

Enhancing Your Practice With the Magnifying Video Scope



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INTRODUCTION

Do you sometimes feel that you are “bending over backwards” for your patients? Many dentists have experienced back pain, and in fact, PubMed has 96 articles on “Back Pain in Dentists.” Why? Because of the intricate work that is demanded of us in our field of dentistry. There are magnification aides that can help us in our performance of dentistry while sitting in an upright position, affording better ergonomics with improved operator comfort. There are specialized devices that allow dental procedures to be done without having to be bodily over the patient with the head bent down in order to see into the oral cavity. In this article, we will take a look at a couple of magnifying video scopes that can assist both the operator and assistant in their daily work.

The use of the microscopes in dentistry was conceptualized by Dr. Harvey Apotheker in 1981.¹ “The newest addition to vision enhancement...in dentistry is the operating microscope. In some medical subspecialties—such as otolaryngology, ophthalmology, plastic surgery, and neurosurgery—extensive microsurgical training is required to perform procedures at acceptable standards of precision.”² As of 1998, the American Academy of Endodontics requires that all postgraduate endodontic students from accredited programs must become proficient in the use of the microscope.² There are many advantages of the magnifying video scope and the use of captured images for our everyday practice of dentistry: ergonomics, treatment outcomes, communication and documentation, and education.

BETTER ERGONOMICS

The use of the magnifying video scope (MVS) ensures that the dentist and assistant can sit upright in “a neutral (and) balanced posture which has been shown to help prevent ergonomic problems (that) seem to be an occupational hazard” (Figures 1 and 2). Using the MVS reduces tension, fatigue, and stress of the lower back and neck muscles.² Longer procedures can be performed, and the dentist and assistant can work longer hours with less bodily stress.

One of the newest devices, the Explorer (CamSight) (Figure 3), has many advantages over typical microscopes used in dentistry.



Figure 1. An example of poor operator posture, as observed when no magnifying video scope is used.

Due to the slim design of the Explorer, it can be easily moved and fits nicely into any operatory space. MagnaVu (Magnified Video Dentistry) is another digital operating microscope that has been used successfully in dentistry for many years (Figure 4).

IMPROVING TREATMENT OUTCOMES

Due to the increased magnification (Explorer with digital zoom up to 15x and MagnaVu at 23x), the ability to visualize the surgical field is vastly improved as compared to using the naked eye. “According to microscope manufacturers, most current instrument sales are to general practitioners, who are using them for a wide variety of procedures.”² The microscope has the potential to enhance a dentist’s vision to unprecedented levels, according to Friedman, et al.² Furthermore, dentists have begun to learn that illumination of the operating field is just as important as magnification. The Explorer utilizes a bright LED light which substitutes for the dentist’s operatory light (Figure 5).

The MVS can enhance the operator’s vision capabilities just as similar devices have been used in other medical specialties, such as otolaryngology, ophthalmology, plastic surgery, and neurosurgery.² During the 1990s, many restorative dentists and periodontists followed the endodontists’ lead and began to incorporate the micro-



Figure 2. An example of good posture using the Explorer. (Photo courtesy of CamSight.)

scope into their everyday practice. Dr. Glenn A. van As has stated; “...The greatest increase in new users of the digital operating microscope has been from those clinicians familiar with using medium-powered loupes routinely.”³ It has been reported in the literature that as magnification is incorporated, procedural errors decrease significantly and the inclusion of a microscope resulted in fewer errors than when a set of loupes was used.¹

BETTER COMMUNICATION AND DOCUMENTATION

The increased communication found with the use of the MVS affects the dentist in several different ways. The first is in communication with the assistant. The MVS aids the dental practitioner and the assistant in visualizing the treatment being performed more easily than the traditional methods. The dental assistant now has an unobstructed view of the operating field—the same view as the operator. This allows the assistant to become more aware of the operator’s needs; such as more light, readying for the next instrument to pass, etc. With the Explorer, the dentist and/or assistant can zoom in or out, focus, and adjust the intensity of the operating light coming through the camera’s lens. (Figure 6) (This can be done utilizing both hand and foot controls.)

The second area of improved communi-

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cation is with the patient and/or parent. Just as digital radiographs have allowed magnified images giving better views of the teeth and supporting structures, so does the magnifying video scope when used with a computer monitor. As a pediatric dentist, one of my challenges is to communicate with the patient's parents. The magnifying video scope allows me to illustrate various procedures either as individual digital photographs or videos. By depressing a foot pedal one can take and record these images for diagnostic and educational purposes. Many of my special needs patients, of



Figure 3. Explorer (CamSight) is one of the newest magnifying video scope systems.

all ages, love watching their dentistry performed on the computer monitor (only nonthreatening procedures are shown to our patients) (Figure 7). I use the MVS for my autistic patients as part of their conditioning program to allow them to watch the dental procedures so that they will see what's happening in "real time." I have used the live videos to illustrate tooth brushing and flossing techniques for the parents and children. Our office's Web site (kidsmyl.com) has 2 videos to help introduce our new patients and their families to our practice; one video is on the "First Visit," and another is on "Laser Dentistry." These are excellent behavioral and practice management tools, in addition to helping us educate our patients and parents about our practice/practice philosophies.

The third area of communication is in the areas of treatment planning and documentation. With the MVS,



Figure 4. The MagnaVu (Magnified Video Dentistry).



Figure 5. The author and dental assistant with the Explorer demonstrating the use of the LED light.



Figure 6. The Explorer in use.



Figure 7. Education of special needs patient with live pictures from MagnaVu.

Tone has the ability to show patients their oral structures magnified, better demonstrating a fractured tooth or restoration, a periodontal problem, an oral lesion, etc. This can be illustrated to the patient in real time or recorded and shown at a subsequent visit. In the same way, these images can be used to show the patient his or her condition prior to and after the completion of a procedure. Lastly, the images can be stored and filed with the patient's name and date of the procedure for future reference and documentation. Depending on the com-

puter software that one has, storage of these images is possible in the patient's electronic chart.

The fourth area of communication is the use of the digitally captured images for a consultation. In today's world of cyberspace, I have had dentists send me e-mailed questions and photos from literally around the world. What a great tool we now have to capture magnified images in seconds, and then to send them in microseconds to other dentists throughout the world.

THE MVS IN DENTAL EDUCATION

The author has used video clips in his lectures for many years that enhance the educational tools that are available. These videos can also be sent live via broadcast teleconferences anywhere in the world or archived for future educational programs. These videos can be transferred to DVD, edited, and utilized for patient and/or dentist education. The Magnifying Video Scope offers the dental educator to use the digital images and videos as an educational tool. The author also utilizes the Explorer for his over-the-shoulder presentations at his office.

SUMMARY

The magnifying video scope (such as the Explorer and the MagnaVu) allows the dentist and team to provide quality dentistry in a more comfortable position, for longer periods of time. This is especially important for complex surgical and extensive restorative/aesthetic cases. The procedures that would be enhanced via the MVS include: diagnostic, preventative care, restorative, periodontal, endodontic, orthodontic, implant, and laser dentistry. ♦

References

1. van As GA. Extreme magnification: seeing the light. ineedce.com/courses/1442/PDF/ExtremeMagnification.pdf. Accessed November 23, 2009.
2. Friedman M, Mora AF, Schmidt R. Microscope-assisted precision dentistry. *Compend Contin Educ Dent*. 1999;20:723-731.
3. van As GA. Use of the dental operating microscope in laser dentistry: seeing the light. *Journal of Laser Dentistry*. 2007;15:122-129.

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Disclosure: Dr. Margolis receives honoraria for lectures from CamSight and honoraria and products from BIOLASE Technology.

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