



Case Report: Removal of a Fractured Nickel-Titanium Instrument from a Left Lower Molar.

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ABSTRACT

This case report details the successful removal of a fractured nickel-titanium (NiTi) endodontic instrument from the root canal of a left lower molar in a 30-year-old female patient. The patient presented with mild, intermittent paresthesia in the lower lip, which intensified in the morning. This report highlights the challenges associated with the procedure and the use of an operating microscope for enhanced visualization.

Keywords: *fractured instrument, nickel-titanium, endodontic treatment, operating microscope, case report.*

Introduction

Fractured endodontic instruments are a common complication in root canal therapy, often leading to treatment failure and ongoing patient discomfort. This case involves a patient referred by a colleague approximately four months after the initial incident of instrument fracture during endodontic therapy. The fractured instrument was located in the mesiobuccal canal of a left lower molar, extending 8 mm beyond the apex.

Case Presentation

The patient, a 30-year-old woman, was referred to our clinic due to persistent symptoms following her previous endodontic treatment. She reported sporadic tingling sensations in her lower lip, primarily exacerbated in the morning. Upon examination, the patient's medical history was unremarkable, and she was otherwise healthy.

To assess the extent of the fracture and plan for removal, we obtained periapical radiographs and a cone-beam computed tomography (CBCT) scan. The imaging revealed the fractured NiTi instrument lodged deep within the canal system, complicating its retrieval due to its position approximately 8 mm beyond the apical foramen.

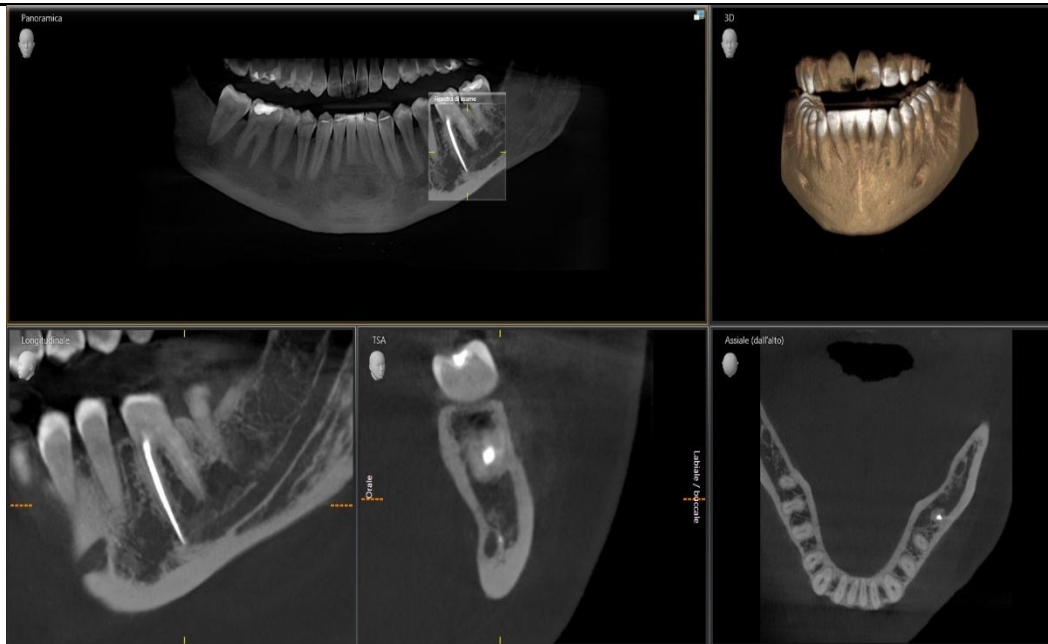


Fig1

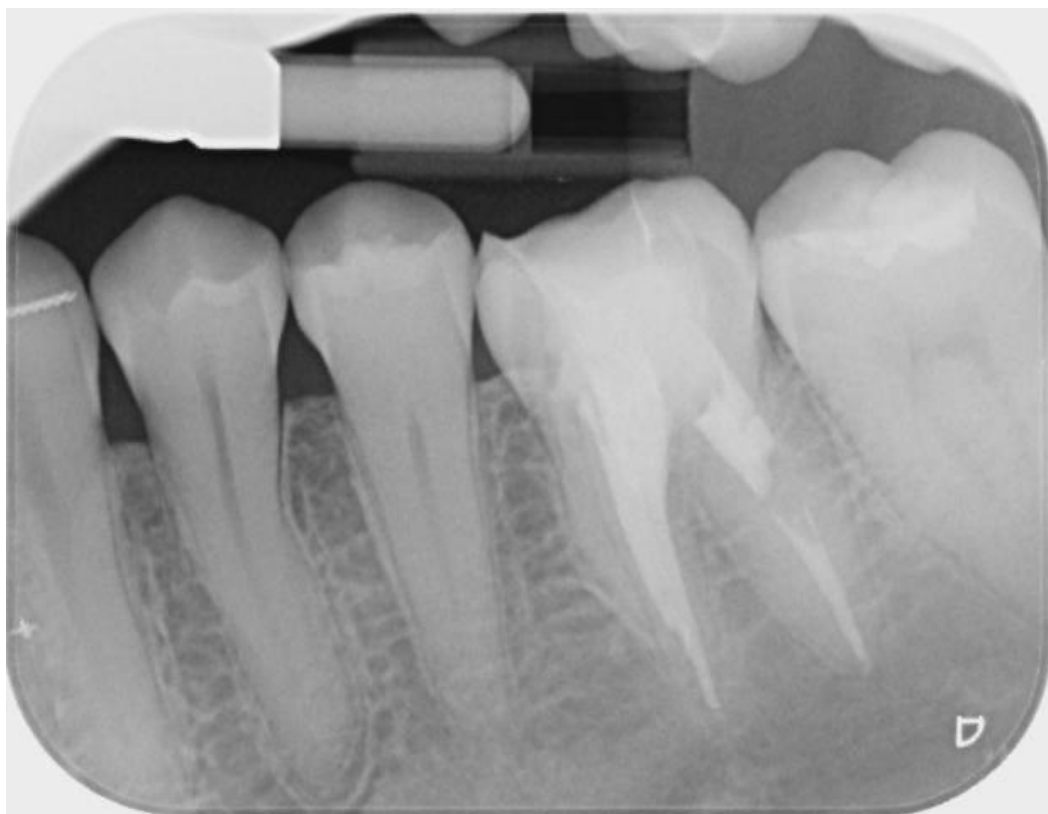


Fig 2



Fig 3

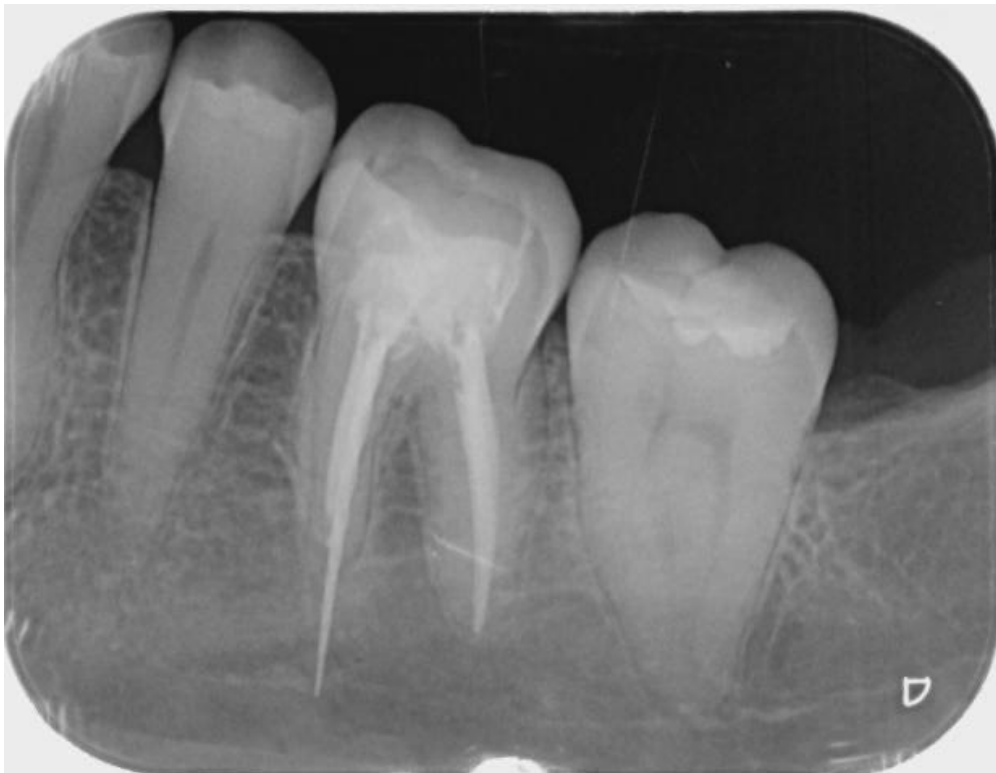


Fig 4

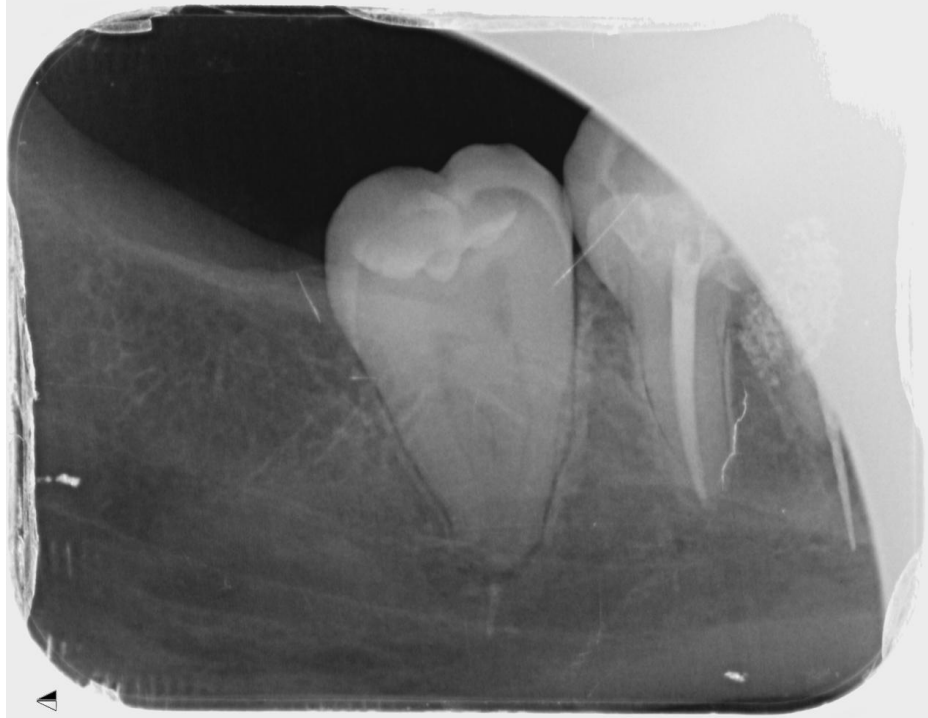


Fig 5

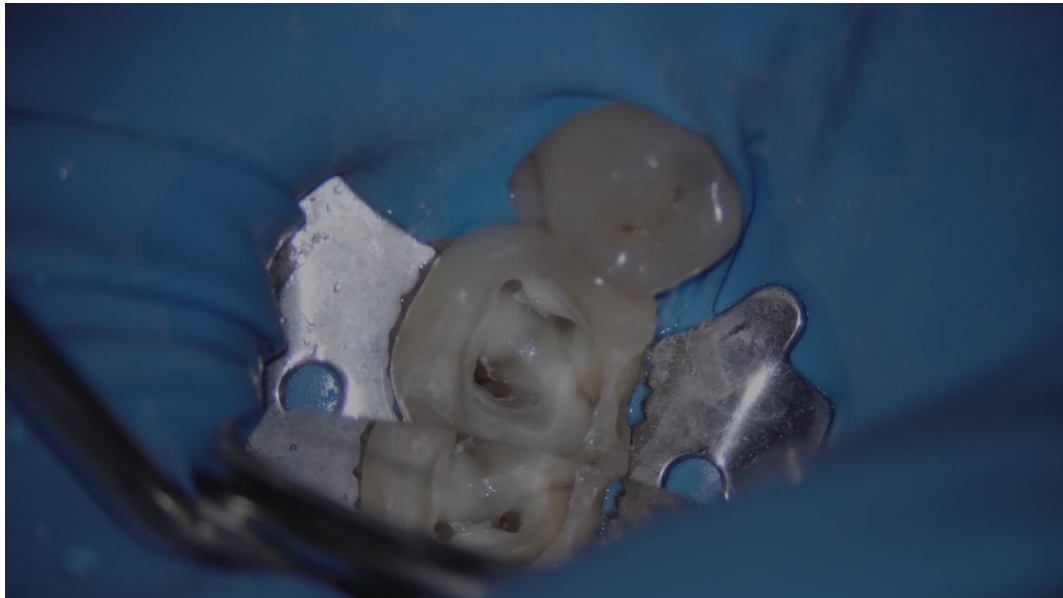


Fig 6



Fig 7

Surgical Procedure

After obtaining informed consent, we proceeded with the surgical intervention under local anesthesia. Utilizing an operating microscope, we aimed to enhance our visibility and precision during the procedure.

A rubber dam was placed to isolate the tooth, and the access cavity was refined to facilitate our approach to the fractured instrument. Using ultrasonic tips designed for endodontic retrieval, we carefully navigated the canal to engage the fractured piece.

Despite the challenging anatomy and the depth of the fracture, we successfully retrieved the instrument without any complications. The use of the microscope was invaluable in providing a clear view of the canal system and the surrounding structures.

Postoperative Care and Follow-Up

The patient was prescribed analgesics and instructed on postoperative care. A follow-up appointment was scheduled for one week later, during which she reported a significant reduction in paresthesia and overall discomfort. Radiographic evaluation confirmed the successful retrieval of the fractured instrument and the integrity of the root structure.

Discussion

The successful removal of fractured endodontic instruments requires careful planning, appropriate imaging, and advanced techniques. In this case, the use of CBCT provided critical three-dimensional insights into the complex anatomy of the tooth, allowing for a more strategic approach to the retrieval process.

Operating microscopes enhance visualization and precision, significantly improving the likelihood of successful outcomes in such challenging cases. The combination of thorough imaging and magnified visualization facilitates accurate navigation of the intricate canal system, reducing the risk of further complications.

Conclusion

This case demonstrates the importance of thorough diagnostic imaging and the benefits of using an operating microscope in the removal of fractured endodontic instruments. Successful intervention not only alleviated the patient's symptoms but also restored her confidence in dental care.

