Peripheral Fundus Photography

Don Wong, R.B.P., F.O.P.S.
Dept. of Ophthalmology
Cabrini Medical Center, New York, N.Y.
The current generation of fundus cameras, with their wide angles of view of 45°, 50°, and 60° are perfectly suited to the photography of large lesions in the fundus, or documenting retinopathic changes seen in such systemic diseases as diabetes. In many cases, excellent photographic coverage can be achieved with a single photograph, so the need to obtain multiple, survey-type photographs is minimized. However, the photographer using the older, fixed 30° angle of view fundus camera must often take more than one picture in order to fully document the condition of the patient’s fundus. Thus, the term, “peripheral fundus photography,” though a misnomer, came to mean the photography of any quadrant outside of the central, posterior polar field. Peripheral fundus photography becomes increasingly difficult to perform as one gets further away from the central field for a number of reasons. Therefore, standardization of one’s technique can help overcome many of the problems, and some helpful hints are offered here.

After photographing the posterior pole, two methods may be used to visualize the next quadrant to be studied:

1. alter the patient’s field of gaze by moving the fixation target
2. alter the camera position by means of the tilting mechanism (if available) and swing feature, keeping the patient’s gaze fixed.

The method of choice depends upon a number of factors:

1. the ability of the patient to see, and maintain a steady gaze at the fixation target
2. the quadrant to be photographed, and the distance from the central field (posterior pole)
3. the availability of a tilt mechanism

If, when setting up the patient for the posterior polar view, one finds that the patient has considerable difficulty in seeing the fixation target, the method of choice is to keep the patient’s gaze stationary, and manipulate the camera instead. However, if the patient has no difficulty in seeing, and following the movement of the target, it is faster to move the fixation target, and have the patient follow its movement. It is helpful to the patient to be informed of the direction in which the target will be moving. If a number of differential fields are to be photographed, it might be worthwhile to have a “dry-run” before proceeding with the work.

If the camera is to be manipulated, instruct the patient to concentrate upon the fixation target, ignoring the movement of the camera, lest the gaze be distracted by the movement. In addition to swinging and tilting the camera, one must also bring the apparatus closer to the patient in order to maintain the critical camera-to-subject distance necessary to produce flare-free pictures. However, it must be recognized that it is virtually impossible to produce photographs that are free of haze, when photographing a very far peripheral area of the fundus.

If the apparatus does not have a tilting mechanism, peripheral fundus photography can be a difficult task, since the only way of achieving the desired view is to move the patient’s direction of gaze. Often, the patient will not be able to achieve, and maintain for any appreciable length of time, the required direction of gaze for the photography. If this occurs, and the area of interest is still not seen, deviating from the standard head position may help establish the proper camera angle.

To photograph the superior field, elevate the entire camera table to a position higher than usual, keeping the patient’s chin pressed firmly against the chin-rest bar, while at the same time permitting the forehead to tilt away from the headrest bar (Fig. 1A). With the patient maintaining as high a direction of gaze as is comfortable, bring the camera appropriately closer to achieve critical camera distance, and use the swing feature to find the area of interest. The patient’s head may be stabilized by placing a small, rolled towel, or wad of paper towels between the forehead and head-rest bar (Fig. 1B).

Conversely, if the field desired is in the inferior quadrant, some alteration of in the patient’s head position may also be of help. In this instance, move the chin away from the chin-rest bar, lower the table more than usual, and have the patient maintain contact with the head-rest bar for stability. With the patient in a down-gaze, the combination of a head tilt and gaze may permit one to visualize the area of interest. In these cases one may have to have an assistant, to help retract the top lid during photography.