Chapter

2

# Non-paralytic Strabismus and its Management in the Geriatric Population

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## HORIZONTAL STRABISMUS EZOTROPYA

### Accommodative Esotropias

Both accommodation and accommodation are required for close-up viewing, and they vary according to the proximity of the object being viewed. There is a fixed ratio between the convergence and accommodation. For every 1° of accommodation, the eyes turn inward with 5-6 degrees of convergence. The normal value of the accommodative convergence/accommodation (AC/A) ratio is between 3-5 and 6 and above, which is considered high. In accommodative esotropia, binocular vision can be achieved with early diagnosis, refraction follow-up, amblyopia treatment, and timely surgical indications. The average age of onset of accommodative esotropia is usually 2-5 years, and the diagnosis is usually made at a pediatric age. Accommodation decreases with age, and accommodative esotropias are very rare in the geriatric population. However, the age of onset of accommodative esotropia may be delayed until adulthood, when the slip is provoked by a short period of occlusion (1).

### Refractive Accommodative Esotropia

**Clinical features:** There average of 4-5 diopters (D) of hyperopia and 20-40 prism diopters (PD) of inward shift. Although the near shift was more prominent, there was also a shift at a certain distance. The AC/A/A ratio was normal.

**Treatment:** All hyperopia cases are determined by cycloplegia. If hypermetropia decreased during adolescence, optical reduction was performed. In most cases, no additional treatment is required because spectacle-free orthoporia is achieved at an advanced age; however, bilateral medial rectus recession may be performed in the presence

of residual esotropia (2). The recommended amounts of medial rectus recession and lateral rectus resection according to the amount of slippage for all esotropias are given in **Table 1**.

**Table 1.** Recommended medial rectus recession and lateral rectus resection amounts according to the amount of slippage in esotropias

| Slip angle (PD) | Bimedial regression(mm) | Regression/resection (mm) | Bilateral resection (mm) |
|---|---|---|---|
| 15 | 3.0 | 3.0/4.0 | 4.0 |
| 20 | 3.5 | 3.5/5.0 | 5.0 |
| 25 | 4.0 | 4.0/6.0 | 6.0 |
| 30 | 4.5 | 4.5/7.0 | 7.0 |
| 35 | 5.0 | 5.0/8.0 | 8.0 |
| 40 | 5.5 | 5.5/9.0 | 9.0 |
| 50 | 6.0 | 6.0/9.0 | 9.0 |
| 3 muscle surgery is recommended for shifts >50 PD | | | |

## Non Refractive Accommodative Esotropia

**Clinical features:** Refractive errors include hyperopia, myopia, and emmetropia. There was a 20-40 PD inward shift. The near shift was greater than the distance shift. A high AC/A ratio is observed. The age-matched accommodation near this point was normal.

**Treatment:** Generally, bifocal glasses are prescribed by adding +3 D to the near first dose. Myotics may be tried but should be used with caution because of side effects. In surgical treatment, bilateral medial rectus recession, posterior fixation suture (Faden surgery), or combined surgery (bilateral medial rectus recession + Faden surgery) is performed (3).

## Hypoacomodative Esotropia

**Clinical features:** Refractive errors include hyperopia, myopia, and emmetropia. There was a 20-40 PD inward shift. Esotropia is prominent nearby, and orthophoria, or esophoria, is present in the distance. The AC/A/A ratio may be either normal or low. The nearest point to the age-matched accommodation is far away.

**Treatment:** In the treatment, the existing hyperopia was corrected completely, and the near reading distance of the patients was kept away from 33 cm. Surgical treatment was not recommended (4).

## Partial Accommodative Esotropia

**Clinical features:** Esotropia is associated with hypermetropia in which accommodative factors are effective in shifting. Refractive accommodative esotropia and/or a high AC/A ratio may also be present. Anisometropia and astigmatism are common. Amblyopia is associated with the suppression of abnormal retinal correspondence. Unilateral and persistent esotropia. It is the most common form of accommodative esotropia in adulthood.

**Treatment:** Generally, conservative treatment is applied in patients with amblyopia and no binocular visual function. Full hypermetropic correction was performed. During surgery, the nonaccommodative component was corrected with medial rectus recession. 45% of patients may develop accommodative exotropia after surgery (3,4).