

How to use magnification ratio on a macro lens for dental documentation

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EDITORIAL

Technically magnification ratio is a relation between the object size and the sensor size. When 1 mm of the sensor equals 1 mm of the subject, magnification is said to be 1:1. Similarly when 1 mm of the sensor equals 2 mm of the object, magnification is said to be 1:2.

In dentistry the magnification ratio holds significant importance for 2 reasons:

- 1) It sets a standard distance from which an image has to be made and hence the composition remains standardized. e.g. If pre-operative image was made at a magnification of 1:1.5 then even the operative & post-operative images have to be made at the same magnification. We set the magnification to 1:1.5 on the same 100 mm macro lens and then move physically ahead and backward to focus. When the object appears sharp, image is to be recorded. It is interesting to note that the lens will focus at the same subject - camera distance like that of the pre-operative image at 1:1.5 magnifications (Figures 1-8).

This is the specialty of a macro lens and it cannot be reproduced by other lenses like zoom lenses (18-05 lens, 55-250 lens, 70-300 lens etc. or normal prime lenses like 50 mm, 100 mm, etc.



Figure 1) Operative & post-operative images

- 2) It is a method of communication with our colleagues.

Magnification ratio and its applications

When we increase the magnification we come closer to the subject as follows:



Figure 2) Image recorded at a magnification ratio of 1:10 shows the full face



Figure 3) We then increase the magnification to 1:5 & it roughly records half the face only



Figure 4) When we record intraoral images we usually start recording images at 1:3



Figure 5) An image taken at 1:2 shows lesser area which is recorded



Figure 6) We then increase magnification to 1:1.5

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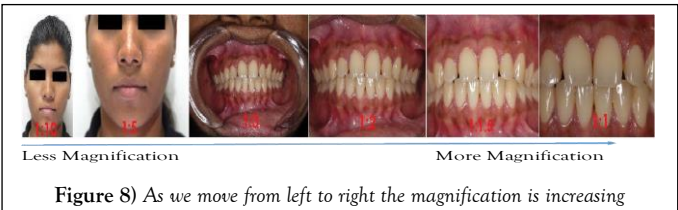
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(Note that all images are unprocessed or uncropped images & they are not a part of any protocol)



Organizations/institutes/journals/companies have their own photography protocols which have fixed number of views that are needed to be documented by their followers. e.g. AACD has 12 view protocols, UCLA has 16 image protocols.

All these images have been allotted a magnification ratio and the dentist is expected to document the image at that particular magnification only.

IMPORTANT NOTE

Magnifications of different cameras might look slightly different from one another even when the same lens is used. This depends upon the sensor size of the camera. In a full frame camera like the one used in this article more number of teeth might be visible at a magnification of 1:1 compared to a crop sensor camera in which only 2-3 teeth might be seen. The reader is expected to refer to their camera model catalogue to find out the sensor size of their own camera.