



Role of Enhanced Magnification in Contemporary Dentistry- A Review

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Day by day, field of dentistry is getting updated with new materials, instruments and technologies. It has been seen that better you see better you work; this is true for dentistry as a better vision helps dentist to diagnose the problem and work more efficiently. Dentistry revolution started with magnification devices such as loupes and microscopes. Use of Microscope has been mentioned in literature in medical field long ago but in dentistry it started in late 1900 by Apotheker. He first mentioned about use of microscope in dentistry. Later it was popularised by Carr with better ergonomically made microscope. In 1994, Shanelec presented use of microscope in dentistry in continuing education program under name of Microscope-Assisted Precision Dentistry [1].

Since then restorative dentistry from the use of loupes and microscope increased worldwide for lab work and clinical procedure. Later, ADA also emphasized the use of microscope by incorporating in dental master program for student as compulsory teaching curriculum subject. The modern day patients want dental treatment painless and minimally invasive. These demands of patient can be fulfilled by a dentist who is updated with these new tools and technologies [2].

There are many advantages of enhanced vision by microscope such as better visualization of working field, better quality of treatment and having ideal ergonomics.

The vision is improved with shadow free light of microscope and enlarged picture of working area. A picture is worth more than thousand words this saying is true after introduction of microscope. A microscope gives better picture of tooth with fine details which we cannot see with naked eyes and so better magnified vision helps brain to analyze better [2].

Microscopes can magnify from 3x to 40x with quality. Today, it is known that resolution power of human eye is 0.2 mm which means that eye can differentiate between 2 objects with 0.2 mm distance. But microscope have high resolution power can raise the resolving limit from 0.2 mm to 0.006 mm (6 microns) which helps dentist to see working area better. For example, during looking for any margin gap between restoration and tooth, it can easily evident with magnified vision by microscope which a naked human eye can miss that details. Restorative dentists, Periodontists, and Endodontists routinely perform procedures requiring resolution well beyond the 0.2 mm limit of human sight.

Crown margins, scaling procedures, incisions, root canal location, caries removal, furcation and perforation repair, post placement or removal, and bone-and soft-tissue grafting procedures are only a few of the procedures that demand tolerances well beyond the 0.2 mm limit [3].

Various dental procedures are done at different magnification ranges, for example, 2.5x for access to 20x for exploration and surgery, 10x to 20x for periodontal microsurgies and 2.5x to 19x restorative dentistry. Dental operating microscope plays important role in diagnosis, documentation and patient education [4,5].

The use of the dental operating microscope has already started a revolution in with regards to diagnosis, treatment and quality control in restorative dentistry. The use of magnification has also been identified as one of the best ways to improve the quality of dentistry virtually overnight [6].

Earlier in dentistry role of tactile sensation was main which vary dentist to dentist as person. But use of microscope has made standard in dental practice with more confirm and precise details. This standardization made less variation in treatment.

Today, dentist are getting health problem with dentistry such as back pain which make them less efficient in work. Dentists are facing this issue due to incorrect ergonomic position which they do for many hours. In this aspect these microscope has been boom to them as indispensable tool with advantage of ergonomic. With microscope, dentist can work for hours without bending spine and in much relaxed way which enhance their performance. This is biggest advantage of microscope when it comes to dentist in person as dentist can have quality life with less health problem.

In dentistry, communication between dentist and patient is important to explain about treatment and prognosis. With the help of microscope, it is easier to explain about treatment with video recording. So by seeing things patient can remember better than listening. It give confidence in dentist to explain them.

Use of microscope has increased in all field of dentistry such as restorative dentistry, oral surgery, implant, prosthetic, periodontics and in endodontics particularly.

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