Case Report

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Dentistry Section

A Case of Capillary Haemangioma of the Gingiva in a Six-year-old Child: A Diagnostic Challenge

CS ARUN[1], SUCHITHRA MURALEEDHAR SEETHA[2]

ABSTRACT

Capillary haemangioma is a benign vascular lesion commonly observed in infancy but rarely reported in the oral cavity, especially on the gingiva. Because its clinical appearance can resemble more common reactive lesions, such as pyogenic granuloma, establishing a correct diagnosis in children can be difficult. In the present case report, the authors present the case of a six-year-old male who reported with intermittent gingival bleeding and a rapidly enlarging reddish, lobulated swelling in the posterior mandibular region. The lesion developed after minor trauma and the extraction of a primary molar, which further complicated the initial clinical impression. The lesion was soft, friable, and bled easily on manipulation, leading to an initial clinical diagnosis of pyogenic granuloma. Radiographic evaluation revealed no underlying bony involvement. Given the vascular nature of the lesion, careful surgical excision was performed under local anaesthesia. Histopathological examination revealed numerous irregular, endothelial-lined capillary channels within a connective tissue stroma, confirming the diagnosis of capillary haemangioma. Postoperative healing was uneventful, with no evidence of recurrence on 2-month follow-up. Misdiagnosis of vascular lesions such as capillary haemangioma as reactive lesions like pyogenic granuloma may result in unexpected intraoperative bleeding and inadequate surgical planning, emphasising the need for careful evaluation and histopathological confirmation. The present case highlights the close clinical resemblance between capillary haemangioma and reactive gingival lesions and underscores the importance of histopathological examination for establishing a definitive diagnosis and guiding appropriate management in paediatric patients.

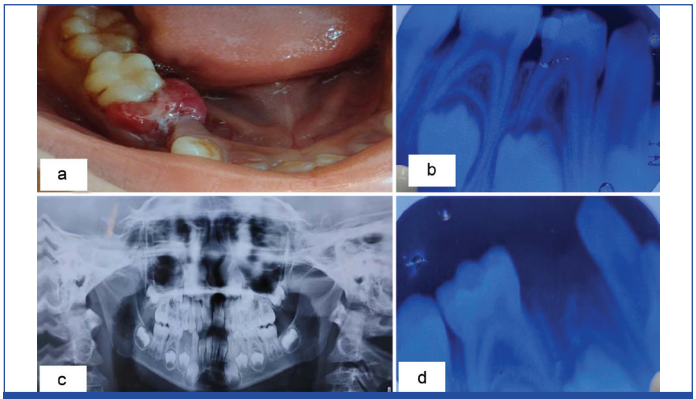
Keywords: Lobular capillary haemangioma, Oral lesion, Vascular malformation

CASE REPORT

A six-year-old male presented to the postgraduate clinic, Department of Pedodontics, with a four-week history of intermittent bleeding from the gums in the lower right posterior region. The symptoms began after trauma from a fish bone. Initial management in the Outpatient (OP) wing of the Pedodontic Department included local debridement and warm saline rinses. However, bleeding persisted, and the gingiva in relation to tooth 84 (mandibular right primary first molar), which had a restoration, became enlarged and erythematous. Based on the clinical presentation, a provisional diagnosis of dentoalveolar abscess was considered, although it was not definitively confirmed. Based on the clinical findings at presentation, the involved 84 was extracted under antibiotic and analgesic coverage (Syrup amoxicillin 40 mg/kg/day and Syrup paracetamol 45 mg/kg/day). Three days later, the patient returned with a soft-tissue growth at the extraction site and was referred to the postgraduate clinic for further evaluation.

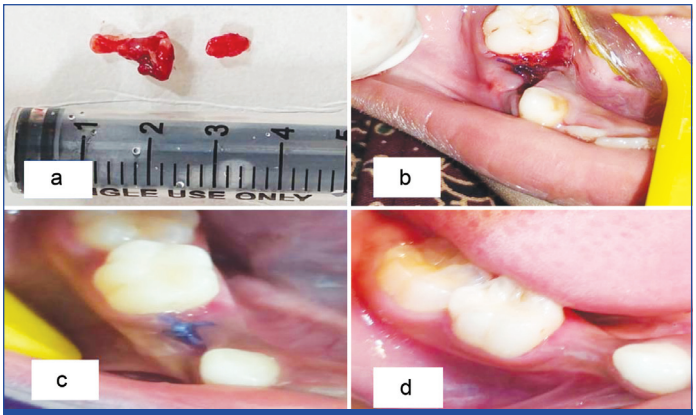
Medical and drug history were non-contributory. Intraoral examination revealed a smooth, lobulated, reddish mass measuring approximately 1.4×1 cm at the extraction site, extending buccally and lingually in relation to the 84 region [Table/Fig-1a]. The lesion was soft, friable, and bled easily on gentle manipulation. Preoperative Intraoral Periapical (IOPA) radiograph showed restorative material in 84 with no obvious pulpal involvement [Table/Fig-1b]. The periodontal ligament space appeared normal, and no evidence of alveolar bone loss, cortical destruction, or periapical pathology was observed. Postoperative Orthopantomography (OPG) and IOPA radiographs confirmed the absence of retained root fragments or other pathology [Table/Fig-1c,d].

After consultation with oral medicine and radiology specialists, a provisional diagnosis of pyogenic granuloma with a possible vascular origin was made. Informed consent was obtained from the parent, and an excisional biopsy was performed under local anaesthesia (2% lignocaine + adrenaline 1:80000) by giving an inferior alveolar nerve block. Once the patient was properly anaesthetised, a No. 15 Bard-Parker (BP) blade was used to excise the tissue. Unusual bleeding was noted from the site, which was controlled using local pressure, gauze compression, and suturing. The tissue [Table/Fig-2a] was fixed in 10% formalin for histopathological examination, the socket was curetted, and closure was achieved with 3-0 polyglactin 910 (Vicryl) sutures [Table/Fig-2b]. Healing was uneventful at one week [Table/Fig-2c], and no recurrence was noted at two-month follow-up [Table/Fig-2d].

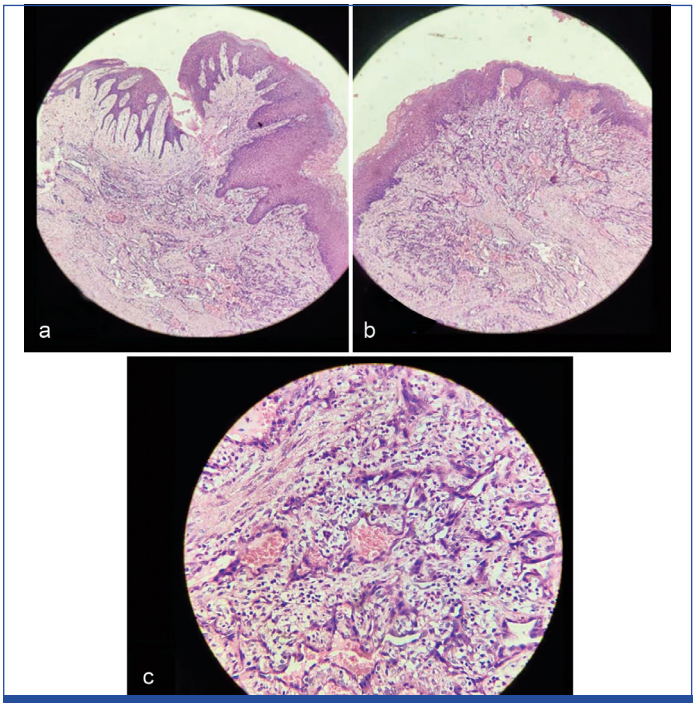


[Table/Fig-1]: a) Intraoral view showing lobulated reddish growth in relation to 84 region; b) Preoperative IOPA showing restorative material in relation to 84 lower right first primary molar with normal periodontal ligament space and no evidence of alveolar bone pathology; c) Postoperative OPG showing no retained root fragments and intact surrounding alveolar bone; d) Postoperative IOPA radiograph confirming the absence of pathology at the extraction site.

Histopathological examination showed hyperplastic parakeratinised stratified squamous epithelium with focal ulceration [Table/Fig-3a]. The connective tissue stroma exhibited numerous irregular endothelial-lined vascular channels, marked vascular proliferation, engorged vessels [Table/Fig-3b], and dense mixed inflammatory infiltrate, [Table/Fig-3c], consistent with a diagnosis of capillary haemangioma.

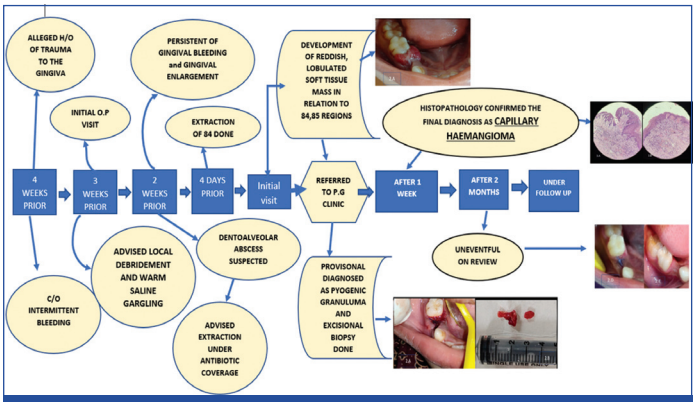


[Table/Fig-2]: a) Specimen following surgical removal, showing multiple irregular haemorrhagic tissue fragments; b) Immediate postoperative view following complete surgical excision and curettage of the lesion; c) Postoperative intraoral view one week after excision; d) Postoperative intraoral view at two-month follow-up.



[Table/Fig-3]: a) Histopathological image showing hyperplastic parakeratinised stratified squamous epithelium, (H&E, ×10); b) Connective stroma showed intense vascularity with irregular vascular channels, numerous endothelial cell-lined blood vessels, endothelial cell proliferation and engorged blood vessels (H&E, ×10); c) Stroma shows a dense and diffuse collection of mixed inflammatory cells (H&E, ×40).
H&E: Haematoxylin and Eosin

The chronological sequence of clinical events is summarised in [Table/Fig-4].



[Table/Fig-4]: Timeline illustrating the chronological sequence of clinical events, including onset of symptoms, initial management, extraction of 84, development of gingival growth, surgical excision, histopathological diagnosis, and follow-up.

DISCUSSION

Capillary haemangioma is a benign vascular neoplasm composed of proliferating capillary-sized vessels lined by endothelial cells. Haemangiomas are among the most common tumours of infancy, affecting approximately 5-10% of one-year-old children [1]. However, involvement of the oral cavity is uncommon, representing less than 1% of benign oral soft-tissue tumours. When present intraorally, the buccal mucosa (45.2%), tongue (35.5%), and lips (9.7%) are more frequently affected, whereas gingival involvement is rare (6.5%) [2,3].

Haemangiomas are benign vascular lesions characterised by the proliferation of blood vessels and are commonly encountered in the head and neck region, including the oral cavity. Oral haemangiomas are histologically classified into capillary and cavernous variants. Capillary haemangioma is characterised by the proliferation of numerous small capillary-sized vascular channels lined by endothelial cells within a connective tissue stroma [4]. Clinically, these lesions often present as erythematous, rapidly enlarging, soft masses that tend to bleed, features that closely resemble reactive gingival lesions such as pyogenic granuloma. Such overlap frequently leads to an initial misdiagnosis, particularly when the lesion arises on the gingiva, where reactive lesions are more common [4].

In paediatric patients, the differential diagnosis of gingival enlargements should be approached carefully because several reactive, inflammatory, and vascular lesions may present with similar clinical features [5]. Common differential diagnoses include pyogenic granuloma, peripheral giant cell granuloma, peripheral ossifying fibroma, parulis, vascular malformations, and other benign vascular proliferations [6]. Pyogenic granuloma is particularly important because it frequently occurs in children and adolescents and typically presents as a rapidly growing erythematous lesion with a marked tendency to bleed [2,7,8]. Peripheral giant cell granuloma usually appears as a reddish-purple gingival swelling and histologically demonstrates multinucleated giant cells within a vascular stroma, whereas peripheral ossifying fibroma commonly presents as a firm nodular gingival enlargement arising from the interdental papilla and exhibits fibrous proliferation with calcified deposits [2,7]. Vascular malformations should also be considered, especially when lesions exhibit blanching, pulsation, bruit, or compressibility [9]. Therefore, histopathological examination remains essential for establishing a definitive diagnosis in paediatric gingival lesions.

The aetiology of haemangiomas remains uncertain. Proposed mechanisms include dysregulated angiogenesis involving Vascular Endothelial Growth Factor (VEGF) and basic fibroblast growth factor; placental endothelial cell embolisation, supported by Glucose Transporter-1 (GLUT-1) expression; clonal endothelial proliferation; somatic mutations; and localised tissue hypoxia. Genetic influences may contribute through abnormalities in angiogenic signalling pathways that promote excessive endothelial cell proliferation, while microenvironmental factors such as hypoxia, trauma, and inflammatory mediators, including VEGF, Tumour Necrosis Factor-alpha (TNF-α), Interleukin-6 (IL-6), and Interleukin-8 (IL-8) may stimulate vascular proliferation and persistence of the lesion. Current evidence therefore suggests a multifactorial pathogenesis involving both genetic and local tissue environmental influences [10].

In the present case, the provisional diagnosis of pyogenic granuloma was based on the rapid growth, erythematous appearance, soft consistency, bleeding tendency, and recent history of local trauma, which are characteristic features of reactive gingival lesions in children [8]. However, the marked friability of the lesion and excessive bleeding encountered during surgical manipulation raised the possibility of a vascular lesion. Histopathological examination demonstrated numerous irregular endothelial-lined capillary channels without the characteristic lobular arrangement typically seen in pyogenic granuloma, thereby confirming the diagnosis of capillary haemangioma [8]. Since vascular lesions may result in unexpected intraoperative haemorrhage, careful surgical planning, assessment of lesion vascularity, use of vasoconstrictor-

containing local anaesthesia, adequate haemostatic measures, and cautious tissue manipulation are important during management. Vascular malformations were considered less likely in the present case because the lesion lacked pulsation, bruit, blanching, or compressibility.

Microscopically, pyogenic granuloma typically demonstrates lobular capillary proliferation resembling granulation tissue, whereas capillary haemangioma shows irregular capillary channels without lobular organisation. The present case demonstrated the latter pattern, confirming the diagnosis of a capillary haemangioma [11].

Management of oral capillary haemangiomas depends on lesion size, location, symptoms, and patient cooperation. Surgical excision remains a reliable treatment for localised lesions, providing immediate removal and tissue for histological analysis [4]. In the present case, conventional excision proved effective with no postoperative complications or recurrence during follow-up.

Various treatment options have been reported in the literature, particularly for larger lesions or those resistant to surgical site management. These treatments are intralesional corticosteroids [12], systemic or topical beta-blockers such as propranolol or timolol [13], cryotherapy [14], sclerotherapy including sodium tetradecyl sulphate [15], and laser treatment [16]. Spontaneous regression is commonly observed in infantile haemangiomas during their involution phase; therefore, careful observation may be considered in selected cases [5]. Nonetheless, if a localised gingival lesion warrants a definitive diagnosis, surgical excision is the best approach. A limitation of the present case is that immunohistochemical analysis for GLUT-1 was not performed because the specific antibody marker was unavailable at the study institution at the time of diagnosis. However, the diagnosis was established based on the characteristic clinical presentation and definitive histopathological findings consistent with capillary haemangioma.

The present case highlights the diagnostic challenge posed by vascular lesions of the gingiva, particularly due to their close clinical resemblance to reactive lesions such as pyogenic granuloma. It underscores the importance of careful clinical evaluation and histopathological examination in establishing a definitive diagnosis and guiding appropriate management in paediatric patients.

CONCLUSION(S)

Capillary haemangioma of the gingiva is an uncommon lesion in children and may closely resemble pyogenic granuloma clinically. In the present case, the lesion developed following trauma and extraction, leading to an initial misdiagnosis. Definitive diagnosis was established only after histopathological examination.

Conventional surgical excision provided effective treatment and confirmed the diagnosis. The present case emphasises the need for clinicians to consider vascular lesions in the differential diagnosis of post-extraction gingival masses and to rely on histopathology for accurate identification. Early diagnosis, elimination of local irritants, and appropriate follow-up are essential to ensure optimal outcomes in paediatric patients.

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PARTICULARS OF CONTRIBUTORS:
1. Postgraduate Student, Department of Paediatric and Preventive Dentistry, Government Dental College Kottayam, Gandhinagar, Kerala, India.
2. Professor and Head, Department of Paediatric and Preventive Dentistry, Government Dental College Kottayam, Gandhinagar, Kerala, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. CS Arun,
Postgraduate Student, Department of Paediatric and Preventive Dentistry,
Government Dental College, Kottayam, Gandhinagar-686008, Kerala, India.
E-mail: aruncs2310@gmail.com

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