Clinical Case Spotlight

Root Canal Therapy on Tooth 16

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Introduction to the case

A 35 year old female patient presented after referral from a Specialist Periodontist. During the initial endodontic assessment the patient mentioned crown lengthening had been performed, prior to placement of the crown on tooth 16, two years earlier. Two months prior to the patient presenting, she had noted swelling of the palatal gingiva. The patient's general dental practitioner had discovered a 7mm periodontal pocket adjacent the palatal sinus tract associated with tooth 16. The patient was referrred to a Specialist Periodontist. The Specialist Periodontist diagnosed a primary endodontic - secondary periodontal lesion.

The patient had satisfactory oral hygiene and was a regular dental attender. Tooth 16 was tender to percussion. It was noted that the crown margins were satisfactory and the periodontal pockets around tooth 16 were less than 2mm deep on the buccal aspect, however on the palatal surface, adjacent the sinus tract there was a 6.5mm isolated periodontal pocket. Thermal testing of tooth 16 revealed a negative response. Tooth 16 had risk factors for apical periodontitis such as: a negative response to thermal testing, tenderness to percussion, a history of a deep restoration following crown lengthening surgery and radiographically identifiable periapical disease.

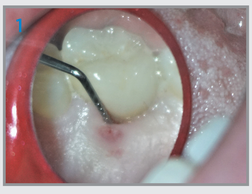
Tooth 16 did not have a history of pain on biting or chewing, which may indicate a crack communicating with the pulp and/or periodontal tissues. The patient had no risk factors for periodontal disease and there was no abnormally deep pocketing present around any other teeth.

Diagnosis

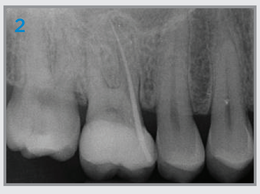
Chronic apical abscess associated with a necrotic pulp tooth 16, with a primary endododontic – secondary periodontal lesion.

Treatment plan

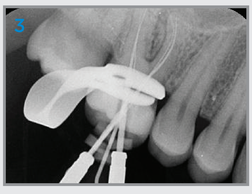
The existing crown margins were both clinically and radiographically satisfactory. It was decided that the access cavity would be made through the existing crown and further investigation into whether this would need replacing, could be done during the treatment.
After cleaning of the canals and temporisation of the access cavity, a review appointment would be conducted 5 weeks later to assess the healing of the tenderness, sinus tract and periodontal pocket. If healing occurred, obturation of the canals and restoration of the access would be done soon after this.



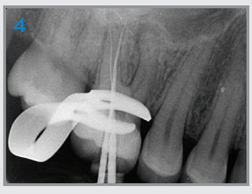
Periodontal charting revealing a palatal sinus tract and a 6.5mm periodontal pocket on the palatal aspect of tooth 16



Preoperative radiograph showing a gutta-percha point tracing to the apex of the palatal root of tooth 16 and periapical radiolucencies associated with the mesiobuccal and distobuccal roots



Working length radiograph with the radiographic tube shifted distally showing MB1 and 2 have separate apices



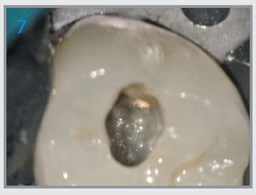
Working length radiograph showing a satisfactory working length in distobuccal and palatal canals

Preparation of the canals

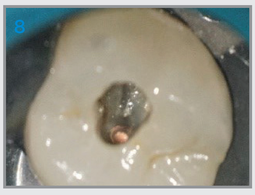
The patient was given local anaesthesia and the rubber dam was applied to tooth 16. The access cavity was made through the crown and 4 canals located and negotiated. The lengths were: MB1 – 21mm, MB2 – 20mm, DB – 22mm, PAL – 22mm. Two radiographs were taken, one to determine the working lengths and the other to assess whether the MB1 and MB2 canals were separate. Due to the long, narrow, curve of tooth 16, TruNatomy Prime (26/04v) shaping file was used to complete preparation of the mesiobuccal 1, mesiobuccal 2 and distobuccal canals. Due to the straight and wide anatomy of the palatal canal a ProTaper NEXT X2 (25/06) shaping file was used to complete preparation. Irrigation was carried out using 6% sodium hypochlorite and 15% EDTA with the TruNatomy irrigation needle. Activation of sodium hypochlorite, using the EndoActivator was performed. Calcium hydroxide was placed in the canals and the access cavity closed with a base of Cavit and a glass ionomer temporary restoration.

Review of the healing 5 weeks after preparation of the canals, showing healing of the palatal sinus tract and reduction of the periodontal pocketing to 2.5mm. Tooth 16 was no longer tender to percussion

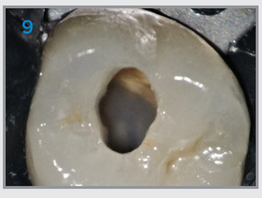
Root filling in the mesio-buccal 1 and mesio-buccal 2 canals



Root filling in the disto-buccal canal



Root filling in the palatal canal



Light cured SDR flow+ base over the gutta percha prior to placement of the composite restoration in the access cavity

Postoperative radiograph showing satisfactory filling of the canals and restoration

Materials

- TruNatomy
- ProTaper NEXT
- Prime&Bond active
- SDR flow+

Conclusion

Tooth 16 is currently protected against fracture by the existing crown. Tooth 16 has been root treated to a satisfactory standard and soft tissue healing of the sinus tract and periodontal pocket occurred before filling of the canals, a review of the radiographic healing will be undertaken in 12 months' time.

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