

**Est-ce que l'instrumentation permet
de toucher toutes les parois
canales ?**



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Non



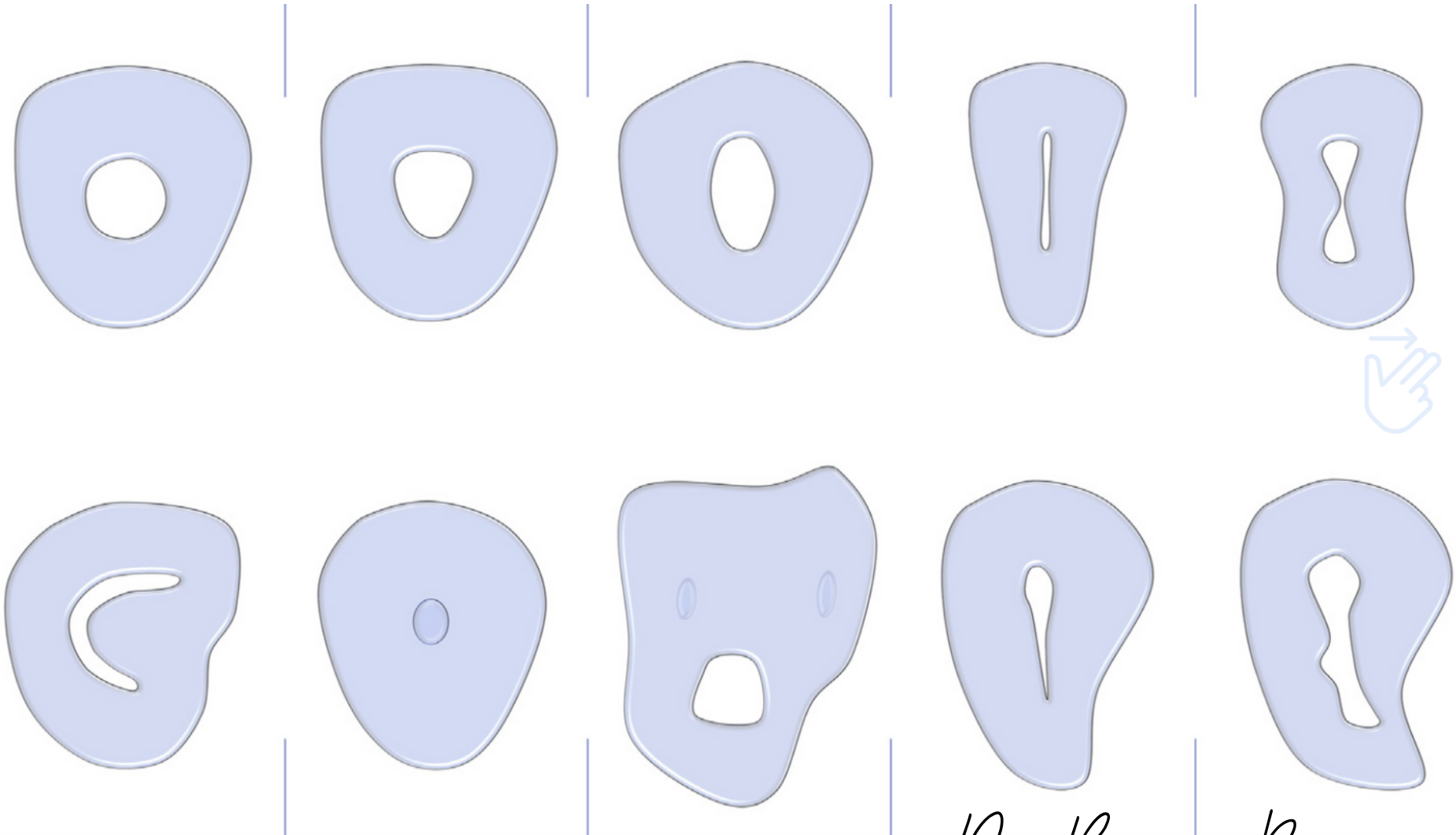
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Pourquoi ?



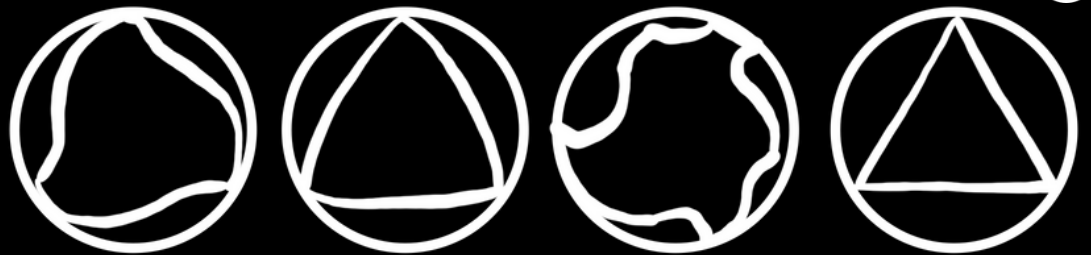
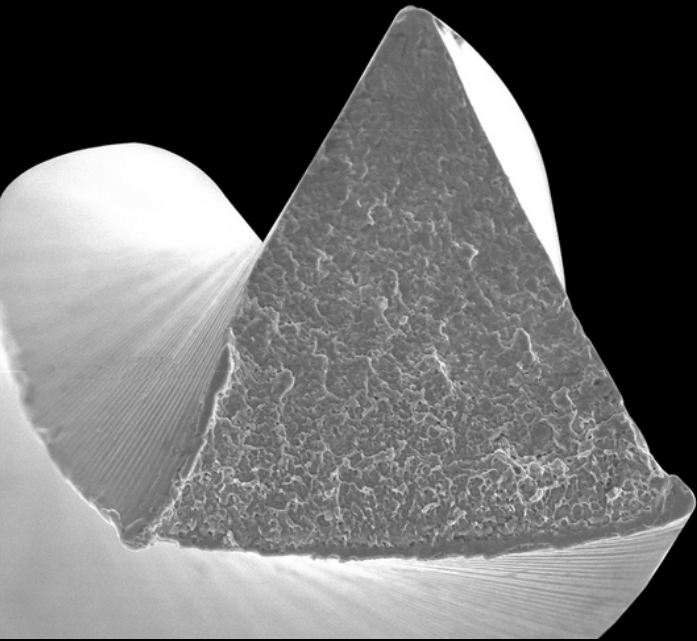
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Parce que la forme géométrique des canaux est rarement ronde...



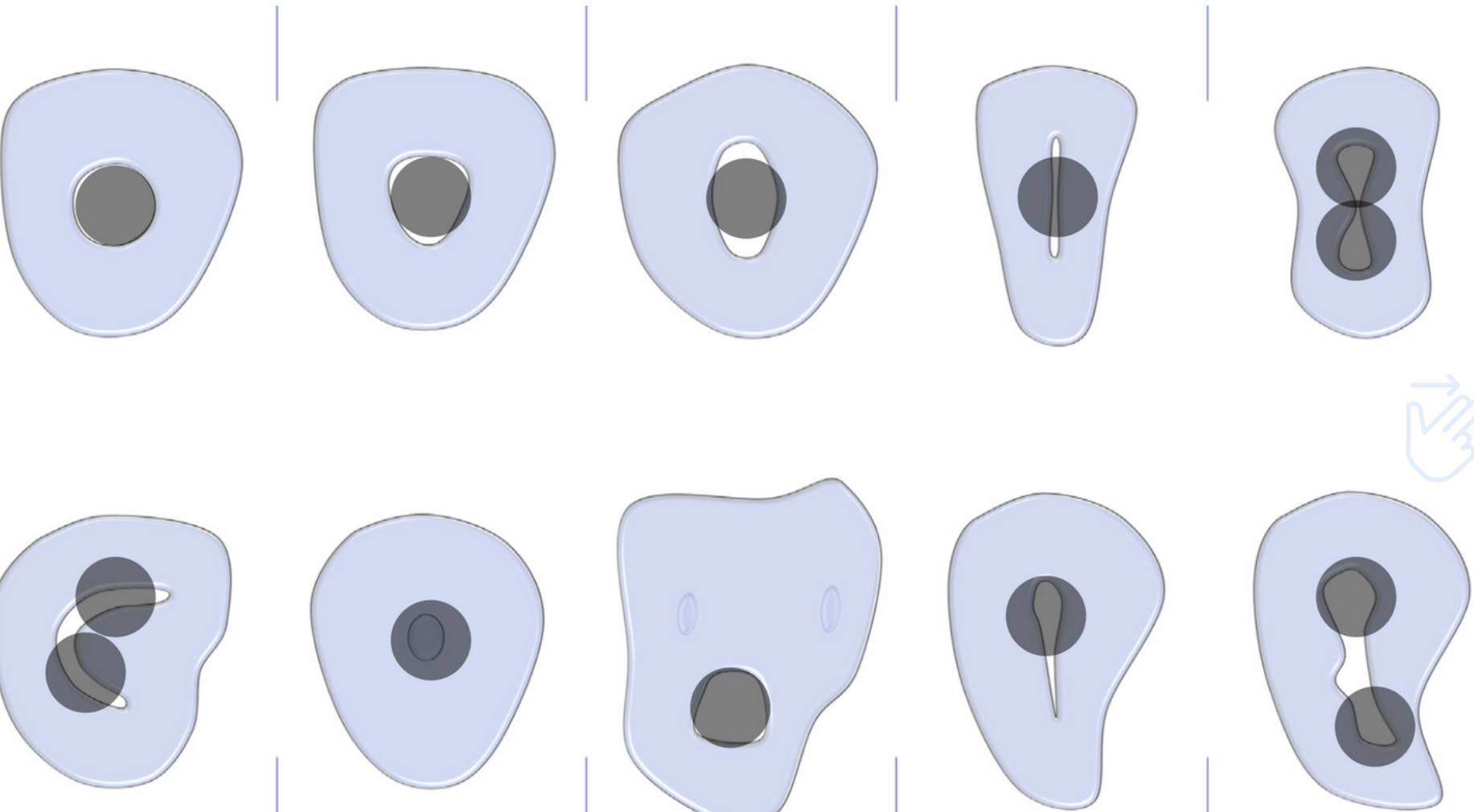
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Alors que la forme géométrique des instruments de préparation canalaire est ronde, quel que soit le design en coupe de l'instrument (triangulaire, en double S etc...)



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Ce qui explique pourquoi l'instrumentation ne permet pas de toucher de 10% à 55% des surfaces des parois canalaire selon les études.



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Cleaning and Shaping Oval Canals with 3 Instrumentation Systems: A Correlative Micro-computed Tomographic and Histologic Study



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Abstract

Introduction: The present study evaluated the cleaning and shaping ability of 3 instrumentation systems in oval canals of extracted vital teeth using a correlative analytic approach. **Methods:** Oval distal canals from 33 freshly extracted mandibular molars with pulp vitality were scanned by micro-computed tomographic (micro-CT) imaging for sample selection. Specimens matched by anatomic similarities were distributed into 3 experimental groups according to the instrument system to be evaluated: the Self-Adjusting File (SAF; ReDentNOVA, Ra'anana, Israel), TRUShape (Dentsply Sirona, Tulsa, OK), and XP-endo Shaper (FKG Dentaire, La Chaux-de-Fonds, Switzerland). The irrigant was 5.25% sodium hypochlorite heated at 37°C. After rescanning with micro-CT imaging, the unprepared surface areas were identified, measured, and then histologically evaluated for the amount of pulp remnants in each root third. **Results:** When the apical 4-mm canal segment was evaluated, the SAF exhibited significantly less unprepared areas than the XP-endo Shaper ($P < .05$), and there were no significant differences for the other comparisons ($P > .05$). Analysis of the full canal length showed no statistically significant differences between the 3 tested systems ($P > .05$). Likewise, the tested systems did not differ significantly in cleaning the unprepared walls ($P > .05$). **Conclusions:** There was no significant difference in the amount of unprepared surface areas between the 3 instrument systems, except for the comparison between the SAF and XP-endo Shaper in the apical 4-mm segment. None of them prepared 100% of the root canal walls. The cleaning ability of the 3 systems was similar. (*J Endod* 2017;43:1878–1884)

Key Words

Cleaning and shaping, endodontic treatment, histology, micro-computed tomography

Oval-shaped canals pose a significant challenge for adequate root canal cleaning, shaping, and disinfection, especially when rotary instruments are used for preparation (1). This is because rotary instrumentation usually sculpts a round cross-sectional shape, which leaves behind untouched recesses in the extremities of the largest diameter of the oval canal. The incidence of oval-shaped canals is high in mandibular incisors, maxillary second premolars, and the distal root of mandibular molars (2). Studies using micro-computed tomographic (micro-CT) imaging have revealed that the amount of unprepared canal surface areas ranges from 5%–80% in oval-shaped canals after using different instrumentation techniques (3–10).

Instruments with different designs and concepts have been introduced to deal with canals with complex anatomy, including oval-shaped canals. They include the Self-Adjusting File (SAF) (ReDentNOVA, Ra'anana, Israel), TRUShape (Dentsply Sirona, Tulsa, OK), and XP-endo Shaper (FKG Dentaire, La Chaux-de-Fonds, Switzerland) systems.

The SAF instrument was designed to adapt tridimensionally to the cross-sectional shape of the canal. Its abrasive surface enables the root canal to be widened with no significant alteration of its original form (11). In addition, the instrument operates under a continuous flow of irrigant that circulates through its hollow cylinder. Studies have reported good results for the SAF when it comes to cleaning and disinfection of oval-shaped root canals (12–14). As for the shaping ability in oval canals, studies have reported an occurrence of 6%–35% of unprepared walls after using the SAF system (4, 7–9, 15).

Significance

The cleaning/shaping efficacy of 3 instrumentation systems was evaluated in oval root canals. The SAF instrument left less unprepared areas in the apical canal than the XP-endo Shaper, but cleaning was similar. The 3 systems performed similarly in cleaning/shaping the full canal length.

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La conséquence :

- présence de débris résiduels (pulpe, bactéries, biofilms, biomatériaux d'obturation)

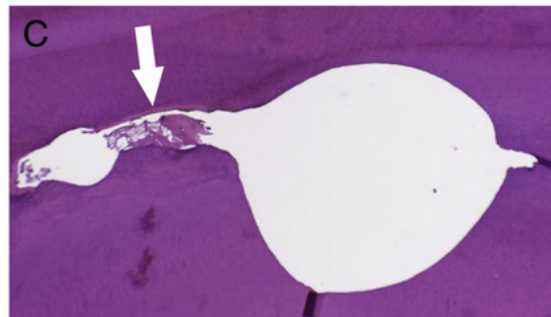
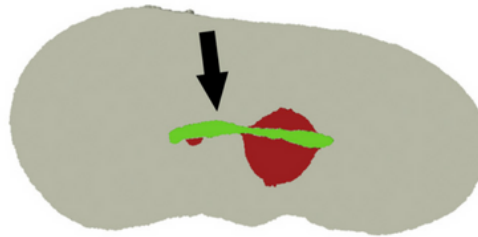
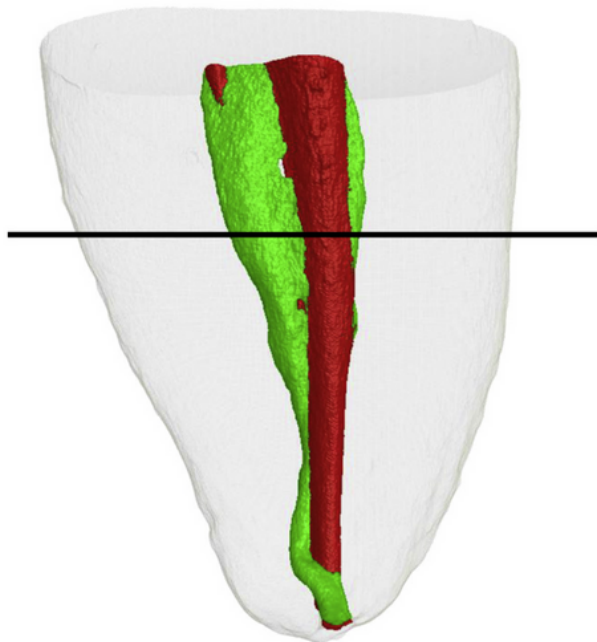


- le travail d'une dentine qui ne nécessitait pas d'être instrumentée

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- Surfaces canalaires non touchées
SAF / TRUShape / XP-endo Shaper
10-17% 16-17% 18%

- Débris résiduels



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