

**BACKGROUND**

- Management of dento-alveolar trauma, often requires rigid fixation using mini plates and cortical screws.
- Vitality of pulps adjacent to these devices can be compromised by; damage to their blood supply or damage to apical vessels or tooth roots
- It is challenging to determine pulpal health in patients with these devices

**AIM**

To present an *unusual* case report depicting the complexity of treating a tooth associated with mandibular fracture managed by fixation.

**CASE REPORT**

**HISTORY**

- 19-year-old male patient
- History of severe spontaneous pain
- Currently asymptomatic.

**EXAMINATION**

- Large occlusal amalgams on LR6 & 7
- Intra-oral swelling apical to LR7 (Fig. 1).

**SPECIAL TESTS**

- Radiographs:
  - Periapical radiolucency surrounding apical third of LR7 with radiopaque miniplate (Fig 2.)
  - Gutta percha (GP) point placed in sinus showed sinus tracking towards LR7 and mesial portion of mini-plate (Fig 3.).
- Sensibility testing: Inconclusive and inconsistent.
- LR7 acutely TTP and swelling painful on palpation.

**SUPPORTING IMAGES**

*Written explicit consent obtained for clinical photography and sharing of images for educational purposes.*



Figure 1. pre-op clinical photograph LR7



Figure 2. pre-operative diagnostic radiograph



Figure 3. radiograph with GP point tracking sinus associated with tooth LR7



Figure 4. access cavity and canals located



Figure 5. and 6. Working-length radiographs depicting the difficulty of determining accurate working length readings due to positioning of mini-plate



Figure 8. Mid-fil radiograph



Figure 7. Clinical photograph of tooth #47 following obturation and cut-back

**DIAGNOSIS**

A diagnosis of *pulpal necrosis* with *chronic apical periodontitis* #47 was reached<sup>1</sup>.

**TREATMENT** – LR7 required root canal treatment and crown.

*Treatment completed over several visits, at beginning of each appointment consent was confirmed, local anesthesia delivered, achieved and rubber dam placed.*

- Restoration removed and access cavity initiated, orifices of the canals were located at angles to the junction of the walls and floor of the cavity<sup>2</sup>.
- 3 canals identified (ML, MB, D) and instrumented using a systematic anatomic approach<sup>2</sup> (Fig. 4.).
- Working length verification was difficult, therefore heavy reliance was placed on the EAL.
- Wave-one gold instrumentation completed in all 3 canals with primary file (25/.07).
- Copious 2.25% sodium hypochlorite irrigation employed throughout and canals obturated with matched GP
- A mid-fil radiograph was recorded, and GP points cut back (Fig. 6).

**REFERENCES**

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3. Chandler, N., Cathro, P. and Walton, R., 1996. Endodontic sequelae of miniplate bone fixation. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology*, [online] 81(4), pp.467-471.
4. Gordon, M. and Chandler, N., 2004. Electronic apex locators. *International Endodontic Journal*, 37(7), pp.425-437.
5. Patel, S., Brown, J., Pimentel, T., Kelly, R., Abella, F. and Durack, C., 2019. Cone beam computed tomography in Endodontics – a review of the literature. *International Endodontic Journal*.

**DISCUSSION**

The initial goal when treating teeth associated with mini-plates is to establish a correct **diagnosis**, often a reliance is placed on radiographic evidence.

This case study shows how mini plates interfere with accurate diagnosing, and for this reason more than one radiograph was evaluated as recommended by Chandler and Cathro<sup>3</sup> (Fig. 2. and 3.). Even several radiographs from various angles cannot always provide sufficient useful information<sup>3</sup> (Fig. 5 and 6.).

It appears likely that the problem was a result of the trauma and surgery 2 years previously, it is however impossible to determine if the; trauma, bone movement or screw placement, damaged the blood supply.

An EAL was used successfully however whilst using the EAL it was important to ensure all remaining amalgam restoration was removed, and to be aware that touching metal would cause a contradictory reading<sup>4</sup>. Perhaps highlighting a future in which all modern endodontics routinely use 3D imagery, CBCT<sup>5</sup>.

A concern raised was that if this patient required extraction of any of the right maxillary second molars, would the associated plate and screw cause difficulties? This would need assessed in secondary care with adequate imaging and assessment.

Further monitoring of this case will allow confirmation of treatment success; no pain or swelling, no presence of an apical abscess and reduction in periapical radiolucencies at 1-year follow-up.

**CONCLUSION**

It is important to recognise teeth which have associated history of trauma or surgery involving fixation. Thorough radiographic and clinical assessment is required to ensure an accurate correct diagnosis. Awareness of anatomic variations in these cases is key and careful inspection of radiographs with EAL readings is essential.