Air polishing primer

By Stephanie Wall, RDH, MSDH, MEd

Studies have shown that adequate plaque control can prevent gingivitis, periodontal disease and dental caries. Plaque control is achieved one of two ways — mechanically or professionally.

Mechanical control includes the self-care methods of proper brushing and flossing by an individual.

Professional control includes the in-office use of rubber cups or brushes, scalers and curets, or ultrasonic devices by a dental professional. Air polishing was introduced as an alternative that is less time-consuming and labor-intensive than the previously mentioned professional methods.

The air polishing system uses air and water pressure to deliver a controlled stream of specially processed sodium bicarbonate in a slurry through a handpiece nozzle. Fine particles of sodium bicarbonate are propelled by compressed air in a warm spray.

Water temperature is controlled and maintained at about 57 degrees Celsius or 100 degrees Fahrenheit. Air polishing has been firmly established as an equally safe and effective alternative to traditional methods of plaque and stain removal.

The first air polishing devices became available in the 1970s with mechanics that have not changed much since that time. The device uses pressurized air, water and sodium bicarbonate powder as the polishing medium. The inlet air pressure from the device is about 60 psi, with the outlet pressure being delivered at about 58-60 psi. The water pressure ranges from 10-50 psi.

The sodium bicarbonate is a food grade tribasic combined with small amounts of calcium phosphate and silica that allow the powder to remain free flowing.

This powder, combined with the pressurized air and water, will remove surface stains, plaque and other soft deposits frequently found on the tooth surfaces.

The decision to use air polishing should be based on the patient’s medical history and patient assessment. Indications for use include:
- General post-scaling procedures
- Cleaning of pits and fissures
- Interproximal cleaning
- Tooth preparation prior to placement
- Removal of temporary cement residue
- Surface cleaning
- Cleaning of orthodontic bands and brackets

Contraindications for use include:
- Patients with respiratory, renal or metabolic disease
- Patients with exposed cementum or dentin
- Prolonged polishing of root surfaces
- Patients taking potassium, antacids or steroid therapy
- Orthodontic bands and brackets

The air polishing technique is one that can be used with all systems. A correct technique prevents undue aerosols from deflecting back to the clinician and from being directed into the patient’s soft tissues.

To control aerosols, high speed evacuation should be used. The handpiece nozzle should be used in a circular pattern with the tip kept 3 to 4 mm away from the enamel surface.

The angulation of the tip is critical in order to prevent tissue trauma. The universal angulations are: 60 degrees to the anterior teeth away from the gingiva, 80 degrees to the posterior teeth, and 90 degrees to the occlusal surfaces.

If directed at 90 degrees to the anterior and posterior surfaces, there will be deflection of the spray toward the patient and clinician.

Research indicates there are many benefits to the use of air polishing over that of traditional polishing. These include:
- Removal of up to 100 percent of bacteria and endotoxins
- Use on implants
- Creation of uniformly smooth root surfaces
- Greater access for stain removal in pits and fissures
- Less abrasiveness
- Use before bonding or sealant placement
- Increased patient comfort
- No heat generation
- No tooth contact
- Reduced operator fatigue
- Temporary relief of dentinal hypersensitivity

Air polishing is safe for use on amalgam, gold, porcelain and orthodontic bands and brackets. It is not safe for use on all types of composite, glass ionomers, and luting agents.

Air polishing with the recommended sodium bicarbonate mixture does not damage titanium used for implants and is the method of choice for decontamination.

Recently new air polishing powders have been developed that include glycine, calcium carbonate and calcium sodium phosphosilicate (NovaMin®).

Glycine is available in two grades: pharmaceutical and technical. Glycine crystals can be grown using a solvent of water and sodium salt and then prepared for use in powder formulations.

Calcium carbonate, a naturally occurring substance, is often used as a filler for pharmaceutical drugs and as a main ingredient in antacids.

Calcium sodium phosphosilicate is a bioactive glass. It has the ability to interact with oral fluids and release sodium, calcium and phosphate ions resulting in remineralization of tooth enamel.

Consider including air polishing in your professional armamentarium as an effective and safe method of decontamination.
alternative to traditional methods.

References
• Barnes, C. An In-depth Look at Air Polishing. Dimensions of DH, March 2010.

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About the author
Stephanie Wall has been a dental hygienist for more than 20 years. She recently completed training as an orofacial myologist and will be opening her practice, The Orofacial Myology Center of South Carolina, this year. She is also an active member of Career-Fusion. Wall resides with her two cats in Mount Pleasant, S.C. You may contact her at rdhms@live.com.
Xylitol a superhero in crusade against cavities

Xylitol, the dietary substance long used in the management of diabetes and weight control, is proving to be a healthcare powerhouse, say scientists and dental professionals around the world. Repeated studies indicate the sugar substitute has strong cavity-fighting properties when used several times a day. Studies have also shown xylitol to reduce sinus and ear infections.

“The action of sugarless gum and candy containing xylitol has been a happy surprise to the healthcare community,” said Dr. Allan Melnick, a clinical dentist from Encino, Calif. “This therapeutic sweetener substantially reduces the bacteria streptococcus mutans in the mouth. It lowers oral acid levels, adjusts pH and reduces tooth plaque, resulting in less tooth decay and gum disease.”

Xylitol is a sugar alcohol found in plants such as berries, corn and plums. It also is produced in humans during normal metabolism. Dental experts agree it is produced in the mouth, research shows. These bacteria, which love to feed on sugar, produce sticky acids that adhere to teeth. The acids damage tooth enamel by dissolving calcium on the tooth’s surface. Frequent use of xylitol — whether in the form of gum, mints, toothpaste or oral wash — appears to break this cycle.

“A yearlong study in Finland showed an 85 percent reduction in the caries rates for subjects who chewed gum containing 6.7 grams of xylitol each day,” Melnick said. “The same reduced decay rate was found in subjects who followed strict diet guidelines and used xylitol as a sugar substitute. In other short-term Finnish studies at Turku University, dental plaque accumulation was reduced by about 50 percent in less than a week of xylitol use.”

Similar results were found in more recent studies in Russia, the United States, New Zealand, Thailand and Canada. A Danish researcher has even correlated xylitol use by mothers with decreased tooth decay in babies. Decay in small children can have a devastating effect on the development of their adult teeth and urgently needs to be prevented, say dental experts.

“A 40-month, multinational chewing gum study published in the Journal of Dental Research showed decreased tooth decay for children chewing xylitol gum in comparison to those who chewed none or had gum sweetened with other substances,” Melnick said. “In a follow-up study five years later by the University of Washington, xylitol subjects showed a 70 percent reduction in tooth decay — evidence of long-term benefits. That’s huge, especially for high-risk groups.”

The sweetener has been linked to tooth self-repair, reduction in bacterial levels, improved saliva levels in dry mouth patients and reduced ear infection cases in children, said Trisha O’Hehir of Arizona, a dental hygienist, educator and a well-known xylitol expert. She noted that there is no aftertaste and xylitol has only half the calories of sucrose. Xylitol also has a slower rate of absorption than sugar — 88 percent slower — which helps to keep blood sugar levels stable.

Additional research has shown that xylitol — like bacteria — has the ability to adhere to body tissues. In a controlled study, solutions of xylitol were able to reduce the presence of staph bacteria. Lab animals given xylitol also exhibited an increase in white blood cells, which are part of a body’s natural defense against bacterial infections.

Animal studies in Finland indicate xylitol in the diet promotes the intestinal absorption of calcium and has the potential to reduce or reverse bone loss in humans. Its use is being considered as a preventive measure to deal with osteoporosis, which affects more than 10 million people in the United States.

The U.S. Army promotes the use of this sweetener in its “Look for Xylitol First” initiative, and in the last two years dental associations in Wisconsin, Hawaii, California and Arizona have endorsed xylitol for its preventive benefits. Several other state dental associations are planning the same endorsement shortly.

“The average American consumes half a cup of sugar a day in some form or other. It’s having a devastating effect on our teeth and overall health,” Melnick said.

“So, it’s crucial that we make changes. While diet modification, brushing and dental office visits are obvious, something as simple as chewing xylitol gum a couple times a day can help dramatically. It tastes good, it’s something you can carry in your pocket, and you don’t have to make an appointment. I recommend it to all my patients.”

(Source: PRWeb)