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[Intervention Review]

# Routine scale and polish for periodontal health in adults

Helen V Worthington<sup>1</sup>, Jan E Clarkson<sup>1,2</sup>, Gemma Bryan<sup>1</sup>, Paul V Beirne<sup>3</sup>

<sup>1</sup>Cochrane Oral Health Group, School of Dentistry, The University of Manchester, Manchester, UK. <sup>2</sup>Dental Health Services Research Unit, University of Dundee, Dundee, UK. <sup>3</sup>Department of Epidemiology and Public Health, University College Cork, Cork, Ireland

**Contact address:** Helen V Worthington, Cochrane Oral Health Group, School of Dentistry, The University of Manchester, Coupland III Building, Oxford Road, Manchester, M13 9PL, UK. [helen.worthington@manchester.ac.uk](mailto:helen.worthington@manchester.ac.uk).

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## ABSTRACT

### Background

Many dentists or hygienists provide scaling and polishing for patients at regular intervals, even if those patients are considered to be at low risk of developing periodontal disease. There is debate over the clinical effectiveness and cost effectiveness of 'routine scaling and polishing' and the 'optimal' frequency at which it should be provided for healthy adults.

A 'routine scale and polish' treatment is defined as scaling or polishing or both of the crown and root surfaces of teeth to remove local irritational factors (plaque, calculus, debris and staining), that does not involve periodontal surgery or any form of adjunctive periodontal therapy such as the use of chemotherapeutic agents or root planing.

### Objectives

The objectives were: 1) to determine the beneficial and harmful effects of routine scaling and polishing for periodontal health; 2) to determine the beneficial and harmful effects of providing routine scaling and polishing at different time intervals on periodontal health; 3) to compare the effects of routine scaling and polishing with or without oral hygiene instruction (OHI) on periodontal health; and 4) to compare the effects of routine scaling and polishing provided by a dentist or dental care professional (dental therapist or dental hygienist) on periodontal health.

### Search methods

We searched the following electronic databases: the Cochrane Oral Health Group's Trials Register (to 15 July 2013), CENTRAL (*The Cochrane Library* 2013, Issue 6), MEDLINE via OVID (1946 to 15 July 2013) and EMBASE via OVID (1980 to 15 July 2013). We searched the *metaRegister* of Controlled Trials and the US National Institutes of Health Clinical Trials Register ([clinicaltrials.gov](http://clinicaltrials.gov)) for ongoing and completed studies to July 2013. There were no restrictions regarding language or date of publication.

### Selection criteria

Randomised controlled trials of routine scale and polish treatments (excluding split-mouth trials) with and without OHI in healthy dentate adults, without severe periodontitis.

### Data collection and analysis

Two review authors screened the results of the searches against inclusion criteria, extracted data and assessed risk of bias independently and in duplicate. We calculated mean differences (MDs) (standardised mean differences (SMDs) when different scales were reported) and 95% confidence intervals (CIs) for continuous data and, where results were meta-analysed, we used a fixed-effect model as there were fewer than four studies. Study authors were contacted where possible and where deemed necessary for missing information.

## Main results

Three studies were included in this review with 836 participants included in the analyses. All three studies are assessed as at unclear risk of bias. The numerical results are only presented here for the primary outcome gingivitis. There were no useable data presented in the studies for the outcomes of attachment change and tooth loss. No studies reported any adverse effects.

### - Objective 1: Scale and polish versus no scale and polish

Only one trial provided data for the comparison between scale and polish versus no scale and polish. This study was conducted in general practice and compared both six-monthly and 12-monthly scale and polish treatments with no treatment. This study showed no evidence to claim or refute benefit for scale and polish treatments for the outcomes of gingivitis, calculus and plaque. The MD for six-monthly scale and polish, for the percentage of index teeth with bleeding at 24 months was -2% (95% CI -10% to 6%; P value = 0.65), with 40% of the sites in the control group with bleeding. The MD for 12-monthly scale and polish was -1% (95% CI -9% to 7%; P value = 0.82). The body of evidence was assessed as of low quality.

### - Objective 2: Scale and polish at different time intervals

Two studies, both at unclear risk of bias, compared routine scale and polish provided at different time intervals. When comparing six with 12 months there was insufficient evidence to determine a difference for gingivitis at 24 months SMD -0.08 (95% CI -0.27 to 0.10). There were some statistically significant differences in favour of scaling and polishing provided at more frequent intervals, in particular between three and 12 months for the outcome of gingivitis at 24 months, with OHI, MD -0.14 (95% CI -0.23 to -0.05; P value = 0.003) and without OHI MD -0.21 (95% CI -0.30 to -0.12; P value < 0.001) (mean per patient measured on 0-3 scale), based on one study. There was some evidence of a reduction in calculus. This body of evidence was assessed as of low quality.

### - Objective 3: Scale and polish with and without OHI

One study provided data for the comparison of scale and polish treatment with and without OHI. There was a reduction in gingivitis for the 12-month scale and polish treatment when assessed at 24 months MD -0.14 (95% CI -0.22 to -0.06) in favour of including OHI. There were also significant reductions in plaque for both three and 12-month scale and polish treatments when OHI was included. The body of evidence was once again assessed as of low quality.

### - Objective 4: Scale and polish provided by a dentist compared with a dental care professional

No studies were found which compared the effects of routine scaling and polishing provided by a dentist or dental care professional (dental therapist or dental hygienist) on periodontal health.

## Authors' conclusions

There is insufficient evidence to determine the effects of routine scale and polish treatments. High quality trials conducted in general dental practice settings with sufficiently long follow-up periods (five years or more) are required to address the objectives of this review.

## PLAIN LANGUAGE SUMMARY

### Routine scale and polish for periodontal health in adults

#### Review question

Scaling and polishing of the teeth may reduce deposits (plaque and calculus), as well as bleeding and inflammation of the gums (gingivitis). Over time a reduction in gingivitis (a milder form of gum disease) will reduce progression to periodontitis (a severe gum disease).

This review examines the evidence for the effects of routine scale and polish treatment. It has been carried out by authors of the Cochrane Oral Health Group to assess the benefits or otherwise of routine scale and polish treatments for healthy adults; to establish whether different time intervals between treatments influence these; to assess if the treatment is more effective if given together with instruction on how best to maintain healthy gums, and to compare the effectiveness of the treatment when given either by a dentist or by a dental therapist or hygienist.

#### Background

Many dentists or hygienists provide regular scaling and polishing for most patients at regular intervals even if they are considered to be at low risk of developing gum disease. There is debate about the clinical effectiveness of scaling and polishing and what is the best time interval between treatments.

For the purposes of this review a 'routine scale and polish' is scaling and polishing of both the crown and root surfaces to remove deposits of (mainly) bacteria called plaque, and also hardened plaque known as calculus (tartar). Calculus is so hard it cannot be removed by toothbrushing alone and this along with plaque, other debris and staining on the teeth is removed by the scale and polish treatment. Scaling or removal of hardened deposits is done with specially designed dental instruments or ultrasonic scalers and polishing is done mechanically with special pastes.

In this review scaling above and below the gum level is included, however any surgical procedure on the gums, any chemical washing of the space between gum and tooth (pocket) and more intense (root planing) scraping of the root than simple scaling is excluded.

### Study characteristics

The evidence on which this review is based was correct as of 15 July 2013.

Three trials with 836 participants were included in this review, ranging from 61 to 470 in each trial. Participants in two trials were adults aged 18 to 73, in the other trial young air force cadets.

One study included patients attending three general dental practices for check-up appointments. Only patients with calculus or bleeding on probing and pockets between teeth and gums less than 3.5 mm were included. One study included young adult male US Air Force cadets and the other patients attending a dental school hygiene clinic. All participants had varying degrees of gingivitis but no evidence of loss of the bone that the teeth are anchored in (alveolar bone) which is caused by periodontitis.

### Key results

The most pertinent result found was from one study which was based in general practice, the most appropriate setting. This study did not show either a benefit or harm for regular six or 12-month scale and polish treatments when compared to no scale and polish. However, the study on young air force cadets compared scale and polish treatments at different time intervals and did find some differences for gingivitis, plaque and calculus when three-month treatments were compared with annual treatments, favouring the three-month treatments. This study also looked at whether the treatment should include both scale and polish and oral hygiene instruction. There were reductions in gingivitis, plaque and calculus. No studies compared dentists with other oral health professionals.

Scaling is an invasive procedure and associated with a number of adverse effects including damaged to tooth surfaces and tooth sensitivity. This information was not captured or reported on by the included studies.

None of the studies included in this review reported on patient-centred outcomes such as quality of life or economic outcomes.

### Quality of the evidence

Given the considerable resources involved in providing this treatments for adults in many countries it is disappointing that there is so little good quality, reliable research evidence available to inform clinical practice. The quality of the evidence was generally low, with one of the included studies being more appropriate than the others.