Preserving teeth means preserving dental hard tissues

ENDO

One main reason for the failure and even extraction of root canal-treated teeth are fractures and especially vertical root fractures (VRF). VRF occurs almost exclusively in root canal-treated teeth with an incidence of 2% to 5% of all root canal-treated teeth[1].

The most relevant aetiological factor for the development of VRF is the loss of sound dental hard tissues. The preparation of the access cavity is associated with a decrease of the fracture resistance of the tooth, which is about 35%[2]. But numerous following treatment steps are also associated with further loss of dental hard tissue and may furthermore damage the dentine. Is in fact, excessive coronal flaring of root canals, by using for instance Gates-Glidden drills, mandatory for proper root canal treatment? Although it is a matter of fact that mechanical root canal preparation – independent of the type of instruments used – results in dentinal cracks, the clinical relevance of such defects is still unknown[3]. Surprisingly, few attempts have been made over the last couple of decades to develop instruments or to search for preparation techniques that better preserve the integrity of the root canal wall. Is it actually beneficial to use engine-driven instruments with tapers of 8% or even greater for root canal preparation – or does this mainly focus on the most aesthetic root canal filling on our radiographs?

Some obturation techniques are also associated with dentinal damage[4]. The currently best available evidence suggests that there are no relevant differences between the lateral compaction and thermoplastic obturation, with regard to treatment outcome[5]. Thus, obturation techniques, which avoid unnecessary weakening of tooth structure might be preferable. In this regard, also the single-cone obturation, using matching gutta-percha cones might be of interest. Clinical trials assessing the treatment outcome following single-cone obturation are therefore essential.

Each treatment step during the entire root canal therapy may ultimately lead to a loss of tooth structure or may weaken the integrity of the entire tooth. Thus, during any root canal treatment, more attempts to minimise potential causes of fracture (loss of tooth structure, effects of irrigants and intracanal dressings, intracanal stress generation during preparation and obturation, post-endodontic restorative procedures) are required[6].

Against this background it appears reasonable to think about a paradigm shift in endodontics. Less might be more when trying to preserve teeth requiring root canal treatment! In the interest of our patients, minimally invasive endodontics is rewarding. Preserving as much tooth structure as possible requires optical magnification aids, modern equipment and in particular, profound knowledge of the tooth and root canal anatomy. But first and foremost, as pointed out in the short communication by Ahmed and Gutmann in this issue, strategies for minimal endodontic treatment concepts should be included in pre- and post-graduate curricula. Moreover, well-designed clinical trials are essential, in order to provide convincing evidence about whether or not minimal endodontic treatment procedures have an impact on the long-term treatment outcome of root canal therapy.

As this is the last issue of this year, we would like to take the opportunity to express our thanks to all board members of ENDO and all reviewers, for their critical appraisal of all manuscripts received in this year. Their expertise and support is very much appreciated!

Last but not least we would like to express our sincerest thanks to Antonio Bonaccorso, who has retired as Editor of ENDO for personal reasons. His

outstanding support of this journal over the last 9 years and his expertise were of great value and contributed substantially to the development of ENDO. Antonio, thanks for your dedication and the always pleasant cooperation!

As for now I hope you will enjoy the present issue of ENDO.

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