non tender and soft to firm. Bleeding on palpation was present, and the swelling was non pulsatile in nature. Grade-I mobility was also observed on 24,25,26,27. Radiographic findings were insignificant [Table/Fig-1a,b].



[Table/Fig-1]: (a) Clinical image showing intraoral pedunculated growth with lobular pattern occupying the left palate region; (b) Radiographic image showing no evidence of crestal bone loss.

Based on clinical observations, a provisional diagnosis of pyogenic granuloma was given. Complete excision of the lesion was performed under local anaesthesia with compression/pressure pack to reduce bleeding. The specimen was preserved and sent in 10% neutral buffered formalin for histopathological examination.

On histopathological examination, the Haematoxylin and Eosin (H&E) stained section revealed the presence of superficially ulcerated stratified squamous epithelium underlying a fibrovascular and inflamed connective tissue stroma. A large number of young proliferating congested blood capillaries of different shapes and sizes, lined by a single layer of flattened endothelial cells, were observed. Central areas also showed the presence of elongated endothelial-lined feeder blood vessels. A mixed inflammatory infiltrate, chiefly composed of lymphocytes and plasma cells, was also observed [Table/Fig-2a-d]. Based on histopathological examination, the final diagnosis of "Capillary Haemangioma" was made.

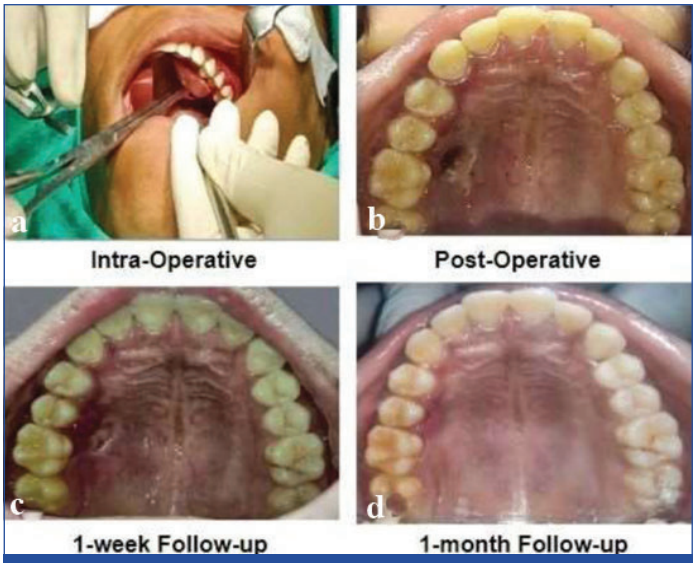


[Table/Fig-2]: (a) Shows discontinuous parakeratinised stratified squamous epithelium with vascular spaces (H&E stain, x4 magnification); (b) 10X shows numerous proliferating capillaries of various shape and size (H&E stain, 10X); (c&d) Shows numerous endothelially lined capillaries admixed with lymphocytes and plasma cells (H&E stain, 40X).

After complete surgical excision, the patient was recalled for routine follow-up examinations to check the status of healing and recurrence. After one month, the lesion had completely healed, and no signs of recurrence had been recorded [Table/Fig-3a-d].

DISCUSSION

Haemangiomas are regarded as benign proliferative lesions of vascular tissue that may appear at birth or develop later in life, manifesting within the first month of life [1]. Haemangiomas can



[Table/Fig-3]: (Intraoperative; a) Complete surgical excision; (Postoperative; b) Postoperative images; (c) Postoperative healed lesion at one week follow-up; (d) Postoperative healed lesion at one month follow-up.

be defined as a heterogeneous group of clinically benign vascular lesions with similar histological features [2]. Haemangiomas are one of the most prevalent benign vasoformative tumours of early childhood and generally appear as a period of rapid proliferation followed by gradual regression, usually within the first month of life [3-5]. There are no malignant changes in cell proliferation [6,7].

The clinical presentation of capillary haemangiomas can be either sessile or pedunculated. They present as soft, smooth, or irregular swellings that appear bulbous in outline. The colour may vary from reddish to purple, and there may be blanching on applying pressure. Haemangiomas located on the palate can be classified as capillary type [8,9]. Haemangiomas are rare in the oral cavity; the gingiva, lips, buccal mucosa, and tongue are the most common intraoral sites, while the maxilla, mandible, and nasal bone are rarely affected [3,10].

Haemangiomas and pyogenic granulomas of the hard palate may mimic each other clinically as well as histopathologically, making them a diagnostic enigma [3]. The present case is of high significance, as there are currently very few literature available diagnosing capillary haemangioma due to its association with the hard palate, which is very rare in young women.

Haemangiomas can mimic other types of lesions, such as vascular malformations and pyogenic granulomas, clinically, radiographically, and histologically [Table/Fig-4] [9,11-14]. Vascular malformations are present at birth and continue to grow with the child, whereas haemangiomas are lesions that develop later in life and are usually not present at birth. The hallmark of vascular malformations is proportional growth throughout an individual's life [1]. Histopathologically, haemangiomas consist of many small capillaries lined by a layer of endothelial cells. The connective tissue stroma of variable densities can be observed [15]. Sometimes, haemangiomas may show similarities to young granulation tissue, and notable endothelial cell proliferation may appear indistinguishable from a few cases of pyogenic granuloma [16].

Vascular malformations are localised or diffuse errors of embryonic development. Vascular anomalies are currently classified based on a system developed in 1982 by Mulliken and Glowacki, which takes into account the histology, biological behaviour, and clinical presentation of these entities [9]. On the other hand, pyogenic granuloma is a proliferative vascular lesion frequently confused with haemangioma, as observed in the present case. In the oral cavity, pyogenic granulomas are typically found on the gingiva, with interdental papillae being the most common site in 70% of cases. Based on histological findings, Pyogenic Granuloma can be categorised into two types: Lobular Capillary Haemangioma (LCH) type and non LCH type. LCH is characterised by the proliferation of blood vessels organised into lobular aggregates, even when the appearance of the lesion shows no specific changes or oedema, capillary dilation, or inflammatory reaction of granulation tissue [15].

Such unusual manifestations can be quite confusing and can lead to inaccurate diagnoses of other lesions, such as peripheral giant cell granuloma, Epulis granuloma, squamous cell carcinoma, Kaposi's sarcoma, etc., [11,16].

In the present case, a provisional diagnosis of pyogenic granuloma was made based on the clinical presentation. The diagnosis of capillary haemangioma was confirmed based on histopathological examination. It is advisable to perform a biopsy of all clinically diagnosed cases of

Variables	Capillary haemangioma	Vascular malformations	Pyogenic granuloma
Description	Haemangiomas are vascular tumours that are rarely apparent at birth, grow rapidly during the first six months of life, involute with time and do not necessarily infiltrate but can sometimes be destructive.	Vascular malformation, which represents a localised defect in vascular morphogenesis. Vascular malformations are irregular vascular networks defined by their particular blood vessel type.	Pyogenic granuloma is a common, acquired, benign, vascular tumour that arises in tissues such as the skin and mucous membranes.
Age	The rare "congenital" haemangioma is present at birth and can be of RICH and NICH.	These are present at birth.	They may be present at any age group and not present at birth.
Gender	Female	Equal gender predilection.	Female
Site	May occur anywhere on the body. Although it is one of the most common soft tissue tumours of head and neck region but it is relatively rarely seen in oral cavity. Intraoral involvement is seen on skin, lips, lining of oral cavity, gingiva and palate.	May occur anywhere on the body. Typically involves skin, mucosa and subcutaneous tissues but may also arise in deeper tissues e.g., muscles, bone and internal organs.	Occurs on skin and mucous membrane. Found subcutaneously or intravascularly. It is most commonly seen within the oral cavity. Most common intraoral site is gingiva.
Clinical presentation	May occur as well-demarcated, flat, and erythematous red patches or red and nodular growth or may be present as presents as a protrusion with an overlying bluish tint or telangectasia.	Vascular malformations do not regress and continue to expand with time. Periods of rapid growth, infiltration and soft tissue destruction are seen.	The lesion grossly appears as a solitary, red, pedunculated papule that is very friable. It may present as a sessile plaque. It shows rapid exophytic growth, with a surface that often undergoes ulceration. It is often seen on cutaneous or mucosal surfaces.
Histopathological presentation	Composed of small thin-walled vessels of capillary size that are lined by a single layer of flattened or plump endothelial cells, surrounded by a discontinuous layer of pericytes and reticular fibers. Capillary haemangiomas exhibit a progression from densely cellular proliferation of endothelial cells in early stages to a lobular mass of well-formed capillaries in mature phase.	Vascular malformation is comprised of abnormally formed channels within a vascular apparatus that are lined by endothelial cells and do not undergo abnormal cellular turnover.	LCH is characterised by proliferating blood vessels that are organised in lobular aggregates although superficially the lesion undergoes no special changes e.g., increased oedema, capillary dilatation or inflammatory granulation tissue reaction. Non LCH consists of highly vascular proliferation that resembles granulation tissue.

[Table/Fig-4]: Histology, biological behaviour, and clinical presentation of capillary haemangioma, vascular malformations and pyogenic granuloma [9,11-14].
LCH: Lobular capillary haemangioma; RICH: Rapidly involuting congenital haemangioma; NICH: Non involuting congenital haemangioma

pyogenic granulomas and capillary haemangiomas to rule out more serious conditions like carcinoma and sarcomas [11]. Radiographs should be taken to rule out any bony destruction suggestive of malignancy, central haemangiomas, or to identify foreign bodies [16].

CONCLUSION(S)

Oral haemangiomas are rare benign tumours typically diagnosed in children, and the majority of these lesions will involute over time. Intraoral capillary haemangioma is an uncommon pathological entity that must be included in the differential diagnosis of benign oral tumours. This entity may be confused with pyogenic granuloma and requires careful evaluation to make a final diagnosis. Simple surgical excision of capillary haemangioma may result in bleeding during and after surgery and should, therefore, be performed with caution. Regular follow-up appointments should be maintained for monitoring.

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