Endodontic treatment of internal resorption with the aid of a glass fibre reinforced composite root post

Dr Maxim Stošek, Dr Jozef Minčík and Dr Marián Tulenko discuss tooth resorption

Tooth resorption is a physiological (deciduous teeth) or pathological process that leads to the degradation of cement or the degradation of cement and dentine. Normally, the mineralised tissues of the permanent teeth are not resorbed. In the pulp cavity, they are protected by predentine and odontoblasts, while on the surface of the roots they are protected by uncalcified cement and odontoblasts.

If the origin is in the pulp, this is referred to as internal resorption. Internal resorption results from chronic pulpitis. It is unknown why certain teeth, such as incisors, are affected far more frequently and severely than others. Important etiological factors are trauma and infection. The typical feature of internal resorption is a slight widening of the walls of the root canal. Resorption can sometimes also appear as a pink stain as the enlarged pulp becomes visible through the thin walls of the crown. The pulp usually remains healthy and free of symptoms for a long period of time, although it may be necrotic. In most cases, the diagnosis is easy. In the case of internal resorption, the contours of the canal are discontinuous and a slight protrusion is normally visible on the radiograph. Conversely, in the case of external resorption, the contours of the canal are clearly visible. As the vital pulp tissues support the cells responsible for resorption, their immediate removal is necessary in all diagnosed cases (Wesselink, 2004).

**The clinical case**

An 18-year-old patient visited our practice after an unsuccessful initial endodontic restoration of tooth UL1. The radiograph (Figure 1) shows the findings. The resorbed area, located in the middle third of the root, was only partially filled and the apical root canal was not filled at all. The radiograph also shows a perforation (via falsa) that was caused by the initial treatment. After the preparation of the access cavity, we obtained the microscopic findings (Figure 2): the granulation tissue, which perforates the thin dentine wall into the periodontium, can be identified on the upper left. The perforation (via falsa) caused during initial treatment is visible on the right. The root canal contained vital tissues which were bleeding noticeably.

The resorption tissues were removed with the aid of ultrasonic instruments (Figures 3 and 4). We covered both perforations with ProRoot MTA (Dentsply), a restorative material that is especially suited for this indication (Figure 5). Debridement was carried out with 5% sodium hypochlorite, which dissolved any material not accessible with instruments. A subsequent application of ultrasound improved the action of the rinsing solution. After removal of the pulp tissue from the root canal, the latter was filled with warm gutta percha (Beefill). The warm gutta percha condenses well into the cavity (Figures 6 and 7).

Due to the fact that the tooth had been considerably weakened by the large-scale substance defects, we decided to fortify it with a glass fibre-reinforced root post (Rebilda Post, Voco). The advantage of using Rebilda Post is the tooth-like modulus of elasticity of this post and its reliable adhesive fixation in the root canal (Figures 8 and 9). The control radiograph (Figure 10) confirms the successful revision treatment of the affected tooth. The root canal and the perforation have been tightly sealed and the tooth is reliably reinforced with the composite root post.
Conclusion

In internal resorption cases we must presume that the large-scale loss of dental tissue substance means the affected tooth is distinctly weakened and at risk of fracture. The use of glass fibre-reinforced root posts is advantageous in this respect as it enables the affected tooth to be strengthened and stabilised. We recommend the use of a surgical microscope; only this enables precise visual control of the treatment process. The application of thermoplastic restoration techniques enables the resorption cavity to be filled and sealed. Lateral condensation is not recommended in such cases (Netolicky, Zahlavova, 2010).

References