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Low Cost Endodontic Files

Gordon's Clinical Observations: Endodontic treatment is a nearly daily procedure for most general dentists, and the relatively low overhead makes this treatment very profitable if accomplished correctly. The introduction of lower-cost endo files has many clinicians wondering if these files are clinically acceptable and as efficient as conventional higher-cost files. *CR scientists and clinicians, assisted by a survey of practitioners, help you decide if these inexpensive files are right for you.*

Two examples of low cost NiTi files: EdgeFile by EdgeEndo *(upper)* about $4, and EndoFlex by Henry Schein *(lower)* about $6

Low cost nickel-titanium *(NiTi)* endodontic files are making a significant impact on the endo market.

- ***EdgeFile (EdgeEndo)*** is the leader in low-cost files and is now the fourth most popular file brand in use.
- ***Single use*** of files is a more viable option with lower cost, which reduces the risks of cross-contamination and file separation of fatigued instruments.

CR surveyed clinical users and performed controlled tests to compare low-cost files to conventional files to determine notable similarities and differences. **The following report includes survey data on current use, a comparison of low-cost files to other popular brands, clinical tips, and CR conclusions.**

Current Use of Endo Files

Most popular files identified in survey *(left to right):* WaveOne Gold, ProTaper Gold, EndoSequence, and EdgeFile

Key findings from 673 clinicians who regularly perform endo treatments (97% general dentists):

- **Approximate number of endo treatments per week:** 78% 0–3; 18% 4–6; 3% 7–9; 1% 10+
- **File brands used most:** 18% WaveOne Gold *(Dentsply);* 18% ProTaper *(Dentsply);* 12% Endosequence *(Brasseler);* 7% EdgeFile *(EdgeEndo);* 7% hand files *(various companies);* 7% GT *(Dentsply);* 4% TF *(Kerr);* 3% Kflex *(Dentsply);* plus 27 additional brands reported
- **File motion used:** 58% rotary; 26% reciprocal; 14% hand only

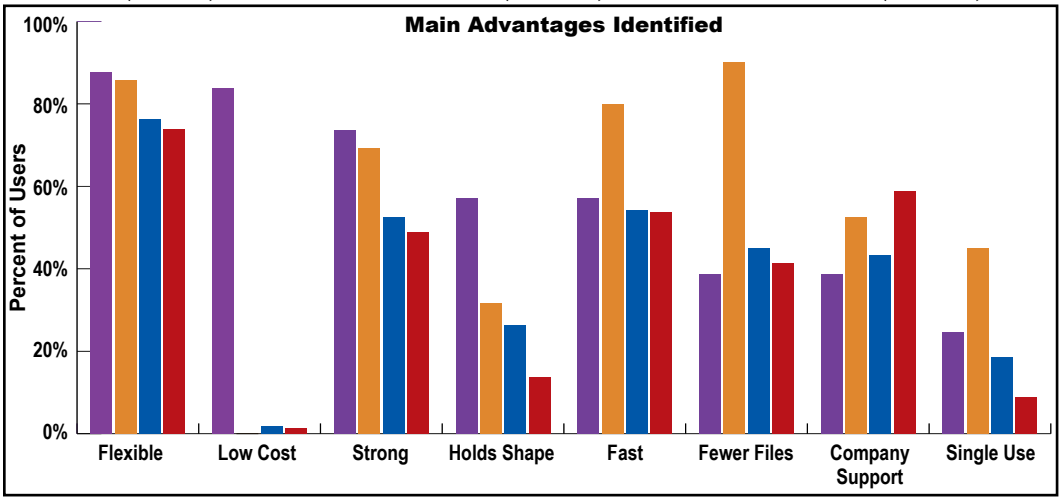
Performance of EdgeFile Compared to Other Popular Brands

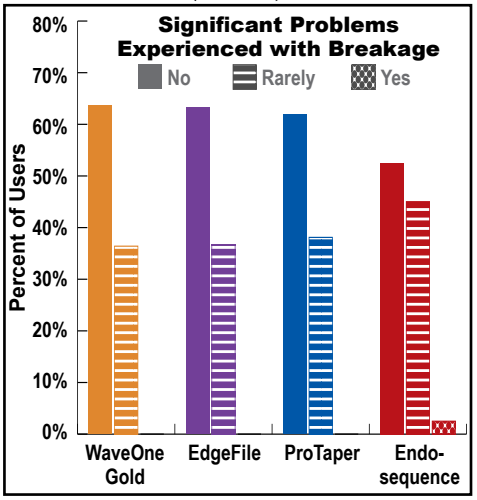
CR Controlled Tests:

- **Low cost files were clinically useful,** with models available for both rotary and reciprocal handpieces.
- **Low cost files differed in both design and metallurgy** from other brands, even those they are purported to replace. These differences required a clinical learning period. *Clinicians should evaluate feel and performance, in addition to cost, as they choose instruments.*
- **Torsion strength testing** of 11 file brands, averaged across different sizes, showed that low cost files were similar to other brands. Data correlated with user feedback and showed that clinically adequate strength can be expected with all brands.
- **EdgeFiles exhibited high *plasticity*** and held their shape when bent to match canal anatomy. Additional examples with plasticity are HyFlex CM *(Coltene Whaledent),* Pac-File NiTi Conform *(PacDent),* and others. Most brands of files exhibited ***elasticity***, and rebounded to shape after being bent. Both attributes can be advantageous in certain clinical situations.

Feedback from clinical users: User ratings for the four file brands used most.

EdgeFile, $4 each *(49 users)* | WaveOne Gold, $22 each *(120 users)* | ProTaper, $11 each *(118 users)* | Endosequence, $14 each *(80 users)*





- EdgeFile's most distinct advantages were "low cost" and "holds shape." It was marginally rated higher in "strong" and "flexible."
- WaveOne Gold was rated highest for "fast," "fewer files" needed, and "single use."
- File separation problems were fairly similar for the four brands.

Low Cost Endodontic Files *(Continued from page 1)*

Clinical Tips

- **Avoiding file separation *(breakage):*** Use torque-limiting handpieces that stop and reverse rotation when file binds; use reciprocal motion instead of rotary motion; don't allow file to draw *(pull)* down canal and bind; use single-use files to avoid fatiguing and unwinding.
- **Effective irrigation:** Sodium hypochlorite is essential and should be used frequently and alternated with mechanical filing. It dissolves organic components of dentin smear layer, acting as a "lubricant" and helping flush debris, making the file more efficient. EDTA is used to dissolve inorganic components of the smear layer, and solutions with chlorhexidine improve the disinfection. Gel lubricants and chelating agents *(example: RC-Prep by Premier)* can help in treating calcified canals.
- **Thorough debridement:** Radiographs seldom show full canal anatomy. Use a sweeping or brushing motion to flex sides of file against canal walls for more thorough debridement. Use caution to not "ledge" with the tip of file or remove excessive dentin and weaken tooth.

CR CONCLUSIONS: Clinical and laboratory evaluations found the EdgeFile to have clinically acceptable performance with a cost significantly lower than other leading brands. Users noted its flexibility, strength, and ability to hold its shape. They rated file separation as similar to other brands, which was confirmed with controlled tests. Low cost makes single use of endo files a more viable option. Design features and metallurgy differ among brands, and clinicians should consider all factors when choosing files, including feel, efficiency, aggressiveness, flexibility, shape, familiarity, cost, compatibility with obturation, etc.

What is CR?

WHY CR?

CR was founded in 1976 by clinicians who believed practitioners could confirm efficacy and clinical usefulness of new products and avoid both the experimentation on patients and failures in the closet. With this purpose in mind, CR was organized as a unique volunteer purpose of testing all types of dental products and disseminating results to colleagues throughout the world.

WHO FUNDS CR?

Research funds come from subscriptions to the *Gordon J. Christensen Clinicians Report*®. Revenue from CR's "Dentistry Update®" courses support payroll for non-clinical staff. All Clinical Evaluators volunteer their time and expertise. CR is a non-profit, educational research institute. It is not owned in whole or in part by any individual, family, or group of investors. This system, free of outside funding, was designed to keep CR's research objective and candid.

HOW DOES CR FUNCTION?

Each year, CR tests in excess of 750 different product brands, performing about 20,000 field evaluations. CR tests all types of dental products, including materials, devices, and equipment, plus techniques. Worldwide, products are purchased from distributors, secured from companies, and sent to CR by clinicians, inventors, and patients. There is no charge to companies for product evaluations. Testing combines the efforts of 450 clinicians in 19 countries who volunteer their time and expertise, and 40 on-site scientists, engineers, and support staff. Products are subjected to at least two levels of CR's unique three-tiered evaluation process that consists of:

1. Clinical field trials where new products are incorporated into routine use in a variety of dental practices and compared by clinicians to products and methods they use routinely.
2. Controlled clinical tests where new products are used and compared under rigorously controlled conditions, and patients are paid for their time as study participants.
3. Laboratory tests where physical and chemical properties of new products are compared to standard products.

THE PROBLEM WITH NEW DENTAL PRODUCTS.

New dental products have always presented a challenge to clinicians because, with little more than promotional information to guide them, they must judge between those that are new and better, and those that are just new. Because of the industry's keen competition and rush to be first on the market, clinicians and their patients often become test data for new products.

Every clinician has, at one time or another, become a victim of this system. All own new products that did not meet expectations, but are stored in hope of some unknown future use, or thrown away at a considerable loss. To help clinicians make educated product purchases, CR tests new dental products and reports the results to the profession.

Clinical Success is the Final Test

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