CHAPTER 7: Diagnostic Evaluation of Strabismus and Torticollis

Examine Corneal Light Reflexes

If equal, no strabismus but may have heterophoria.

If unequal, heterotropia exists.

To test for heterophoria, cover OD (OS will not move).

To prove heterotropia, cover fixating eye (OD); remaining eye (OS) will move to pick up fixation, proving heterotropia.

When cover removed (from OD).

When cover removed (from OD).

OD moves to recover fixation, proving heterophoria.

If OD does not have to move to recover fixation, there is no heterophoria.

Neither eye moves, but fixation now alternated, indicating no amblyopia.

Both eyes shift with corneal reflexes same as beginning. Strong fixation preference for OD.

Figure 7-1 The monocular cover-uncover test.

The alternate cover test (Fig 7-2A; Video 7-2) detects both latent (heterophoria) and manifest (heterotropia) deviations. As the patient views the target, the examiner moves the occluder from one eye to the other, observing the direction of movement of each eye when it is uncovered. Because this test disrupts binocular fusion, dissociating the eyes, it does not distinguish between latent and manifest components. Testing should be performed at both distance and near fixation.

VIDEO 7-2 The alternate cover test. Animation developed by Steven M. Archer, MD, and Kristina Tarczy-Hornoch, MD, DPhil.

In the prism alternate cover test, prisms of varying amount are held over one eye or both eyes during alternate cover testing; the amount of prism that neutralizes the
deviation, such that eye movement is no longer seen as the occluder is moved from one eye to the other, represents the magnitude of the deviation (Fig 7-2B; Video 7-3). It may be necessary to use both horizontal and vertical prisms. This test measures the total deviation (heterotropia plus heterophoria).

Two horizontal or 2 vertical prisms should not be stacked; such stacking can induce significant measurement errors. Deviations larger than the largest-available single prism are best measured by placing 1 prism in front of each eye, although this is not perfectly additive either. A horizontal prism and a vertical prism may be stacked over the same eye, however. Plastic prisms should always be held with the back surface (closest to the patient) in the patient’s frontal plane. If the head is tilted, the prisms must be tilted accordingly. With incomitant (paretic or restrictive) strabismus, the primary and secondary deviations are measured by holding the prism over the paretic or restricted eye and the sound eye, respectively.

The simultaneous prism and cover test (Video 7-4) measures the manifest deviation during binocular viewing (only the heterotropia). The test is performed by placing a prism in front of the deviating eye and covering the fixating eye at the same time. The test is