Ove A. Peters

Dr. Ove Peters received his degree in Dentistry (Dr. med dent) from the University of Kiel, Germany, in 1990. After two years in the Department of Neurophysiology at the University of Kiel, he served as an assistant professor in Posthodontics at the University of Heidelberg, Germany, from 1993 to 1996. He received his endodontic training at Zurich University dental School, Switzerland, from 1997 to 2001. He was an assistant professor and head of the faculty practice in restorative dentistry at the University of Zurich from 1996 to 2001; after receiving an MS in Oral Biology from UCSF in San Francisco in 2003 he finally became a Clinical Assistant Professor in the Department of Preventive and Restorative Dental Sciences at UCSF. His main scientific interests were the performance of Nickel-Titanium rotary root canal instruments evaluated by micro-computed tomography and torque-testing devices, which was also the topic of his PD thesis. Recently he has focused more on clinical and biologic topics.

Dr. Peters has published extensively in international journals and lectures both nationally and internationally. His favorite activities outside the endodontic world included remodeling the house, traveling and exploring all sorts of outdoor life together with his wife, Christine and their son, Morten.

Previous Lecture

The Importance of Rotaries for Endodontic Treatment

Dr. Ove A. Peters

There is no doubt that the use of nickel-titanium (NiTi) rotary instruments leads to improved root canal shapes in vitro. A minimal incidence of gross preparation errors and only small canal transportations, expressed as the movement of the canal centers of mass, of 100 to 150µm have been demonstrated. This holds true for the majority of available instrument types and is reflected in a special radiographic appearance of cases that have also been referred to as “the look”.

However, this is true only if instruments are used with adequate training and according to currently accepted guideline. If misuse, rotary instruments will fracture, will remove unnecessary dentine or may perform suboptimally regarding disinfecting ability.

A few operator – controlled variables have been investigated and will be discussed in this paper. The ideal r.p.m. varies from instrument and a case has been made for lower (about 250, = safer) and higher (about 350, = more efficient) r.p.m.. Rotational speed is directly related to instrument lifespans and to recommendation for re-use of NiTi rotary instrument.

Another variable that has been tested is the working strokes or motion: many instruments should be used in an up-and down or pecking motion. This was believed to distribute fatigue over some instrument length and has in fact been shown to be efficient, at least for some instrument sizes. The actual stroke with specific instruments, e.g. brushing vs. apical advancement until stalled vs. pecking, is still somewhat empirical and difficult to ascertain experimentally but may be crucial for success.

Furthermore, the use of a step-back technique is inferior regarding torque compared to crown down, while no definitive conclusion can be made at this point regarding the use of decreasing tip sizes compared to decreasing tapers within a crown-down sequence.

Finally, the recommended use of irrigants and/or lubricants in conjunction with NiTi rotaries is mainly based on personal preference. Unfortunately, alternating irrigation with EDTA and NaOCI reduces disinfecting efficacy while very recent evidence indicates that the use of gel-type lubricants is not beneficial to reduce torque. In addition, warm NaOCI solution carries a greater risk or corrosion and therefore it is recommended to discard NiTi instruments that were in contact with heated NaOCI for 30 minutes and more.

In conclusion, there is a multitude of operator-related factors in the clinical use of Nickel-Titanium rotary instruments. Only after training and with adherence to set and verified guidelines can clinicians utilize these instruments to their fullest potential and achieve clinical success.