THE BOTTOM LINE

The development of new enamel and dentin bonding systems has brought about great improvements in adhesive dentistry and changes in the philosophies of cavity preparation and design. High concentrations of phosphoric acid (30–40%) in combination with a primer and adhesive resin have been used routinely to create a micromechanical bond to enamel and dentin. Although long-term clinical success has been achieved with these systems, the demand for simplified steps also has increased, resulting in the development of the self-etching primers.

Self-etching primer systems, which can be two-step or one-step (all-in-one) systems, do not use a separate phosphoric acid agent. They combine the etching and priming steps, using a separate solvent-free bonding resin, or they combine the etching, priming, and bonding steps. However, with the simplification of the bonding steps, technique sensitivity and substrate variability problems are possible with the self-etching systems. For example, proper evaporation of the solvents using a mild but constant air stream is important, and ensuring that all preparation walls are constantly in contact with the self-etching primer during the etching time is crucial for success. Another great concern regarding the self-etching primers is the degree of enamel etching and bonding. Most scientific publications report that self-etching primer systems bond better to ground enamel.

In conclusion, care should be taken to avoid technique sensitivity using self-etching primers. The primer should be spread evenly along all walls of the preparation and air dried properly. In addition, enamel should be beveled or roughened, and bonding to intact enamel should be avoided with these systems.

SUMMARY

Self-etching primers should be used on ground enamel only, and the manufacturer's instructions should be followed carefully. Systems using phosphoric acid etching still provide better long-term bonding to enamel.