



Quick Tips

Air Abrasion—Beyond the Basics



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After the reintroduction of air abrasion for cavity preparation in 1993, many devices appeared on the market, and dentists began using them mostly for deep sealants or preventive resin restorations and simple occlusal caries. Although all of these devices

were successful in cutting tooth structure, many were limited to the simplest procedures by excess powder and an inability to control the device because of inefficient or overly aggressive cutting at low pressure. Just as early curing lights were equipped with handles to transport them into the operatory for infrequent use and have become a regular and indispensable part of the armamentarium, it is now time for air abrasion to take its place alongside the high-speed handpiece in a dentist's everyday instrumentation.

AIR ABRASION

A difficult concept for most dentists to realize is that air abrasion is the instrument of choice in preparing Class 1, Class 3, Class 5, small Class 2 preparations, and removing old composite. This is based on the ability of air abrasion to accomplish a minimally invasive cavity preparation without the pulpal response and enamel microfracturing that occurs with handpiece preparation, usually without anesthetic. However, for this modality to take its proper place, the instrument must

be capable of a high degree of control. The device must be readily available, and the dentist must understand the techniques and differences in air abrasion preparation.

Control

Like a handpiece that varies its cutting with subtle increases in speed and hand pressure, an air-abrasion device must be capable of varying cutting speed and "aggressiveness" without excessive machinations such as screwing on and off tips with different orifice sizes and readjusting air pressure and powder flow with each tip. Like the high- and low-speed handpieces dentists are accustomed to, by simply changing the air pressure the instrument must be able to:

- remove the organic plug in a pit or fissure without removing more than a few microns of enamel;
- cut aggressively through enamel, slower, and with greater comfort in dentin;
- when necessary, remove dentin with extreme care without penetrating enamel.

To permit visibility, this must all be accomplished without excessive powder.

Availability

Like a handpiece or curing light, for air abrasion to be used in all the procedures for which it is indicated it must be part of the standard delivery system (Figure 1). The device should even use the same foot control to avoid the sea of wires and foot controls dental operatories have become.



Figure 1—The AirDent II CS control panel and handpiece installed next to the high-speed on the standard handpiece delivery system.



Figure 2—Caries under the occlusal enamel indicated by changes in light transmission, color, and reflectance.



Figure 3—Graphic showing the appearance of caries under the enamel being accessed by air abrasion.