

## EDITORIAL



## The exciting world of magnification



As dental professionals, we are working in small areas applying techniques and instruments that easily fall within the confines of microsurgery. High precision and minimal invasion translate directly to limited destruction, biologic and mechanical success, and clinical longevity. Since our vision is limited and a better view of a small object can only be achieved by moving the eyes closer to the object, the use of magnifying optical aids (ie, dental telescopic loupes) seems logical. However, many clinicians still believe that dental loupes are “unnecessary,” or “require too much transitional time and effort,” and/or “slow down the treatment.”

Admittedly, much of the excitement of working with loupes is borne from the ability to finally “see”—which some may render a subjective experience. In a dental world where objective measures and scientific evidence become integral parts of decision-making processes, I have some exciting news for you: there *is* scientific evidence that supports the use of dental loupes even in restorative dentistry. A study conducted at the University of Pennsylvania School of Dental Medicine during the Operative Advanced Simulation (AS) course included over 230 first-year dental students who either used dental loupes (study group) or performed the procedures without magnification (control group).<sup>1</sup> The AS course uses virtual-reality-based technology that provides exact computer-generated data on the students’ performance. Students in the study group completed the required preparations in less time than students who did not use loupes. A survey given to the study group members revealed a high rate of acceptance of dental telescopic loupes, with 73% agreeing that the time needed to adjust to the loupes was minimal. The overwhelming majority (70%) felt that loupes helped them to learn faster and be more accurate (87%).

The most important steps into the world of magnification are the selection of proper loupes and the willingness to make some adjustments to the daily practice routine. It is advisable to “shop around”—not for a better price, but for highest quality and best-fitting loupes for your personal needs. High-quality optical lenses provide a better resolution, a wider field of view, and clear vision even in the marginal areas; they also require less field illumination. Assistance from a well-trained individual is an absolute must for proper selection and optimal fitting of your loupes.

The most common designs are through-the-lens and flip-up loupes. There are no general guidelines; the selection of loupe type depends largely on personal preference. Through-the-lens loupes, when properly fitted and installed, do not require any adjustment and

can always be used the same way. The field of view is larger and some may find this set-up more comfortable. Flip-up loupes are connected to a headband or a special frame. They can be individually adjusted; however, this can be a humbling experience if it is not well instructed and performed. The versatility and adjustability of flip-up loupes are appealing to many clinicians. The loupes can be easily moved out of the way when not needed without having to remove the headband or frame. Installation of prescription glasses is simple, and the glasses function as protective devices even when the loupes are flipped up.

The “power” or “magnification strength” of the loupes typically ranges from 2× to 6× or even higher. Many clinicians start their magnified experience with 2×, which requires only minimal adaptation. Once accustomed to the low-magnification loupes, most clinicians step up to at least 3.5× for restorative dentistry and 4.5× for endodontics or surgical interventions. While some colleagues prefer to store multiple loupes of various magnifications, the cost-concerned may wish to skip the low-magnification introductory step.

Higher magnification generally requires better field illumination. There are multiple lights available that can be paired with almost any loupe. Small LED lights with compact battery packs have recently become quite popular.

There are 2 other parameters that need individual selection: viewing angle and working distance. These factors are important not only for proper vision, but ensure a defined, upright, and ergonomic working posture that prevents strain and ultimately pain and injury to your head, neck, and back muscles.

There is abundant anecdotal and scientific support for the use of dental loupes. No other instrument, material, or technique has had such direct impact on the precision and ultimately the quality of my work. The rewards of this exciting new magnified world can be yours as well, but it is up to you to take that first step.

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 Sciences  
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## REFERENCE

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