

[J Periodontol.](#) 2000 Nov;71(11):1792-801.

Position paper: sonic and ultrasonic scalers in periodontics. Research, Science and Therapy Committee of the American Academy of Periodontology.

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Abstract

Ultrasonic and sonic scalers appear to attain similar results as hand instruments for removing plaque, calculus, and endotoxin. Ultrasonic scalers used at medium power seem to produce less root surface damage than hand or sonic scalers. Due to instrument width, furcations may be more accessible using ultrasonic or sonic scalers than manual scalers. It is not clear whether root surface roughness is more or less pronounced following power-driven scalers or manual scalers. It is also unclear if root surface roughness affects long-term wound healing. Periodontal scaling and root planing includes thorough calculus removal, but complete cementum removal should not be a goal of periodontal therapy. Studies have established that endotoxin is weakly adsorbed to the root surface, and can be easily removed with light, overlapping strokes with an ultrasonic scaler. A significant disadvantage of power-driven scalers is the production of contaminated aerosols. Because ultrasonics and sonics produce aerosols, additional care is required to achieve and maintain good infection control when incorporating these instrumentation techniques into dental practice. Preliminary evidence suggests that the addition of certain antimicrobials to the lavage during ultrasonic instrumentation may be of minimal clinical benefit. However, more randomized controlled clinical trials need to be conducted over longer periods of time to better understand the long-term benefits of ultrasonic and sonic debridement.

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Time to shift: from scaling and root planing to root surface debridement.

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Abstract

Non-surgical periodontal treatment has traditionally been based on the notion that bacterial plaque (dental biofilm) penetrates and infects dental cementum. Removal of this infected cementum via scaling and root planing (SRP) was considered essential for re-establishing periodontal health. In the 1980s the concept of SRP was questioned because several in vitro studies showed that the biofilm was superficially located on the root surface and its disruption and removal could be relatively easily achieved by ultrasonic instrumentation of the root surface (known as root surface debridement (RSD)). Subsequent in vivo studies corroborated the in vitro findings. There is now sufficient clinical evidence to substantiate the concept that the deliberate removal of cementum by SRP is no longer warranted or justified, and that the more gentle and conservative approach of RSD should be implemented in daily periodontal practice.

[Contemp Clin Dent](#). 2013 Apr;4(2):198-205. doi: 10.4103/0976-237X.114881.

A comparative scanning electron microscopy study between hand instrument, ultrasonic scaling and erbium doped:Yttrium aluminum garnet laser on root surface: A morphological and thermal analysis.

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Abstract

BACKGROUND AND OBJECTIVES:

Scaling and root planing is one of the most commonly used procedures for the treatment of periodontal diseases. Removal of calculus using conventional hand instruments is incomplete and rather time consuming. In search of more efficient and less difficult instrumentation, investigators have proposed lasers as an alternative or as adjuncts to scaling and root planing. Hence, the purpose of the present study was to evaluate the effectiveness of erbium doped: Yttrium aluminum garnet (Er:YAG) laser scaling and root planing alone or as an adjunct to hand and ultrasonic instrumentation.

SUBJECTS AND METHODS:

A total of 75 freshly extracted periodontally involved single rooted teeth were collected. Teeth were randomly divided into five treatment groups having 15 teeth each: Hand scaling only, ultrasonic scaling only, Er:YAG laser scaling only, hand scaling + Er:YAG laser scaling and ultrasonic scaling + Er:YAG laser scaling. Specimens were subjected to scanning electron microscopy and photographs were evaluated by three examiners who were blinded to the study. Parameters included were remaining calculus index, loss of tooth substance index, roughness loss of tooth substance index, presence or absence of smear layer, thermal damage and any other morphological damage.

RESULTS:

Er:YAG laser treated specimens showed similar effectiveness in calculus removal to the other test groups whereas tooth substance loss and tooth surface roughness was more on comparison with other groups. Ultrasonic treated specimens showed better results as compared to other groups with different parameters. However, smear layer presence was seen more with hand and ultrasonic groups. Very few laser treated specimens showed thermal damage and morphological change.

INTERPRETATION AND CONCLUSION:

In our study, ultrasonic scaling specimen have shown root surface clean and practically unaltered. On the other hand, hand instrument have produced a plane surface, but removed more tooth structure. The laser treated specimens showed rough surfaces without much residual deposit or any other sign of morphological change.

KEYWORDS:

Erbium doped:Yttrium aluminum garnet laser; manual instruments; root planing; scaling; scanning electron microscopy; smear layer; ultrasonic scaler