

clinical insight

Managing a deep carious lesion and non-surgical endodontic treatment of an UL7

DIAGNOSIS

UL7: Irreversible pulpitis with normal apical tissues



Figure 1: Preoperative long cone periapical radiograph of UL7

FOCUS

Patient level:

- Elderly patient
- Type II Diabetes Mellitus

Mouth level:

- Limited mouth opening

Tooth level:

- Deep distal margin
- Sclerosed canals
- Long palatal root

KEY QUESTIONS

Single visit vs multi visit: Theoretically we CAN complete this in a single visit, but the question is SHOULD we? We have multiple complicating factors at both a patient, mouth and tooth level, and consideration should be given to a two-visit approach to limit stress on both the patient and operator.

Does Type II Diabetes Mellitus affect treatment outcome? Yes, the evidence is clear from longitudinal studies that poorly controlled Type II DM increases the risk of treatment failure. Additionally, it increases the risk of severe acute infections, meaning that prompt and effective treatment is necessary.

Does endodontic disease affect Diabetes Mellitus? Maybe – there is increasing evidence of a bidirectional relationship in which untreated endodontic disease contributes to worsened glycaemic control via elevation of shared inflammatory markers.

CLINICAL PROTOCOL

A pragmatic and safe decision was made to stage this endodontic treatment into two separate visits.

Goals of visit 1:

1. Complete caries removal

2. Pre-endodontic treatment build-up
3. Completion of chemo mechanical preparation

Complete caries removal is a prerequisite to prevent leakage and reinfection of the root canal space between visits.

Pre-endo build up helps ensure stable apex locator readings and create a reservoir of hypochlorite which aids in effective debris removal and disinfection.

Completing chemo mechanical preparation in a single visit is important as it reduces the risk of interappointment flare ups, which we wish to avoid given the patient's age and medical history.

Following rubber dam isolation and complete caries removal, the distal wall was rebuilt with composite resin.

- 4 canals located: MB1, MB2, DB and P
- Chemo mechanical preparation was completed using the tooth saver sequence:

1. 8/10 D finders
2. 14/03 glidepath
3. 15/3-6% variable shaper
4. 20/04,25/04 and 30/04 finishers

Then all canals were finished on a 30/04 prep, with the exception of the MB2 canal which was completed to a 25/04.

Standard irrigation protocols were completed with 17% EDTA and 5.25% NaOCl using an irriflex syringe and ultrasonic agitation.

Notably the MB2 canal joined the MB1 canal in a 2:1 anatomy. A 27mm palatal root was noted.

The canals were dried, dressed with non-setting CaOH and the tooth temporised with GIC.

Goals of second visit:

- Repeat disinfection protocol
- Confirm apical gauging
- Complete obturation

Following reaccess, the CaOH was removed with a chelating agent (EDTA 17%) and ultrasonic activation.

Patency was reconfirmed and tugback established with matching 30/04 GP cones. The previous irrigation protocol was repeated to ensure effective disinfection.

Master cone radiographs:

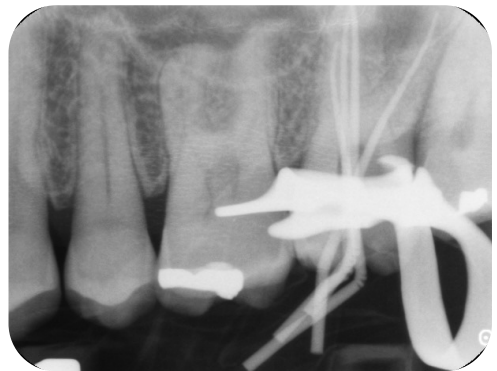


Figure 2: Master cone radiograph

Note that the apical area of the 27mm palatal root is not visualised. However, it nicely demonstrates the 2:1 anatomy of the MB root.

A second MC radiograph, without the MB and DB GP points, was taken at a deeper angle to capture the palatal root:



Figure 3: Master cone radiograph

After confirming satisfactory length on the GP cone try ins, the canals were dried and the UL7 obturated using a cold hydraulic condensation technique with One-Fil calcium silicate sealer.

Care should be taken not to pump or activate the sealer in cases with large pneumatized maxillary air sinuses, the low compliance environment risks the extrusion of sealer.

An orifice barrier of self-levelling flowable composite (SDR flow +) was placed and the access cavity restored with composite resin.

A post-operative radiograph was taken to confirm satisfactory obturation and to act as a baseline for treatment outcome assessment in 12 months' time.



Figure 4: Postoperative radiograph

EVO ENDO PERSPECTIVE

This case reinforces the importance of:

Patient-Mouth-Tooth analysis

The integration of a patient's general health into treatment planning

Awareness of the anatomical morphologies of the mesiobuccal root of maxillary molars

Safe obturation when in close proximity to vital structures

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