

Problem-solving endodontics

John Rhodes presents an interactive, practical and problem-solving solution in endodontics. This month, he looks at the non-surgical retreatment of a maxillary central incisor restored with a post crown

A post crown can be a predictable means of restoring an anterior tooth. Indeed, survival rates are often comparable to single tooth implants.

It is essential for long-term function of the restoration that there is sufficient supragingival tooth substance to provide a ferrule (1-2mm); the post should be conservative and extend below osseous level.

Historically, the aim was to provide 4-5mm of root filling material as an apical seal, but now the emphasis is much more directed to providing a complete coronal and apical seal.

Post crown restorations can fail in several ways: root fracture is more likely to occur if there is insufficient ferrule or the post is too wide, weakening the root. Coronal microleakage can occur if the cement lute fails or if bacteria are introduced into the post-hole during restoration; the endodontist, therefore, is best placed to provide a definitive coronal seal after obturation by immediately cementing any post. Temporary post crowns have a notorious tendency to provide a poor seal, and so the post-hole will need to be disinfected before permanent restoration if carried out at a subsequent appointment.

Treatment approach

There are three ways of approaching treatment of periapical periodontitis on a tooth that has been restored with a post

crown:

1. Non-surgical disassembly and root canal retreatment
2. Microsurgical endodontics
3. Extraction and replacement with a conventional bridge, implant or denture.

In this case, we will look at a non-surgical approach and associated disassembly techniques.

Case study

A paralleling radiograph (Figure 1) shows that the existing, poorly condensed root filling has failed and there is chronic periapical periodontitis present. The crown is reasonable and there does not appear to be significant loss of marginal integrity or obvious coronal microleakage.

The post is slightly short and the tip lies above osseous level, possibly as a result of marginal bone loss. The tooth is not mobile and there is sufficient supra-gingival tooth substance to provide a ferrule.

In this case, there are two sensible treatment options: non-surgical retreatment, or replacement with an implant. An implant is unlikely to offer a better outcome than restoration of the natural tooth.

Under rubber dam isolation the porcelain crown was sectioned and removed. The tooth had been restored with a cast gold post and core. Ultrasonic tips provide the best means of removing cast posts. In this case, a notch was

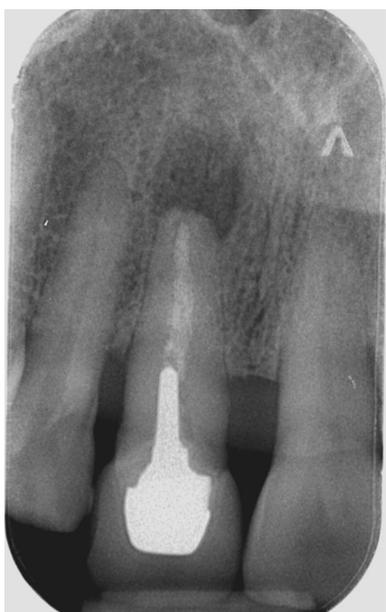


Figure 1: A failed post crown UR1



Figure 2: The crown on UR1 is reasonable; there has been some recession and there is sufficient tooth substance to provide a ferrule



Figure 3: The completed root canal treatment

prepared in the buccal surface of the core into which a Start-X ultrasonic tip number 4 (Dentsply) was vibrated at three-quarters full power, with water spray to try and break up the cement lute.

After about 30 seconds, there was no noticeable movement of the post, and so a tungsten carbide Jet Beaver bur was used to carefully undermine the core material without removing valuable dentine. A few more seconds of ultrasonic vibration loosened the post and it was easily retrieved.

A Gates Glidden bur size 2 was used to remove gutta percha from the apical third of the root canal, after which it was flushed with 3% sodium hypochlorite. The remaining gutta percha was retrieved by carefully winding a size 30 Hedstroen file to engage it before removing intact.

The root canal was large and there was no need to widen it any further, however, the canal had to be disinfected and this was carried out with 3% sodium hypochlorite solution activated with an ultrasonic Irrisafe tip (Satalec, Acteon).

In order to prevent obturating material being extruded from the root canal, a stop had to be created. Small plugs of collagen matrix (Haemocollagene, Septodont) were placed in the dried canal, the first packed through the apex and the second packed so that it was level with the end of the root. The apical part of the root canal could now be obturated with thermoplasticised gutta percha without

risking extrusion.

As mentioned previously, temporary post crowns provide a notoriously poor seal, and so the best time to place the definitive post and core is immediately after obturation. This ensures that the disinfected post-hole does not become contaminated and provides optimal apical to coronal seal. In order to remain conservative, the post-hole did not need to be enlarged any further but the post length was extended apically below osseous level.

A fibre post was cemented and core fabricated with dual cure composite material (Core-X, Dentsply). A temporary acrylic crown was then cemented before returning the patient to the referring dentist for definitive restoration. ■

WATCH THE VIDEO

To see how these steps were applied, visit <https://www.youtube.com/watch?v=PSryTgehepU> or search Youtube for 'Endo Practice – simple glide path management'. The author is happy to answer questions directly via Youtube or Twitter @johnrhodesendo.

AUTHOR

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