Think Beyond Extraction

Saving Mandibular Molar with Endodontic Therapy and Hemisection

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ABSTRACT

A 45-year-old female patient presented with persistent pain in the left mandibular posterior region. Clinical and radiographic evaluation revealed pulpal involvement in teeth 35 and 36, leading to a diagnosis of symptomatic apical periodontitis. A conservative treatment plan comprising root canal therapy (RCT) for both teeth, followed by hemisection of the mesial root of 36 and prosthetic rehabilitation, was executed.

The approach successfully relieved symptoms, preserved natural tooth structure, and restored function. This case highlights the importance of strategic endodontic and surgical intervention in managing compromised molars while avoiding complete extraction.

INTRODUCTION

Preservation of natural dentition remains a primary goal in modern dentistry. Teeth with extensive carious involvement and pulpal pathology are often considered for extraction; however, advances in endodontic and surgical procedures allow for more conservative alternatives. Hemisection is one such procedure that enables the selective removal of a compromised root while retaining the rest of the tooth structure.

This case report demonstrates the successful management of symptomatic apical periodontitis in mandibular posterior teeth using a combined endodontic and surgical approach, emphasising the role of hemisection in maintaining function and arch integrity.

Case Presentation

A 45-year-old female patient reported with a chief complaint of pain in the left lower posterior teeth region for 15 days. The pain was gradual in onset, continuous, and of a dull, aching nature, aggravated by both heat and cold.

There was no history of nocturnal pain, swelling, or pus discharge, and no prior medication was taken.

Clinical examination revealed tenderness over teeth 35 and 36.

Radiographic evaluation (RVG) revealed:

- Radiolucency on the distal aspect of 35 and mesial aspect of 36 involving enamel, dentin, and pulp
- Furcation involvement in 36
- Periapical radiolucency associated with the mesial root of 36

Based on these findings, a final diagnosis of symptomatic apical periodontitis was established for 35 and 36.

Treatment Plan

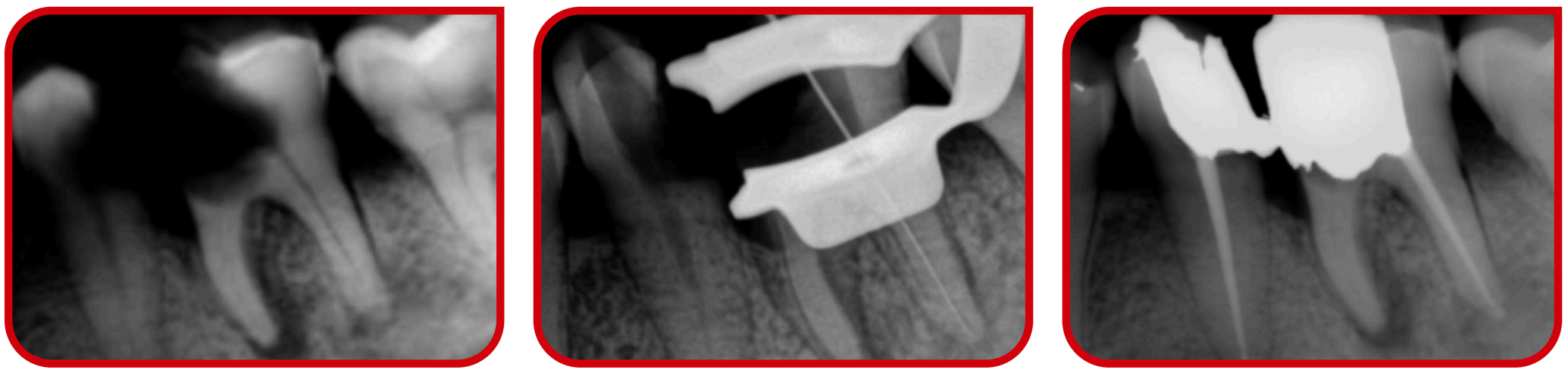
The primary objective was to eliminate infection, relieve pain, and preserve the affected teeth. So, the following plan was created:

- Root canal treatment of 35 and 36, which included disinfection with canal irrigants (2.5% sodium hypochlorite) and antibiotic coverage.
- Hemisection of the mesial root of 36
- Prosthetic rehabilitation with a fixed crown prosthesis on 35 and 36

Treatment Procedure

1. Under local anaesthesia, rubber dam isolation was achieved.

2. Root canal treatment of 35 and 36 was performed under rubber dam isolation. Biomechanical preparation was done with Protaper NEXT file X1 and X2, and obturation with 6% Gutta percha, 20 number, using the single-cone obturation technique with AH Plus sealer.



Preoperative Radiograph | Working Length Radiograph | Post Obturation Radiograph

Fig 1: Root canal treatment

3. Throughout the procedure, irrigation was performed using Dentsply Endo Activator.

4. Hemisection of the mesial root of 36 following completion of RCT

Fig 2: Hemisection of the Mesial Root of 36

Treatment Procedure

5. Crown preparation of 35 and the remaining portion of 36

6. A 3-unit metal crown prosthesis was luted with GIC Type 1 Luting cement

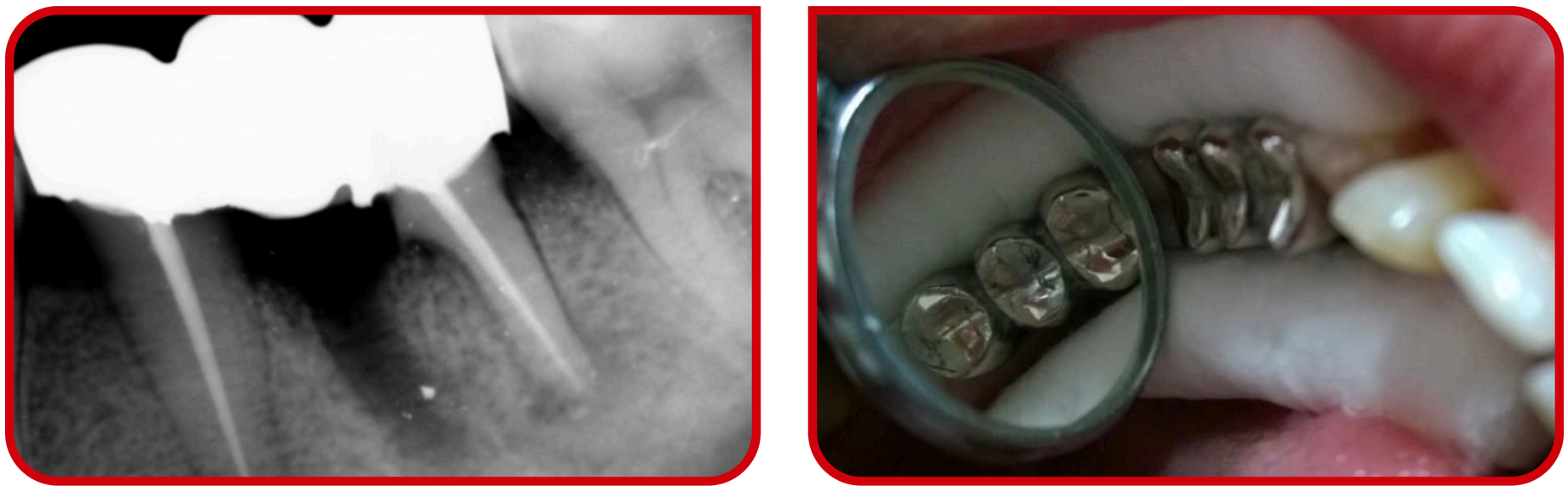


Fig 3: Final Fixed Prosthesis

Outcomes

Post-treatment, tooth 36 was successfully converted into a functional unit by retaining the distal root. The patient was reviewed after 7 days and 1 month, reporting complete relief of symptoms and satisfaction with the treatment.

Discussion

The treatment approach was guided by the need to preserve natural dentition while effectively managing infection. Root canal therapy addressed pulpal pathology in both teeth, eliminating the source of pain.

In tooth 36, the mesial root had a poor prognosis due to periapical pathology and furcation involvement, whereas the distal root remained healthy. Hemisection allowed selective removal of the compromised root, preserving alveolar bone and avoiding full extraction.

Subsequent prosthetic rehabilitation restored occlusal function and ensured long-term stability. This multidisciplinary approach highlights the effectiveness of conservative treatment strategies in complex posterior cases.

Key Learnings

- Comprehensive clinical and radiographic evaluation is critical for accurate diagnosis and treatment planning.
- Hemisection is a valuable, conservative alternative to extraction in multi-rooted teeth.
- Preservation of healthy tooth structure improves long-term prognosis and patient outcomes.
- Interdisciplinary treatment planning enhances functional and restorative success.
- Patient cooperation plays a key role in treatment success.

Further Care

- Maintaining oral hygiene using appropriate brushing technique, flossing and interdental brushes at home twice a day or after every meal by the patient.
- Patient should be recalled for follow-up after 7 days, 3 months, 6 months, 9 months, and 1 year to check for any bone loss or reinfection.

Conclusion

This case demonstrates that a well-planned combination of endodontic therapy and hemisection can successfully manage teeth with advanced pathology while preserving natural dentition. The approach effectively eliminated infection, relieved symptoms, and maintained functional integrity.

Hemisection, when performed in appropriately selected cases, serves as a predictable and conservative treatment modality. Coupled with proper prosthetic rehabilitation, it offers long-term clinical success and improved patient satisfaction, reinforcing the importance of tooth-preserving strategies in modern dental practice.

Declaration

I confirm that informed patient consent has been obtained for sharing case details and clinical images.

For any case study–related queries, please contact Dr Arshia Baig at baig.arshia@gmail.com.