

# clinical insight

## Managing a Missed Calcified Distobuccal Canal in a UR7 Retreatment Case



### INTENTION

Before engaging in complex endodontic retreatment, the primary intention is to establish restorability, anatomical clarity, and completeness of canal management. High-quality endodontics begins coronally; without a restorable tooth, canal management becomes irrelevant.



Figure 1: Preoperative Long cone periapical radiograph UR7

In this case, the objectives were to:

- Remove the existing crown to allow direct assessment of the tooth
- Eliminate caries and compromised coronal structure
- Confirm restorability prior to retreatment
- Retreatment of existing located canals were indicated due to an inadequate coronal seal
- Identify and manage any missed canal anatomy using an anatomy-led approach

### FOCUS

What we need to do – clinical guidance

#### **1. Crown removal to expose residual tooth structure and true coronal anatomy**

Crown removal should be viewed as diagnostic and risk-reducing, not a complication. Existing restorations can obscure secondary caries, crack lines, core integrity, and true pulp chamber anatomy.

Crown removal allows:

- Visualisation of secondary caries and restorative defects
- Accurate assessment of remaining tooth structure
- Clear identification of the pulpal floor and canal anatomy

Treating through an existing crown risks masking restorability concerns and missed anatomy.

#### **2. Caries removal and restorability assessment**

All caries and compromised restorative material must be removed before endodontic decision-making.

This enables assessment of:

- Remaining sound dentine
- Presence or absence of cracks
- Ferrule potential
- Margin position relative to the biological width

Only once restorability is confirmed should retreatment proceed.

### **3. Systematic anatomical expectation**

A disciplined anatomical framework is essential when managing maxillary second molars.

Distobuccal (DB) canals are usually:

- More centrally placed than expected
- Smaller and can be obscured by dentine shelves

Use Krasner and Rankow (2004) laws of orifice location:

- Orifices lie at the junction of walls and floor
- Orifices are found at angles in the floor anatomy, not positioned randomly

Mesiobuccal second canal (MB2)

- Should be searched for routinely
- Located palatal to MB1 along the MB–palatal groove (Discussion to follow in future newsletter)

Classical anatomical studies by Vertucci (1984) demonstrated that maxillary second molars most commonly contain a single mesiobuccal canal (Type 1), however additional canal configurations are possible.

A routine, structured search for MB2 anatomy is therefore warranted, while recognising that its absence is anatomically possible. Knowing when to stop is as important as knowing where to look.

### **4. Access refinement to reveal the pulpal floor**

Calcified canals can be missed due to incomplete unroofing of the pulpal floor.

Access refinement should focus on:

- Removal of dentine shelves
- Visualisation of the pulpal floor
- Creating a clean, readable chamber outline

This step alone often reveals anatomical cues without aggressive exploration.

### **5. Visual interpretation over blind exploration**

In calcified cases, canal orifices may not be immediately visible. Localisation relies on:

- Subtle dentine colour variation
- Differences in surface texture
- Shadowing patterns under magnification

Visual cues consistently guide safe and targeted exploration more effectively than tactile searching alone.

### **6. Controlled ultrasonic troughing**

When required, ultrasonics should be used:

- Conservatively and anatomically
- With light brushing strokes and frequent reassessment

The objective is exposure, not excavation.

### **7. Early canal negotiation**

Once canal positions are confirmed:

- Negotiation should begin with pre-curved size 8 D Finders (personal preference, as I find they have greater resistance to buckling compared to standard K-files). Remember to always inspect your files for deformation and replace them if you want to avoid separation anxiety!
- Chelation (Liquid EDTA 17%) and watch-winding movements are preferred
- Rotary instrumentation should be deferred until a reproducible glide path is established

## EXECUTION

The existing crown was removed, followed by complete caries and restorative material removal, allowing confirmation of restorability and direct visualisation of the pulpal floor.

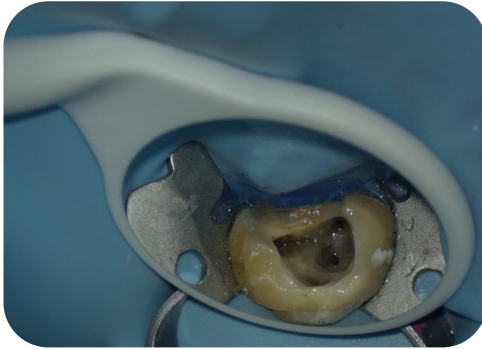


Figure 2. Pulp chamber anatomy following retreatment and canal identification

Clinical photograph demonstrating the pulpal floor following retreatment of the mesio-buccal and palatal canals. A systematic search for an MB2 canal was performed along the expected anatomical pathway; no MB2 was identified. The calcified distobuccal canal was located in its predictable position palatal and slightly distal to the MB canal, following controlled ultrasonic troughing and anatomical guidance.

Attention was then directed to the expected position of the distobuccal canal. Following access refinement and removal of dentine shelves, subtle anatomical cues guided conservative ultrasonic troughing. The calcified distobuccal canal was located and negotiated using a pre-curved size 8 D Finder hand file with EDTA 17% chelation until patency was achieved. The glide path was secured using a Hyflex EDM 15/03 Glide path file.

Once canal anatomy was fully secured and respected, standard shaping, irrigation, and obturation protocols were completed for all identified canals.

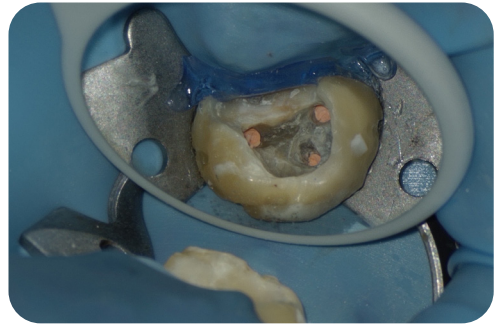


Figure 3. Post obturation

Post-obturation view of the UR7 demonstrating successful management of previously missed calcified distobuccal anatomy following access refinement and anatomy-driven retreatment.



Figure 4. Post operative long cone periapical following retreatment of UR7

## CLINICAL INSIGHT

Calcified canals are not found by chance — they are revealed by method.

Anatomy, vision, and restraint matter more than persistence.

## EVO ENDO PERSPECTIVE

This case reinforces the importance of:

- Early crown removal and restorability assessment
- Retreatment of existing canals where indicated
- Routine, disciplined MB2 evaluation
- Anatomy-led identification of additional canals
- Visual discipline and controlled execution

These principles reflect the Evo Endo philosophy of precision-led, anatomy-driven endodontics, where judgment precedes instrumentation.

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## REFERENCES

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