

# Case Report

## Endodontic retreatment of tooth 4.6

### Referral details

Female patient, 43 years old, was sent by her general dentist to retreat tooth 4.6

### Presenting complaint

The patient complains about strong, spontaneous pain on 4.6, exacerbated by cold or chewing on the tooth. Medications like AINS and painkillers were slowly getting ineffective, and the silence period was shorter and shorter. The first symptoms appeared around two weeks ago, growing and becoming unbearable.

### Examination

Extraoral – no visible inflammation, no abnormalities of facial symmetry

Intraoral – no visible inflammation

Percussion – positive on 4.6, negative on 4.7 and 4.5

Palpation – slight tenderness on lingual side

Sinus tract – none

Mobility – within normal limits

Periodontal probing – within normal limits

### Preoperative radiograph

The patient comes at the appointment with a periapical radiograph (fig. 1). Since the radiograph was taken and the time of the appointment, her general dentist has removed the PFM crown.

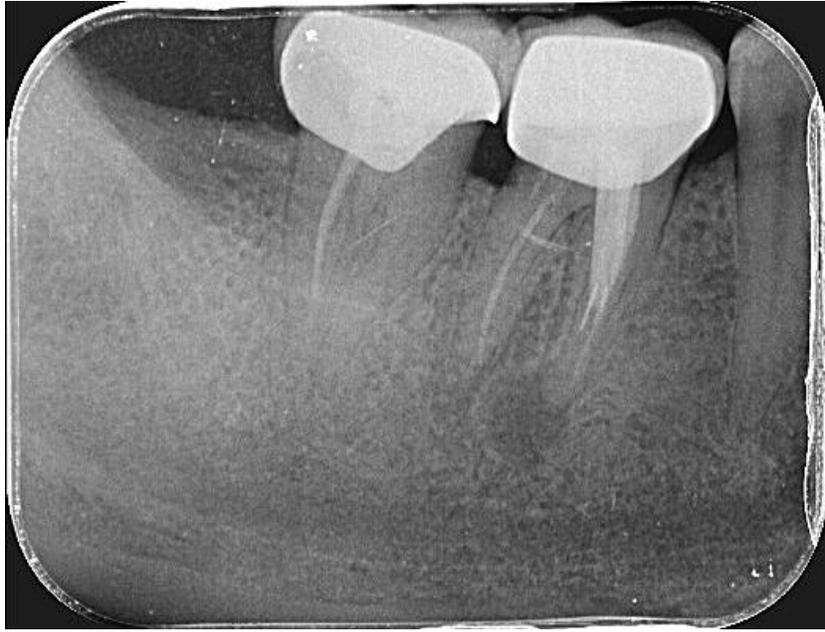


Figure 1 – Preoperative radiograph

## Diagnosis

Following the clinical examination, the anamnesis and the radiological findings, a diagnosis of Previous Endodontic treatment / Symptomatic Apical Periodontitis was set. As complication we can note three separated instruments, grossly over-prepared mesial system and the presence of a short and wide fiber post in the distal root.

## Treatment options

As treatment options we have discussed the following:

- Non-intervention – ruled out because of existing symptoms
- Extraction – ruled out by the patient
- Surgery of the mesial root with retrograde filling – very high risk of fracture due to the fact that the only part of the mesial root remaining would be the over-prepared and already weakened part
- Endodontic retreatment – with all risks involved and complications present

After discussing all the options with advantages and disadvantages, the patient opted for the endodontic retreatment.

## Isolation

Single tooth isolation with the 8A clamp from Coltene (fig.2)

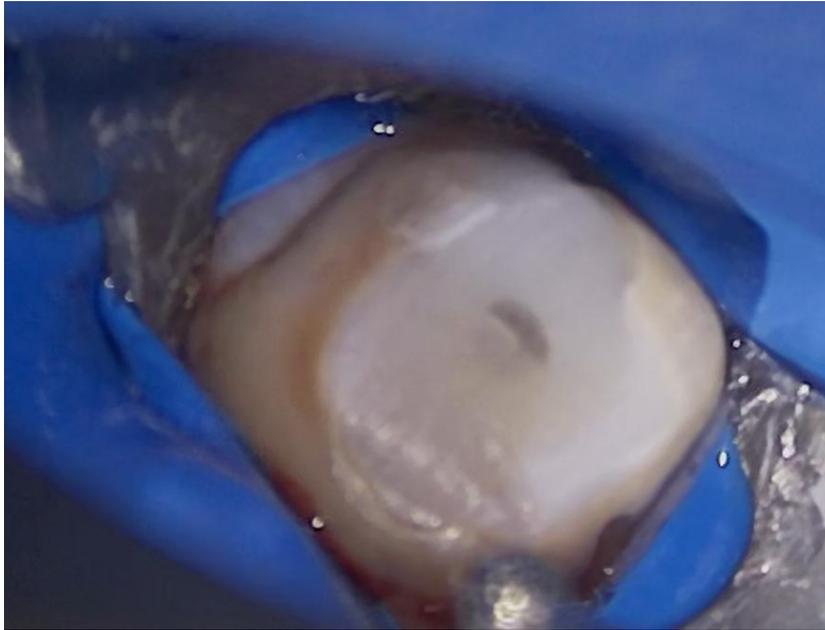


Figure 2 – isolation

## Access

The access was made with a long neck round diamond bur by removing the old restoration and exposing the pulp chamber floor and orifices (fig. 3)



Figure 3 – Removing old restoration

## Shaping the root canal system

The bulk of the gutta percha from the mesial system was removed with the ultrasonic tip ED3 (fig. 4)



Figure 4 – Removing the bulk gutta percha

After removing the gutta percha we can see the end of a separated instrument and a piece of gutta percha on the outer wall of the canal, which later proved to be in a strip perforation (fig. 5)

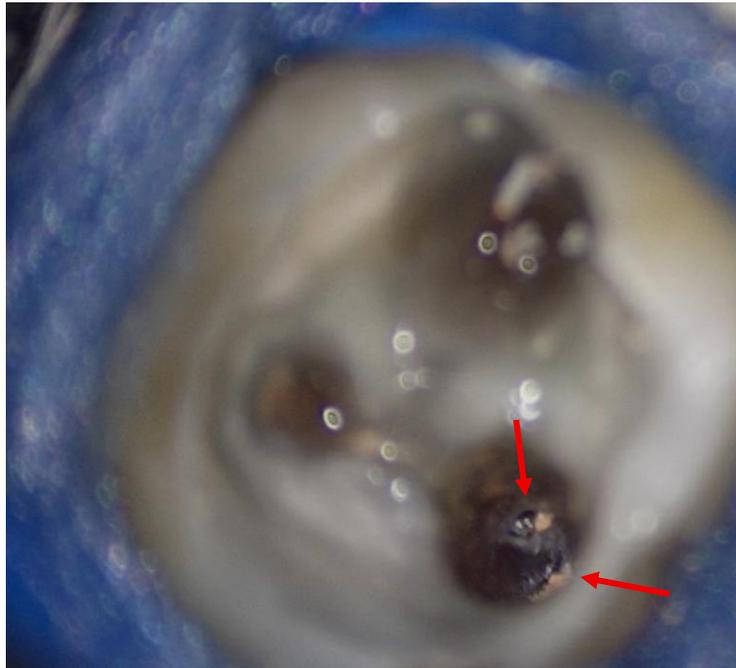


Figure 5 – Separated instrument and gutta percha in perforation

The separated instrument was removed with a U-file attached to the ultrasonic tip E2, applying vibrations on the inner wall. (fig. 6)



Figure 6 – Separated instrument removed

The second separated instrument jumped out of the canal in the attempt to expose it from the gutta percha with the U-file (fig. 7)



Figure 7 – The second instrument removed

The fiber post in the distal root was broken down using the same U-file attached to the ultrasonic tip E2 (fig. 8)

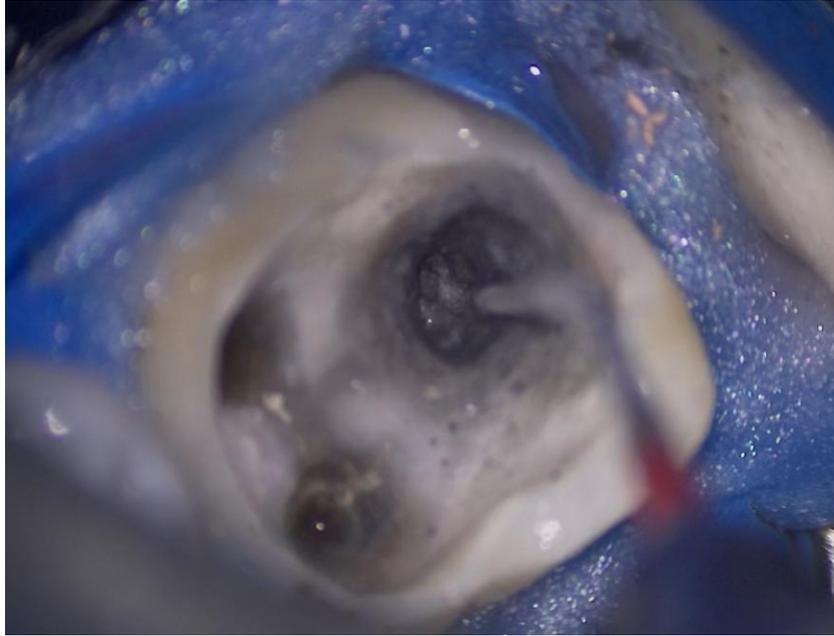


Figure 8 – Fiber post removal

For the removal of the separated instrument in the apical portion of the distal root, a bypass was first attempted in order not to weaken the apical part of the root in the attempt to visualize the instrument. Since the bypass was easily achieved with K-files #10 and #15, I decided not to sacrifice dentin in order to visualize, mobilize and remove it, and instead entomb it in the root obturation.

The shaping of the root canals was done with Reciproc Blue R25 up to the working length on the mesial root, and up to the separated instrument on the distal root, making sure to maintain patency with a #15 K-file.

The shaping parameters can be consulted in Tabel 1.

Tabel 1 – Shaping parameters

<b>Shaping parameters</b>				
<b>Canal</b>	<b>Reference point</b>	<b>Length</b>	<b>Foraminal diameter</b>	<b>Taper</b>
Mb	Mesial ridge	18 mm	25	8%
ML	Mesial ridge	18 mm	25	8%
D	Distal ridge	16.5 mm	15	2%

## **Irrigation of the root canal system**

For the disinfection of the root canal system I used 5.25% Sodium Hypochlorite all throughout the treatment, and at the end I alternated NaOCl with 17% EDTA aided by sonic activation with EDDY (fig. 9)



Figure 9 – Sonic activation

## **Obturation of the root canal system**

The strip-perforation in the MB canal was repaired with white MTA and the original canal was obturated with a modified mono-cone technique , the master cone being cut at the level of the compacted MTA (fig. 10)

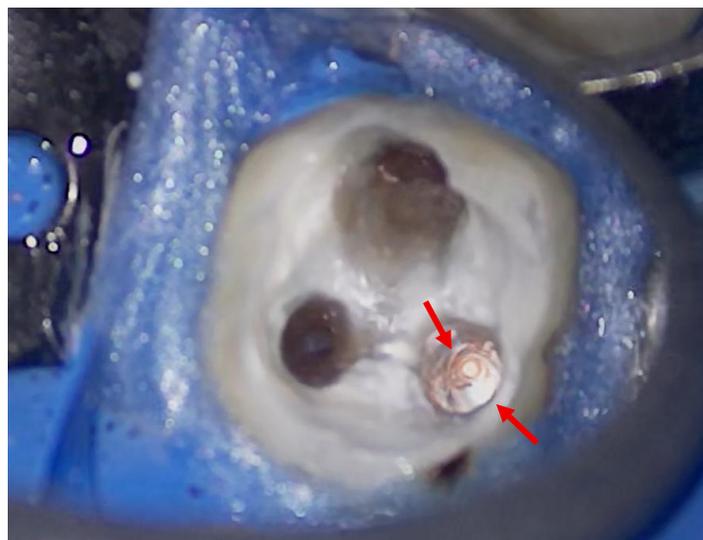


Figure 10 – Gutta percha in the canal and MTA in the perforation

The ML canal was obturated by the continuous waves of condensation technique, and the distal canal was obturated by the Squirt technique of injecting warm gutta percha (fig. 11). The sealer used was epoxy resin based.



Figure 11 – Direct injection in the distal canal

After all the canals were obturated, the pulp chamber was cleaned of sealer with alcohol and the tooth was prepared for restoration (fig. 12) with composite bulk fill material.



Figure 12 – Ready to bond and reconstruct

## Post-operator and recall

After finalizing the endodontic treatment and giving all necessary instructions, the patient did a control radiograph (fig. 13)



Figure 13 – Post-operative radiograph

Since the tooth had a reserved prognostic, the patient was advised to place a temporary crown for a period of 6 months so we can evaluate the evolution of the case.

At 6 months after the treatment the patient did a recall radiograph (fig. 14)



Figure 14 – 6 months recall radiograph

At 6 months the tooth is stable, asymptomatic, without sensitivity to axial or lateral percussion, soft tissues are healthy looking, and the radiological lesion is showing signs of healing. The patient was advised to place a definitive crown and come to the 1 year recall to evaluate the evolution of the lesion.