

قسم تقنيات البصريات

اخطاء الانكسار2

المرحلة الثانية

المحاضرة الخامسة

Department of Optics Techniques

Lecture5

The treatment for low vision

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The treatment for low vision

Treatment options will depend on the specific eye condition that caused low vision. Some sight disorders, like diabetes-related retinopathy, can be treated to restore or maintain vision. When this is not possible, low vision is permanent. However, many people with low vision find visual aids helpful. Popular low vision aids include:

❖ Optical Devices

Broadly, optical devices are of four types:

1. Spectacle magnifiers
2. Hand magnifiers
3. Stand magnifiers
4. Telescopes

They can be divided into:

1. Distance, which includes

Telescopes:

Telescopes in low vision are usually of two types: **Galilean** or **Keplerian**. **The Galilean telescope** has a plus objective lens in a minus eyepiece. Most of the prescriptions are Galilean telescope prescriptions because they produce an upright, erect image and are simpler designs and smaller in size. The telescopes can be monocular or binocular.

The advantages are that the patient can view far-off things easily by holding it in hand or by attaching it in the spectacles. **The disadvantage** higher magnifications reduce the field of vision

A Keplerian telescope has a larger field of vision and can be given in higher magnification but has an inverted image, for which a prism is added into the optics. These are a little more complicated designs and sometimes are difficult to handle.

CCTV or electronic systems: There are many low-vision devices now which incorporate electronic systems for magnifying.

The advantages These devices have a reasonable field of view and can be given up to 40× magnification. The reading distance is also

comfortable compared to other optical devices, and it has several other features which enhance the quality of vision. **The disadvantages** These devices are expensive for many of our patients.

2- Near, which includes:
spectacle magnifiers:

These are the most commonly prescribed low-vision devices and can be given in a basic set-up of refraction room also. They are prescribed for near and work on the simple principle of magnification by a convex lens. For a high-plus lens mounted in a standard full frame or half frame, the powers range from anything beyond 4 dioptries.

The disadvantage is that one must hold it at the focal point, which is usually very close to the eye. The reading distance of a 10-dioptre magnifier would be 10 cm, and of +5 would be 20 cm. The reading at close distance is the major disadvantage.

The advantages include convenience and both hands being free.

handheld magnifiers:

These devices are illuminated or non-illuminated, available in various powers starting from 2× magnification. Usual prescriptions range below 8× magnification, because the size of the optical lens reduces as magnification is increased

The advantages it is used for reading or any near activity for a short while. It can be combined with other spectacle magnifiers, and the eye can have a normal reading distance. These are easily available and are less-expensive.

The disadvantage It is difficult to be used in old patients with poor manual dexterity, and the patient must hold the object at the right

focal distance throughout the reading, hence needs steady focus and keeps the hand occupied.

stand magnifiers:

Similar to hand magnifiers, the patient uses his near prescription and keeps the material at the focal length of the lens for reading. The device is recommended in patients with field effects and poor manual dexterity. It is helpful in schoolchildren, especially with central field loss.