

Literaturverzeichnis

SAF-System – Teil 3: Reinigung und Formgebung in allen Wurzelkanalabschnitten

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1. Cheung GS, Liu CS, de Chevigny C, Dao TT, Basrani BR, Marquis V, Farzaneh M, Abitbol S, Friedman S. Treatment outcome in endodontics: the Toronto study-phase 4: initial treatment. *J Endod* 2008;34:258-263.
2. Molander A, Caplan D, Bergenholtz G, Reit C. Improved quality of root fillings provided by general dental practitioners educated in nickel–titanium rotary instrumentation. *Int Endod J* 2007;40:254–260.
3. Larsen CM, Watanabe I, Glickman GN, He J. Cyclic fatigue analysis of a new generation of nickel titanium rotary instruments. *J Endod* 2009;35:401–403.
4. Al-Hadlaq SM, Aljarbou FA, AlThumairy RI. Evaluation of cyclic flexural fatigue of Mwire nickel-titanium rotary instruments. *J Endod* 2010;36:305–307.
5. Peters OA, Peters CI, Schönenberger K, Barbakow F. ProTaper rotary root canal preparation: effects of canal anatomy on final shape analysed by micro CT *Int Endod J* 2003; 36:86-92.
6. Shemesh H, Bier CA, Wu MK, Tanomaru-Filho M, Wesselink PR. The effects of canal preparation and filling on the incidence of dentinal defects. *Int Endod J* 2009;42:208-213.
7. Bier CA, Shemesh H, Tanomaru-Filho M, Wesselink PR, Wu MK. The ability of different nickel-titanium rotary instruments to induce dentinal damage during canal preparation. *J Endod* 2009;35:236-238.

8. De-Deus G, Barino B, Zamolyi RQ, Souza E, Fonseca A JR, Fidel S, Fidel RA. Suboptimal debridement quality produced by the single-file F2 ProTaper technique in oval-shaped canals. *J Endod* 2010;36:1897-1900.
9. Paqué F, Ballmer M, Attin T, Peters OA. Preparation of oval-shaped root canals in mandibular molars using nickel-titanium rotary instruments: a micro-computed tomography study. *J Endod* 2010;36:703-707.
10. Siqueira JF, Alves FRF, Bernardo M, Almeida BM, Machado de Oliveira JC, Rôças IN. Ability of chemomechanical preparation with either rotary instruments or Self-Adjusting File to disinfect oval-shaped root canals. *J Endod* 2010;36:1860-1865.
11. Metzger Z, Zary R, Cohen R, Teperovich E, Paqué F. The quality of root canal preparation and root canal obturation in canals treated with rotary versus Self Adjusting Files: A three-dimensional micro-computed tomographic study. *J Endod* 2010;36:1569-1573.
12. Paqué F, Peters OA. Micro-computed tomography evaluation of the preparation of long oval root canals in mandibular molars with the Self-Adjusting File. *J Endod* 2011;37:517-521.
13. De-Deus G, Souza EM, Barino B, Maia J, Zamolyi RQ, Reis C, Kfir A. The Self-Adjusting File optimizes debridement quality in oval-shaped root canals. *J Endod* 2011;37:701-705.
14. Adorno CG, Yoshioka T, Suda H. Crack Initiation on the apical root surface caused by three different nickel-titanium rotary files at different working lengths. *J Endod* 2011;37:522-525.
15. Yoldas O, Yilmaz S, Atakan G, Kuden C, Kasan Z. Dentinal microcrack formation during root canal preparations by different Ni-Ti rotary instruments and the Self-adjusting File. *J Endod* 2012;38:232-235.

16. Alves FRF, Almedina BM , Neves MAS, Rôças IN, Siqueira Jr. Time-dependent antibacterial effects of the Self-Adjusting File used with two sodium hypochlorite concentrations. *J Endod* 2011;37:1451-1455.
17. de Melo Ribeiro MV, Silva-Sousa YT, Versiani MA, Lamira A Steier L, Pecora JD, de Sousa-Neto MD. Comparison of the cleaning efficacy of self-adjusting file and rotary systems in the apical third of oval-shaped canals. *J Endod* 2013;39:398-401.
18. Hin ES, Wu M-K, Wesselink PR, Shemesh H. Effects of Self-Adjusting File, Mtwo, and ProTaper on the root canal wall. *J Endod* 2013;39:262–264.
19. Liu R, Kaiwar A, Shemesh H, Wesselink PR, Hou B, Wu M-K. Incidence of apical root cracks and apical dentinal detachments after canal preparation with hand and rotary files at different instrumentation lengths. *J Endod* 2013;39:129-132.
20. Metzger Z, Teperovich E, Zary R, Cohen R, Hof R. The Self-Adjusting File (SAF). Part 1: Respecting the root canal anatomy-a new concept of endodontic files and its implementation. *J Endod* 2010;36:679-690.
21. Metzger Z. From Files to SAF: 3D endodontic treatment is possible at last. *Alpha Omega* 2011;104:36-44.
22. Metzger Z, Kfir A, Abramovitz I, Weissman A, Solomonov M. The Self-adjusting File system. *ENDO (Lond Eng)* 2013;7:189-210.
23. Metzger Z, Cohen R, Zary R, Teperovich E, Paqué F, Hülsmann M The Self-Adjusting File (SAF). Part 3: Removal of debris and smear layer - a scanning electron microscope study. *J Endod* 2010;36:697-702.
24. Peters OA, Paqué F. Root canal preparation of maxillary molars with the Self-Adjusting File : A micro-computed tomography study. *J Endod* 2011;37:53-57.

25. Versiani MA, Pecora JD, de Sousa-Neto MD. Flat-oval root canal preparation with self-adjusting file instrument: a micro-computed tomography study. *J Endod* 2011;37:1002-1007.
26. Yiğit-Özer S, Adigüzel Ö, Kaya S. Removal of debris and smear layer in curved root canals using Self-Adjusting File with different operation times. A scanning electron microscope study. *Int Dent Res* 2011;1:1-6.
27. Solomonov M, Paqué F, Fan B, Eilat Y, Berman LH. The Challenge of C-shaped canal systems: A comparative study of the Self-Adjusting File and ProTaper. *J Endod* 2012;38:209-214.
28. Hof R, Perevalov V, Eltanani M, Zary R, Metzger Z. The self-adjusting-file (SAF). Part 2: Mechanical analysis. *J Endod* 2010;36:691-696.
29. Nielsen B A, Baumgartner JC. Comparison of the EndoVac system to needle irrigation of root canals. *J Endod* 2007;33:611-615.
30. Schoeffel GJ. The EndoVac method of endodontic irrigation, part 2-efficacy. *Dent Today* 2008; 27: 82, 84, 86-87.
31. Heilborn C, Reynolds K, Johnson JD, Cohenca N. Cleaning efficacy of an apical negative-pressure irrigation system at different exposure times. *Quintessence Int* 2010;41:759-767.
32. Shin SJ, Kim HK, Jung IY, Lee CY, Lee SJ, Kim E. Comparison of the cleaning efficacy of a new apical negative pressure irrigating system with conventional irrigation needles in the root canals. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2010;109:479-484.
33. Cupkova V, Sirotkova L, Mlynarcik D, Devinsky F, Lacko I, Kovackova Z. Primary biodegradation of amine oxide and quaternary ammonium amphiphiles. *Folia Microbiol* 1993; 38: 43-48.

34. Haapasalo HK, Siren EK, Waltimo TM. Inactivation of local root canal medicaments by dentine: an in vitro study. *Int Endod J* 2000; 33:126-131.
35. Camps J, Pashley DH. Buffering action of human dentine in vitro. *J Adhes Dent* 2000 2: 39-50.
36. Vianna ME, Gomes BP, Berber VB, et al. In vitro evaluation of the antimicrobial activity of chlorhexidine and sodium hypochlorite. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2004;97:79–84.
37. Portenier I, Waltimo T, Ørstavik D, et al. The susceptibility of starved, stationary phase, and growing cells of *Enterococcus faecalis* to endodontic medicaments *J Endod* 2005;31:380–386.
38. Haapasalo M, Shen Y, Qian W, Gao y. Irrigation in Endodontics *Dent Clin N Am* 2010; 54: 291-312.
39. Basrani B, Haapasalo M. Update on endodontic irrigating solutions. *Endo Topics* 2012; 27: 74-102.
40. Ram Z. Effectiveness of root canal irrigation. *Oral Surg Oral Med Oral Pathol* 1977;44:306–312.
41. Metzger Z, Solomonov M, Kfir A. The role of mechanical instrumentation in the cleaning of root canals. *Endod Topics* 2013, 29, 87–109.
42. De-Deus G, Leal Silva EJM, Moreira EJ, de Almeida Neves A, Alves Belladonna FG, Tameirão M. Assessment of apically extruded debris produced by the Self-Adjusting File. *J Endod* 2014;40:526–529.
43. Chow TW. Mechanical effectiveness of root canal irrigation. *J Endod* 1983;9: 475–479
44. Boutsoukis C, Lambrianidis T, Kastrinakis E. Irrigant flow within a prepared root canal using various flow rates: a computational fluid dynamics study. *Int Endod J* 2009;42:144–155.

45. Townsend C, Maki J. An in vitro comparison of new irrigation and agitation techniques to ultrasonic agitation in removing bacteria from a simulated root canal. *J Endod* 2009;35:1040–1043.
46. Gulabivala K, Ng Y-L, Gilbertson M, Eames I. The fluid mechanics of root canal irrigation. *Physiol Meas* 2010;31: R49–R84.
47. Munoz HR, Camacho-Cuadra, K. In vivo efficacy of three different endodontic irrigation systems for irrigant delivery to working length of mesial canals of mandibular molars *J Endod* 2012;38:445–448.
48. Saad AY, Al-Hadlaq SM, Al-Katheeri NH. Efficacy of two rotary NiTi instruments in the removal of gutta-percha during root canal retreatment. *J Endod* 2007;33: 38-41.
49. Giuliani V, Cocchetti R, Pagavino G. Efficacy of ProTaper universal retreatment files in removing filling materials from root canal. 2008;34: 1381-1384.
50. Gu L-S, Ling J-Q, Wei X, Huang X-Y. Efficacy of ProTaper Universal rotary retreatment system for gutta-percha removal from root canals. *Int Endod J* 2008;41:288-295.
51. Takahashi CM, Cunha RS, De-Martin AS, Fontana CE, Silveira CFM, da-Silveira-Beuno CE. In Vitro evaluation of the effectiveness of ProTaper Universal rotary retreatment system for gutta-percha removal with or without a solvent. *J Endod* 2009;35:1580-1583.
52. Taşdemir T, Yildirim Er K, Çelik D. Efficacy of three rotary NiTi instruments in removing gutta-percha from root canals. *Int Endod J* 2008;41: 191-196.
53. Abramovitz I, Relles-Bonar S, Baransi B, Kfir A. The effectiveness of a self-adjusting file to remove residual gutta-percha after retreatment with rotary files. *Int Endod J* 2012;45:386-392.

54. Solomonov M, Paqué F, Kaya S, Adıgüzel Ö, Kfir A, Yiğit-Özer S. Self-Adjusting Files in retreatment: A high-resolution micro-computed tomography study. *J Endod* 2012;38:1283–1287.
55. Adıgüzel Ö, Yiğit-Özer S, Kaya S, Uysal I, Ganidaüli –Ayas S, Akkus Z. Effectiveness of ethylenediaminetetraacetic acid (EDTA) and MTAD on debris and smear layer removal using a Self-Adjusting File. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2011;112: 803-808.
56. Lin J, Shen Y, Haapasalo M. A comparative study of biofilm removal with hand, rotary nickel-titanium, and Self-Adjusting File instrumentation using a novel in vitro biofilm model. *J Endod* 2013; 39:658-663.
57. Capar ID, Ozcan E, Arslan H, ErtasH, *Aydinbelge HA*. Effect of different final irrigation methods on the removal of calcium hydroxide from an artificial standardized groove in the apical third of root canals. *J Endod* 2014;40: 451-454.
58. de Gregorio C, Arias A, Navarrete N, del Rio V, Oltra E, Cohenca N. Effect of apical size and taper on volume of irrigant delivered at working length with apical negative pressure at different root curvatures *J Endod* 2013;39:119–124.
59. Kunert GG, Camargo VR, Fontanella VRC, de Moura AAM, Barletta FB. Analysis of apical root transportation associated with ProTaper Universal F3 and F4 instruments by using digital subtraction radiography. *J Endod* 2010;36:1052-1055.
60. Kim HC, Lee MH, Yum J, Versluis A, Lee CJ, Kim BM. Potential relationship between design of nickel-titanium rotary instruments and vertical root fracture. *J Endod* 2010;36:1195-1199.
61. Hülsmann M, Rummelin C, Schäfers F. Root canal cleanliness after preparation with different endodontic handpieces and hand instruments: a comparative SEM investigation. *J Endod* 1997;23:301–306.

62. Hülsmann M, Bluhm V. Efficacy, cleaning ability and safety of different rotary NiTi instruments in root canal retreatment. *Int Endod J* 2004; 37:468–476.
63. Versümer J, Hülsmann M, Schäfers F. A comparative study of root canal preparation using ProFile .04 and Lightspeed rotary Ni-Ti instruments. *Int Endod J* 2002;35:37–46.
64. Gambarini G, Laszkiewicz J. A scanning electron microscopic study of debris and smear layer remaining following use of GT rotary instruments. *Int Endod J* 2002;35:422–427.
65. Mayer BE, Peters OA, Barbakow F. Effect of rotary instruments and ultrasonic irrigation on debris and smear layer scores: a scanning electron microscopic study. *Int Endod J* 2002;35:582–589.
66. Paqué F, Musch U, Hülsmann M. Comparison of root canal preparation using RaCe and ProTaper rotary Ni-Ti instruments. *Int Endod J* 2005;38:8–16.
67. Peters OA, Boessler C, Paqué F. Root canal preparation with a novel nickel-titanium instrument evaluated with micro-computed tomography: canal surface preparation over time. *J Endod* 2010;36:1068-1072.
68. Wu M-K, R'oris A, Barkis D, Wesselink PR. Prevalence and extent of long oval canals in the apical third. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2000;89:739-743.
69. Versiani MA, Leoni GB, Steier L, De-Deus GA, Tassani S, Pécora JD, de Sousa-Neto MD. Micro-computed tomography study of oval-shaped canals prepared with the Self-adjusting File, Reciproc, WaveOne, and ProTaper Universal Systems. *J Endod* 2013; 39:1060-1066.
70. Yang ZP, Yang SF, Lin YC, Shay JC, Chi CY. C-shaped root canals in mandibular second molars in a Chinese population. *Endod Dent Traumatol* 1988;4:160–163.

71. Cooke HG, Cox FL. C-shaped canal configurations in mandibular molars. *J Am Dent Assoc* 1979;99:836–839.
72. Walker RT. Root form and canal anatomy of mandibular second molars in a southern chinese population. *J Endod* 1988;14:325–329.
73. Fan B, Pan Y, Gao Y, Fang F, g Wu Q, Gutmann JL. Three-dimensional morphologic analysis of isthmuses in the mesial roots of mandibular molars. *J Endod* 2010;36:1866–1869.
74. Hsu YY, Kim S. The resected root surface. The issue of canal isthmuses. *Dent Clin N Am* 1997;41:529-540.
75. Nair PNR, Henry S, Cano V, Vera J. Microbial status of apical root canal system of human mandibular first molars with primary apical periodontitis after “one-visit” endodontic treatment. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2005;99:231-252.
76. Paqué F, Laib A, Gautschi H, Zehnder M. Hard-tissue debris accumulation analysis by high-resolution computed tomography scans. *J Endod* 2009;35:1044-1047.
77. Paqué F, Boessler C, Zehnder M. Accumulated hard tissue debris levels in mesial roots of mandibular molars after sequential irrigation steps. *Int Endod J* 2011;44:148-153.
78. Paqué F, Al-Jadaa A, Kfir A. Hard tissue debris accumulation caused by conventional rotary versus Self-Adjusting File instrumentation in mesial root canal systems of mandibular molars. *Int Endod J* 2012;45:413-418.
79. De-Deus G, Gurgel-Filho ED, Magalhães KM, Coutinho-Filho T. A laboratory analysis of gutta-percha filled area obtained using Thermafil, system B and lateral condensation. *Int Endod J* 2006;39:378–383.

80. De-Deus G, Reis C, Beznos D, Gruetzmacher-de-Abranches AM, Coutinho-Filho T, Pacionrik S. Limited ability of three commonly used thermoplasticised gutta-percha techniques in filling oval-shaped canals. *J Endod* 2008;34:1401-1405.
81. De-Deus G, Barino B, Marins J, Magalhães K, Thuanne E, Kfir A. Self-Adjusting File cleaning-shaping-irrigation system optimizes the filling of oval-shaped canals with thermoplasticized gutta-percha. *J Endod* 2012;38:846-849.
82. Paqué F, Ganahl D, Peters OA. Effects of root canal preparation on apical geometry assessed by micro-computed tomography. *J Endod* 2009;35:1056–1059
83. Siqueira JF Jr, Rôças IN, Santos SRLD, Lima KC, Magalhães AC, de Uzeda M. Efficacy of instrumentation techniques and irrigation regimens in reducing the bacterial population within root canals. *J Endod* 2002; 28: 181-184.
84. Brito PRR, Souza LC, de Oliveira JCM, Alves FLF, De-Deus G, Lopes HP, Siqueira JF Jr. Comparison of the effectiveness of three irrigation techniques in reducing intracanal *Enterococcus faecalis* populations: An in vitro study. *J Endod* 2009;35:1422–1427.
85. Neves MAS, Rôças IN, Siqueira JF Jr. Clinical antibacterial effectiveness of the self-adjusting file system. *Int Endod J* 2014;47:356–365.
86. Paranjpe A, de Gregorio C, Gonzalez AM, Gomez A, Silva Herzog D, Aragón Piña A, Cohenca N. Efficacy of the Self-Adjusting File System on cleaning and shaping oval canals: A microbiological and microscopic evaluation. *J Endod* 2012;38:226–231.
87. Wilcox LR, Roskelley C, Sutton T. The relationship of root canal enlargement to finger spreader induced vertical root fractures. *J Endod* 1997;23:533-434.

88. Card S, Sigurdsson A, Orstavik D, Trope M. The effectiveness of increased apical enlargement in reducing intracanal bacteria. *J Endod* 2002;28:779–783.93. Buchanan LS. Management of the curved root canal. *J Cal Dent Assoc* 1989;17;18–25, 27.
89. Hecker H, Bartha T, Lost C, Weiger R. Determining the apical size in premolars: part III. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, And Endodontics* [Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2010;110:118-124.
90. Brunson M, Heilborn C, Johnson DJ, Cohenca N. Effect of apical preparation size and preparation taper on irrigant volume delivered by using negative pressure irrigation system. *J Endod* 2010; 36:721- 724.
91. Bürklein S, Tsotsis P, Schäfer E. Incidence of dentinal defects after root canal preparation: Reciprocating versus rotary Instrumentation. *J Endod* 2013; 39:501-504.
92. Kim HC, Sung SY, Ha JH, Solomonov M, Lee JM, Lee CJ, Kim BM. Stress generation during Self-Adjusting File movement: minimally invasive instrumentation. *J Endod* 2013;39:1572–1575.
93. Shemesh H, Roeleveld AC, Wesselink PR, Wu MK. Damage to root dentin during retreatment procedures. *J Endod* 2011;37:63-66.
94. Anderson TL. *Fracture mechanics: fundamentals and applications*. 3rd ed. Taylor & Francis, 2005.
95. Voet KC, Wu M-K, Wesselink PR, Shemesh H. Removal of gutta-percha from root canals using the Self-Adjusting File. *J Endod* 2012; 38:1004-1006.
96. Solomonov M. Eight months of clinical experience with the Self-Adjusting File system. *J Endod* 2011;37: 881-887.