

The Ray-pex® 5 apex locator

In the following article, Nigel Foot describes the use of the Ray-pex® 5 apex locator



Nigel Foot

Nigel Foot qualified from Newcastle University in 1979. After two years in hospital oral surgery, he entered general dental practice where he developed an interest in endodontics and gained his MSc. Nigel has had a practice limited to endodontics since 1995. In 1996, he gained the Membership in Restorative Dentistry (Endodontics), at the Royal College of Surgeons, London and Glasgow, and was admitted to the Endodontic Specialist Register in 1999. He has taught at both undergraduate and postgraduate levels and is currently a part-time teacher at the Eastman Continuing Professional Development Centre.

The Ray-pex® 5 by Dentsply VDW is the latest version of the successful Ray-pex line of apex locators. It is characteristically compact and has a small 'footprint' on the bracket table or surgery work surface (see Figure 1). It is a 4th generation apex locator that has a new mathematical algorithm that allows the unit to determine the position of the major apical constriction in the root canal. In clinical practice, this facility appears to work well and is a very useful additional piece of information that the apex locator can provide.

The Ray-pex® 5 comes with two types of electrode for connecting to endodontic files: the clip-type electrode for areas where access is straightforward and the probe-type where access is difficult or a limited amount of file shaft is available for connection (see Figure 2).

As with all modern apex locators, the unit will work in canals containing all types of fluid. However, it is advisable to have canals moist rather than flooded with sodium hypochlorite, so as to avoid wild fluctuations in readings.

Furthermore, the unit is most accurate when the size of the test file in the canal approximates the diameter of the apical foramen.

I have found the following protocol useful when measuring working length.

Carefully determine the length at which the test file touches the periodontal ligament ('true' working length). A note should be made in the patient's clinical record of this length. The test file is then carefully withdrawn until the display indicates the file tip is at the major constriction of the root canal. A separate note can be made of this length on the patient's record.

During instrumentation of the root canal, recapitulation files should be set to the 'true' working length (or 0.5mm longer, if preferred). With all rotary instrumentation, the working length should not exceed the position of the apical constriction. This way, the preservation of the natural resistance form of the root canal is maintained and extrusion of root canal filling materials minimised. An example is shown in the treatment of tooth 37 (see Figure 3).

Measurements were made of the 'true' working length of the root canals and the length at which the apical constriction was detected. No rotary

instrumentation was taken beyond the length of the apical constriction. The tooth was prepared using ProTaper rotary files to a size F2 in the mesial root canals and F3 in the distal root canal. ProTaper gutta percha cones were tried in to check they fitted to the correct length of the root canals as measured to the apical constriction (Figure 4). The tooth was then root filled (Figure 5). Note the minimal amounts of extruded sealer.

The Ray-pex® 5 is an efficient, compact and accurate apex locator that incorporates the latest mathematical algorithms to calculate the position of the apical constriction within the canal, which is a useful feature in clinical practice. It is a great new unit that I would definitely recommend.

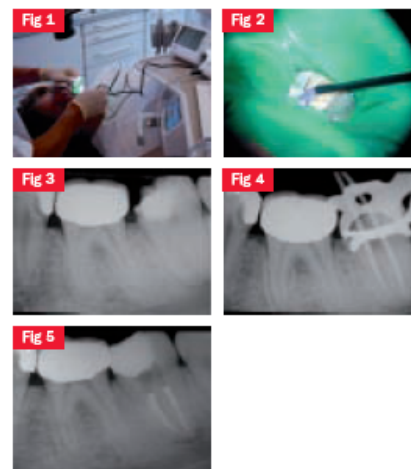


Fig 1: The new Ray-pex® 5 in clinical use

Fig 2: Probe electrode in use

Fig 3: Treatment of tooth 37

Fig 4: Gutta percha cones fitted to the length of the apical constriction

Fig 5: Final post obturation radiograph