Adjustable vs Non Adjustable?
Strabismus surgery
Cybersight Webinar

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Sliding noose
One and a half knot

Thank you God, we rely on you
Be Adjustable

Ox Ford!

Be Adjustable when need be

I have no financial disclosures to make
Adjustable Strabismus Surgery: History

- First suggested by Harms, 1941
- Bielschowsky, 1907
- Revisited by Jampolsky, 1975
- Rejuvenated interest
- time and again

If you know how to adjust, when required, you are successful and happy
Indications

- Incomitant strabismus
- Sensory anomalies
  - Sensory deviations
  - Central fusion disruption
  - Central scotoma
  - Eccentric fixation
- Reoperations
- Vertical strabismus
- Combined: horiz/vert/torsional

When the end point is more discrete: adjust!
Indications

- **Incomitant Strabismus**
  - Paralytic
    - VI N, IV N, III N
  - Restrictive strabismus
    - Dysthyroid
    - Ortho DRS
    - Post RD buckle/
    - Glaucoma valve/ scar

*In short, when in doubt: adjust!*
Contraindications

- Childhood!
- Uncooperative apprehensive adults
- High myopia: thin sclera
- ? Inferior rectus: POAIRR
Published studies on Adjustable surgery:

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Mostly retrospective, non randomized, small numbers!
Advantages: Adjustable vs Conventional

Success rates improve:

- 70-80% vs 90-94% (Eustis & Leoni, JAAPPOS 2001)
- 64.5% vs 79% (Awadein et.al, JAAPPOS 2008)
- 73% vs 86.7% (Kamal et.al, Eye 2016)

- Reoperation rates fall:
  20% to 9.7% (Wisnicki etal JPOS 1988)

Adjustments can alter deviation by about 20pd
Adjustable surgery

Preop

Postop
Adjustable surgery: Different Strokes

- Limbal incision
- Radial scleral passage
- Hemi hangback or full hangback
- Tunnel passage
- Release silk suture
- Bucket handle suture
Adjustable Strabismus Surgery
Different techniques
When to adjust?

Intraop: Single stage: SSASS
use topical & IV conscious anesthesia

Double stage
• After 5-6 hours
• After 24 hours
• Delayed:
  use Viscoelastic/MMC to prevent adhesions
Instruments for adjustment
Adjustment day

Preop

Post op
How to Adjust a Bow tie knot

For adjustment to shorten muscle - decrease recession

rotate eye

pull on suture

patient maintains fixation straight ahead

For adjustment to increase recession

patient gaze

rotate eye

patient looks in direction of muscle to be loosened - pulls muscle back for more recession

From ORBIS E-Learning Strabismus version 1.0
Adjusting a sliding noose/cinch
Adjustment day
Releasable Adjustable

Adjustables for kids

Hakim et al J AAPSO 2005;9:386-390
Tandem suture: Adjustable
Adjustable faden operation without posterior sutures

FIG 1. The faden operation. Point A represents the insertion of the muscle. Point B represents the location of the posterior fixation suture(s). Point B becomes the effective muscle insertion.

FIG 2. Combined resection and recession of a single rectus muscle. The portion of the rectus muscle between the insertion and the desired site of posterior fixation is excised.
Tackling Near Distance Disparity

Faden operation on MR for convergence excess ET

Combined resection and recession on LR
For Divergence excess XT
Correcting Near Distance disparity:

Superior Oblique Tucking:
Santiago & Rosenbaum, CSM.W B Saunders 1999

Role of intraoperative adjustment
Adjustment for torsion
Adjustable Cross-action Partial VRT in VI n palsy
Adjustable Cross action Partial VRT in LR palsy
Presented at AAPOS New Orleans 2015
Non Adj pVRT
Presented at AAPOS New Orleans 2015

Preop

Postop
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<th>PD 1st post op</th>
<th>PD 1 month post</th>
<th>PD 3 month post</th>
<th>Abd pre op</th>
<th>Abd at 3 months</th>
<th>Add pre op</th>
<th>Add at 3 months</th>
<th>Total binocular single vision pre op</th>
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<th>Orthophoria</th>
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### Group 2 (NAdj) : Preoperative and Postoperative Parameters

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Adjustable vs Non Adjustable

Adjustment required in 5 out of 10 patients postop. (3 cases tightening of adjustable suture required while two had to undergo loosening.)
To conclude

• Adjustable sutures provide more definite alignment
• It requires special technique, extra effort and may not require adjusting in about 50% cases
• It makes for "double trouble"
• But in demanding cases of diplopia, it does offer a “second chance” or safety net
Thank You for your love and affection
The Mission

Spreading Sight and Happiness
For kids the world across!
Maintaining the stereopsis
And restoring the loss!

Thank you God we rely on you only