

# The Clinical Conundrum of Periapical Lesions: Granuloma or Cyst?

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**Abstract:-** Periapical lesions typically arise as a result of pulp disease, often due to untreated dental caries, secondary to trauma or periodontal disease. There is a cascade of pathologies one leading to another. Periapical lesion usually represents sequelae of pulpitis.<sup>[1]</sup> This case report documents a puzzling dental situation in a 20-year-old female. Initial clinical evaluation suggested an infected root stump, however, histopathological examination revealed a periapical granuloma. We highlight the systematic analysis and decision making process leading to the revised diagnosis, underscoring the importance of integrated clinical and histopathological assessment in resolving complex dental dilemmas.

**Keywords:-** Case Report, Periapical Abscess, Periapical Cyst, Periapical Granuloma, Periapical Lesions

## I. INTRODUCTION

Periapical lesions are common complications arising from pulp necrosis, often associated with dental caries or trauma. Among these lesions, periapical cysts and granulomas are significant, differing in histopathology, and clinical implications. Periapical cysts, typically arises due to the epithelial cell proliferation in response to inflammation, with a characteristic well-defined radiolucent area surrounding the non-vital tooth apex. While generally benign, untreated cysts can expand, leading to local bone resorption and potential complications. In contrast, periapical granulomas are reactive inflammatory lesions resulting from chronic irritation at the apex of a tooth.<sup>[2]</sup> Clinically, granulomas may present with symptoms such as pain and swelling, and are often associated with non-vital teeth. Accurate diagnosis relies on clinical examination, radiographic imaging, and histopathological evaluation. Treatment typically involves endodontic therapy or tooth extraction, with periapical cysts often requiring enucleation for definitive management.

The periapical cyst exhibits the same clinical and radiographic features as the periapical granuloma (i.e., variably sized radiolucency at the apex of a nonvital tooth).<sup>[3]</sup> Understanding the distinction between periapical cysts and granulomas is crucial for effective diagnosis and treatment. A notable distinction exists in the treatment of periapical granulomas and cysts. Granulomas often respond favorably to non-surgical root canal therapy, whereas periapical cysts typically necessitate surgical intervention for optimal outcomes. Hence, is a must to distinguish one lesion from the other because of different treatment modalities for each.<sup>[4]</sup> Timely intervention can prevent complications and improve patient outcomes, emphasizing the importance of comprehensive oral health management.

## II. CASE REPORT

A 20-year-old female reported to the outpatient department of Oral Medicine and Radiology with the chief complaint of pain in the lower left back tooth region since 2 days, accompanied by swelling that had developed over the last day. The patient described the pain sudden in onset, continuous in nature, throbbing and radiating type, exacerbated upon mastication. There was no significant medical or dental history noted.

A solitary submandibular lymph node measuring approximately 1 cm x 1 cm was palpated near the angle of the mandible, which was tender, firm, and freely movable. On extra oral examination, diffuse swelling was observed on the left lower third of the face. Intraoral examination revealed, retained root stumps in relation to 36. Upon local examination, 36 revealed complete loss of crown structure and vestibular tenderness. Based on the clinical findings and examination results, a provisional diagnosis of infected root stumps was given.

The intraoral periapical radiograph in relation to 36 revealed a well-defined radiolucency measuring approximately 2.1cm\*1.8cm with absence of sclerotic border [Fig.1]. This radiographic appearance prompted a revision of

the clinical diagnosis from infected root stumps to infected periapical cyst. Extraction was done along with enucleation of the cyst.



Fig 1: Intraoral Periapical Radiograph of 36 Reveals Well Defined Radiolucency with Sclerotic Border below the Apices of 36

The cyst sample was then sent to department of Oral Pathology for histological examination. The tissue specimen was processed and stained with hematoxylin and eosin solution. The histological examination revealed stromal tissue with areas of hemorrhage and the presence of chronic inflammatory cells [Fig.2] correlating with the clinical features, a definitive diagnosis of periapical granuloma was given.

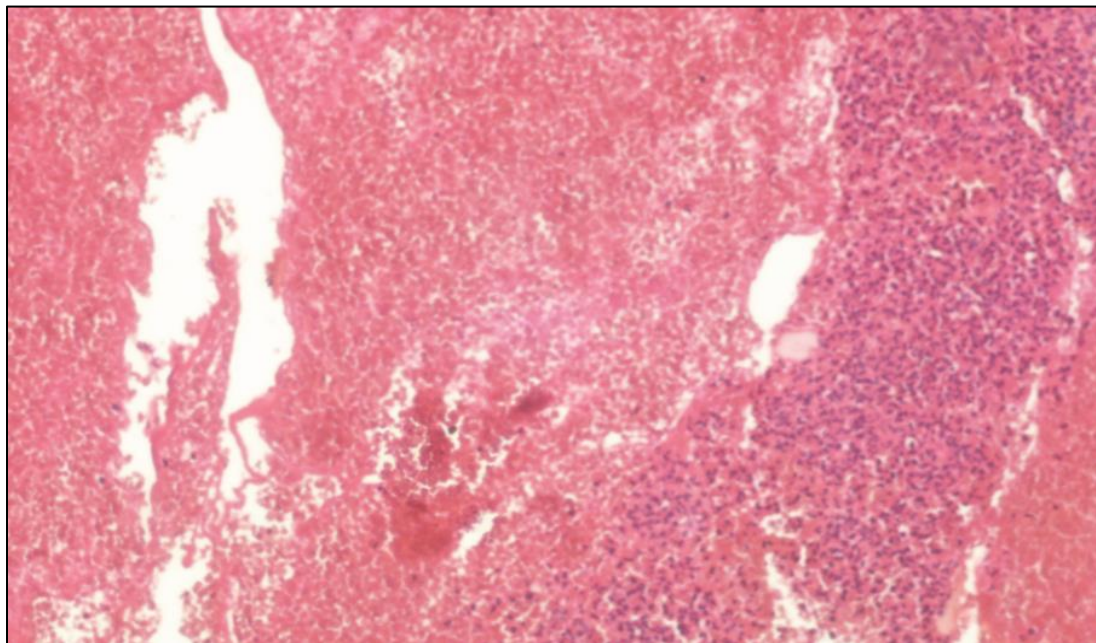


Fig 2: Histopathological Picture Showing Stromal Tissue with Areas of Hemorrhage and the Presence of Chronic Inflammatory Cells

### III. DISCUSSION

This case highlights the importance of comprehensive clinical and radiographic evaluation in the diagnosis of periapical lesions, as well as the need for appropriate treatment to manage potential complications associated with retained dental structures.

Radiographs serve as essential tools in dentistry, acting as “mirrors” that reflect the underlying conditions of the oral cavity. In this case, the eventual identification of a periapical granuloma through histopathology emphasizes that relying solely on radiographs can be misleading. The progression from a suspected periapical abscess to the eventual diagnosis of a periapical granuloma illustrates how untreated dental issues can evolve over time. Comprehensive dental care involves integrating clinical findings, radiographic data, and histopathological results, ensuring that practitioners can accurately diagnose and effectively treat conditions, ultimately improving patient outcomes.

Moreover, this case highlights the necessity for patients to seek dental care promptly when experiencing symptoms such as pain or swelling. Early intervention not only mitigates the potential for severe complications but also supports better long-term oral health outcomes. Overall, it reinforces the idea that proactive dental care is essential for maintaining oral health and preventing the escalation of dental diseases.

### REFERENCES

- [1]. Syed Ismail, Prabu Mahin<sup>1</sup>; Apoorva, K<sup>2</sup>; Manasa, N<sup>2</sup>; Rama Krishna, R<sup>2</sup>; Bhowmick, Siddhartha<sup>3</sup>; Jain, Shilpa<sup>4</sup>. Clinical, radiographic, and histological findings of chronic inflammatory periapical lesions – A clinical study. *Journal of Family Medicine and Primary Care* 9(1):p 235-238, January 2020. | DOI: 10.4103/jfmpe.jfmpe\_715\_19
- [2]. Alzahrani O, Komo H, Howait M. Healing and Spontaneous Realignment of Displaced Roots With Periapical Granuloma After Microsurgical Endodontic Treatment (Three Years' Follow-up): A Case Report. *Cureus*. 2024 Jan 10;16(1):e52020. doi: 10.7759/cureus.52020. PMID: 38205085; PMCID: PMC10777889.
- [3]. Brad W. Neville, Douglas D. Damm, Carl M. Allen, Angela C. Chi, 3 - Pulp and Periapical Disease, Editor(s): Brad W. Neville, Douglas D. Damm, Carl M. Allen, Angela C. Chi, *Color Atlas of Oral and Maxillofacial Diseases*, Elsevier, 2019, Pages 79-92, ISBN 9780323552257
- [4]. RamanPreet Bhullar Kaur, Amandeep Bhullar, Shreenivas Vanaki, R.S. Puranik, M. Sudhakara, Mamta Kamat, A comparative histopathological & bacteriological insight into periapical lesions: An analysis of 62 lesions from north Karnataka, *Indian Journal of Dentistry*, Volume 4, Issue 4, 2013, Pages 200-206, ISSN 0975-962X,
- [5]. 5 Ingle JJ, et al. (2019). *Ingle's Endodontics*. 7th ed. Chapter 14: Periapical Lesions
- [6]. Parameswaran, A. Grossman's endodontic practice - 14th edition. *Endodontology* 33(2):p 118, Apr–Jun 2021. | DOI: 10.4103/0970-7212.318141
- [7]. Rajendran, R & Sundharam, Sivapatha. (2006). *Shafer's Text Book of Oral Pathology*.