Surgical management of DVD

Sumita Agarkar
Deputy director Pediatric ophthalmology and Adult strabismus
Sankara Nethralaya, Chennai
DVD

- Oculomotor anomaly where non-fixing eye
  Drifts upwards
  Abducts
  Extorts

- Commonly associated with infantile esotropia but known to occur with exotropia also

- Can be latent or manifest

- Often associated with nystagmus
Graded density filter bar (Bielschowsky’s) test – as the density of the filter bar is increased, the eye drifts up and as the density of the filter bar is decreased, the eye comes down. This is called Bielschowsky’s phenomenon.
Some theory

• Evocative term is “Righting reflex gone wrong”

• Dr Brodsky has proposed that DVD is dorsal light reflex where asymmetrical visual input in both eyes leads to vertical divergence of eyes

• Dorsal light reflex is a primitive righting reflex which is suppressed in human beings but can manifest in early onset strabismus

• Compensatory mechanism to dampen nystagmus
When to offer surgery?

- Cosmetically unacceptable vertical drift
- Large manifest dvd
- AHP- head tilt is often present
- Combined with horizontal surgery
DVD with AHP
Problems with measurements!

- No clear endpoint
- Prism undercover measurements are helpful
- Ideal to measure each eye individually in case of asymmetric DVD
- Reversal can be taken as end point
- Important to discuss with patient that surgery will make DVD better but will not eliminate it
Factors in surgical decision making

- Is DVD symmetrical
- Inferior oblique overaction if any
- Horizontal strabismus if any
- Coexisting Pattern strabismus
Surgical options

• Superior rectus recession
• Inferior oblique anterior transposition
• Posterior fixation suture on SR
• Antero Nasal transposition of inferior oblique
• Inferior rectus plication
SR recession

- Effective for moderate DVD
- Asymmetrical DVD may require asymmetrical recession
- Can be combined with horizontal surgery
Pre-op photos OS DVD

POD 1 s/p SR recession

AT GA
Looked at bilateral SR recessions including symmetric and asymmetric

DVD of at least 10 PD or more

No oblique dysfunction

Success rate of 63%

Age at surgery, magnitude of preoperative DVD, presence of horizontal strabismus, asymmetry of DVD or surgical technique did not modify the success rate
Faden suture

- Effective for small angle dvd
- Technically difficult
- Risk of perforation
Surgery on inferior oblique

- Indicated in DVD with coexisting inferior oblique over action
- Anterior transposition produces J shaped deformity leading to profound anti elevation effect
- Can be combined with horizontal surgery
Infantile Esotropia with incomitant alternately manifesting DVD + IOOA + V pattern

BILATERAL MRc 6mm with IOAT
Post op 4 months
Anteronasal transposition inferior oblique

• Described by Stager et al

• Inferior oblique is sutured near nasal border of inferior rectus converting it to a depressor and intorter. Less anti elevation seen

• Farid et al have shown it as effective as IOAT in DVD. ANT was more effective in primary position and had less anti elevation effect

A pattern with DVD

- Very common association

- Combined surgery with SR recession with PTSO and horizontal rectus surgery gives good result

- Helvesten syndrome comprises of triad of exotropia Pattern and DVD. This entity requires recession of horizontal muscles, PTSO and IOAT
Thank you for the attention