Case report: Clear root evaluation of endodontic failure

Dr Craig Barrington discusses the importance of follow up in order to see where treatment may have succeeded or failed

Abstract
Endodontic treatment is classified as therapy by definition. Regimented follow up should be an important part of our clinical actions to evaluate our research perceptions, ability and performance. Sectioning treated roots can destroy anatomy and alter our ability to properly evaluate failures and successes. Clearing teeth is an important technique because it leaves anatomy and obturations as they were in situ.

Introduction
We perform our clinical processes and it is rare that we are able to truly encounter and see what we have accomplished. Endodontic treatment requires follow up to evaluate success or failure. Although unfavorable, endodontic failures allow us the chance to learn. It is important to know the cause for failure such that we might enable ourselves to prevent the occurrence in future treatments.

This case illustrates a restorative endodontic failure but further evaluation is required to evaluate the cleaning, shaping and obturation.

Case report
A 57-year-old female patient presented initially in 2001 with multiple decayed and problematic teeth. (See Fig. 1). She has a controlled substance problem and has a history of being an unreliable patient. She wears a complete upper denture. Her CC was: “I want to save the rest of my teeth”.

A 37-year-old female patient presented initially in 2002 with NSRCT of tooth #18. The diagnosis was necrotic pulp with acute periradicular periodontitis due to financial constraints. We placed a stainless steel crown and Kerr’s EWT sealer. Sometime later, the crown was noted to be fractured (Fig. 2). Healing of the apical radiolucency was noted.

Fig. 1 shows a follow up x-ray prior to rubber dam removal. The canal system was obturated with System B/Obtura and Kerr's EWT sealer. Fig. 2 is of post extraction of 19 and 20 and was taken in 2002 as an initial radiographic for NSRCT of tooth #18. The diagnosis was necrotic pulp with acute periradicular periodontitis.

This case illustrates a restorative endodontic failure but further evaluation is required to evaluate the cleaning, shaping and obturation.

Fig. 3 demonstrates a working length x-ray. Four canals were located.

Fig. 4 shows an initial post-op x-ray prior to rubber dam removal. The canal system was obturated with System B/Obtura and Kerr’s EWT sealer.

Fig. 5 shows the post op x-ray with build up. Build up material was bonded flowable resin in the canals and composite resin.

Fig. 6 shows an angled post op x-ray.

Fig. 7 shows a follow up x-ray two years later. The patient presented with a fractured cusp, so we placed a stainless steel crown due to financial constraints. Healing of the apical radiolucencies was noted.

If it isn’t clean, it can’t be sterilised

Hydrim C51wd:
- The benchtop Hydrim C51 wd instrument washer disinfector eliminates the risk of puncture injuries and perfectly prepares instruments for sterilisation
- The innovative HI+ cleaning solution, in combination with dual high pressure sprays, removes virtually all proteins and organic debris
- Hydrim is independently tested for 99.9-100% efficacy and complies with EN15883
- Hydrim uses patented instrument protection and active drying systems

Statim:
- The Statim 2000xi, one of the world’s most popular autoclaves, automatically sterilises solid, hollow, wrapped and unwrapped loads including handpieces
- Statim is 5 times faster than typical B cycle autoclaves
- Statim’s performance is validated by biological and mechanical means
- Statim complies with EN13080 and the 2006 RKI Hygiene guidelines

For further information about SciCan products please call Ken Green on 01594 837327 or visit www.scican.com
Discussion

The biologic objectives of endodontic therapy include removal of all potential irritants from the root canal space to control infection and periapical inflammation. Many complexities in root canal anatomy can prevent achievement of endodontic goals. It is important to debride, disinfect and obturate the prepared system and to protect the treated tooth from coronal leakage. It is only in failure and thorough post extraction evaluation that we are truly able to see if we accomplished any of the required tasks.

In spite of our best efforts, failures in our treatment protocol can occur for multiple reasons and for reasons beyond our control. Although unwelcomed, these moments can be made into opportunities for learning and increasing our endodontic knowledge. This can eventually lead to improvements in our endodontic treatment approach and protocol.

Conclusion

Coronal leakage is a complex and multifactorial entity that is still not fully understood.

Fig. 8 shows the seven-year follow up. Yet again, the patient disappeared but this time for five years. Note the drifting of the roots from the IA canal. No apical radiolucencies are noted but coronal leakage is certainly present.

Fig. 9 shows the extracted and cleared mesial root. Note the space between the canal wall and the gutta percha fill at the red arrow. This could be under prepared canal, under filled, gutta percha shrinkage on cooling or all of the above. Note the other lateral anatomy between the canals. The black stain is hard to indentify. It is either the silver particles in Kerr’s EWT or bacteria growth or both.

Figs. 10 to 12 show other views of the cleared mesial root anatomy complex.

Figs. 13 and 14 show the distal root cleared. The overfill seems to be beneficial to the system.

Figs. 15 and 16 show the distal root cleared. The overfill seems to be beneficial to the system.

In spite of our best efforts, failures in our treatment protocol can occur for multiple reasons and for reasons beyond our control. Although unwelcomed, these moments can be made into opportunities for learning and increasing our endodontic knowledge. This can eventually lead to improvements in our endodontic treatment approach and protocol.

Conclusion

Coronal leakage is a complex and multifactorial entity that is still not fully understood.