

A 3-year Outcome of Endodontic Treatments Done with the RECIPROC® Single File Canal Preparation System

Ghassan Yared DDS MSc, Endodontist

This article reports on the 3-year outcome of initial root canal treatments and retreatments done with the RECIPROC® single file reciprocating system.

All treatments were performed by an endodontist, the author, in his private practice. The pre- and post- operative examinations and the 3-year recall examination were done by the same endodontist.

An access cavity with four walls was created for all the teeth included in the study.

■ Preparation protocol

The canal preparation was done with the RECIPROC® system as previously described (Yared G, 2008; <http://endodonticourses.com/literature>). Straight-line access to the canals was obtained by using the RECIPROC® instrument in a brushing motion as soon as the canal preparation was started. The working length was determined using a Root ZX apex locator with a reading between the 0.5 and Apex marks. The working length was continuously verified with the Root ZX during the canal preparation procedure by touching the file holder on the RECIPROC® instrument or the handpiece. The canals were frequently irrigated with 5.25% NaOCl which was left in the access cavity and the canal(s) during the canal preparation procedure. Increased apical enlargement was carried out if needed after the RECIPROC® reached the working length and after gauging the size of the canal at the working length. The enlargement was carried out until a 0.02 mm/mm taper file bound at the working length. At the end of the canal preparation, the canal walls were examined with high magnification to detect the presence of possible cracks in the endodontic retreatment cases. The tooth was excluded from the evaluation if a crack was suspected / detected.

ONE FILE ENDO
OUTCOME

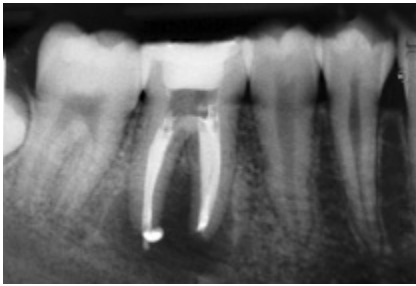


Fig. 1a

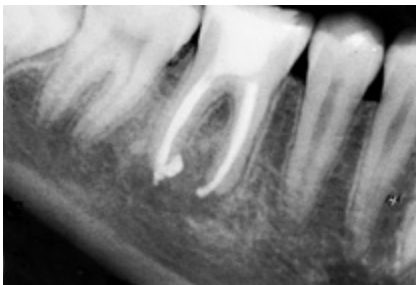


Fig. 1b

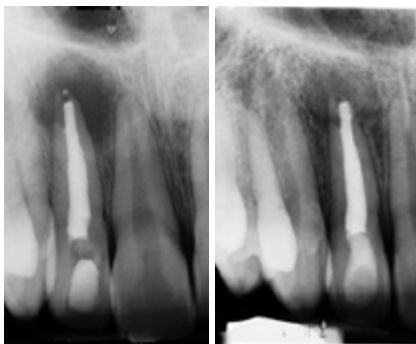


Fig. 2a

Fig. 2b

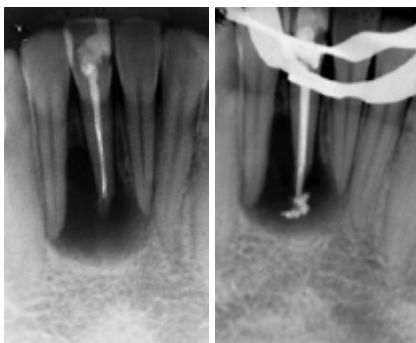


Fig. 3a

Fig. 3b



Fig. 3b

Matching RECIPROC® gutta-percha cones were used as a master cone when the canal preparation was completed with a RECIPROC® instrument to the working length. If increased apical enlargement was done, a standardized gutta-percha cone was fitted as a master cone.

After the cones were fitted, the NaOCl solution in the canals was refreshed and pumped with the master cone for a few seconds.

All cones were sterilized in the NaOCl solution for 1 minute prior to the obturation. The obturation was done with a single cone technique. AH Plus® sealer was used. The sealer was applied with a lentulo spiral size 40 that was introduced to 3 mm short of the working length. In wide canals, one or more accessory cones coated with sealer were added alongside the master cone. The gutta-percha was severed at the canal orifice with an electric heat carrier; a plugger was used to compact the softened gutta-percha in the coronal third of the root. If a post space was required, it was prepared by the endodontist at the same visit. Ca(OH)₂ was then placed in the post space. A temporary restoration, Cavit, was placed in the access cavity; the patient was referred back to the dentist for the permanent restoration, which was placed within 2 weeks of completion of the endodontic treatment. The placement of the permanent restoration within the 2-week period was confirmed by the treating dentist and the patient.

■ Selection criteria

All patients did not have any systemic diseases. All teeth included in this evaluation were free of periodontal disease. Initial treatments on teeth with (Group A) and without (Group B) apical disease, and retreatments on teeth without posts and with apical disease (Group C) were included in this report. Teeth with cracks in the crown were included only if the crack did not reach the pulpal floor and if a post was not required. Only teeth in which the root canal treatment was completed in one visit (including the teeth with a fistula) and in which the RECIPROC® instrument was able to reach the working length were included in this outcome report. The first 600 treatments were included.

■ Evaluation criteria

All patients were recalled for a follow-up 3 years after the root canal treatment was completed. Four hundred eighty six (486) teeth representing 81% of the treated teeth were available for the 3-year recall. Group A included 177 teeth (177/486; 36.42%). Two hundred two teeth were included in Group B (202/486; 41.56%). The remaining teeth (107/486; 22.02%) had root canal retreatments; those teeth had apical disease.

The treatment was classified as successful / healed and failed / not healed according to strict criteria. The successful / healed treatments are those for which the tooth was asymptomatic with no clinical and radiographic signs of an endodontic disease. All the other treatments were classified as failed / not healed. Cases showing significant but incomplete healing were considered as failed / not healed even if the tooth was asymptomatic (Fig. 1, 2 3). All the evaluations were done by the same endodontist.

■ Results

Table 1 shows the different outcome results. In Group A, 97.18 % of the teeth (172/177) were classified as successful / healed. For teeth with apical disease, the successful / healed rate was 93.07 % (188/202) and 91.59 % (98/107) for Groups B (Fig. 4) and C (Fig. 5), respectively. The total healing rate was 94.24 % (458/486).

The high successful / healed rates, mainly for Groups B and C, could be attributed to the following:

1. All endodontic treatments were done in a private clinic with ideal working conditions.
2. All the endodontic treatments were done by only one experienced endodontist proficient in the use of the RECIPROC® system.
3. All teeth received a permanent restoration within 2 weeks of completion of the endodontic treatment.
4. All teeth were restored prior to the endodontic treatment to obtain a four-wall access cavity.
5. All endodontic treatments were done entirely under high magnification using a dental microscope.
6. Teeth with posts were not included in the evaluation thus reducing the incidence of undetected vertical root fractures.
7. The root canal walls of all teeth that had a root canal retreatment were examined under high magnification at the end of the canal preparation to detect the presence of cracks. If a crack was detected, the tooth was excluded from the evaluation.

	Group A (177 teeth)	Group B (202 teeth)	Group C (107 teeth)
Successful / Healed	172 (97.18 %)	188 (93.07 %)	98 (91.59 %)
Failed / Not Healed	5 (2.82 %)	14 (6.93 %)	9 (8.41 %)
Total	177 (100 %)	202 (100 %)	107 (100 %)

Table 1

Acknowledgement

Dr. Ghassan Yared is the inventor of single file reciprocation and was involved in the development, field testing and research of RECIPROC®. He serves as a consultant to the RECIPROC® product range.

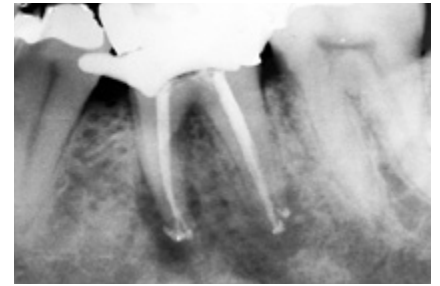


Fig. 4a



Fig. 4b



Fig. 5a



Fig. 5b



Ghassan Yared DDS MSc

Curriculum Vitae

Dr. Ghassan Yared is an endodontist practicing in Ontario, Canada. He completed his endodontic specialty training at University Paris VII (Paris, France) in 1987 and obtained his MSc from the Lebanese University (Beirut, Lebanon) in 1994.

Dr. Yared has been extensively involved in teaching. He joined the Faculty of Dentistry at the Lebanese University in Beirut, Lebanon in 1988 and became Professor and Head of the Department of Endodontics; he also created and chaired the Department of Research. He joined the Department of Endodontics at the University of Toronto, Canada in 1999 for a full-time position as Assistant Head of the Department of Endodontics and Director of the Endodontic Undergraduate Programme. He remained at that position as Associate Professor until summer 2004. He was Acting Head of the Department of Endodontics for 2003 and 2004. Dr. Yared was elected for four consecutive years as the “Best Teacher of the Year”, and received the “Master Bruce Howard Award for Excellence in Teaching”, the highest teaching award at the Faculty of Dentistry, University of Toronto.

Dr. Yared has supervised the research projects of graduate endodontic students at the University of Toronto and has published extensively in peer-reviewed international endodontic journals. He has also given numerous lectures and continuous education courses worldwide.

Dr. Yared is a reviewer for the International Endodontic Journal, the Journal of Endodontics, Endodontic Topics, and for Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontics. He is also a member of the Canadian Academy of Endodontology and the American Association of Endodontists.

Contact:

Dr. Ghassan Yared
101 Westmount Road
Guelph
ON N1H 5J2
Canada

www.endodonticcourses.com
email: ghassanyared@gmail.com