





Q: Picture of patient with L hypertropia. Dx, discussion and management?

- The Ddx would include
  1. SOP
  2. DVD
  3. TAO
  4. Brown's
  5. B/O #
  6. MED
  7. Skew
  8. Myasthenia gravis

THREE-STEP TEST	
Step	Test
1	Determine whether there is a right or left hypertropia in or near primary gaze.
2	Determine the lateral gaze direction that worsens the hypertropia.
3	Tilting the head to the side that increases the hypertropia.

- Ocular exam should include measurements in all fields of gaze.
- Look for masked bilateral: look for Rhyper in Lgaze and a Lhyper in Rgaze and do double maddox rod and see if  $>10^\circ$  excyclotorsion

OUTCOMES OF THE THREE-STEP TEST	
Test outcome (Step 1-Step 2-Step 3)	Affected cyclovertical muscle
R-L-R	Right superior oblique muscle
L-R-L	Left superior oblique muscle
L-L-L	Right inferior oblique muscle
R-R-R	Left inferior oblique muscle
L-L-R	Left inferior rectus muscle
R-R-L	Right inferior rectus muscle
L-R-R	Right superior rectus muscle
R-L-L	Left superior rectus muscle

- Congenital: Facial asymmetry, old photos with head position and fusional amplitudes

- Indications for treatment
  - Significant head turn
  - Hyper in primary
  - Symptomatic

- Non surgical treatment if small deviation can use Fresnel prisms

- **Surgical treatment of Superior oblique palsy (don't forget IPCA, and Harad Ito)**

Treatment algorithm #1

IOOA Present

1. Deviation <15\_>>>>IO weakening procedure
2. Deviation >15\_>>>>IO weakening + IR contralateral (1mm:3\_)

IOOA not present

1. Forced ductions normal>>>>IR recessed contralateral
2. Forced ductions positive>>>>SR recessed ipsilateral

>35\_ do three muscles

bilateral SOP do bilateral SO tucks

Treatment per Knapp's

1. Type I: IO weakening
2. Type II: SO tuck
3. Type III: <25 SO tuck, >25 SO tuck & IO weaken (Ipsi)
4. Type IV: Add ipsi IR resect
5. Type V: SO tuck + IR recess (contra)
6. Type VI: Bilateral do bilateral SO tucks
7. Type VII: Brown's plus

KNAPP CLASSIFICATION OF SUPERIOR OBLIQUE MUSCLE PALSY	
Class	
1	Greatest deviation is with the affected eye elevated in adduction, the field of the ipsilateral (antagonist) inferior oblique muscle.
2	Greatest deviation is with the affected eye depressed in adduction, the field of the affected paretic superior oblique muscle.
3	Greatest deviation is in all contralateral gazes (down, level, and up).
4	Greatest deviations are in all contralateral gaze and in all downgaze positions (contralateral, straight, and ipsilateral).
5	Greatest deviations are in all downgaze positions.
6	Y-Pattern esotropia, cyclotropia, and bilaterally positive three-step test indicates a bilateral palsy.
7	Poor elevation and depression in adduction of the affected eye, resulting from direct injury to the superior oblique muscle, causing its restriction and paresis.

## SOP

### **Treatment of SO palsy (Wright)**

- I) IO recession (if worse on upgaze) - corrects up to 15 PD vertic. deviation
- II) SO tuck (for HT worse on down and in gaze or for bilateral SO palsy)
- III) contralateral IR recession (for HT worse on downgaze; 3 PD correction per mm recession)
- IV) ipsilateral SR recession (for HT worse on abduction or restricted downgaze on forced ductions)
- V) Harado Ito: anteriorization of SO; for problem with excyclorion but little vertical deviation
  - NV: for 20-35 PD, do 2 muscles; for > 35 PD, do 3 muscles