The use of EMS Retro Berutti instrument for surgical applications: A modern approach to Endodontic surgery

Recent developments in the use of Ultrasonics in the preparation of root canals have had an important impact on the quality and success of Endodontic procedures. Ultrasonics is now routinely used in the shaping, disinfecting, and filling of canals (Fig. 1). These benefits have been achieved while simultaneously limiting the risk of deforming the canal anatomy or displacing the apex.

The use of Ultrasonics to activate and enhance the effectiveness of irrigating solutions (sodium hypochlorite) has been well documented. Through a combination of cavitation, hydrodynamics, and acoustic streaming, bacterial debris and biofilm are efficiently disrupted and removed from the canal.

EMS (Electro Medical System SA) Nyon, Switzerland, offers a range of stainless steel K files to be used with endochucks for thorough cleaning of the root canal system (Fig. 2). The instruments are intended for use with the EMS Piezon® Master Ultrasonic Unit (Fig. 3).

Ultrasonic activation also improves the condensation of gutta percha in the canal. This application allows the gutta percha to reach side canals that may otherwise be difficult to obturate. The EMS Piezon® instrument H is designed for this application.

Retreatment and retrograde procedures are also enhanced by the use of Ultrasonic instruments. Retreatment includes removal of calcifications in the pulp chamber, clean-up of calcifications in the canal, enlargement of the coronal third (pre-flaring), and removal of broken files. EMS has developed a set of three instruments for endodontic retreatment procedures. (Fig 5, 6, 7)

Retrograde endodontic surgery consists of getting access to the canal through the bone and after apicoectomy. The purpose is to save the tooth in cases where root filling is unsuccessful. It is the final alternative to extraction. The EMS diamond tip retro Berutti (Fig. 4) used with the appropriately angled endochuck provides access to all canal formations. The following clinical case describes the application of the Berutti tip during endodontic surgery.

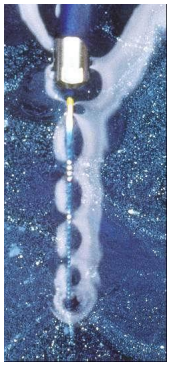

Fig 1

Fig 2

Fig 3

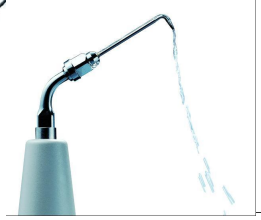

Fig 4

Fig 5

Fig 6

Fig7

A modern approach to Endodontic surgery: Case study

A 57 years old female patient was referred to our clinic with discomfort in the lower left

mandible (Fig. 8). Two x-rays were taken showing a root canal filling passing far beyond the apex of tooth #34 (x-ray VM2, Fig. 9), with some filling material in the bone and a translucency surrounding it, i.e. a Lesion of Endodontic Origin (LEO) and an uncompleted root canal filling of the mesial root of tooth #36 (x-ray VM1, Fig. 10), again showing a LEO.

Fig. 8

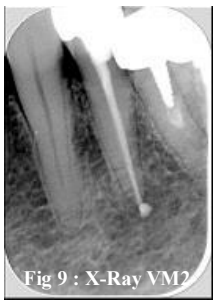

Fig 9 : X-Ray VM2

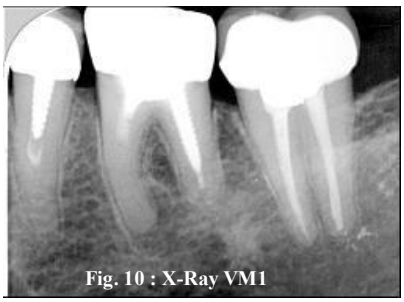

Fig. 10 : X-Ray VM1

After a troncular anesthesia without epinephrine, a triple injection was performed locally with a 1/100.000 **concentration of epinephrine-xylocaine anesthesia**.

The key to the success of such a delicate and complicated surgical treatment lies in the use of a surgical microscope (Zeiss Pro-Magis, Germany) and microsurgical tools, added to a specific range of ultrasonic instruments. This equipment allows the surgeon to proceed to the retro root canal therapy with total control and a perfect view of the lesion of the root apex. In addition, and this is absolutely essential, the microscope allows the clinician to check the cleanliness of the inner walls of the canal.

The full thickness flap is raised using a microsurgical periodontal approach in order to get the best possible aesthetic result combined with a perfect treatment of the concerned roots. Two windows are created regarding the tips of both roots, and special care must be taken not to bruise or cut the dental nerve (third trigeminal) just a couple millimetres away. The lesions are then taken out, followed by a complete and thorough curettage of the osseous cavity (Fig. 11, 12).

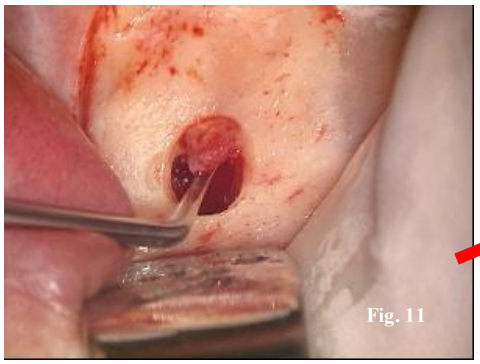
Fig. 11

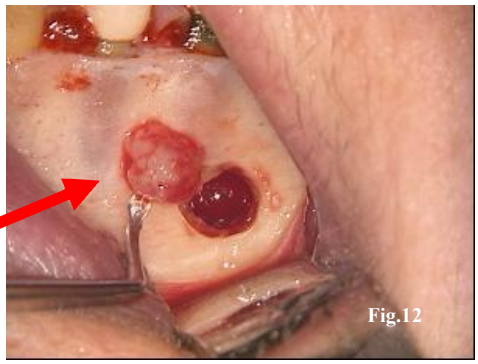
Fig.12

Both apices are cut at a straight angle, while removing a minimum of **root tissue**. Inspection of both roots with small microsurgical mirrors (Fig. 13, 14) shows two canals on Tooth #36. As expected: one is ill closed, while the lingual one had not even been treated. Tooth #34 shows one canal.


Fig.13

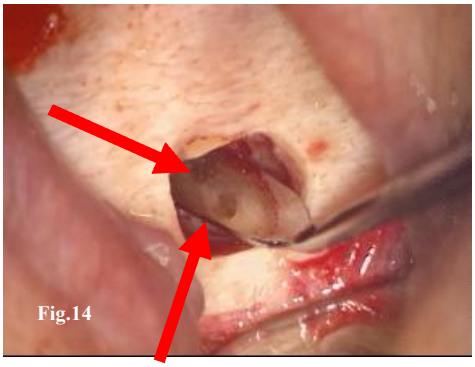
Fig.14

Using the EMS Berutti instrument (Fig. 15, 16), the old filling materials are removed and the non-instrumented canal is widened. The aim is to reach a minimum preparation depth of 3mm. (A deeper or more shallow preparation might be suitable, depending on the case.) At this point, it is often necessary to apply a hemostatic agent into the cavity to prevent any blood from interfering with the procedure.

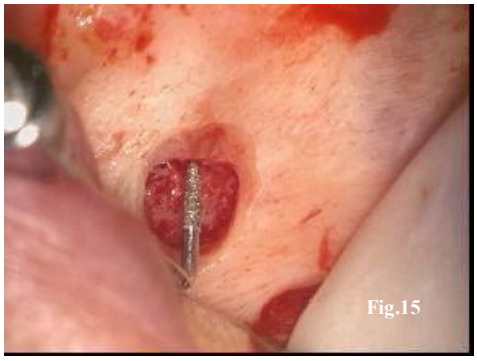
Fig.15


Fig.16

All three canals are cleaned thoroughly with the ultrasonic device, which adds a bactericidal effect to the mechanical debridement of the walls of the canals. **Then, the canals are dried and filled with a neutral filling paste (SuperEBA)** (Fig. 17, 18).

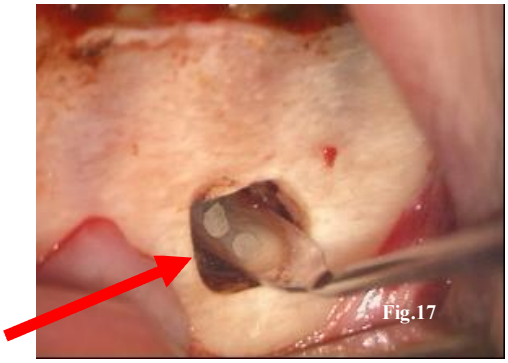
Fig.17


Fig.18

Once the filling has set, a final check accompanied by a polish of the root end, gives the opportunity to place the flap back in its original position. Occasionally it is necessary to add BioOs or BioOs Collagen (Geistlich, Switzerland) to fill the osseous defects, but only if they are very large, which is not the case in this example. The flap is then sutured into position, with absolutely no tension, normally using a 7-0 **Maxon resorbable suture** (Fig. 19, 20, 21). Some compression may be exerted on the flap for a couple of minutes. A control x-ray of the apiectomized teeth follows (Fig. 22: x-ray VM3).


Fig.19

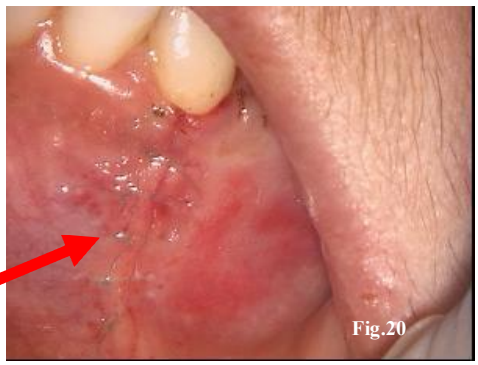
Fig.20


Fig.21

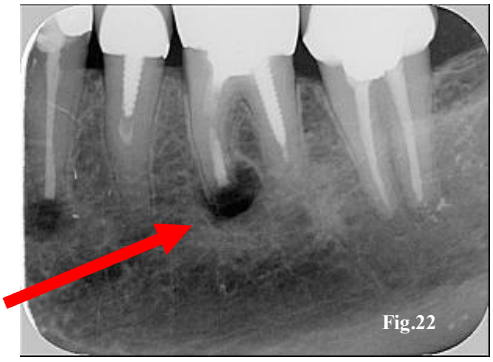
Fig.22

The patient is asked not to perform any physical activity for a minimum of two days and is given one 500mg tablet of mefenamic acid (Ponstan) to be taken immediately. She is instructed not to brush the area and to rest for a couple of hours lying down with the head resting higher. A cold pack can be used, but not directly on the skin, and for not more than 5 minutes every 20 minutes. A disinfectant mouth rinse should be used 3 times per day (Meridol of GABA, Switzerland).

The post-operative treatment generally takes place three days later. In this case, the patient experienced no pain, no discomfort, and virtually no swelling. The sensitivity of the dental nerve remained fully intact with no sign of paresthesia. The wound was completely closed, with little sign of inflammation, and the stitches were removed (Fig. 23). About 80% of patients who undergo this kind of surgery show comparable healing without the use of painkillers or anti-inflammatory drugs.


Fig. 23

The patient is requested not to brush the area for another couple of days and to continue the using the mouth rinse. She will be seen for a check-up in three months when a control x-ray will verify the ossification of the periapical zones.

About the clinician

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