

PLASMA CELL GRANULOMA OF THE GINGIVA: A CASE REPORT AND A SHORT COMMUNICATION ON THE DIAGNOSTIC HURDLES

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ABSTRACT

Introduction: Plasma cell granulomas (PCG), a form of non-cancerous inflammatory lesions, are primarily found in the lungs but seldom observed in the oral cavity. The term highlights a focal, non-malignant accumulation of mature plasma cells. Previous studies have noted PCGs in the tongue, lip, and oral mucosa; however, cases involving the gingiva are notably infrequent. Hence, the manuscript presents a dual strategy of a brief literature review using multiple electronic databases, along with the presentation of a case report of PCG. These pathological entities are typically composed of a dense aggregation of polyclonal plasma cells. A precise diagnosis relies on gross examination, radiographic findings, morphological features, and immunophenotypic characteristics. **Case presentation:** A 35-year-old female presented with a painless gingival overgrowth in the mandibular anterior region, associated with intermittent bleeding on flossing. Intraoral examination revealed a firm, erythematous, well-demarcated lesion between teeth 32 and 33. A provisional diagnosis of pyogenic granuloma was made. Radiographs showed no bony involvement. Following Phase I therapy; an excisional biopsy was performed. Histopathology confirmed plasma cell granuloma with dense plasma cell infiltration and kappa light chain predominance. Post-operative healing was satisfactory with no recurrence after eight weeks. **Conclusion:** This case report presents a rare case of PCG of the gingiva, contributing valuable insights for further research, to raise awareness among patients and dental professionals, and to understand that early identification and treatment can lead to highly successful outcomes, ensuring effective management and alleviating concerns about malignancy. Hence, this case underscores the importance of histopathological evaluation in diagnosing rare gingival lesions and avoiding misdiagnosis. Early intervention ensures excellent outcomes.

KEYWORDS: Plasma cell granuloma, inflammatory pseudo-tumor, immunohistochemistry, kappa expression, mesenchymal spindle cells.

INTRODUCTION

Plasma cell granuloma (PCG), commonly known as inflammatory pseudotumor, is not associated with an identified etiopathogenesis. The frequent sites of such lesions are the lungs. Though it is also reported in the liver, kidney, brain, and heart.^[1, 2] Histopathologically, the tumor is predominated by accumulating polyclonal plasma cells, thus suggesting its name. PCG has no preference for age or gender. PCG is reported to be a rare

pseudotumor of the oral cavity and much rarer in the gingiva.^[3] Condition manifests as a delineated exophytic, solitary, well-demarcated lesion with bleeding tendency. Although gingival plasma cell granuloma (PCG) is benign, its asymptomatic nature, combined with radiological and clinical findings, can resemble malignancy, posing a diagnostic hurdle.^[4] There is a dearth of literature for the drug-induced PCG of gingiva.^[3-5] Therefore, this study covers a brief literature

review of PCG up to the year 2024 and presents a case of a 35-year-old female who exhibited painless gingival overgrowth in the mandibular anterior region. This report is unique and novel in the sense that it presents a rare case of plasma cell granuloma of the gingiva with a bleeding tendency and no confirmatory etiology.

METHODOLOGY

The literature review for this article was conducted using multiple electronic databases to ensure comprehensive coverage of relevant studies. The databases searched included PubMed, Web of Science, Scopus, and Google Scholar. Keywords used in the search included "Plasma cell granuloma," "inflammatory pseudo-tumor," "immunohistochemistry," "kappa expression," and "mesenchymal spindle cells." Boolean operators (AND/OR) were applied to refine search results, with terms combined as follows.

- Plasma cell granuloma AND inflammatory pseudo-tumor.
- Immunohistochemistry AND Plasma cell granuloma.
- Kappa expression AND mesenchymal spindle cells.
- Plasma cell granuloma AND Kappa expression.

Inclusion and Exclusion Criteria

- **Inclusion Criteria**
 - Studies published between 1952 and 2024.
 - Articles available in English.
 - Case reports, case series, systematic reviews, and observational studies.
 - Reports describing plasma cell granuloma with a primary focus on gingival involvement.
- **Exclusion Criteria**
 - Duplicate studies.
 - Articles not available in English.
 - Studies focusing on plasma cell granuloma in regions other than the oral cavity.
 - Cases with associated comorbidities, metabolic syndromes, or prior treatments such as chemotherapy, radiation, or steroid therapy.

Selection Process

The initial database search yielded a total of 140 articles. After removing duplicates and non-English articles, 96 studies remained. Titles and abstracts were screened independently by two reviewers to exclude irrelevant studies. In the next step, full-text articles were assessed for eligibility. Disagreements were resolved through discussion and consensus. Ultimately, 25 articles were included in this review.

Data Extraction and Analysis

A standardized data extraction form was used to collect information on the study design, demographic details, clinical presentation, diagnostic methods, histopathological findings, immunohistochemical results, and treatment modalities. The extracted data were cross-verified by two authors to ensure accuracy and minimize

bias. Findings were synthesized to provide a comprehensive understanding of plasma cell granuloma in the gingiva, with an emphasis on diagnostic challenges and differential diagnoses.

CASE PRESENTATION

A 35-year-old female patient reported to the Department of Periodontia & Community Dentistry, Dr. Z A Dental College, AMU Aligarh in early 2024, presenting with a primary complaint of gingival overgrowth in the lower anterior region for 1 month. Anamnestic details disclosed that the mass was first noticed nearly six weeks ago and had a tendency to bleed when irritated. The lesion was painless with no other relevant medical history. The patient reported slight or no discomfort but complained of profuse bleeding whenever she flosses. The patient sought dental treatment and underwent oral prophylaxis, which momentarily alleviated the swelling. Despite this, the swelling and bleeding persisted over time without fully resolving. Also, she did not give a history of any recent trauma.

During the intraoral examination, a solitary growth was observed on the buccal gingiva, between the left lateral incisor and the left mandibular canine (Fig 1A). The growth was clearly demarcated, elliptical, and attached directly to the surface, measuring 6 mm in width and 9 mm in length, extending through the interdental papilla space (Fig 1B). The color was erythematous to the surrounding mucosa. On palpation, the findings from the inspection were confirmed. The lesion was rigid, fixed to the underlying structures, and showed no tenderness, pulsation, fluctuation, or compressibility. Bleeding was triggered upon palpation. The lesion appeared localized to this area, with no similar growths or abnormalities detected in other regions of the oral cavity. Based on history and clinical findings, a provisional diagnosis of pyogenic granuloma was made till it was confirmed with a biopsy report.

Phase I periodontal therapy was done to remove all debris and microbial irritants. After 1 week of oral prophylaxis, tissue re-evaluation was performed to ensure a healthy and firm gingiva. The patient was informed in detail about the surgical procedure, and consent was taken for the excision of the mass. The patient underwent an excisional biopsy under local anesthesia with complete removal of the lesion and degranulation of the papillary tissues, followed by gingivoplasty in the same region. Excised tissue in 10% formalin was sent for histopathological examination (Fig 1C-D).

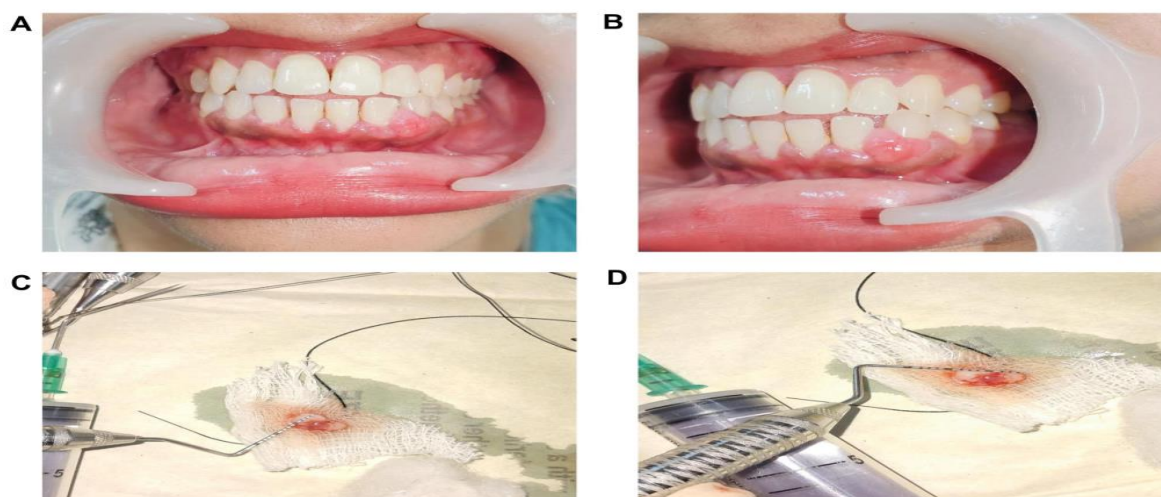


Figure 1: An intraoral picture showing gingival overgrowth between 32 and 33, along with papillary gingival enlargement in respect to 31,32, and 33. B. lateral view showing solitary overgrowth concerning 32 and 33. C. Excised mass showing 6mm in width, measured with UNC 15 probe. D. Excised mass measuring 9mm in length.

Radiographic imaging showed no major bony changes concerning teeth 33 and 34. No bony invasion, destruction, or osseous alterations were detected (Fig 2).



Figure 2: Normal radiographic appearance of the same site with no bony abnormalities or overgrowth.

All post-operative instructions were given, and the patient was recalled after 2- and 8-weeks intervals to check the healing of the operated area. Two weeks post-operatively, satisfactory healing was observed in the soft tissues between teeth 32 and 33, with no signs of gingival enlargement but with some residual inflammation (Fig 3 A-B). By eight weeks, the interdental papilla appeared more normal and significantly thinner. Probing with a UNC 15 mm probe indicated resistance at a depth of 4 mm with minimal bleeding.



Figure 3: Intraoperative view showing complete excision of the mass along with gingivoplasty in respect to 31, 32, and 33.

Microscopic examination with Hematoxylin and Eosin staining revealed stratified squamous epithelium overlying stroma densely infiltrated by lymphoplasmacytic cells (Fig 4 A). At higher magnification (40X), the section demonstrated a pronounced lymphocytic infiltrate interspersed among spindle-shaped stromal cells (Fig 4 B). Immunohistochemical staining showed positivity for smooth muscle actin (SMA) in the stromal cells, while

vimentin staining further confirmed the presence of mesenchymal spindle cells within the stroma (Fig 4 C-D). Notably, the lesion was negative for S100, helping to exclude other histiocytic or neural cell-associated conditions (Fig 4 E). These findings highlight a reactive stromal response characterized by lymphocytic and plasma cell infiltration supported by a mesenchymal stromal framework.

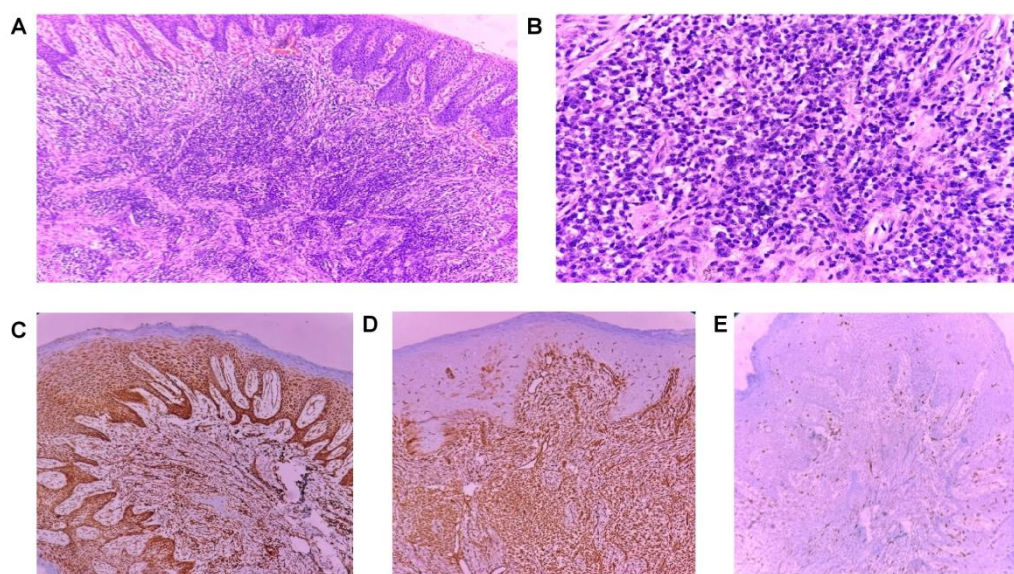


Figure 4: H&E staining shows lymphoplasmacytic infiltration in the stroma (A-B). Immunohistochemistry confirms mesenchymal spindle cells (SMA+, vimentin+) (C-D), while S100 negativity excludes neural/histiocytic origins (4E)

The immunohistochemical analysis reveals strong positivity for kappa light chains (4+) in the plasma cells, indicating a predominant kappa expression, while lambda light chains exhibit moderate positivity (2+). This disparity suggests a clonal proliferation of plasma cells, favoring the diagnosis of a kappa-restricted plasma cell granuloma (Fig 5 A-B). All the clinical and radiographic findings corresponded to the diagnosis of plasma cell granuloma. The findings of the case corroborate earlier studies and are discussed below.^[1-10]

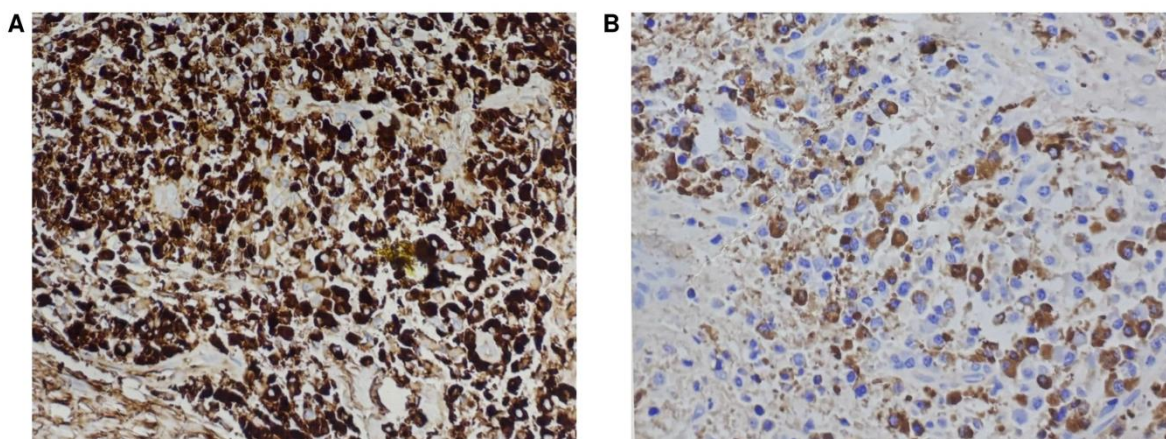


Figure 5: Strong kappa (4+) and moderate lambda (2+) positivity indicate kappa-restricted plasma cell granuloma (A-B).

DISCUSSION

Plasma cell granuloma (PCG) is a rare, reactive mass-like condition with an ambiguous etiology. It was first characterized by Zoon in 1952 as balanitis plasmacellularis, also known as plasma cell balanitis.^[5] The term "plasma cell granuloma" was introduced in the 1950s and 1960s. In 1968, it was first reported in the gingiva as a distinct entity.^[6,7] and in 1973, Bahadori and Liebow described it as an inflammatory pseudo-tumor.^[6] Literature identifies several alternative terms for this lesion like "myofibrohistiocytic proliferation", "inflammatory myofibroblastic tumor", and "xanthomatous pseudotumor".^[7,8] The most common location for PCG is the lungs, where it typically presents as a benign inflammatory lesion. However, it can also occur, though less frequently, in other areas such as the head and neck region. PCG has been described in various locations within the head and neck, such as the oral mucosa, submandibular area, temporal bone, tonsils, paranasal sinuses, tongue, and gingiva.^[9] It comprises less than 5% of extrapulmonary cases.^[10,11]

The orbit is the primary site for plasma cell granulomas in the head and neck, followed by the meninges, paranasal sinuses, infratemporal fossa, and soft tissue regions.^[11,12] The temporal bone, skull base, and facial nerve are rarely affected.^[10] The oral cavity can also be involved, with the gingiva being the most frequent site, showing equal prevalence in both the maxillary and mandibular gingiva.^[9-13] Generally, the alveolar mucosa remains unaffected. Patients may experience bleeding and report difficulty in maintaining proper dental hygiene. The potential for future bone loss depends on the cause and chronicity of the lesion.^[14-18]

Early oral lesions characterized by nonneoplastic plasma cell infiltration were historically referred to as atypical gingivostomatitis, idiopathic gingivostomatitis, and allergic gingivostomatitis. These terms were used to describe inflammatory conditions affecting the gums and oral mucosa. The lesions were thought to arise as a

secondary response to various external irritants, such as chewing gum, toothpaste, or other foreign substances introduced into the oral cavity. These reactions led to the inflammation, primarily affecting the gingival tissues, and were commonly linked to hypersensitivity reactions.^[9] Thus, the exact cause of plasma cell granuloma is often unclear, but it is generally regarded as an inflammatory response to infections, trauma, or foreign bodies.^[14] Although plasma cell granulomas are typically benign, they can mimic malignant conditions, become symptomatic due to their size or location, and present a diagnostic challenge for radiologists, pathologists, and clinicians who must carefully evaluate the lesion to avoid misdiagnosis. Though its recurrence is rare, it remains important to accurately identify the condition and provide the necessary treatment to prevent potential complications.^[15] Timely and appropriate care ensures better outcomes for patients and reduces the risk of unnecessary interventions. Immunohistochemistry is used to assess the clonality of the lesion. In reactive lesions, the kappa to lambda light chain ratio usually remains at 2: 1, but in malignant lesions, this ratio may exceed 10: 1 or be reversed to 1: 10.^[16,17]

PCG does not show a particular age preference.^[17-20] While they are usually solitary, multiple lesions may occur simultaneously.^[21-23] These lesions are typically asymptomatic and are often discovered accidentally during routine dental check-ups.^[10, 18, 24, 25] Based on the brief literature review conducted and the case presented here, it is emphasized that incidental discovery highlights the importance of regular dental check-ups for early detection.

CONCLUSION

Plasma cell granuloma is a lesion primarily identified through histological examination. Its precise cause remains uncertain, but it is thought to stem from a nonspecific inflammatory reaction to an unknown external agent. This case report is significant as it presents a rare case of plasma cell granuloma (PCG) of

the gingiva, contributing valuable insights for further research. Additionally, it serves to raise awareness among patients and dental professionals that such lesions, though uncommon, are benign and not cancerous. The present study holds some limitations, firstly, as this is a rare case, hence cannot be correlated with a broader population. Secondly, any cause-effect relationships cannot be established; hence, posing a problem with generalizability. Thirdly, a lack of statistical analysis may induce overinterpretation and bias. Early identification and treatment can lead to highly successful outcomes, ensuring effective management and alleviating concerns about malignancy.

Author Contributions

NS, SAA and ASH. wrote the manuscript. ASH and SR modified the manuscript and critically analyzed it, SAA. ASH and NS did the literature review. SAA conceived the idea and carried out the final editing and reviewing of the manuscript. All authors reviewed and approved the final manuscript.

Consent for Publication

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

The authors declare no conflict of interest, financial or otherwise.

Ethical statement

Authors declare that CARE guidelines have been followed for this case report.

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REFERENCES

1. Agrons GA, Rosado-de-Christenson ML, Kirejczyk WM, Conran RM, Stocker JT. Pulmonary inflammatory pseudotumor: radiologic features. *Radiology*, 1998; 206(2): 511–8. doi:10.1148/radiology.206.2.9457206.
2. Albert D, MR M, Kumar SP, Krishnan M. A rare case of hormone-induced plasma cell granuloma of the gingiva. *Cureus*, 2022; 14(4): e23897. doi:10.7759/cureus.23897.
3. Ajani MA, Fatunla EO, Onakpoma FA, Salami AA. Inflammatory pseudotumor: a 20-year single institutional experience. *Adv Biomed Res*, 2020; 9: 68. doi:10.4103/abr.abr_48_20.
4. Buccoliero AM, Caldarella A, Santucci M, Ammannati F, Mennonna P, Taddei A, et al. Plasma cell granuloma—an enigmatic lesion: description of an extensive intracranial case and review of the literature. *Arch Pathol Lab Med*, 2003; 127(4): e220–3. doi:10.5858/2003-127-e220-PCGEL.
5. Zoon JJ. Balanoposthite chronique circonscrite bénigne à plasmocytes [Chronic benign circumscribed plasmocytic balanoposthitis]. *Dermatologica*. 1952; 105(1): 1–7.
6. Bahadori M, Liebow AA. Plasma cell granulomas of the lung. *Cancer*. 1973; 31(1): 191–208.
7. Korlepara R, Guttikonda VR, Madala J, Taneeru S. Inflammatory myofibroblastic tumor of mandible: a rare case report and review of literature. *J Oral Maxillofac Pathol*, 2017; 21(1): 136–9. doi:10.4103/jomfp.JOMFP_122_15.
8. Albert D, MR M, Kumar SP, Krishnan M. A rare case of hormone-induced plasma cell granuloma of the gingiva. *Cureus*, 2022; 14(4): e23897. doi:10.7759/cureus.23897.
9. Chen D, Zhao H, Jia B, Yang R, Duan K. Gingival plasma cell granuloma: a case report. *Hua Xi Kou Qiang Yi Xue Za Zhi*, 2022; 40(1): 100–5. doi:10.7518/hxkq.2022.01.015.
10. Wang Y, Wang CH, Chen HC. Inflammatory pseudotumour of temporal bone in a multiple-comorbidity patient. *J Coll Physicians Surg Pak*, 2022; 32(8): S168–70. doi:10.29271/jcpsp.2022.Supp2.S168.
11. Ballesteros E, Osborne BM, Matsushima AY. Plasma cell granuloma of the oral cavity: a report of two cases and review of the literature. *Mod Pathol*. 1998; 11(1): 60–4.
12. Kilinc M, Ertürk İÖ, Uysal H, Birler K, Evrenkaya T, Akkalyoncu BB. Multiple plasma cell granuloma of the central nervous system: a unique case with brain and spinal cord involvement. Case report and review of literature. *Spinal Cord*, 2002; 40(4): 203–6.
13. Laco J, Kamarádová K, Mottl R, et al. Plasma cell granuloma of the oral cavity: a mucosal manifestation of immunoglobulin G4-related disease or a mimic? *Virchows Arch*, 2015; 466(3): 255–63.
14. Cohen MC, Kaschula ROC. Pulmonary pseudotumours: a review of 45 cases. *Thorax*. 1992; 47(11): 988–93.
15. Ortlip TE, Drake VE, Raghavan P, Papadimitriou JC, Porter NC, Eisenman DJ, et al. Inflammatory pseudotumor of the temporal bone: a case series. *Otol Neurotol*, 2017; 38(7): 1024–31. doi:10.1097/MAO.0000000000001465.
16. Chen D, Zhao H, Jia B, Yang R, Duan K. Gingival plasma cell granuloma: a case report. *Hua Xi Kou Qiang Yi Xue Za Zhi*, 2022; 40(1): 100–5. doi:10.7518/hxkq.2022.01.015.
17. Brage-Varela A, Boullosa PE, Otero JP, Rodríguez MB, Novoa ML, Monreal FA. Multifocal hepatic inflammatory pseudotumor: spontaneous regression

- in a diabetic patient. *Rev Esp Enferm Dig*, 2010; 102(8): 507–9.
18. Kanteti AP, Kelsey WP, Duarte EM. A rare case of plasma cell granuloma. *Case Rep Dent*, 2020; 2020: 8861918. doi:10.1155/2020/8861918.
 19. Albert D, M R M, Kumar SP, Krishnan M. A Rare Case of Hormone-Induced Plasma Cell Granuloma of the Gingiva. *Cureus*, 2022; 14(4): e23897. doi:10.7759/cureus.23897
 20. Lu W, Qi GG, Li XJ, He FM, Hong B. Gingival Plasma Cell Granuloma: A case Report of Multiple Lesions. *J Clin Pediatr Dent*, 2020; 44(6): 436-441. doi:10.17796/1053-4625-44.6.8
 21. Chen D, Zhao H, Jia B, Yang R, Duan K. Gingival plasma cell granuloma: a case report. *Hua Xi Kou Qiang Yi Xue Za Zhi*, 2022; 40(1): 100-105. doi:10.7518/hxkq.2022.01.015
 22. Lu W, Qi GG, Li XJ, He FM, Hong B. Gingival Plasma Cell Granuloma: A case Report of Multiple Lesions. *J Clin Pediatr Dent*, 2020; 44(6): 436-441. doi:10.17796/1053-4625-44.6.8
 23. Chen D, Zhao H, Jia B, Yang R, Duan K. Gingival plasma cell granuloma: a case report. *Hua Xi Kou Qiang Yi Xue Za Zhi*, 2022; 40(1): 100-105. doi:10.7518/hxkq.2022.01.015
 24. Sonar PR, Panchbhair AS. Pyogenic Granuloma in the Mandibular Anterior Gingiva: A Case Study. *Cureus*, 2024; 16(1): e52273. doi:10.7759/cureus.52273
 25. Jhingta PK, Mardi K, Sharma D, et al. An Enigmatic Clinical Presentation of Plasma Cell Granuloma of the Oral Cavity. *Contemp Clin Dent*, 2018; 9(1): 132-136. doi:10.4103/ccd.ccd_816_17