BRASSELER USA®

One Brasseler Boulevard, Savannah, GA 31419
P 800.841.4522 F 888.610.1937
BrasselerUSA.com

ACE Endo Research Bibliography

XP-3D Shaper+

Ability to Adapt to the RC Original Anatomy, Dislodging Tissue

XP Shaper, A Novel Adaptive Core Rotary Instrument: Micro-computed Tomographic Analysis of Its Shaping Abilities
Adham A Azim, et al., J Endod 2017 Sept;43(9): 1532-1538.
The XP Shaper can expand beyond its core size to adapt to the anatomy of the root canal space. The XP Shaper can prepare and touch more canal walls in oval-shaped canals compared with Vortex Blue. The final preparation taper will vary according to the anatomy of the treated tooth.

Evaluation of Apical Dimension, Canal Taper and Maintenance of Root Canal Morphology Using XP-endo Shaper
Afif Tabbara et al. J Contemp Dent Pract 2019 Feb 1;20(2):136-144.
The XP-endo shaper was a safe and effective instrument to achieve a root canal preparation of at least size 30 and a 0.04 taper. The clinical performance of XP-endo shaper was to some extent dependent on preoperative volume and curvature of the root canal.

Micro-Computed Tomographic Analysis of the Shaping Ability of XP-Endo Shaper in oval-Shaped Distal Root Canals of Mandibular Molars
Poly, A, et al., Eur Endodontic J 2021; 6: 271-77.
This study provided data on the shaping ability of XP-Endo Shaper following the manufacturer's instructions of use compared to an additional long movements with the instrument.
XP-Endo Shaper led to a significantly percentage of unprepared areas overall and in the coronal walls of the root canal system.

The shaping ability of WaveOne Gold, TRUShape and XP-endo Shaper systems in oval-shaped distal canals of mandibular molars: A microcomputed tomographic analysis
Ane Poly, et al. Int Endod J 2021 Dec;54(12):2300-2306.
The comparison of three recognized root canal filing systems has shown that with similar preparation times, the XP-endo Shaper removed more dentine (mm^3) leaving less unprepared canal wall area (%) than WaveOne Gold and TRUShape when preparing oval-shaped root canals of extracted mandibular molars.

Adaptive instrumentation of root canals in primary teeth using XP-endo shaper: a case series
Bhagyashree Thakur et al, J Clin Pediatr Dent. 2023 Sep;47(5):170-175.
The use of the XP-endo Shaper for pulpectomy demonstrated faster and instrumentation that was confined with the original shape of the canals.

Safety, Disinfection

Bacteria and Hard Tissue Debris Extrusion and Intracanal Bacterial Reduction Promoted by XP-endo Shaper and Reciproc Instruments
Flávio R F Alves et al. J Endod 2018 Jul;44(7):1173-1178.
The intracanal bacterial reduction was higher with the XP-endo Shaper.

Apically Extruded Debris during Root Canal Instrumentation with Reciproc Blue, HyFlex EDM, and XP-

endo Shaper Nickel-titanium Files
Gülşah Uslu et al., J Endod 2018 May;44(5):856-859.
The amount of apically extruded debris registered for the different files tested was REC Blue > HEDM > XPS, with a statistical difference only between XPS and REC Blue.

Effect of Reciproc blue, XP-endo shaper, and WaveOne gold instruments on dentinal microcrack formation: A micro-computed tomographic evaluation
Zeliha Uğur Aydın et al., Microsc Res Tech 2019 Jun;82(6):856-860.
The XPS, WOG, and RPCB files did not cause new dentinal microcrack formation or propagation of existing dentinal microcracks.

Mechanical reduction in intracanal Enterococcus faecalis when using three different single-file systems: an ex vivo comparative study
B Üreyen Kaya et al. Int Endod J 2019 Jan;52(1):77-85.
Instrumentation in straight and round canals of premolar teeth with the Hyflex EDM and XP-endo Shaper resulted in significantly greater bacterial reduction than WaveOne Gold. No instrumentation system rendered root canals completely free from bacteria.

Incidence of Postoperative Pain after Single Visit Root Canal Treatment using XP-endo Shaper, 2Shape and ProTaper Gold Rotary Systems: A Prospective Randomized Clinical Trial
Kriti Kapoor et al. Eur Endod J 2023 Jan;8(1):47-54.
XP-endo Shaper exhibited least postoperative pain at all time intervals and treatment time, followed by 2S and PTG rotary systems respectively.

Retreatment Performance

***In vitro* comparative evaluation of efficiency of XP-endo shaper, XP-endo finisher, and XP-endo finisher-R files in terms of residual root filling material, preservation of root dentin, and time during retreatment procedures in oval canals - A cone-beam computed tomography analysis**
Khyati Kapasi, et al. J Conserv Dent 2020 Mar-Apr;23(2):145-151.
XP-Shaper + XP-Finisher removed gutta-percha more significantly without sacrificing the sound dentin along with instrumentation.

Accumulation of Dentin Debris

Evaluation of several instrumentation and irrigation methods on the percentage of untouched canal wall and accumulated debris in C-shaped canals
Y Zhao et al., Int Endod J 2019 Sep;52(9):1354-1365.
Both Reciproc Blue (RB) and XP-S (XP-endo Shaper) systems were associated with similar accumulated hard-tissue debris (AHTD) after instrumenting C-shaped canals. RB left significantly greater levels of AHTD when compared with XP-S. Passive Ultrasonic Irrigation and XP-Finisher irrigation removed more debris than syringe and needle irrigation when using the RB system.

Triton Irrigation

Antimicrobial Activity, Smear Layer and Debris Reduction

In vitro Evaluation of Smear Layer and Debris Removal and Antimicrobial Activity of Different Irrigating Solutions
Raffaella Castagnola, et al. Eur Endod J 2024 Jan 1;9(1):81-88.
Triton was the most effective irrigation solution in removing debris and as effective as NaOCl/ EDTA in removing the smear layer. Triton showed the highest efficacy against C. albicans. New irrigating solutions that provide continuous chelation may provide an alternative to current irrigation protocols.

Dual effectiveness of a novel all-in-one endodontic irrigating solution in antibiofilm activity and smear layer removal
Sheng X et al., Front Bioeng Biotechnol 2023 Aug 1:11:1254927.
This study findings demonstrated that Triton could provide dual benefits of antibiofilm and smear layer removal capabilities simultaneously, indicating a simplified and effective strategy for application in root canal treatment.

BC Sealer Obturation

Biocompatibility, Osteogenic Properties

Comparison of the biocompatibility of calcium silicate-based materials to mineral trioxide aggregate: Systematic review
Gomes de Oliveira et al. Eur J of Dent, 2018 April; 12(2).
Bioceramic materials have biological properties like those of MTA, including low cytotoxicity as well as promoting cell proliferation and adhesion, low expression of inflammatory cytokines, and reduced pulp inflammation.

Comparative Biocompatibility and Osteogenic Potential of Two Bioceramic Sealers
Giacomino CM et al, Journal of Endodontics, 2019; 45(1):51- 56.
EndoSequence BC Sealer and ProRoot ES were significantly more biocompatible and promoted osteoblastic differentiation, a bioactivity not found in AH Plus and Roth sealers.

In Vitro Biocompatibility, Inflammatory Response, and Osteogenic Potential of 4 Root Canal Sealers: Sealapex, Sankin Apatite Root Sealer, MTA Fillapex, and iRoot SP Root Canal Sealer
Chang, Lee, Kang, Kum, Kim. Journal of Endodontics, 2014 (online June 7th， 2014).
iRoot SP (aka BC Sealer) showed lower expression of inflammatory mediators and enhanced osteoblastic differentiation of PDLCs.

Antimicrobial Properties

Antibacterial activity of endodontic sealers by modified direct contact test against *Enterococcus faecalis*
Hui Zhang et al. J Endod 2009 Jul;35(7):1051-5.
Fresh iRoot SP, AH Plus, and EndoRez killed E. faecalis effectively. IRoot SP and EndoRez continued to be effective for 3 and 7 days after mixing.

Dentin Extends the Antibacterial Effect of Endodontic Sealers against Enterococcus Faecalis Biofilms
Wang, Zhejun, et al. Journal of Endodontics, 2014; 40(4):505–508.
The 3 endodontic root canal sealers had antibacterial effects against E. faecalis in the dentinal tubules. BC sealer and AH Plus had superior antibacterial effects compared with PCEWT. The antibacterial effects of sealers in dentinal tubules continued after setting.

Cytotoxicity, genotoxicity, and antibacterial effectiveness of a bioceramic endodontic sealer
International Endodontic Journal, 2015 Aug.
Bioceramic-based sealer had less cytotoxicity and genotoxicity and similar antibacterial effect against *E. faecalis* in comparison with AH Plus sealer.

The Antimicrobial Effect of Bioceramic Sealer on an 8-week Matured Enterococcus faecalis Biofilm Attached to Root Canal Dentinal Surface
Bukhari S, Karabucak B, J Endod 2019;45:1047–1052.
EndoSequence BC Sealer exhibited significant antimicrobial capacity in the presence of dentin for up to 2 weeks on an 8-week-old *E. faecalis* biofilm in comparison with AH Plus sealer.

Sealing Ability

A Scanning Electron Microscope Analysis of Sealing Potential and Marginal Adaptation of Different Root Canal Sealers to Dentin: An *In Vitro* study
Patri G et al. The Journal of Contemporary Dental Practice, 2020 Jan; 21(1):73-77
In this evaluation of the sealing potential and marginal adaptation of different root canal sealers (ProRoot MTA, EndoREZ, Endosequence BC sealer) to dentin, significantly better sealing ability and marginal adaptation was demonstrated by Endosequence BC sealer.

Antibacterial activity of endodontic sealers by modified direct contact test against *Enterococcus faecalis*
Hui Zhang et al. J Endod 2009 Jul;35(7):1051-5.
BC Sealer, by far had the lowest contact angle/wetting ability. The authors attribute the favorable sealing properties of BC Sealer to its combination of high pH, hydrophilicity, and active calcium hydroxide diffusion.

Retreatability

Retreatment efficacy of hydraulic calcium silicate sealers used in single cone obturation
Garrib M, Camilleri J. Journal of Dentistry, 2020 July; 98.
17% EDTA and 10% formic acid applied for 5 minutes used in conjunction with mechanical instrumentation achieved over 95% removal of GP and sealer and achieved patency and reestablishment of the working length while not damaging the dentin.

Dentinal Tubule Penetration and Retreatability of a Calcium Silicate-based Sealer Tested in Bulk or with Different Main Core Material
Eymirli A et al. Journal of Endodontics, 2019 Aug; 45(8)1036-1040.
The best sealer penetration was achieved with the use of 0.04 tapered GP points. Removal of the sealer was easier when it was accompanied by GP points.

A micro-computed tomographic study of remaining filling materials of two bioceramic sealers and epoxy resin sealer after retreatment
Restorative Dentistry & Endodontics, 2019 April; vol. 44.
EndoSeal MTA had large amounts of sealer remaining while there was no difference between the BC sealer and AH Plus.

Manufactured For:
Brasseler U.S.A, LLC
One Brasseler Blvd
Savannah, GA 31419, U.S.A.

REV0 4/5/2024