Use of Surgical Telescopes in Dentistry

INTRODUCTION:

Dentistry has encountered a tremendous surge in technology over the last 25 years in nearly all areas including armamentarium, material and technique. These technological advancements have given dentist a new opportunity to create clinical excellence as long as microscopic attention to details in both the use of materials and the technique necessary to provide excellence is observed.

The increasing demand for aesthetic, conservative and durable restorations requires that the clinician be able to visualize the operating field in greater detail.

Loupes are commonly used when high demands of visual performance are needed.

Critical visual assessment is an integral function of oral health care. The ability to perceive fine details is relevant in all aspects of dentistry and represents an important first step in clinical decision making.

The visual aspects of magnification may appear to be the primary benefit, but we also should consider significant ergonomic and clinical issues improved by using loupes.

Effective magnification with quality surgical loupes enhances vision and can reduce the risk of musculoskeletal discomfort and pain that often accompanies dental practice. Improved ergonomic posture resulting from wearing loupes may help to extend your carrier.

By permitting the clinician to operate at a greater working distance from the patient, higher magnification viewers also reduce the clinician's exposure to potential contamination from aerosols.

Purchasing the loupes for their benefits should not yield to a pressure to be 'equipped' for certain procedures, nor should it copy other clinician's choices blindly. We must obtain knowledge about the product to make an educated decision.

LOUPES, EYES AND THE LEARNING CURVE:

The practice of wearing loupes needs to be consistent and deliberate because there is a small learning curve in their use and only time brings the maximum benefits in terms of operative speed and comfort.

First evaluate all the features of your loupes. Set aside time to learn how to use them.

After years of practice, it can be difficult to break bad posture habits or incorporate a whole new piece of technology, but that is not a good justification for delaying the purchase of loupes. Students may adapt more quickly because everything is new to them. The best advice for all clinician is to be patient and slowly implement loupe usage.

The head strap is an often-ignored accessory. Always tighten the head strap first because it will distribute the weight evenly over your entire head. It also will stabilize the loupes so that they will not move.


Head strap

Nosepieces are adjustable and interchangeable, so if one does not fit well, visit your local optician for adjustment or to check out other options.


Correct position of nose pad


Incorrect position of nose pad

Begin wearing the loupes for 20 to 30 minutes at a time. Wear your loupes daily for 2 to 3 weeks until you have integrated magnification into your daily routine on a consistent basis. Some clinicians may be prone to motion sickness, but they can still wear loupes- it may just take a little longer to get used to them.

Clinicians may be concerned about becoming dependent on loupes, but actually, loupes decrease eye fatigue caused by focussing on a small area for 8 to 10 hours a day and increase our career longevity.

Use of magnifying loupes does not harm or weaken the eyes, nor does it cause the user to become compromised in any way. However, after wearing loupes for a period, the user becomes accustomed to seeing more details than that apparent to natural vision, and a psychological feeling develops that something is being missed if depending solely on natural vision. This is an uncomfortable feeling if magnification is not available. Furthermore, after several hours, the eyes require time to readjust to normal vision, just as they do each morning after the eye muscles have been dormant all night. Apparently, while using magnification, the eye muscles become accustomed to contracting to a given level, and they must relax again to regain normal function. To avoid or reduce this challenge, it has been suggested that those people wearing magnifying loupes should consider not wearing them all the time; instead, they should use loupes for some procedure and unmagnified, normal vision for other procedures.

EVALUATING LOUPE FEATURES:

Look at an object with straight black lines-

The most common sign of poor quality loupes are low resolution, chromatic and spherical aberrations.

Viewing colourful or complex objects such as anatomical models or the inside of your hand does not give you the opportunity to evaluate loupes for their true optical performance. A simple piece of graph paper, however, can reveal the differences between mediocre and high quality loupes.

A: low resolution B: spherical aberration C: high resolution

Evaluate quality of frame-

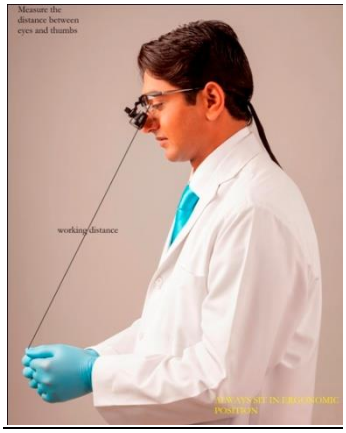
Look at the frame for the material and finishing, tightness of all the components.

Sports wrap around frames provide better protection from splashes and temple grip avoids pressure on ears.

Always confirm that frame glasses are of optical quality and most importantly anti-fogging. Scratch resistant, antiglare coating is desirable. Wear the mask along with loupes to see if they fog.

Picture demonstrating fogging on one side having regular glass and no fogging on other side where anti-fogging glass is used.

Determine your working distance-



Working distance requirement varies by the user's height and body type, and also by how you sit and stand while work with your patients. The best method of determining your working distance is to measure the distance between your eyes and the patient's teeth, while sitting in the ergonomic position in your normal workspace.

You can also use the following table to help determine the best working distance for your personal needs:

height	<170 cm	170-190 cm	>190 cm
sitting	340 mm	420 mm	500mm
standing	420 mm	500 mm	550 mm

Prescription inserts-

If you use glasses with prescription lenses, it is important that you have option of fitting your loupes frame with the correct prescription inserts. Otherwise, the loupes will not perform according to specifications.


Prescription inserts being fitted onto the frame

Test the weight of the loupes-

Weight is an important factor while choosing a new loupe. Especially if the loupe is to be used for longer periods of time. Lightweight loupes are more comfortable, and in the long term, will reduce tension and other complications. Ultra light weight loupes, offer the maximum comfort.

PROPER LOUPE CARE:

Proper care is essential in maintaining your investment. Generally, loupes can be cleaned with soft lens cloth moistened with disinfectant or 70% isopropyl alcohol. Gauze and paper towels usually contain fibers that can scratch the optics.

Hand contact with the loupes should be avoided during the procedure. Flip up paddles are used to flip the barrels up and down without touching the barrels with your gloved hands. These removable paddles provide an effective solution for preventing cross-contamination and are easily disinfected.


flip up paddle

Lens covers, which can be easily removed and disinfected, prevent scratching of the optics by flying debris such as calculus, prophy paste or aerosol.

Submerging the loupes in water, washing them under running water, use of ultrasonic bath is not recommended because of possibility of introducing moisture into the barrels.