

Comprehensive endodontic treatment solution

Dr Anselm Brune shows how VDW offers a modern upgrade to endodontics.

Present day endodontics can achieve a 90–95% success rate in the primary session of a root canal treatment (RCT), provided that appropriate treatment strategies are followed. Within the scope of endodontic treatment it is important to understand that first and foremost, a bacterial infection consisting of different and sometimes changing bacterial strains, must be treated.

In the past 10 years the therapeutic spectrum for root canal treatment has made rapid and innovative leaps forward: as a result, numerous preparation and obturation systems have been developed.

Eliminating infection

The ideal endodontic treatment system should be cost effective, efficient and faster. It should also enable the practitioner to improve the outcome of a root canal treatment and to prepare obliterated and curved canals predictably and confidently in the primary session.

RCT, as part of an innovative endodontic concept, may provide early arrival at 1 mm of the working length of the irrigation canula with the natrium hypochloride. From what we know about the anatomical variations of root canal cross-sections, we can assume that no file system, be it hand or rotary operated, treats more than 70% of the root canal wall surface. In the presence of irreversible pulp, the practitioner must, in order to control the infection, be able to clean the inner tooth and achieve a long-term symptom-free state. This means that the recall radiograph must clearly state that lesions of endodontic origin are either healed or have been avoided.

An anti-bacterial and chelating irrigation solution such as 5% sodium hypochlorite supports mechanic preparation as it allows maximal disinfection at the end of the root canal.

Each RCT should begin by placing a caries-free restoration build-up and trepanation opening in order to eliminate coronal bacteria and create a gliding path for the root canal instruments. Straight access is an important key to successful endodontic treatment.

Locating all canals

To avoid unnecessary weakening of the tooth, the trepanation opening should always be placed in a caries-free restoration build-up and be as small as possible. Loupe systems and operation microscopes with up to 25x magnification will support this maxim and help to identify all canal orifices in a root canal system.

These entrances may be located either at the floor of the pulp chamber or, as in the case of bifurcating canals, in the lower third of an initially seeming single root canal. In order to have a good view on the pulp floor and to detect all canal orifices, it is necessary to create a straight passage for the file systems. Both hand and rotary instruments should stand upright in the upper half of the tooth. In most cases the mesial wall of the pulp chamber in a lower molar will need to be straightened up. The new Mtwo files (VDW) are best suited for this purpose, as they are very flexible due to their S-shaped cross-section. Their efficient cutting blades eliminate genuine dentine and, thanks to the progressive distance of their cutting edge, the debris is transported automatically in the coronal direction. At this stage of the RCT the Mtwo file 25.06 can be used instead of a Gates Glidden.

For detecting small or obliterated canal orifices, convenient instruments like Microopener/MC files or specially hardened C-Pilot files are of great assistance. When using the crown down method, the coronal bacteria must be eliminated first (caries-free restoration build-up). Then the root is divided into three equal sections and the upper two sections are cleaned first. These two coronal thirds can be prepared with Mtwo 25.06. At this stage the lateral cutting ability of the Mtwo files is of great help. This canal section can be cleaned in brush-rotating movements and immediately irrigated.

Optimized canal preparation

In a modern endo-concept only at this point, i.e. after the coronal part was provided with a restoration build-up, the upper two thirds of the canal are prepared with a rotary 25.06 Mtwo file, and the infection is eliminated by irrigation. A 10.02 (ISO 10) steel file controlled by an electric length determination device, e.g. Raypex 5, feels its way in the apical direction.

Firstly, with this technique no bacteria are carried toward the apex; furthermore, following a vital extirpation a caries



Case 1

Figure 1: Lower last molar
Figure 2: Cleaning and shaping
Figure 3: Obturation
Figure 4: 6 months post-treatment



profunda at the apex or beyond is unlikely to be expected at this point. Secondly, the upper part of the root canal is prepared far enough so that the 10.02 file probing the apical region can never jam in the upper part and allows a more sensitive probing of the apical region. A deformation of the 10.02 steel file will also reflect the anatomy of the root canal. Once the working length is determined it is possible, with only four rotary Mtwo files sizes 10.04, 15.05, 20.06 and 25.06, to place a size 30 irrigation canula at 1 mm of the working length both quickly and efficiently .

In so doing it is crucial to always check prior to using a rotary file whether a reproducible gliding path is in place. Based on the working length, a 15.02 steel file can be retracted in mm steps and then brought back to the working length. If there is no gripping in the apical 5 mm, the rotary preparation path is ensured.

Irrigation, recapitulation, irrigation

The canal should be irrigated after each use of a rotary file. With a 10.02 steel file, the working length can be recapitulated and the dentinal debris particles can be detached from the walls. When irrigating at this stage, it is interesting to note how much debris is detached and flushed out after recapitulation.

So, in addition to the automatic debris removal during preparation thanks to the progressive distance of the cutting edge of the Mtwo files, the sequence of 'irrigation, recapitulation, irrigation' is an important criterion to avoid apical blocking by debris and to maintain the exact working length during the entire preparation process.

Efficient use of files

The efficiency of this system becomes particularly apparent in obliterated canals. After the working length was determined with a 06.02, 08.02 or 10.02 C-pilot file, and the reproducible gliding path was checked with a 10.02 file, the Mtwo 10.04 is able to further open up the root canal, showing debris transportation. In curved canals the S-shaped instrument design provides sufficient flexibility to also perform lateral cutting.

Once size 25.06 is reached, the actual size of the foramen is checked with an ISO size steel file and obturated as desired. Additional Mtwo files in sizes 30.05, 35.04 and 40.04 are available for the single-post technique. Adequate gutta percha is available in sizes 25.06, 30.05, 35.04, 40.04 and 25.07. Thermoplastic obturation with vertical condensation is possible with the manual stepback technique.

In conclusion: in this case new and innovative is not only better but is also faster, safer and more cost-effective because with only five files it is possible to use the crown down method allowing a size 30 irrigation canula to be placed at 1mm of the working length. The files are available in sterile blister packs.

Completing treatment: post system

An important step to prevent re-infection is the coronal restoration. Today we are aware that an immediate adhesive seal is a decisive measure to improve treatment outcomes. Depending on the degree of deterioration of the tooth and the intended instrumentation an adhesive build-up filling might be sufficient. If prosthetic treatment is planned the system should provide an e-module post to fit the tooth, as it is proven that complications such as longitudinal fracture or root fractures do occur less. VDW's DT post system offers not only the adequate e-module but



Case 2

Figure 1: Upper last molar

Figure 2: Retraction of palatinal separated instrument

Figure 3: Endodontic treatment

Figure 4: Situation after therapy

also posts of different tapers to fit the anatomy of endodontically treated teeth. These posts have recently become available with a coating which eliminates the silanization step.

Innovative products to be integrated in a structured endodontic treatment plan will put practitioners in a position to fully inform their patients and let them choose this therapy so that they will become loyal patients in the future. Endodontic treatment should ensure infection control by adequately eliminating the infection in the tooth and sufficiently prevent re-infection. The earlier the definitive coronal restoration is in place, the better the outcome. ■

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About the author



Dr Anselm Brune studied and graduated in 1995 at the Westphalian Wilhelm University of Münster, Germany. He has been working as a dentist in private practice since 1998. In 2002 Dr Brune became certified as specialist in Endodontology by DGZ / APW and since then he consequently specialized in endodontology with his private practice. He is vice president, founder and board member of VDZE (Association of Certified German Endodontologists), member of DGZ/ AGET (German Society for Conservative Dentistry/Working Group for Endodontology and Traumatology) and member of DG-Endo (German Society of Endodontology).

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