TRANSILLUMINATION OF THE IRIS DURING ROUTINE SLIT-LAMP EXAMINATION*

BY

J. D. ABRAMS

Neasden Hospital, London

THE methods used for transilluminating the iris have been well summarized by Berliner (1949) and more recently by Duke-Elder (1962). Trans-scleral illumination is generally employed; a bright light shone on the sclera will cause the pupil, as well as any defects in the iris pigment epithelium, to "light up".

As regards slit-lamp examination, two sources of light behind the iris have been used:

(1) Light passing through the pupil is focused on the lens which acts as a source; this method is of limited application unless there is some degree of lens opacity, and even then it is of value only for the area of the iris immediately adjacent to the pupil (Fig. 1, opposite).

(2) The fundus reflex is used as the source (Fig. 2, opposite). This has not been easy in the past because, unless the axis of observation and of illumination nearly coincide, no red reflex is seen.

As a matter of interest, Davidson (1936) used slit-lamp examination to look for defects of the iris pigment epithelium, but in order to observe as closely as possible to the axis of illumination he advised that the microscope be dispensed with.

The writer has noted that, during slit-lamp examination with modern apparatus, especially the Haag-Streit 900, a red reflex is obtained when the axis of illumination coincides with the axis of observation through the microscope. It is only comparatively recently that slit lamps have been evolved in which the angle between the two axes can be reduced to zero; the principle was probably first used in the Aimark model.

Where the two axes do coincide there is inevitably a bright reflex from the cornea which discourages any further attempt to examine the slit-lamp appearance. However, with the following manoeuvres a quite adequate red reflex can be obtained.

The size and shape of the illuminating beam are altered until this is identical with that of the pupil. The pupil itself should not be dilated with drops; the smaller it is the more unfolded the iris will be, and any pigment deficiencies that may be present will be more easily recognized. The patient looks straight ahead and, in order to avoid the brightest reflex from the cornea, the line of observation of the microscope should be slightly from the temporal side. The arm carrying the illuminating system is swung round to coincide with that of the microscope; in some models a click stop indicates coincidence. In this position, a red reflex will be visible from the

* Received for publication June 12, 1963.

FIG. 1.—Transillumination of the iris during conventional slit-lamp examination; the beam is shone in obliquely through the pupil.

FIG. 2.—Transillumination of the iris made possible by the fundus glow when the axis of the illumination coincides with the axis of viewing.

pupil unless it has contracted too much. However, even if there is none visible from the pupil, any defect of the pigment layer will show up as the characteristic red areas.

Other technical points which aid the examination may be mentioned. It is best to use only sufficient magnification by the microscope to fill the field of view with the whole iris. It will be realized that, as the pupil is the sole area illuminated, the iris proper is in darkness and only dehiscences in the pigment epithelium will be seen. Direct illumination of the anterior surface of the iris must be avoided as it will cause many retro-illuminated areas to disappear immediately.

The examination should be carried out in a darkened room. The observer's sensitivity to red increases when the room light is switched off. An iris that appears quite intact when examined by this method in ordinary light will often show up various small areas of pigment defect once the room light is out.

In order to reveal the smaller defects, the microscope must be critically focused on the level of the pigment layer, and this is best done by making sure that the anterior lens capsule in the illuminated pupil is clearly seen.

As a consequence of the magnification afforded by the slit-lamp microscope, astonishingly small areas of loss of pigment can be observed. It is quite common to

find a "pin-head" type of epithelium loss where individual points may not be much greater than 0.01 mm. across.

An advantage of this method is that it can be followed immediately by direct slit-lamp examination of the area that has transilluminated, when interesting results are obtained in some cases. It is hoped to report these more fully in the future.

As might be expected, patients experience some dazzle, but this is not excessive if the examination is carried out quickly, as it usually can be.

Summary

A simple method of transilluminating the iris is described. This takes advantage of a technical improvement in modern slit-lamp design, whereby the axes of illumination and observation can be made to coincide. A red reflex is produced by transpupillary illumination and this shows clearly through any defects of the pigment epithelium.

The author wishes to thank Prof. B. R. Jones for his encouragement.

REFERENCES

- BERLINER, M. L. (1949). "Biomicroscopy of the Eye". Cassell, London.
DAVIDSON, M. (1936). *Amer. J. Ophthalm.*, **19**, 757.
DUKE-ELDER, S. (1962). "System of Ophthalmology", vol. 7. Kimpton, London.