

Paralytic (Incomitant strabismus)

In incomitant strabismus, the angle between the visual axes changes according to the direction of gaze. Incomitant strabismus is often grouped into neurogenic or mechanical types; however, the abnormality may occur in the brainstem, nerve, neuromuscular junction, muscle, or orbit.

In assessing incomitant strabismus, the aims are to identify the pattern and cause of the strabismus and address any actual or potential complications such as amblyopia, diplopia, or poor cosmesis.

Neurogenic strabismus

Underaction with reduced saccadic velocity in the field of action of the paretic muscle (underaction may be more marked for versions than ductions);

Investigations

- *Hess chart*: inner and outer fields are equally affected; full sequelae, if long-standing, comprise:
 - Underaction of palsied muscle.
 - Overaction of contralateral synergist (yoke muscle).
 - Underaction of contralateral antagonist.
- *Forced duction test*: full passive movement, unless chronic contracture of ipsilateral antagonist.
- *Further investigation and treatment*: according to cause (3rd nerve, 4th, 6th.)

Mechanical strabismus

Limitation in direction away from restricted muscle (equal for ductions and versions); saccades of normal speed, but sudden early stop due to restriction; IOP increase in direction of limitation, often with globe retraction.

Investigations

- *Hess chart*: inner and outer fields are compressed in direction of limitation; outer affected more than inner; sequelae limited to overaction of contralateral synergist.
- *Forced duction test*: reduced passive movement in direction of limitation.
- *Further investigation and treatment*: according to cause (Thyroid eye disease, Orbital fractures, E Duane syndrome, Congenital fibrosis of the EOM (CFEOM),

Diagnosis(criteria of Incomitant)

1. **Ocular deviation**: the paralyzed muscle loses its tone; the antagonist draws the eye towards it i.e. the eye deviates to the opposite direction of the paralyzed muscle.
2. **Limitation of movement** of the eye in direction of action of the paralyzed muscle diagnosed by motility test.

3. **Angle of deviation:** changes in different directions of gaze and also changes depending on which eye is fixing

4. **Binocular diplopia**

5. **Compensatory head posture:** abnormal head position adapted to avoid diplopia.

Note: Surgery should not attempt till there is no hope for spontaneous recovery and this is usually after 6-12 months.