What's new for the clinician – excerpts from and summaries of recently published papers

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1. Is there a correlation between oral hygiene status and oral HPV infection in adults?

D Dalla Torre, D Burtscher, E Sölder, et al. Clin Oral Invest. 2019; 23: 179-85.

Oral human papillomavirus (HPV) infections affect some seven percent of adults in the U.S. and is responsible for a growing number of oral cancer cases, especially in men.[1]

The causal role of vaginal high-risk HPV infections in cervical cancer has been proven already decades ago, and more recent studies have shown a positive correlation between oral HPV and certain subtypes of oropharyngeal cancer.[1] Various risk factors have been associated with oral HPV infections, especially regarding sexual behaviour and promiscuity. However, there is still a lack of knowledge regarding additional factors that may facilitate the oral infection of HPV.

Dalla Torre and colleagues (2019)[1] reported on a study that sought to investigate the possible relationship between objectively determined oral hygiene, with the Approximal Plaque Index (API) and the Gingival Bleeding Index (GBI) as marker, and oral HPV infections. Additionally, a possible correlation between general oral health, with tooth loss as indicator, and oral HPV infections was also investigated.

MATERIALS AND METHODS

This is a prospective cross-sectional study involving 187 patients. Patients were considered for inclusion if they met the following criteria: 18–50 years of age; absence of any oral cancer in the past or present; no history of HPV vaccination; provided informed consent; completed questionnaire and measurement of the approximal plaque index (API). Patients were excluded, if: the study questionnaire or measurements regarding oral hygiene indices were incomplete or missing and/or the patient refused the brush smear sample collection. During the clinical oral examination, an assessment of the number of already extracted teeth (except wisdom teeth), API and the gingival bleeding index (GBI) was completed.

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ACRONYMS

API:	Approximal Plaque Index
GBI:	Gingival Bleeding Index
HPV:	Human Papillomavirus
OR:	Odds Ratio

The API was calculated using the formula:

API = number of plaque sites/number of sites examined × 100.

Depending on their API scores, the patients were subdivided into three groups:

- API < 20%, representing the group with good oral hygiene.
- API = 20–40%, representing the group with a fair, although improvable result.
- API > 40%, representing the group with poor oral hygiene.

The GBI was used as marker for the quality of oral hygiene in regard of gingival health. Thereby, The number of bleeding sites was recorded about 10 seconds after gentle probing of the gingival sulcus of all teeth in six different anatomical sites (mesiobuccal, buccal, distobuccal, mesiolingual, lingual, distolingual).

The proportion of bleeding sites was expressed as a percentage of all examined sites. According to the GBI scores, the study population was divided into three groups: GBI < 20%, representing the group with good oral hygiene; GBI = 20–40%, representing the group with a fair, although improvable result; and GBI > 40%, representing the group with poor oral hygiene.

Within a few days after the first professional oral hygiene, two brush smears from the left and the right buccal mucosa were taken by the investigators. After specimen collection, HPV detection was placed into three categories: "no infection," "low risk HPV-infection," and "high risk HPV-infection."

RESULTS

The study involved 187 patients, 91 (48.7%) females and 96 (51.3%) males. Overall, the mean age was 28.5 (range 23–46 years, SD 5.7) years, whereas the mean age in the female group was 29.4 (range 24–46 years, SD 6.8) years and in the male group 27.9 (range 23–45 years, SD 4.5) years.

Ninety-three (48.7%) of the patients showed a full dentition, 62 (34.2%) study participants had experienced one to three extractions of permanent teeth in their lifetime, and 32 (17.1%) patients had lost more than three teeth.

A positive HPV testing was found in 39 (20.9%) cases, whereas the brush smear testing was negative in 148 (79.1%) patients. In 27 (14.4%) cases, the presence of high-risk HPV was diagnosed, and in 26 (13.9%) cases, low-risk HPV. In 14 (7.5%) cases with a positive HPV testing, the combined presence of low-risk and high-risk HPV was discovered.

The first group with an API < 20% consisted of 74 (39.6%) patients, the second group with an API = 20–40% included 84 (44.9%) patients, and the last group with an API > 40% comprised 29 (15.5%) patients.

Regarding the association between the API and a positive oral HPV detection (regardless of low- or high-risk HPV), the presence of oral HPV was significantly correlated with high API. For patients with an API of 20 to 40%, an odds ratio (OR) of 2.80 (95% CI 1.10 to 7.10, $p = 0.0304$) was determined, whereas the OR increased to 7.78 (95% CI 2.67 to 22.64, $p = 0.0002$) in cases with an API of more than 40%.

Results regarding GBI were similar with an OR of 3.01 (95% CI 1.34 to 6.72, $p = 0.0074$) in cases with a GBI of 20 to 40% and an OR of 6.01 (95% CI 1.86 to 19.37, $p = 0.0027$) for a GBI > 40%. Concerning lifetime tooth loss, there was a highly significant relation to oral HPV infections for people having lost one to three teeth (OR 2.98, 95% CI 1.21 to 7.33, $p = 0.0175$) and those who had lost more than three teeth (OR 8.24, 95% CI 3.10 to 21.88, $p < 0.0001$). Regarding gender, no statistically significant correlation with the presence of oral HPV was detected ($p = 0.994$)

If only low-risk HPV positivity was considered, no statistically significant association could be recorded regarding an API of < 40% (OR 2.64, 95% CI 0.80 to 8.67, $p = 0.1104$). In contrast, an API > 40% was significantly associated with the presence of oral low-risk HPV with an OR of 10.69 (95% CI 3.05 to 37.56, $p = 0.0002$). Regarding the GBI measurement, there were significant differences recorded, with an OR of 2.67 (95% CI 1.01 to 7.06, $p = 0.0486$) for a GBI of 20 to 40% and an OR of 7.63 (95% CI 2.14 to 27.20, $p = 0.0017$) for patients with a GBI > 40%. A significant relation to oral low-risk HPV was determined also for the number of lost teeth, with an OR of 3.80 (95% CI 1.25 to 11.54, $p = 0.0187$) for patients with one to three missing teeth and an OR of 8.00 (95% CI 2.48 to 25.80, $p = 0.0005$) for more than three missing teeth. Again, there was no significant relationship regarding gender ($p = 0.7827$).

If only oral high-risk HPV infections were analyzed, a statistically significant association between a positive testing and the API could be seen (API 20–40%: OR 3.50, 95% CI 1.10 to 11.16, $p = 0.0342$ versus API > 40%: OR 7.88, 95% CI 2.19 to 28.28, $p = 0.0016$). A significant result was determined also regarding GBI (GBI 20–40%: OR 3.75, 95% CI 1.38 to 10.21, $p = 0.0097$ versus GBI > 40%: OR 9.00, 95% CI 2.44 to 33.24, $p = 0.0010$) and the lifetime number of extracted teeth with an OR of 4.22 (95% CI 1.41 to 12.68, $p = 0.0102$) for one to three extracted teeth and an OR of 8.00 (95% CI 2.48 to 25.80, $p = 0.0005$) in case of more than three lost teeth. Regarding patients' gender, no significant differences were detected involving gender ($p = 0.9538$).

Regarding patients' age, there were no significant results regarding a relation to any oral HPV detection or to the API. Older patients had experienced more extractions than younger patients ($p < 0.0001$). Data regarding the correlation between oral HPV infection and API, GBI and the number of lost teeth were adjusted for age and gender, achieving similar results compared with the unadjusted analysis.

CONCLUSION

The present analysis confirmed a relationship between the quality of oral hygiene, as determined by objective markers, and the presence of oral HPV.

Implications for practice

The findings of this study confirm the benefits of improving oral hygiene to reduce the risk of Oral HPV infection and/or oral cancer in the mouth.

Reference

1. Dalla Torre D, Burtscher D, Sölder E, Rasse M, Puelacher W. The correlation between the quality of oral hygiene and oral HPV infection in adults: a prospective cross-sectional study. Clin Oral Invest. 2019; 23: 179-185.

2. Routine scale and polish for periodontal health in adults: a Cochrane systematic review

T Lamont, HV Worthington, JE Clarkson, PV Beirne. 2018, Issue 12. Art. No: CD004625.
DOI: 10.1002/14651858.CD004625.pub5

Scaling and polishing of the teeth by a dentist or a dental care professional (DCP) (dental therapist or dental hygienist), also known as prophylaxis, professional mechanical plaque removal or periodontal instrumentation, is a non-surgical intervention that is intended to supplement (and is not a substitute for) the patient's home-care plaque control.[1] This treatment is frequently provided as part of the dental recall appointment.

Scaling and polishing is also often undertaken for patients irrespective of their risk of developing periodontal disease. There is ongoing debate over the clinical effectiveness and cost effectiveness of routine scaling and polishing of teeth and how often it should be provided. This debate is complicated by the fact that a 'routine S&P' is not a precisely defined intervention in periodontal disease management and there is no universally accepted definition of the term. In the USA, the term 'oral prophylaxis' is most often used and has been defined as "the removal of plaque, calculus and stain from exposed and unexposed surfaces of the teeth by scaling and polishing as a preventive measure for the control of local irritational factors".[1]

Lamont and colleagues (2018)[1] undertook a Cochrane Systematic review with the following objectives:

- To determine the beneficial and harmful effects of routine scaling and polishing for periodontal health.
- To determine the beneficial and harmful effects of routine scaling and polishing at different recall intervals for periodontal health.
- To determine the beneficial and harmful effects of routine scaling and polishing for periodontal health when the treatment is provided by dentists compared with dental care professionals (dental therapists or dental hygienists).

SEARCH METHODS

Cochrane Oral Health's Information Specialist searched the following databases: Cochrane Oral Health's Trials Register (to 10 January 2018), the Cochrane Central Register of Controlled Trials (CENTRAL) (the Cochrane Library, 2017, Issue 12), MEDLINE Ovid (1946 to 10 January 2018), and Embase Ovid (1980 to 10 January 2018). The US National Institutes of Health Trials Registry (ClinicalTrials.gov) and the World Health Organization International Clinical Trials Registry Platform were searched for ongoing trials. No restrictions were placed on the language or date of publication when searching the electronic databases.

SELECTION CRITERIA

Randomised controlled trials of routine scale and polish treatments, with or without oral hygiene instruction, in healthy dentate adults without severe periodontitis. Split-mouth trials were excluded.

ACRONYMS

BPE:	Basic Periodontal Examination
CIs:	95% Confidence Intervals
DCP:	Dental Care Professional
MDs:	Mean Differences
RR:	Risk Ratios
SMDs:	Standardised Mean Differences

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. They calculated mean differences (MDs) (or standardised mean differences (SMDs) when different scales were reported) and 95% confidence intervals (CIs) for continuous data and risk ratios (RR) and 95% CIs for dichotomous data. A fixed-effect model was used for meta-analyses. Study authors were contacted when necessary to obtain missing information. The certainty of the evidence was rated using the GRADE approach.

RESULTS

Of the 1002 records assessed in the literature search, two trials were included for meta-analysis in this review. Both trials were conducted in the United Kingdom (UK). Ramsay 2018 included 1406 participants and Jones 2011 included 305 participants in the analyses, giving a total of 1711 participants in this review. Participants were adults aged 18 to 92 years in Ramsay 2018[1] and aged 18 to 73 years in Jones 2011.[1]

Ramsay enrolled people with Basic Periodontal Examination (BPE) scores of three or less, attending general dental practices across Scotland and the North-East of England. Jones enrolled people attending one of three general dental practices for check-up appointments. This study included only those patients with calculus or bleeding on probing and no pockets greater than 3.5 mm.[1]

Comparison 1: routine scaling and polishing versus no scheduled scaling and polishing

Two studies compared planned, regular interval (six- and 12-monthly) scale and polish treatments versus no scheduled treatment. Little or no difference was found between groups over a two- to three-year period for gingivitis, probing depths, oral health-related quality of life (all high-certainty evidence) and plaque (low-certainty evidence).

The SMD for gingivitis when comparing six-monthly scale and polish treatment versus no scheduled treatment was –0.01 (95% CI –0.13 to 0.11; two trials, 1087 participants), and for 12-monthly scale and polish versus no scheduled treatment was –0.04 (95% CI –0.16 to 0.08; two trials, 1091 participants).

Regular planned scale and polish treatments produced a small reduction in calculus levels over two to three years when compared with no scheduled scale and polish treatments (high-certainty evidence). The SMD for six-monthly scale and polish versus no scheduled treatment was –0.32 (95% CI –0.44 to –0.20; two trials, 1088 participants) and for 12-monthly scale and polish versus no scheduled treatment was –0.19 (95% CI –0.31 to –0.07; two trials, 1088 participants). The clinical importance of these small reductions is unclear.

Participants' self-reported levels of oral cleanliness were higher when receiving six- and 12-monthly scale and polish treatments compared with no scheduled treatment, but the certainty of the evidence is low.

Comparison 2: routine scaling and polishing at different recall intervals

Two studies compared routine six-monthly scale and polish treatments versus 12-monthly treatments. Little or no difference was seen between groups over two to three years for the outcomes of gingivitis, probing depths, oral health-related quality of life (all high-certainty evidence) and plaque (low-certainty evidence).

The SMD for gingivitis was 0.03 (95% CI - 0.09 to 0.15; two trials, 1090 participants; I^2 = 0%). Six- monthly scale and polish treatments produced a small reduction in calculus levels over a two- to three-year period when compared with 12-monthly treatments (SMD –0.13 (95% CI –0.25 to –0.01; two trials, 1086 participants; high-certainty evidence). The clinical importance of this small reduction is unclear.

The comparative effects of six- and 12-monthly scale and polish treatments on patients' self-reported levels of oral cleanliness were uncertain (very low-certainty evidence).

Comparison 3: routine scaling and polishing provided by dentists compared with dental care professionals (dental therapists or hygienists)

No studies evaluated this comparison.

The review findings in relation to costs were uncertain (very low-certainty evidence).

CONCLUSIONS

For adults without severe periodontitis accessing routine dental care, there is little or no difference in gingivitis, probing depths or quality of life over two to three years between routinely provided six-monthly scale and polish (S&P) treatments, 12-monthly S&P treatments and no scheduled S&P treatments (high-certainty evidence). There may also be little or no difference in plaque levels over two years (low-certainty evidence).

Although routine S&P treatments produced a small reduction in calculus levels over two to three years when compared with no scheduled S&P treatments, the six-monthly treatments reducing calculus more than 12-monthly treatments (high-certainty evidence), the importance of these reductions for patients and clinicians is unclear. The studies did not assess the adverse effects of S&P treatments and available evidence on the costs of the treatments is uncertain.

Reference

1. Lamont T, Worthington HV, Clarkson JE, Beirne PV. Routine scale and polish for periodontal health in adults. Cochrane Database of Systematic Reviews 2018, Issue 12. Art. No: CD 004625. DOI: 10.1002/14651858.CD004625.pub5.

Do the CPD questionnaire on page 44

Online CPD in 6 Easy Steps

1. Go to the SADA website www.sada.co.za.
2. Log into the 'member only' section with your unique SADA username and password.
3. Select the CPD navigation tab.
4. Select the questionnaire that you wish to complete.
5. Enter your multiple choice answers. Please note that you have two attempts to obtain at least 70%.
6. View and print your CPD certificate.