



BEYOND RADIOGRAPHS:

DETECTING EARLY ENDODONTIC PATHOLOGY WITH QPD



Early endodontic diagnosis is often a challenge. Patients may present with symptoms, but radiographs don't always show a clear lesion of endodontic origin (LEO), especially in the early stages. By the time a radiolucency becomes visible, tissue changes have already progressed. **Contd... (Page 2)**

NON-SURGICAL MANAGEMENT OF A RADICULAR CYST:

A CASE OVERVIEW

A 24-year-old male patient presented to the clinic with a history of dental trauma

approximately 10 years ago. The patient reported no immediate intervention following the trauma but had recently noticed discomfort and mild swelling in the upper anterior region. Clinical examination, along with CBCT imaging, revealed a **well-defined unilocular radiolucency in the maxillary anterior region**, suggestive of a **radicular cyst**.

Contd... (Page 3)

CASE REPORT:

Gingival Polyp Associated with Deep Dentinal Caries & Root Resorption in Mandibular Right Second Molar (47)

A patient presented with a chief complaint of pain, discomfort, & persistent food lodgment in the lower right posterior region.

Clinical Findings:

Clinical examination revealed a grossly decayed mandibular right second molar (47) associated with a prominent exophytic soft tissue growth arising from the carious cavity. **Contd... (Page 3)**

SINGLE VS MULTIPLE VISIT RCT: DOES IT AFFECT POST-OPERATIVE PAIN?

One of the most common clinical questions in endodontics is still a very practical one:

Should I complete the root canal in one visit or multiple visits? Will it change post-operative pain?

A recent umbrella review synthesizes evidence from multiple systematic reviews to provide a clearer examination of this question.

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Beyond Radiographs: Detecting Early Endodontic Pathology with QPD



Early endodontic diagnosis is often a challenge. Patients may present with symptoms, but radiographs don't always show a clear lesion of endodontic origin (LEO), especially in the early stages. By the time a radiolucency becomes visible, tissue changes have already progressed.

A recent study looked at whether quantitative percussion diagnostics (QPD) can detect these changes earlier, specifically by identifying damage in the periodontal ligament (PDL) associated with endodontic pathology.

We know that pulpal infection does not start as a radiographic lesion. It begins with biological changes in the PDL and surrounding tissues. The limitation is that most of our routine diagnostic tools — radiographs, CBCT, and sensibility tests — either detect changes late or rely on subjective interpretation.

QPD approaches this differently. It evaluates the mechanical behavior of the tooth under percussion, rather than relying on visual or radiographic changes.

What the Study Did?

The study evaluated a mandibular first molar with a confirmed apical LEO using: Clinical examination, radiographs, and CBCT, quantitative percussion diagnostics

To better understand the findings, the same tooth was also modeled using finite element analysis (FEA). The model simulated changes in the PDL by reducing its mechanical properties to reflect tissue damage.

What Was Observed

QPD produces an energy return graph (ERG), which reflects how the tooth responds to percussion.

A healthy tooth shows a single, smooth peak. A tooth with internal structural changes shows multiple peaks, indicating internal mobility.

In this study:

The tooth with an apical LEO showed a distinct multipeak pattern. There was a reduction in the second peak amplitude,

suggesting altered PDL behavior. The FEA model closely replicated these findings when the PDL stiffness was reduced.

This correlation between clinical QPD data and the simulated model strengthens the interpretation that the changes detected were due to PDL damage associated with the lesion.

The key finding is not just that QPD detects a difference, but what it is detecting.

The altered signal appears to reflect oscillation within the damaged PDL, indicating loss of normal structural integrity. The study suggests that as the PDL weakens, its mechanical response changes — and QPD is able to capture that.

Clinical Relevance

From a chairside perspective, this has practical implications:

- Early endodontic lesions may be present before radiographic visibility.
- PDL damage may be one of the earliest detectable changes.
- A quick percussion-based test could provide objective data on internal tooth integrity.

The study also suggests that QPD testing can be performed quickly — within seconds per tooth — making it feasible as an adjunct in routine diagnosis.

This is not a replacement for radiographs or clinical testing. But it introduces a different dimension — mechanical diagnostics.

In cases where:

- Symptoms don't match radiographic findings.
- Early endodontic disease is suspected.
- There is uncertainty in diagnosis.

Having an objective tool that detects internal mobility changes may help in decision-making.

The important takeaway is not that QPD replaces current methods, but that it may help detect changes earlier in the disease process.

Because by the time we see a lesion radiographically, the disease has already progressed.

If we can identify PDL changes sooner, it may allow earlier intervention — and potentially better outcomes.

That's where this study adds value.

Single vs Multiple Visit RCT: Does It Affect Post-Operative Pain?

One of the most common clinical questions in endodontics is still a very practical one:

Should I complete the root canal in one visit or multiple visits, and will it change post-operative pain?

A recent umbrella review synthesizes evidence from multiple systematic reviews to provide a clearer examination of this question.

What Was Evaluated

The review included 12 systematic reviews comparing single-visit and multiple-visit root canal treatment in permanent teeth.

Post-operative pain was assessed in most studies using:

- Visual analogue scales (VAS)
- Numeric rating scales (NRS)

Some studies also looked at pain incidence and flare-ups, although definitions and reporting of these outcomes varied significantly.

The methodological quality of the included reviews was assessed using established tools (AMSTAR 2 and ROBIS), and overlap between primary studies was also considered.

What the Evidence Shows

Across the higher-quality reviews, the findings were consistent:

- There was no clear or clinically meaningful difference in post-operative pain between single-visit and multiple-visit root canal treatment.
- This applied across different time intervals and outcome measures.
- Flare-up data were less consistent, mainly because of variability in how flare-ups were defined and reported across studies.

Interpreting This Clinically

From a chairside perspective, the takeaway is straightforward.

If the concern is post-operative pain alone, current evidence does not strongly support choosing one protocol over the other.

In other words:

Completing treatment in a single visit does not appear to increase pain. Spacing treatment over multiple visits does not appear to reduce it in a clinically significant way.



The review also highlights some limitations:

- Variability in how pain was measured
- Differences in follow-up time points
- Inconsistent definitions of flare-ups
- Overlap of the same primary studies across multiple reviews

These factors reduce the certainty of the conclusions, even though the overall direction of evidence remains similar.

What This Means for Practice

Since post-operative pain does not appear to differ meaningfully between the two approaches, the decision can be guided by other clinical factors:

- Case complexity
- Presence of infection or exudate
- Patient symptoms

- Time and scheduling considerations
- Patient preference

For example, a straightforward vital case may be suitable for a single visit, while a complex infected case may still benefit from multiple visits, depending on clinical judgment.

The single-visit vs multiple-visit debate has been ongoing for years. This review suggests that, at least in terms of post-operative pain, the difference may not be as significant as once thought.

The focus, therefore, shifts back to fundamentals — diagnosis, case selection, and execution.

Because in endodontics, outcomes are influenced less by the number of visits and more by how well the treatment is performed.

CASE REPORT: GINGIVAL POLYP ASSOCIATED WITH DEEP DENTINAL CARIES AND ROOT RESORPTION IN MANDIBULAR RIGHT SECOND MOLAR (47)

A patient presented with a chief complaint of pain, discomfort, and persistent food lodgment in the lower right posterior region.

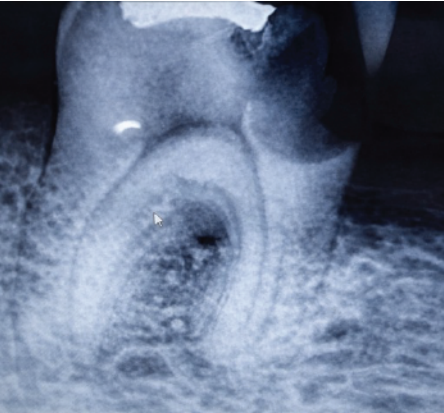
Clinical Findings:

- Clinical examination revealed a grossly decayed mandibular right second molar (47) associated with a prominent exophytic soft tissue growth arising from the carious cavity. The lesion measured approximately >14 mm in its greatest dimension, exhibiting a reddish-pink appearance with a soft to firm consistency and a tendency to bleed on manipulation. The involved tooth demonstrated extensive crown destruction due to deep dentinal caries.



Radiographic Findings

Radiographic evaluation revealed significant loss of coronal tooth structure along with evidence of root resorption, rendering the tooth non-restorable.



Diagnosis

Based on clinical and radiographic findings, a provisional diagnosis of gingival polyp (reactive hyperplastic lesion) associated with chronic irritation from deep caries was established.

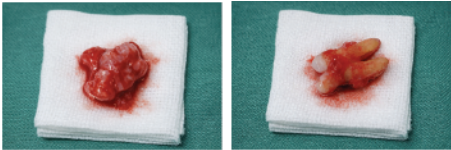
Treatment Plan

The treatment plan included extraction of the affected tooth (47) along with

complete excision of the associated soft tissue lesion.

Procedure

Under local anesthesia, atraumatic extraction was performed, followed by surgical excision of the polypoidal tissue. Thorough curettage and irrigation of the socket were carried out to eliminate residual granulation tissue and minimize recurrence. Hemostasis was achieved, and post-operative instructions were given.



Histopathological Consideration

The excised tissue was consistent with an inflammatory hyperplastic lesion, suggestive of gingival polyp secondary to chronic irritation and infection.

Outcome and Follow-up

Healing was uneventful, with satisfactory soft tissue response observed during follow-up.

Conclusion

This case highlights the clinical significance of early intervention in deep carious lesions to prevent secondary reactive soft tissue proliferations. It also emphasizes the importance of comprehensive management involving both removal of the etiological factor and surgical excision of associated pathology to achieve optimal clinical outcomes.

Dr. Harsh Shah, BDS

Harsh Dental Clinic,
Ahmedabad, Gujarat



Dr. Harsh Shah is a dental surgeon focused on minimally invasive dentistry, precise diagnosis, and actively documenting clinical cases for academic purposes.

NON-SURGICAL MANAGEMENT OF A RADICULAR CYST: A CASE OVERVIEW



OPG of the patient showing radicular cyst involving 11 and 12.

What is a Radicular Cyst?

A radicular cyst is the most common odontogenic cyst, usually arising from chronic inflammation following pulp necrosis. It typically develops at the apex of a non-vital tooth due to stimulation of epithelial cell rests of Malassez. Radiographically, it appears to be a well-circumscribed radiolucency associated with the root apex.

Non-Surgical vs Surgical Endodontics

Non-surgical endodontic treatment (root canal therapy) focuses on eliminating infection from the root canal system and promoting natural healing of periapical tissues. It involves cleaning, shaping, disinfecting, and sealing the canal.

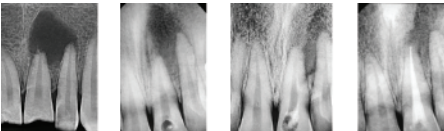
Surgical endodontics, on the other hand, is considered when non-surgical methods fail or are not feasible. It includes procedures like apicoectomy (root-end resection), cyst enucleation, or periapical surgery to directly remove pathological tissues.

In many cases, especially with radicular cysts, non-surgical management alone can lead to complete healing, avoiding invasive surgical intervention.

Treatment Procedure

Following diagnosis, access opening was performed under aseptic conditions. Thorough biomechanical preparation was carried out using standard endodontic protocols. Irrigation was done using sodium hypochlorite for its antimicrobial and tissue-dissolving properties, along with EDTA to remove the smear layer and enhance canal cleanliness.

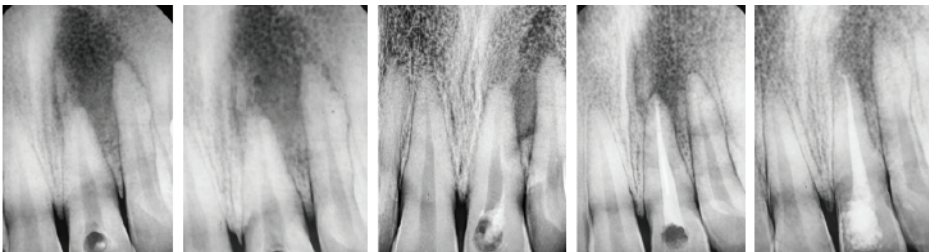
Given the size and nature of the lesion, an intracanal medicament approach was adopted. Initially, triple antibiotic paste (TAP) was placed to achieve deep disinfection. This was followed by the placement of calcium hydroxide paste, which was replaced at intervals of 10 days. Calcium hydroxide plays a crucial role due to its high pH, antibacterial action, & ability to promote hard tissue formation & healing.



Outcome and Healing

Over time, **progressive radiographic evaluation** showed a gradual reduction in the size of the lesion, indicating successful healing. The canal was obturated using **gutta-percha & a resin-based sealer** once it was confirmed to be dry & infection-free.

Follow-up radiographs demonstrated **bone regeneration and resolution of the radiolucency**, confirming the success of non-surgical management.



June 2025 with lesion July 2025 with improvement August 2025 - Resolving November 2025 - Obturation December - Followup

Conclusion

This case highlights the effectiveness of **non-surgical endodontic therapy** in managing large periapical lesions such as radicular cysts. With proper diagnosis, meticulous disinfection, and the use of intracanal medicaments, even extensive lesions can heal without surgical intervention.

Non-surgical approaches should always be considered as the **first line of treatment**, reserving surgical options only when necessary.

Dr. Sumaiya Hiroli BDS

Chief dentist,
Hiroli dental clinic Solapur



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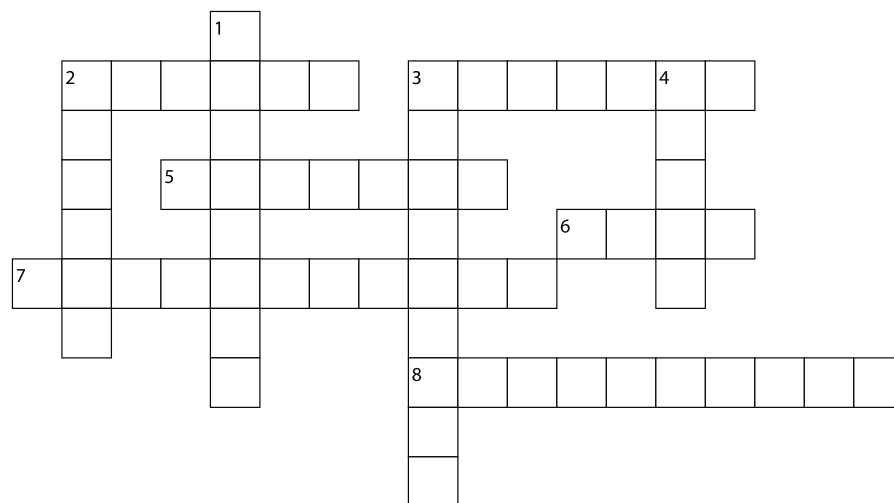


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DENTAL CROSSWORD



Across

2. – Initial irrigant in acute pulpal abscess
3. – Gum boil that drains infection
5. – Tooth structure band providing crown support
6. – Vital organ of the tooth
7. – Cyst associated with an impacted tooth
8. – Final step of root canal treatment

Down

1. – Radiograph showing crowns of upper and lower teeth
2. – Material that seals gaps in canal filling
3. – Partial pulp removal when radicular pulp is healthy
4. – Radiographic method to determine working length

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