

Multident Nano-Silver Hydrogel as an Intracanal Adjunct in the Management of Chronic Apical Periodontitis with Sinus Tract: A Case Report

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Profile

Dr. Ashish Mathur is the owner and chief consultant at **Noble Dental Clinic, Udaipur**, where he has been practising general and restorative dentistry since 2012. He holds a Fellowship in Endodontics and Cosmetology, and his clinical focus centres on conservative, tooth-preserving root canal therapy and aesthetic restorative rehabilitation. He follows a conservative, evidence-based approach to endodontic management, prioritising preservation of the natural tooth over extraction wherever a favourable prognosis exists, and is an early adopter of **Nano-Silver Hydrogel** as an adjunct in the disinfection and healing of periapical lesions with associated sinus tracts.



Abstract

Chronic apical periodontitis with an associated sinus tract presents a diagnostic and therapeutic challenge, requiring effective disinfection of the root canal system to achieve resolution of the periapical lesion and closure of the sinus. This report presents a case managed at Noble Dental Clinic, Udaipur, in which a maxillary right first molar with secondary caries, pulpal necrosis, and a draining palatal sinus was treated with conventional root canal therapy. Multident Nano-Silver Hydrogel was used as an intracanal closed-dressing adjunct following biomechanical preparation. At the 10-day review, the sinus tract had completely healed with no residual signs or symptoms, permitting obturation and definitive crown restoration. The patient remained entirely asymptomatic at the one-month recall, highlighting the value of nano-silver hydrogel as an intracanal medicament in accelerating resolution of periapical sinus tracts during root canal treatment.





Clinical Background /

A persistent sinus tract in chronic apical periodontitis is maintained by intracanal infection, making thorough biomechanical preparation and effective inter-appointment disinfection essential for healing. Used as an intracanal closed dressing, Multident Nano-Silver Hydrogel provides sustained broad-spectrum antimicrobial and anti-inflammatory action, promoting rapid resolution of periapical infection, sinus tract closure, and uneventful healing before obturation.^{1,2}

Case Report

Chronic Apical Periodontitis with Palatal Sinus w.r.t. 16

Patient: Adult / Male, 70 years

Chief Complaint: Intermittent pain while chewing from the right side of the jaw for the past few months. A few days prior to presentation, the patient also noticed a small nodular swelling on the palatal aspect.

Relevant History: The patient had undergone a restoration (filling) in the same region approximately two years earlier. He is on medication for hypertension; there is no other significant systemic illness and no known drug allergies.



Oral Examination & Investigations /

On examination, a Class II restoration was present w.r.t. 16, with secondary caries evident beneath the restoration margins. The tooth was non-responsive to hot and cold stimuli, and a draining sinus tract was noted along the palatal mucosa w.r.t. 16, positive on tracing. Percussion tenderness was mild but positive. A retained, non-restorable root stump was present w.r.t. 17. IOPA radiography w.r.t. 16 revealed a periapical radiolucency consistent with chronic apical periodontitis.

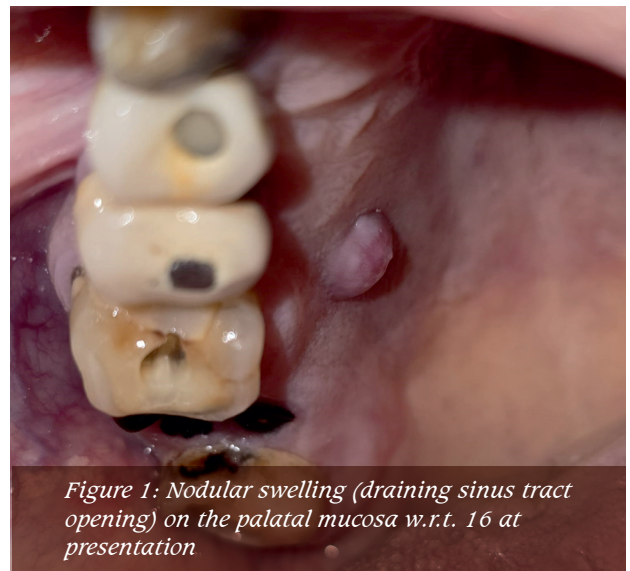


Figure 1: Nodular swelling (draining sinus tract opening) on the palatal mucosa w.r.t. 16 at presentation

Provisional Diagnosis: Chronic apical periodontitis w.r.t. 16, accompanied by a draining palatal sinus tract.

Treatment Plan: Root canal treatment (RCT) w.r.t. 16 and extraction w.r.t. 17 were advised. The patient declined extraction of the root stump at this visit and opted to proceed with RCT w.r.t. 16 only.

• Treatment Protocol •

Day 1 (4.6.26): Root canal access opening performed w.r.t. 16. Antibiotic cover with Amoxicillin and Clavulanic Acid 625 combination started, twice daily for 5 days.

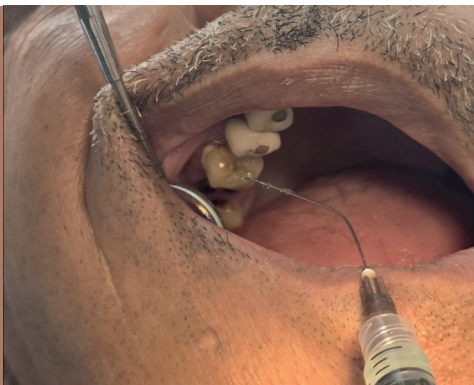
Day 2 (5.6.26): Bio-mechanical preparation (BMP) w.r.t. 16 completed. Closed dressing placed with Multident Nano-Silver Hydrogel (colloidal nano-silver gel) as an intracanal medicament within the pulp chamber and canal space. Patient recalled after 10 days.



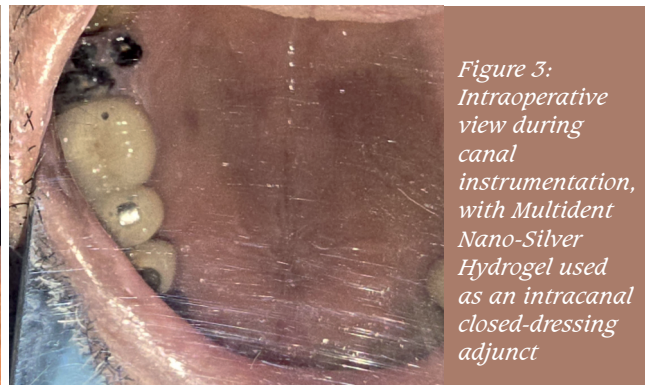
Multident Nano-Silver Hydrogel Application

- ✓ Placed as an intracanal closed dressing after biomechanical preparation and left for 10 days to provide sustained antimicrobial action.
- ✓ Provided anti-inflammatory support, promoting rapid periapical healing and closure of the draining sinus tract.
- ✓ Systemic antibiotics and oral hygiene instructions were given to support healing during the closed-dressing phase.

*Figure 2:
Administration
of Multident
Nano-Silver
Hydrogel
(colloidal nano-
silver gel) as
an intracanal
medicament*



*Figure 3:
Intraoperative
view during
canal
instrumentation,
with Multident
Nano-Silver
Hydrogel used
as an intracanal
closed-dressing
adjunct*



• Follow-Up & Outcomes •



*Figure 4: Cemented PFM crown w.r.t.
16 with completely healed palatal
mucosa at recall, confirming
resolution of the sinus tract*

10-Day Review (15.6.26): No signs or symptoms associated w.r.t. 16. Tenderness on percussion negative. Sinus tract completely healed. Obturation w.r.t. 16 performed, and an impression for a PFM crown was taken.

17.6.26: Cementation of the PFM crown w.r.t. 16 completed. Patient recalled after 2 weeks.

Recall (15.7.26): Patient returned for the recall appointment with no complaint of discomfort while chewing. Patient reported as totally asymptomatic, confirming stable resolution of the periapical lesion and healthy healed mucosa.

Discussion

This case demonstrates the value of Multident Nano-Silver Hydrogel as an intracanal closed-dressing adjunct after biomechanical preparation in chronic apical periodontitis with a draining sinus tract. Since persistent intracanal infection sustains the sinus tract and systemic antibiotics have limited canal penetration, Multident provided sustained antimicrobial activity directly within the root canal system during the inter-appointment period.¹ Its anti-inflammatory action further supported resolution of periapical inflammation and sinus tract closure.² Complete healing within 10 days-earlier than the typical 2–4 week healing period-highlights the effectiveness, ease of use, and good patient tolerance of this approach.

Key Takeaways

1. Rapid resolution of a chronic draining sinus tract within a single 10-day closed-dressing interval
2. Effective intracanal disinfection that indirectly promoted closure of the associated mucosal sinus tract
3. Predictable healing that allowed timely progression to obturation and definitive crown restoration, with high patient satisfaction

Comparison

Nano-silver hydrogel demonstrates a superior antimicrobial effect compared with calcium hydroxide paste and metronidazole gel used as conventional intracanal medicaments³. The sustained-release hydrogel formulation provides prolonged tissue contact and broader antimicrobial coverage than traditional intracanal dressings, making it particularly well suited to cases of chronic apical periodontitis complicated by an active sinus tract.



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References

1. Raghav P, Khara AK, Bisht S. Comparative evaluation of antimicrobial properties of silver nanoparticles and chlorhexidine mouthwashes. *J Clin Orthod Dent*. 2023. 2. Hernández-Sierra JF et al. Bactericidal activity of silver nanoparticles on oral biofilms related to periodontal disease. *Bioengineering*. 2022;14(6):311. 3. Siddiqi A, Zafar S. Scope of Silver Nanoparticles in Periodontal and Peri-Implant Wound Healing: A Systematic Review of Translation Research. *Essent Dent*. 2023;2(2):55-65.

Disclaimer:

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