

Interview with Dr. Sebastian Riedel

Innovative OTR safety function proving a success

Dr. Sebastian Riedel: “From an efficiency and safety point of view, I can no longer imagine working without the DentaPort ZX Set OTR” “

Alongside a number of other factors, equipment plays an important role for successful endodontic therapy. This is where state-of-the-art tools help the dentist meet the high demands on endodontic treatment: During the preparation process, this includes innovative systems such as the current third generation of the DentaPort ZX Set OTR measurement and preparation system (Morita), which incorporates the innovative safety function OTR (Optimum Torque Reverse). This promises a high level of efficiency with a reduced risk of file breakage. We spoke to Dr. Sebastian Riedel (Berlin) about the requirements of modern endodontics, efficiency and safety aspects in preparation and whether the OTR function delivers on its promises in practice.

Different mechanical preparation systems with different modes of operation are available on the dental market. One high-performance appliance that has been on the dental market for more than ten years is the DentaPort ZX measurement and preparation system. A new feature of the DentaPort ZX Set OTR system is its Optimum Torque Reverse (OTR) safety function: As with similar systems, this is based on the principle of a torque-provoked reversal of rotational direction. However, contrary to other available systems, only a very small angular rotation of the file is required with OTR to permanently control the torque during the preparation process. This reduces the possibility of file breakage and makes it possible to work with optimized rotation angles both in the cutting and non-cutting directions of the file.

Dr. Riedel, what are the requirements of modern endodontics – particularly in the case of root canal preparation?

In modern endodontics, an effective – in other words fast and safe – preparation of root canal systems represent the basis for being able to carry out further important stages such as disinfection and later obturation. Preparation should be regarded as a means to an end in order to be able to introduce the actual indispensable antibacterial procedures.

What tools are necessary in order meet these requirements?

Practitioners need instrument systems that can be combined rationally with each other. In this way, they can increase efficiency and compensate for the deficits of individual systems. At least one torque-controlled is required for operating the preparation instruments. Ideally, two such motors should be used in order to ensure that a smoother changeover between instruments is possible.

What role does the aspect of work safety play in this respect?

Irrespective of dealing with initial treatment or the revision of an existing root filling: Instrument breakage represents a risk for any root canal treatment. On the one hand, the time required for the removal of a fractured preparation instrument is difficult to calculate and can possibly lead to massive problems with time management for a treatment procedure, and on the other hand a non-removable root canal instrument can make it difficult or even impossible to disinfect the canal concerned. For this reason, the risk of any such fractures should ideally be reduced to as close to zero as possible by using easily controllable systems.

Can modern endodontics still “function” even without the use of a mechanical endodontics system?

As part of informative consultations in our practice, we regularly see the results of procedures that have been conducted in an “orderly” manner by practitioners who had to manage without mechanical assistance. Personally speaking, these days I can’t imagine any treatment without efficient mechanical assistance, even if it is impossible to avoid using hand instruments or manually operated nickel-titan instruments in some situations. In this case, I’m thinking of ledges in the canal, abrupt curvatures or the passing of fractured instruments.

When did you first start using the DentaPort ZX measurement and preparation system and how did you find out about the new version with OTR?

I've been using the DentaPort ZX ever since the period after having obtained my medical degree and in this way also got to hear about the latest upgrade with OTR. As with the original system, the DentaPort ZX Set OTR also enables me during root canal preparation to simultaneously measure length and even stop the rotation of the instruments being used when the set working length has been reached. Personally, I find the combination with a Root ZX – for me the golden standard in the sector of length measurement – to be the perfect solution.

What do you consider to be the fundamental advantages of the system in comparison to other preparation equipment?

In my opinion, the customary full rotation of a root canal instrument continues to be an effective method for removing hard substances from the root canal wall. The advantage of the DentaPort ZX Set OTR is that it now provides the opportunity to continue using the selected instrument effectively for removal through the implemented torque control in the form of an oscillating or reciprocal operation. This extends the range of existing systems and provides maximum efficiency in combination with matching systems such as the EndoWave instruments.

What advantages does OTR provide for the preparation of severely curved canals?

Long-standing and established rules continue to apply for mechanical treatment in curved areas. The risk of producing ledges when using a preparation system with active tips, however, cannot be completely eliminated with the OTR function either. Nevertheless, a good central position of suitable file systems in the curvature and beyond can be maintained if the individual instruments are combined appropriately with each other.

What other automatic and safety functions do you also rate highly?

The possibility of using “auto-reverse” function upon reaching a pre-defined “depth mark” is a positive factor in my opinion. In contrast, I cannot recommend the “auto-stop” function for use in a canal: When the motor and file are restarted, it is

possible for forces to act briefly on the instrument which could lead to breakage – that is why I don't use this function.

When using OTR in practice, do you notice any difference to other preparation systems with regard to permanent torque control, which as such only requires a very small angular rotation of the file during preparation?

The reaction of the motor upon reaching a torque level is faster than I would be able to react to it. With other motors, for example, which emit an acoustic signal when the torque has reached a set level, I have to decide whether to continue operating without any change to the working depth of the file or the pressure on the file or whether I should react by reducing one of the parameters. Whatever the case, I will undoubtedly be reducing the effectiveness of my work as a result.

How often do you replace files or to what extent have you noticed any change in your “replacement behavior”?

Fundamentally, we replace files after every treatment. In addition, however, files are also replaced during treatment if a tip is untwisted or appears in any other way to be in danger of breaking. In the case of larger file diameters in particular, however, since using the OTR function I have noticed that files can be used more often and without recognizable signs of wear because of the reverse movement as part of torque control – with less instruments per canal as a result.

With OTR, have you noticed any significant change in the number of file breakages and working time?

File breakages will always happen in practice. Nevertheless, it would seem that the already low number of fractures has reduced even further because the resulting response to the rise in torque provides me with the decisive indication to reduce active application of the instrument. The fractures that nevertheless still occur are also the result of production faults. There is also a significant reduction in the time required for the active, mechanical treatment of the tooth. This is a decisive point for me because it means that disinfection can be carried out faster and more completely.

What has been your experience with regard to cutting efficiency?

The efficiency of the instruments being used, irrespective of manufacturer and type of file, depends on the file movement: The file is only able to cut effectively again if the debris is carried in coronal direction out of the canal and ejected by the stroke movements of the file. The situation of “being loaded” is noticeable through the lacking tendency of the file to get drawn into the canal or be pushed in easily.

From your point of view, should attention be paid to anything in particular during application?

No, not unless the user is not familiar with the functions of simultaneous length measurement in combination with the options of “Auto Start” when inserting the file into the canal and “Auto Stop” and “Auto Apical Reverse” upon reaching a selectable distance to the physiological apex. In my opinion, both functions make it easier for all-rounders in particular to master the tricky aspects of correct length measurement and preparation up to that point.

What are your personal conclusions with regard to the DentaPort ZX Set OTR?

In my opinion, endodontic treatment without a motor is no longer imaginable from the point of view of efficiency and safety aspects. The open design, which also allows the use of other file systems, increases the application range beyond the Morita EndoWave file system. The hybrid concept, which most specialist colleagues choose, can still be used with just one motor.

In your opinion, what will be the dominant topics in endodontics in coming years?

A more complete disinfection of the largest possible areas of the root canal system with the simplest possible means is one of the current topics in endodontics and should be achievable within the next few years with the laser playing a greater role in this respect. We are already seeing today that the shockwaves of an Er:YAG laser such as the Morita AdvErL Evo appear to be effective within the area of activating rinsing fluids. In addition, a further simplification of preparation with hard-wearing materials will lead to faster mechanical treatment and, as a consequence, enable disinfection to have a faster overall effect.

Thank you for the interview!

Fig. 1: Portrait of Dr. Riedel

Fig. 2: Root canal treatment with the EndoWave file

Having completed his university degree and obtained a doctorate from the Julius Maximilian University of Würzburg in 2004, Dr. Sebastian Riedel began work as a dentist in a private dental clinic in Zurich before joining the practice of Prof. Dr. A. Gutowski, Schwäbisch Gmünd, from 2005 to 2007. Upon completion of curricular further training in the field of endodontics with the German Society for Endodontics (Deutsche Gesellschaft für Endodontie) in 2007, Dr. Riedel joined the practice of Dr. Jörg Schröder (Berlin) in 2008 as colleague for referral activities in the field of endodontics. Since 2010, he has been operating a joint practice with Dr. Schröder at the same location, and as a private clinic for endodontics since 2013. As of October 2014, the clinic has been operating as a group practice together with Mario Müller (M.Sc.). Riedel is a member of the German Society for Endodontics and Dental Traumatology (DGET / Deutsche Gesellschaft für Endodontologie und zahnärztliche Traumatologie), the German Society for Tooth Preservation (GGZ / Deutsche Gesellschaft für Zahnerhaltung) and the Swiss Society for Endodontics (SSE / Schweizerische Gesellschaft für Endodontologie).