

Reciproc® Family Scientific Highlights

Peer-reviewed clinical evidence with Reciproc® family

“Influence of different endodontic treatment protocols on tooth survival: A retrospective cohort study with multistate analysis and group balancing”

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1 Aim

This study aimed to compare 3 treatment protocols on the survival of teeth after root canal treatment. Treatment protocol 1 included hand files, protocol 2 included multiple NiTi rotary instruments, and protocol 3 used Reciproc® (Reciproc® and Reciproc® Blue).

2 Method

This study is a retrospective cohort analysis including **14,233 endodontically treated teeth with a 5-10 year follow-up.**

- 5,450 teeth were treated with hand K-files (VDW, Munich, Germany) between 1999 and 2007.
- Starting in 2008, when new techniques were available on the market, 1,667 teeth were treated with multiple NiTi Rotary instruments (RaCe and BioRace, FKG, La Chaux de Fonds, Switzerland).
- Starting in 2011, 7,116 teeth were treated with Reciproc® instruments (R25, R40, R50, VDW, Munich, Germany), in compliance with the manufacturer instructions for use, i.e. no initial glide path. When Reciproc® could not reach the working length, in few cases, the glide path was performed manually.

Given the real-world nature of the data, collected from dental treatment records over 25 years (1999 to 2024), statistical adjustment combining multistate modeling, entropy balancing, and machine learning-based regression were used to account for treatment bias and confounding variables.

3 Results and take-home message

Protocol 3, using Reciproc®, was significantly superior in terms of long-term tooth survival and reduced need for reintervention:

- **The teeth survival rates, without further interventions, were 30-40% higher** with the protocol including Reciproc® compared to the other two treatment protocols.
- The incidence of non-surgical retreatments was 66% lower with the protocol using Reciproc® vs. the two other groups. The surgical retreatment incidence was 57% lower, and the incidence of tooth extractions was 21% lower, with the protocol using Reciproc®.

The authors stated, in the discussion section of the publication, that **“the superior performance of protocol 3 might be attributed to the specific features of Reciproc® system”**, including its ability to achieve patency and „These findings call into question the prevailing notion that treatment protocols or instrumentation types may only have a minimal or no impact on endodontic outcomes”.