Air Polishing in Dentistry

In dentistry, air polishers have been around for a little over 40 years, and they are an alternative to the traditional method of polishing teeth (using a polishing cup and prophy paste). In my office, I have the benefit of using either the air polisher or the traditional method. When I choose to use the air polisher, I consider several things:

- Why use an air polisher?
- What are the contraindications?
- What types of powders are available?
- Will it harm fillings and crowns?

Why use an air polisher?

An air-polishing device (APD) is great for removing plaque and stain from tooth surface. It removes tobacco and chlorhexidine stain more efficiently than polishing paste does. Other benefits of using an APD includes reduced time spent on removing stain and plaque, a reduced strain on the operator, and it “generates no heat.” Furthermore, the APD can reach into the pits and fissures of teeth so that the surface is clean prior to placing sealants.

What are the contraindications?

One thing to keep in mind when choosing to use the APD is the client’s medical conditions. Like contraindications to anesthesia or using an ultrasonic scaler, there are contraindications to using the APD. According several sources, you should not use the APD on clients with the following conditions:

- Addison’s Disease
- Communicable disease
- Cushing’s Disease
- Hypertension (sodium containing powder only)
- Immunocompromised
- Low sodium diet (sodium containing powder only)
- Medications that include:
  - Antidiuretics
  - Mineralocorticoid steroids
  - Potassium supplements
- Metabolic alkalosis
- Respiratory illness that limits swallowing or breathing

Other things to consider when using the APD are to minimize the use on “root surfaces,” spongy gums, and, depending on the type of powder your using, we need to be cautious around certain types of “restorative materials.” Furthermore, using the APD on teeth with sealants can cause surface defects.
What types of powders are available?

There are several types of polishing powder available for the APD:

**Sodium bicarbonate** has a salty taste, but you can minimize this by adjusting the “water-to-powder ratio.”¹

**Glycine** is a “crystal [that is] grown using a solvent of water and sodium salt.”³Glycine is “less abrasive than . . . sodium bicarbonate,” and causes less damage to restorations.²

**Calcium sodium phosphosilicate** is a compound that contains “calcium, phosphorus, silica and sodium.”²A benefit to using this compound is that it can “reduce dentinal hypersensitivity . . . by occluding the dentinal tubules.”²

**Calcium carbonate** is the “main ingredient in antacids, and is also used as filler for pharmaceutical drugs.”³Polishing powder that contains the calcium carbonate is effective for stain removal, but more studies are needed to establish the effects it can cause on tooth surfaces.²

**Aluminum trihydroxide** is an alternative to the sodium bicarbonate powders; It’s used for people who have high blood pressure or are on a restricted sodium diet.

Will it harm fillings and crowns?

I found that the best way to know if using the APD is safe on restorations is to read and follow the manufacturer’s recommendations. The following chart* will help simplify using the APD on restorations.

<table>
<thead>
<tr>
<th>Restorative Material</th>
<th>Sodium Bicarbonate</th>
<th>Aluminum Trihydroxide</th>
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</thead>
<tbody>
<tr>
<td>Amalgum</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Gold</td>
<td>Yes*</td>
<td>No</td>
</tr>
<tr>
<td>Porcelain</td>
<td>Yes*</td>
<td>No</td>
</tr>
<tr>
<td>Composite (Hybrid and Microfilled)</td>
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<td>No</td>
</tr>
<tr>
<td>Glass Ionomer</td>
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<td>No</td>
</tr>
<tr>
<td>Composomer</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Luting Agents</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

*Only if margin is avoided

* Barnes, Caren M., RDH, BS, MS author of chapter in Esther M. Wilkens book (see references), p.705, Table 44-3, Recommendations for Use of Air Polishing on Restorative Materials.
References

