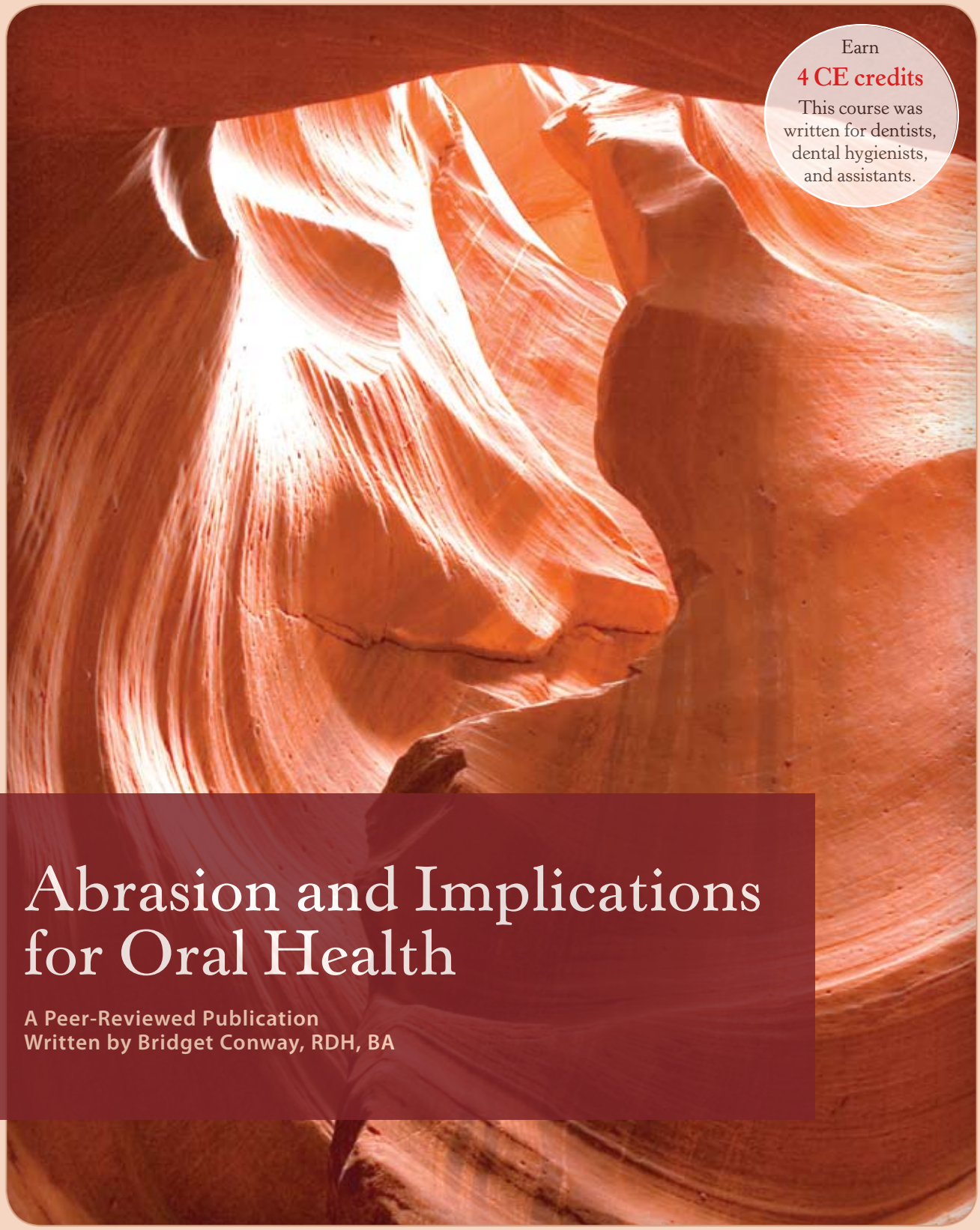

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Abrasion and Implications for Oral Health

A Peer-Reviewed Publication
Written by Bridget Conway, RDH, BA

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Educational Objectives

Upon completion of this course, the clinician will be able to do the following:

1. Give a definition of abrasion and list factors associated with abrasion.
2. Describe an oral care regimen designed to be nonabrasive.
3. Describe the various products available for dental prophylaxis.
4. Understand the considerations in selecting suitable products for home care and dental prophylaxis.

Abstract

Abrasion of teeth involves an abnormal mechanical process that results in enamel, dentin and cementum being worn away over time. Susceptibility to abrasion is increased in the presence of erosion of the surface of the tooth, which results in softening of the tooth structure. Professional dental care is aimed at preventing disease and restoring oral health for patients with oral disease. The appropriate use of professional and home use oral care products is required to achieve these objectives. Careful selection of polishing techniques is required by the dental clinician to ensure optimized stain removal, polishing and preservation of surface integrity, and the oral care regimen recommended to patients for home care must also consider the risk of abrasion.

Introduction

Abrasion can be defined as the wearing away of a substance, such as enamel or dentin, by an abnormal mechanical process. Enamel is the hardest substance in the body, and intact enamel is resistant to abrasion. Nonetheless, over a number of years wear will occur. Once the softer dentin is exposed, tooth surface wear resulting from abrasion proceeds at a faster rate (Table 1). These facts have important implications for patients with gingival recession and periodontal patients. Gingival recession is a common condition — one study estimated that gingival recession of at least 3 mm in one or more teeth is experienced by at least 22% of adults in the 30–90 year age group.[1] Cementum is also softer than dentin and is soon abraded by use of either inappropriate products or an incorrect technique for oral hygiene.

Table 1. Mean microhardness of enamel, dentin[2]

Coronal enamel	395.92 – 255.02 VHN*
Coronal dentin	36.49 – 56.42 VHN*

* Depending on location tested on tooth

Susceptibility to abrasion is increased in the presence of erosion of the surface of the tooth. Erosion results in softening of the tooth structure.[3] Given the significant amount of soda pop currently consumed in the United States,[4] as well as other dietary habits, this is an important consideration. Esophageal reflux disease (GERD) and bulemia also lead to acid erosion of the teeth as a result of regurgitation of stomach acids.

Professional dental care is aimed at preventing disease and restoring oral health for patients with oral disease. The appropriate use of professional and home use oral care products is required to achieve these objectives. Incorrect use of home oral care products can result variously in poor oral hygiene, gingival irritation and abrasion, and damage to the surfaces of the teeth — depending on what is used and how. Similarly, careful selection of polishing techniques is required by the dental clinician to ensure optimized stain removal, polishing and preservation of surface integrity.

Professional and home care are aimed at preventing oral disease and preserving oral health

Implications for Home Care

When performing oral hygiene, it is important to avoid tooth surface abrasion as well as mucosal abrasion and irritation.

Patients should be advised to use a soft- or ultrasoft-bristled toothbrush. If using a manual toothbrush, the patient must be taught how to use it correctly and without applying too much force. Patients have often been taught the Bass technique, which some may consider awkward and complicated. It is known that patients typically do not brush for an adequate length of time (considered to be two minutes of brushing).[5] In addition, some patients are prone to brushing horizontally with force across the tooth surfaces in the belief that brushing hard is better and will remove more plaque.

Figure 1. Manual toothbrushes

Manual toothbrushes currently available include models that are designed to gently remove plaque, and have handle designs that make brushing easier for patients (for example, Cross-Action®, Oral-B®). They may also encourage the Bass technique through the design of the handle (GUM® Technique Toothbrush, Sunstar Americas), thereby simplifying the Bass technique procedure for patients.

If using an electric toothbrush, care must also be taken to avoid applying too much pressure — some powered brushes will temporarily cut out (or "stall") if too much pressure is applied; this acts as a safety feature to help avoid the application of force that can result in tooth surface abrasion. In comparisons of the abrasivity of manual and powered brushes the results have varied depending on the study, with some finding manual brushes more abrasive and others finding powered brushes more abrasive.[6,7]

With respect to interdental cleaning, the use of floss is unlikely to result in tooth surface abrasion, although care must be taken to avoid gingival abrasion and trauma as a result of using the floss carelessly or forcefully, or suddenly snapping it through tight contact points. Interdental brushes offer an alternative that may be easier to use (G.U.M Soft Picks, Sunstar Americas; Proxabrush, Sunstar Americas; Floss Sticks, Flosstech; Dentek Brush Picks®) and avoids the need to negotiate tight contact points — patients have been found to have fewer problems using interdental brushes than using floss.[8] Patients should be taught to use interdental brushes gently, and to use brushes that are soft and have adequate bristle coverage to avoid the underlying wire abrading the gingivae and teeth interdentally. Interdental "brushes" have been introduced that consist of a soft, flexible plastic without a wire core and without bristles (TePe plastic dental sticks, TePe). Use of irrigating aids and mechanical interdental cleaners have also been found to be effective.[9,10]

Figure 2. Interdental cleaners

Which oral hygiene aids are selected is an important component in determining the efficacy and safety of home care and the patient's willingness to perform oral hygiene

The selection of a dentifrice with low abrasivity and good cleaning ability is another main factor to consider. Abrasives, including ground shells and bones, were used to clean teeth thousands of years ago. More recently, charcoal and salt were among the agents used. Abrasives help remove plaque and help remove stain from the surface of the teeth. Dentifrices currently available typically contain silicas, carbonates, phosphates or aluminum oxide as abrasive agents. Some sources of these abrasives are shown in figure 3.

Figure 3. Sources of dental abrasives

The abrasiveness of a dentifrice helps determine the amount of stain and tooth substance that will be removed in a given period of time using a given brush and a given technique. Concern regarding the abrasivity of toothpastes first arose in the early 1900s.[11] The abrasivity of dentifrices is measured using Radioactive Dentin Abrasion measurements (RDA). This testing involves mechanically abrading radioactive dentin under controlled laboratory conditions using a controlled applied force and testing time of brushing.[12] It is important to recommend a toothpaste with low abrasivity that still performs adequately for stain removal[13] and aesthetics.

Implications for In-Office Care

Existing tooth abrasion

Patients may present with lesions resulting from abrasion of varying complexity. Early abrasive lesions present as shallow depressions and grooves on the tooth surface. Initially, while abraded areas are confined to enamel or cementum, the patient will not experience sensitivity or pain, and unless the abraded surface is visible on the anterior teeth the patient may be unaware of the damaged surface. As abraded areas increase in depth, the enamel or cementum is compromised and dentin is exposed and abraded. Once this has occurred, many patients will experience sensitivity. Among periodontal patients, 60% to 98% have been estimated to experience hypersensitivity, indicative of exposed dentinal root surfaces — these are susceptible to abrasion in the presence of an inappropriate (abrasive) oral care regimen, as well as to erosion and caries.[14,15]

Depending on the depth of lesions, a number of treatment options can be considered.

In severe cases, restoration of the abraded dentin using bonded composites or glass ionomers may be necessary for both aesthetics and function. In mild cases, the use of in-office desensitizers such as resins and bonding agents, fluoride varnish, oxalates, hema and/or home care desensitizers (dentifrices containing either potassium nitrate or potassium chloride) may be required to relieve the patient's dentinal hypersensitivity. This will also encourage resumption of healthy oral care habits once oral hygiene instruction has been given — patients are less likely to perform oral hygiene if use of a toothbrush or other oral care device results in pain due to tactile or temperature stimulus of hypersensitive dentin.

Figure 4. Severe abrasion requiring restorative treatment

Courtesy of Howard E. Strassler, DMD

Avoiding abrasion

Avoiding iatrogenic abrasion (abrasion induced by treatment) is important for tooth structure as well as for existing restorations. Care must be taken during dental prophylaxis and air polishing procedures to avoid this.

Figure 5. Restorative treatment

Courtesy of Howard E. Strassler, DMD

Dental Prophylaxis

Dental prophylaxis is one of the most commonly performed procedures in dentistry, with an estimated 226 million performed annually; prophylaxis is also carried out following scaling and root planing procedures.[16] Dental prophylaxis is defined in the current CDT codes as the removal of plaque, calculus and stains from the tooth structures of the dentition (primary and transitional, or permanent and transitional, depending on whether the code being referred to is for children (D1110) or adults (D1120)) and is intended to control local irritational factors.[17] This is a preventive measure and not a disease treatment.[18] Dental prophylaxis includes scaling and, as indicated, polishing. For periodontal treatment and periodontal maintenance, different codes are used.

Scaling, or scaling and root planing, is performed with either hand instruments or ultrasonic scalers or both. Recent studies have found that the use of ultrasonic scalers on root surfaces can result in less tooth surface removal and gouging than does the use of hand instruments. However, care must be taken and a technique appropriate to the instruments used, regardless of whether hand instruments, ultrasonic scalers, or both are selected, to avoid abrading and gouging the tooth surface. According to the National Institute of Dental and Craniofacial Research (NIDCR) study, of adults 30 years of age and older more than 90% experience calculus and about 55% experience subgingival calculus.[19] Thorough removal of both supragingival and subgingival calculus is included in scaling during dental prophylaxis and will remove bacteria and plaque associated with the calculus, as well as bacterial toxins contained within it. The removal of established subgingival plaque requires professional treatment.

Thorough home care has been found to be as effective as polishing with respect to plaque reaccumulation.[20] Following completion of dental prophylaxis (or scaling and root planing), as well as following brushing during home care, the pellicle starts to reform rapidly.

The ongoing level of plaque following professional care will be determined by the patient's attention to home care oral hygiene.

Stain removal is a further component of dental prophylaxis and can be achieved through instrumentation and/or polishing. The amount of stain present varies by patient. Habits resulting in increased levels of staining include smoking and the consumption of red wine, coffee, tea and certain foods.[21] Heavy smokers in particular exhibit heavy stain that can also be resistant to removal even during prophylaxis. Medium- to long-term use of chlorhexidine gluconate mouth rinse is also associated with tooth staining (Table 2). Poor oral hygiene also contributes to increased staining.

Table 2. Factors in surface staining of teeth

Drinking tea	Drinking coffee
Drinking red wine	Smoking
Use of chlorhexidine gluconate mouth rinse	Foods rich in polyphones

Patients generally have the expectation that by the end of a course of dental treatment they will have received a "polish" and will have smoother and stain-free teeth. The expectation of a polish arises from esthetic demands and from having received such treatment from an early age — at an early age polishing primarily performs the functions of accustoming a young child to having the dental professional perform procedures in his or her mouth and is an aid to oral hygiene education on plaque removal. An assessment of the amount and type of stain helps the clinician determine the need for polishing. As with home care, the amount of tooth structure and stain removed during polishing varies with the product(s) used — their abrasiveness and agents, and how they are used. The amount of stain present, ease of use, the patient's overall health, the presence of restorations and implants, and patient and clinician preferences are all factors in selecting the method. These include air polishing, traditional polishing methods and recently introduced alternatives.

Stain removal options include air polishing, traditional and alternative prophy methods

Air polishing

Air polishing was introduced in the 1980s and utilizes the air abrasion technique with a powder abrasive, typically sodium bicarbonate. Air abrasion has been used for enamel preparation for a number of procedures including sealant placement. One study on root surfaces subjected to five seconds of air polishing found that abrasion was significant, with a 161 micron increase in lesion depth compared to unexposed root surfaces.[22] There has also been concern about the aerosol generated by air polishers.[23]

Air polishing using sodium bicarbonate is abrasive for cementum and dentin, while a recent study using glycine powder found that substance to effectively debride subgingival root surfaces and to be safe.[24,25] Galloway and Pashley found that a five-second continuous air polishing spray (Prophy-Jet) resulted in a substantial loss of dentin or cementum using either standard air powder or pumice. They found no visible enamel loss when the spray was used for up to the maximum test period of 60 seconds.[26] Based upon this, air polishing using standard air powder abrasive would be suitable for use on enamel and alternative powders are available for dentin and cementum. Air polishing is contraindicated in the presence of specific conditions, including infectious diseases and respiratory, renal and metabolic diseases. Air polishing of enamel stained by chlorhexidine mouth rinse use in orthodontic patients was found in one study to be more effective and efficient in removing stain than use of a rubber cup and pumice.[27] Another study assessing stain removal for a given period of time found these to be equally effective.[28] When using air abrasion devices, care must be taken to avoid directing the jet at adjacent tooth structure or at soft tissue; this would result in abrasion of the respective tissue.

Traditional polishing options

Traditional in-office polishing options include the use of rubber or latex-free cups, or brushes, in a slow-speed handpiece. These can be used with either pumice and water or a manufactured prophy paste, can be snap-on, screw-in or mandrel-type, and are available in firmer and softer varieties. If using a snap-on cup, it is important to ascertain that wobble will not be significant — this would result in nonconcentric spinning and hand stress. Soft varieties flex well over the tooth and sulcus and require less force. Brushes are more abrasive than cups and are generally indicated for cleaning the occlusal surfaces of molars and bicuspids prior to sealant placement — a soft brush should be used.

Disposable prophy angles

The introduction of disposable lightweight prophy angles for use with disposable cups and brushes has improved infection control and ergonomics for the clinician (Classic®, Young Dental; PIVOT®, Preventech; NUPRO® Revolv®, Dentsply; SUPA, Oral-B®; AllPro™ disposable angles, AllPro™; Duropro, Sunstar Americas; Eez Touch, Sunstar Americas). If the prophy angle incorporates a contra-angle design, rather than a right-angle design, this offers further benefits by reducing wrist flexion. Extended straight-angle disposable prophy angles are also

available (ēsa, Preventech), offering the clinician a lighter weight than regular disposable angles. Rubber and latex-free cups are available for disposable prophy angles, as are disposable brushes, depending on the manufacturer. The selection of a latex-free cup is a key consideration for patients with latex allergies or who are at increased risk for developing latex allergies, as well as for office staff.

Figure 6. Disposable prophy angles

Prophy pastes

Prophy pastes are available as extra coarse, coarse, medium and fine grit variants depending on the manufacturer, with the definition varying. The majority are pumice-based with added ingredients that may include fluoride, flavorings, colorings and other ingredients. All things being equal, coarser grit prophy pastes have the potential to remove more tooth structure and to leave a rougher surface upon completion of the procedure. Finer abrasives will clean and polish teeth with the removal of less structure, and may also impart a surface luster. Variations in treatment time, the speed of the rotating cup (or brush) and the force or load applied can influence the relative abrasion of various materials.[29]

Nontraditional polishing options

Prophy pastes

An alternative prophy paste abrasive is perlite, based on volcanic silica, which has a flat, irregular disc-shaped profile. During use, rough edges quickly become rounded and particles align to the tooth surface. Perlite-based prophy paste has been found to result in a polished surface and effective cleaning properties with either a rubber cup or a brush. One study found that a perlite-based paste resulted in improved cleaning and scored higher in cleaning efficacy.[30] The same researchers compared the perlite-based prophy paste (Cleanic, Hawe Neos Dental) with CCS 250 polishing paste, Détartrine Z, Nupro Coarse and Zircate. These were compared using both rubber cups and brushes. The perlite-based paste resulted in lower relative enamel and dentin abrasion compared to the test groups, while maintaining good cleaning ability.[31] Research on Clinpro™ Prophy Paste

Figure 7. Polishing options — prophy pastes

(3M ESPE) containing perlite found it resulted in less gloss reduction of microfilled ceramic restorations, exhibited superior stain removal compared to a leading coarse prophy paste and resulted in less abrasion of enamel and dentin than the same manufacturer's fine prophy paste.[32,33] Prophy pastes incorporating calcium technology have also been introduced (NuCare®, Sunstar Americas; Enamel Pro®, Premier Dental Products; MI Paste, GC America; ProClude®, Colgate Oral Pharmaceuticals). For patients with sensitivities to flavorings, colorings and other additives, a pumice-water slurry mixed in the office can be used, or pre-manufactured additive- and fluoride-free medium grit pumice-based prophy pastes that are available as single dose units and eliminate the need to mix pumice and water (nada™, Preventech; Pumice Preppies, Whip Mix; Topex Prep and Polish Paste, Sultan Dental).

Pasteless Polishing

Recently, disposable prophy angles have been introduced that incorporate the abrasive cleaner into the rubber cup, as well as stand-alone rubber cups that are used with a separate prophy angle. This removes the need for the clinician to stop and dip the cup into a prophy paste and eliminates any potential splatter from pastes. Visibility is improved in the absence of paste,[34] reducing the need for patients to rinse or for an air-water syringe to be used. Zimmer et al. found that an all-in-one rubber cup (Hawe Neos Dental) had a cleaning efficiency of 78% after 15 seconds of use, compared to 57% with Nupro coarse paste and 49% with Cleanic paste with a conventional rubber cup. The all-in-one rubber cup was less abrasive on enamel than was either paste. The enamel surface smoothness was comparable for all three methods.[35] A second option is the LustreCup® (Lustre Corporation), which consists of a silicone rubber cup with built-in perlite abrasive. A second option that is available is Butler® Paste Free Prophy™ (Sunstar

Americas). This consists of a combined prophy angle manufactured from a thermal plastic elastomer (TPE) with built-in pumice as the abrasive.

Figure 8. Pasteless polishing

Based on *in vitro* testing, this paste-free prophy cup has been found to be up to 50% less abrasive on enamel than a leading medium grit prophy paste used with a disposable prophy angle, and to be equally effective in cleaning stained pellicle when 150 grams of pressure was used for between 3 and 20 seconds (Table 3).[36] In clinical use, it was found to offer improved visibility during polishing procedures, to eliminate splatter, to reduce polishing time, and to reduce the need for expectoration and rinsing, as there was no paste or gritty feeling.[37]

Polishing of Restorations

Table 3. Results of *in vitro* testing

Product	Time	Force	Result (mean pellicle cleaning ratio)
DPA, rubber cup + medium grit prophy	6 seconds	150g	90.60*
	20 seconds	150g	81.95*
Pasteless prophy angle rubber cup	6 seconds	150g	98.86**
	20 seconds	150g	83.44**

*Not statistically different; **Not statistically different

Polishing of ceramic-based restorations requires special attention. Inappropriate polishing can remove the gloss from restorations and roughen the surface, leading to poor aesthetics as well as increased biofilm and stain formation on the roughened surface.[38] If polishing is required, selection of an appropriate method with low abrasivity is key. Options include fine grit pastes of diatomaceous earth (Next, Preventech) and perlite-based prophy pastes (ClinPro®, 3M ESPE). In testing of perlite-based prophy paste and a leading manufacturer's pumice-based coarse, medium and fine grit prophy pastes, it was found that all produced some surface roughness on ceramic surfaces, with the agent producing the least surface roughness depending on the type of restorative material.[39] One study found that medium grit pumice-based pastes resulted in surface scratching of composite resins and high gold content alloys.[40] A number of formulations based on aluminum or tin oxide are both low abrasive and able to improve luster. Polishing pastes formulated specifically for ceramic restorations are available (Prisma® - Gloss™, DENTSPLY Caulk; CompoSite®, Shofu; NUPRO® Shimmer™). It is important to note that a given polishing paste may not be suitable for all restorative materials. If there is doubt about the suitability of a polishing or prophy paste, the manufacturers should be consulted.

Summary

The appropriate use of professional and home use oral care products is required to prevent disease and to restore oral health for patients with oral disease. For home care oral hygiene, patients should be advised to use a soft or ultrasoft bristled brush. If using a manual brush, the patient must be taught how to use the brush correctly and without applying too much force. The selection of an interdental cleaning method that the patient can perform, and use of a dentifrice with low abrasivity and good cleaning ability, are other factors requiring consideration. Dental prophylaxis is one of the most common in-office procedures. As with home care, a careful technique and selection of appropriate products with the best cleaning and lowest abrasivity are important considerations for care. Other considerations for dental prophylaxis products include convenience, ease of use, and patient and clinical preference.

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Author Profile

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Bridget Conway, BA, RDH, is a Public Health Hygienist working in Maine. Bridget structured and implemented programs to benefit senior citizens and low-income children. She also began a program called Island Outreach, to bring dental care to some of Maine's outlying Island communities. In 2006 she began a Pilot program for dental screenings for entering Kindergarten students and established a dental home for these children. Bridget is also an active member of the ADHA and secretary to the Maine Dental Hygiene Association.

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Questions

1. Abrasion can be defined as the wearing away of a substance, such as enamel or dentin, by an abnormal chemical process.
   a. True
   b. False

2. Susceptibility to abrasion is increased _____.
   a. in the presence of erosion
   b. in the presence of sealants
   c. in the presence of fractures
   d. none of the above

3. Incorrect use of home oral care products can result variously in _____.
   a. poor oral hygiene
   b. gingival irritation and abrasion
   c. damage to the tooth
   d. all of the above

4. Careful selection of polishing techniques is required to _____.
   a. ensure optimized stain removal
   b. ensure polishing and preservation of surface integrity
   c. prevent the caries process from ever occurring
   d. a and b

5. The use of floss is likely to result in tooth surface abrasion.
   a. True
   b. False

6. Patients have been found to have fewer problems using interdental brushes than using floss.
   a. True
   b. False

7. Oral hygiene aid selection is an important component in _____.
   a. determining the efficacy and safety of home care and the patient's willingness to perform oral hygiene
   b. determining the patient's risk for disease
   c. avoiding professional dental prophylaxis
   d. all of the above

8. Abrasives used to clean teeth thousands of years ago have included ground shells and bones.
   a. True
   b. False

9. Dentifrices currently available can typically contain _____ as abrasive agents.
   a. carbonates
   b. phosphates or aluminum oxide
   c. silicas
   d. any of the above

10. The abrasivity of dentifrices is measured using _____ measurements (RDA).
    a. Reduced Dentin Abrasion
    b. Radioactive Dentin Abrasion
    c. Radiopaque Dentin Abrasion
    d. none of the above

11. If abrasive lesions are confined to enamel or cementum, the patient will _____.
    a. always experience sensitivity
    b. not experience sensitivity as a result
    c. always be aware of the abraded areas
    d. a and c

12. In severe cases of abrasion, restoration of the abraded dentin using bonded composites or glass ionomers may be necessary.
    a. True
    b. False

13. In-office desensitizers that may be used to relieve a patient's dentinal hypersensitivity include_____.
    a. resins and bonding agents
    b. fluoride varnish
    c. oxalates
    d. all of the above

14. Care must be taken during dental prophylaxis and air polishing procedures to avoid iatrogenic abrasion.
    a. True
    b. False

15. Dental prophylaxis is one of the most commonly performed procedures in dentistry, with an estimated _____ performed annually.
    a. 116 million
    b. 193 million
    c. 226 million
    d. none of the above

16. Dental prophylaxis is _____ .
    a. a disease treatment
    b. a preventive measure
    c. a diagnostic procedure
    d. all of the above

17. According to the NIDCR study, of adults 30 years of age and older more than _____ experience calculus and about _____ experience subgingival calculus.
    a. 40%; 35%
    b. 80%; 45%
    c. 90%; 55%
    d. 90%; 65%

18. Stain removal is a further component of dental prophylaxis and can be achieved through instrumentation and/or polishing.
    a. True
    b. False

19. Habits resulting in increased levels of staining include _____.
    a. consumption of red wine
    b. consumption of tea and coffee
    c. smoking
    d. all of the above

20. An assessment of the amount and type of stain helps the clinician determine the need for polishing.
    a. True
    b. False

21. Factors in selecting a method of polishing include _____.
    a. the amount of stain present
    b. the presence of restorations
    c. patient and clinician preferences
    d. all of the above

22. A recent study using glycine powder for air polishing found that substance to effectively debride subgingival root surfaces and to be safe.
    a. True
    b. False

23. If using a snap-on rubber prophy cup, it is important to ascertain that wobble will not be significant – this could result in nonconcentric spinning and hand stress.
    a. True
    b. False

24. Disposable soft prophy brushes are generally indicated for buccal surfaces.
    a. True
    b. False

25. The majority of prophy pastes are _____.
    a. oxalate-based
    b. pumice-based
    c. shell-based
    d. none of the above

26. The introduction of disposable lightweight prophy angles has _____.
    a. removed the need for infection control in general
    b. improved infection control
    c. improved ergonomics
    d. b and c

27. The use of a perlite-based prophy paste has been found to result in _____.
    a. improved cleaning
    b. lower abrasion
    c. offer good stain removal
    d. all of the above

28. Use of a pasteless prophy angle technique for polishing has been found to _____.
    a. eliminate splatter
    b. reduce the need for expectoration and rinsing
    c. offer improved visibility
    d. all of the above

29. Prophy pastes and rubber cups always offer better cleaning than a pasteless prophy cup.
    a. True
    b. False

30. Considerations for dental prophylaxis products include _____.
    a. convenience
    b. ease of use
    c. patient and clinical preference
    d. all of the above

ANSWER SHEET

Abrasion and Implications for Oral Health

Name: Title: Specialty:

Address: E-mail:

City: State: ZIP:

Telephone: Home ( ) Office ( )

Requirements for successful completion of the course and to obtain dental continuing education credits: 1) Read the entire course. 2) Complete all information above. 3) Complete answer sheets in either pen or pencil. 4) Mark only one answer for each question. 5) A score of 70% on this test will earn you 4 CE credits. 6) Complete the Course Evaluation below. 7) Make check payable to PennWell Corp.

Educational Objectives

1. Give a definition of abrasion and list factors associated with abrasion.
2. Describe an oral care regimen designed to be nonabrasive.
3. Describe the various products available for dental prophylaxis.
4. Understand the considerations in selecting suitable products for home care and dental prophylaxis.

Course Evaluation

Please evaluate this course by responding to the following statements, using a scale of Excellent = 5 to Poor = 0.

1. Were the individual course objectives met?	Objective #1:	Yes	No	Objective #3:	Yes	No
	Objective #2:	Yes	No	Objective #4:	Yes	No
2. To what extent were the course objectives accomplished overall?	5	4	3	2	1	0
3. Please rate your personal mastery of the course objectives.	5	4	3	2	1	0
4. How would you rate the objectives and educational methods?	5	4	3	2	1	0
5. How do you rate the author's grasp of the topic?	5	4	3	2	1	0
6. Please rate the instructor's effectiveness.	5	4	3	2	1	0
7. Was the overall administration of the course effective?	5	4	3	2	1	0
8. Do you feel that the references were adequate?		Yes		No		
9. Would you participate in a similar program on a different topic?		Yes		No		

10. If any of the continuing education questions were unclear or ambiguous, please list them.

_____

11. Was there any subject matter you found confusing? Please describe.

_____

_____

12. What additional continuing dental education topics would you like to see?

_____

_____

Mail completed answer sheet to

Academy of Dental Therapeutics and Stomatology,
A Division of PennWell Corp.
P.O. Box 116, Chesterland, OH 44026
or fax to: (440) 845-3447

For IMMEDIATE results, go to www.ineedce.com and click on the button "Take Tests Online." Answer sheets can be faxed with credit card payment to (440) 845-3447, (216) 398-7922, or (216) 255-6619.

☐ Payment of $59.00 is enclosed.
(Checks and credit cards are accepted.)

If paying by credit card, please complete the following: ☐ MC ☐ Visa ☐ AmEx ☐ Discover

Acct. Number: _____

Exp. Date: _____

Charges on your statement will show up as PennWell

1.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	16.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
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3.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	18.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
4.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	19.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
5.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	20.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
6.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	21.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
7.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	22.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
8.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	23.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
9.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	24.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
10.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	25.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
11.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	26.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
12.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	27.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
13.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	28.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
14.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	29.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
15.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	30.	Ⓐ	Ⓑ	Ⓒ	Ⓓ

AGD Code 017

PLEASE PHOTOCOPY ANSWER SHEET FOR ADDITIONAL PARTICIPANTS.

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