

CanalBrush – The electric toothbrush for root canals

DR. MARIO BESEK, MARCH 2009

One of the most difficult tasks in therapeutic dentistry is the successful endodontic treatment of a tooth. One of the essential components of this treatment is the chemical/mechanical preparation of the root canal; irrespective of the preparation method used, after each preparation stage, the root canal is cleaned chemically with a disinfecting solution.

The most commonly used solution for this is sodium hypochlorite, which is used with a thin irrigation cannula. Already here the dilemma begins: in order to be able to penetrate as deeply as possible into the canal, one needs a very delicate, and if possible, flexible, cannula. The manufacture of such cannulas has its limits: if it is made too thin, fluid can no longer be pushed through it, and besides, flexible cannulas cannot be designed to be thin enough. For this reason, most of the debris fragments in the apical area of the root canal are removed only insufficiently. There are some who use the next smaller preparation instrument in order to dislodge the debris together with the solution. In order to work more efficiently, the operator has a tendency to apply more pressure to the irrigation spray. This is harmless as long as the cannula doesn't become wedged in the canal and thus exert too much pressure on the apex. If sodium hypochlorite is forced

beyond the apex, this will inevitably lead to necrosis of the surrounding tissue, and in an open apex with vestibular bone breakthrough, even to necrosis of the mucous membrane, which heals only with difficulty. In the upper jaw, there is even the risk of injury to the sinus mucous membranes.

Here is where CanalBrush comes in. CanalBrush is a micro-brush made of polypropylene in the form of a thin root canal instrument with small brushes on the sides. The minimal thickness of this instruments allows it to penetrate up to the apical area, even with small preparation sizes. Since these brushes are made from one mould, there is also no danger that bristles can detach. Their use is similar to that of a lentulo, by means of an angle section with a rotational speed of up to a maximum of 600 rpm. The brush's flexibility is extraordinarily great, so that even in very crooked canals, work can be carried out dependably. Furthermore, this flexibility allows the angle section head more room to move. On the one hand, this makes it possible to insert the instrument in difficult situations, such as for terminal molars. At the same time, movement of the angle section head also allows the adaption of the brush to the canal walls to be changed. By means of the changeable rotating movement of the brush, the canal walls are uniformly massaged with the disinfecting

solution. In contrast to other instruments, CanalBrush offers a larger harm-free area of movement, since due to its delicate size, it is almost impossible for it to become wedged. Should the instrument nevertheless break off, it can be removed effortlessly due to its elastic properties. The brushing action of the CanalBrush also removes debris from the walls, so that it is better distributed in the irrigation solution and can be rinsed out more easily. Some of the fragments even remain attached to the fine bristles and can be pulled out along with the CanalBrush. Particularly in the apical area, the debris fragments tend to "clump together". The thin flexible working end of the CanalBrush is able to dissolve these agglomerations without the exertion of pressure. The infected preparation residue in particular must not be driven further into the isthmus or even beyond the apex in the course of further preparation with the instruments. Other cleaning brushes, also elastic, such as the Nanobrush, are clearly at a disadvantage here. Upon insertion, the thicker and rigid wedge shape can sometimes drive the detached components in an apical instead of a coronal direction, and in addition complicate further preparation or result in a loss of part of the preparation length. In contrast to the one-piece CanalBrush, in the case of these so-called brush instruments, as well as with the paper tips, the fine, attached bristle hairs can detach from the instrument and remain behind in the canal.



Insertion of the flexible CanalBrush



Cleaning with irrigating solution in the lateral tooth area

The preparation of the root canal is the first act in the treatment, the final filling generally takes place only after medical inserts are inserted. This insert consists of either a drug in paste form or blended CaOH. In or-



Cleaning of the anterior tooth area with CanalBrush



Cleaned and rinsed root canal

der for them to be maximally effective, these drugs must be applied up to the apex. However, before the final obturation, they must be completely removed. For this, the same procedure is used as with the preparation. In contrast to the water-soluble debris, these are often "greasy" or non-soluble substances. It is particularly in such cases that CanalBrush has proved its worth. While one irrigation alone leads to inadequate cleaning, CanalBrush's massaging effect means that it is able to clean the canal walls better. A clean canal wall is essential to the endodontic success of the obturation. And after a walking bleaching the bleaching agent is often difficult to remove.

This is also true in intracoronary anchoring with rod systems. Today, glass fibres are generally used, which are bonded with adhesive technology. For this, a cleanly-prepared canal is absolutely essential for the precise fit and perfect adhesion.

As with brushing teeth, brushes are not just for cleaning, but also for applying toothpaste or gels.

Just as CanalBrush assures cleaning through optimal adaptation to the canal walls over the entire length, this feature also allows the instrument to optimize wetting. Depending on the type of obturation method, CanalBrush can be equipped with a sealer that wets the walls up to the apex without risk,

and thus promotes a thick obturation. The same is true of adhesive systems used for the fastening of rod systems. The liquid is distributed among the micro-bristles by the cohesion forces, and can thus wet down the canal walls without forming unnecessary "lakes". The majority of the excess adhesive remains held among the bristles. Wetting with composite cement, too, is made easier in this case, since the movements of the CanalBrush reduce the viscosity and thus also the wetting of surfaces, so that much of the air blowing can be avoided.

All in all, CanalBrush is a device with a broad spectrum of indications, one that makes it possible to work efficiently and safely.

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