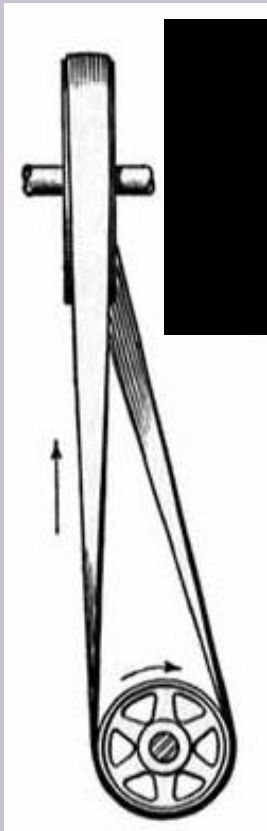


MEDIAL RECTUS PULLEY SUTURES



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[SCLERAL] FADEN SUTURE

- ▣ Long history: Germany 50+ yrs
- ▣ Frequently used in European and Latin strabismus
- ▣ Lower acceptance in Anglo-American strabismus

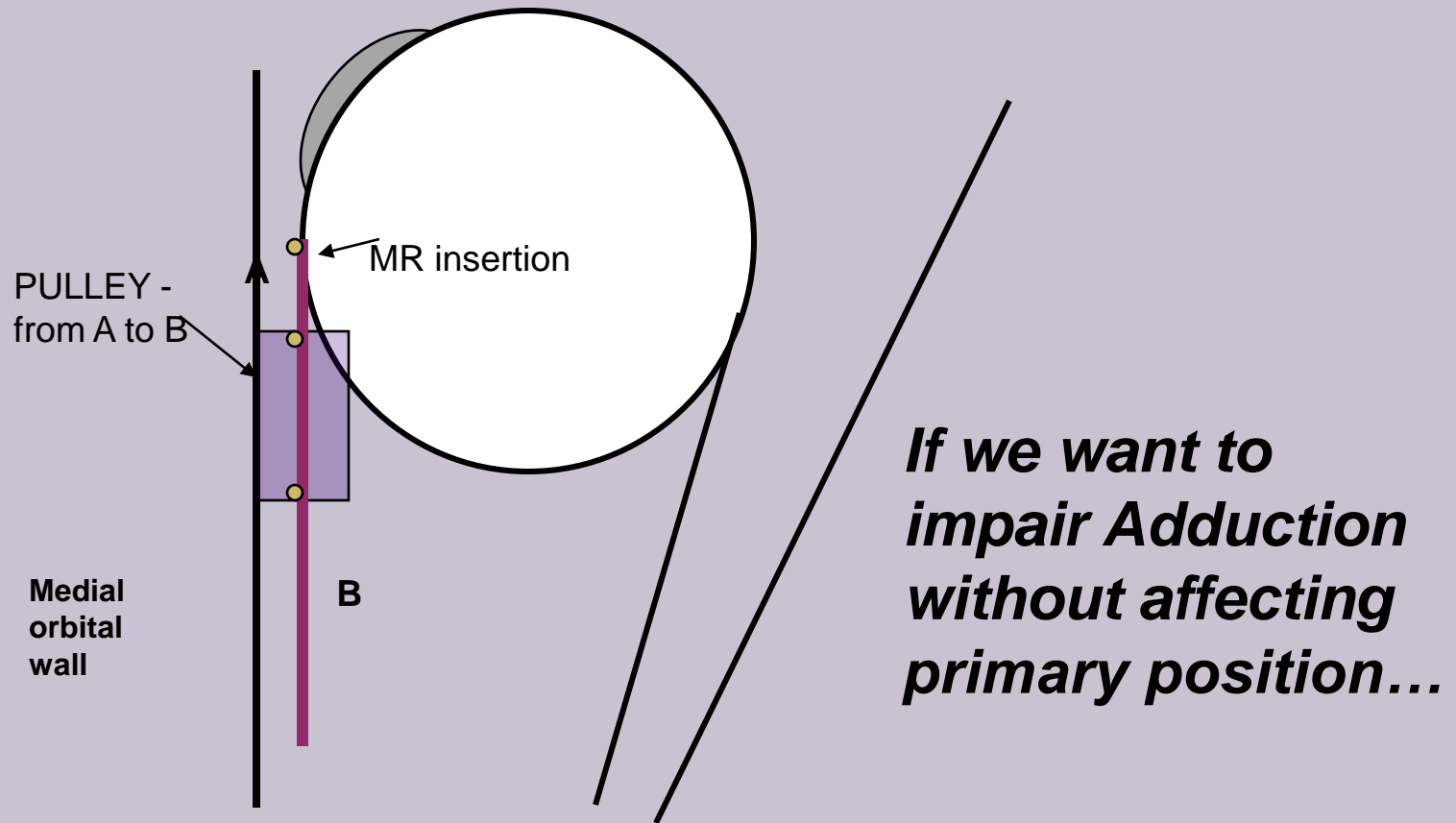
Application

- ▣ Compensate for incommensurability
 - ▣ No effect on primary position
 - ▣ Only effect in ADduction.
-
- ▣ Augment effect of MR recess
(convergence Xs.)
 - ▣ Augment effect of SR recess in DVD

MECHANISM OF FADEN

- ▣ Previous: change tangent of action of muscle
- ▣ Demer: main mechanism - create restriction of movement through the muscle pulley
- ▣ **New intra-operative end point:
restriction of intra-operative duction**

Medial rectus passes through its pulley as the RE aDducts



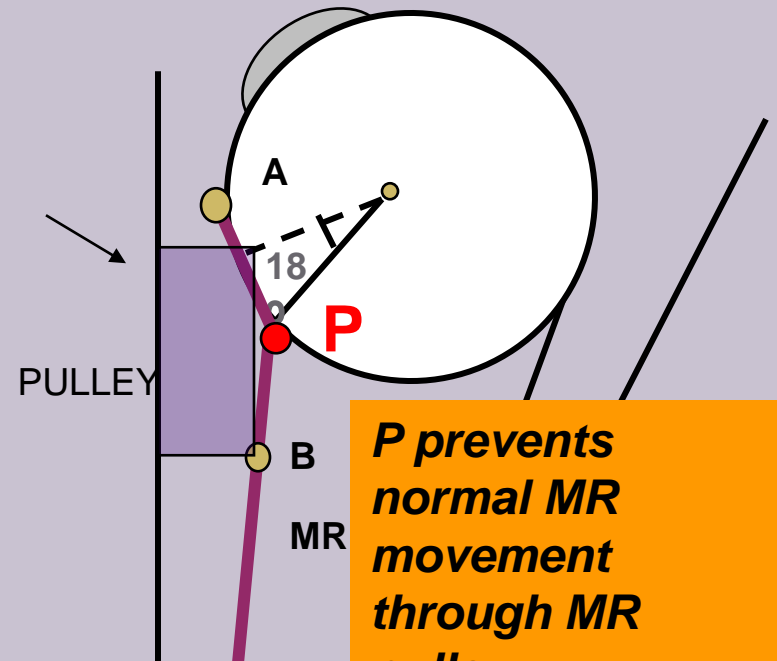
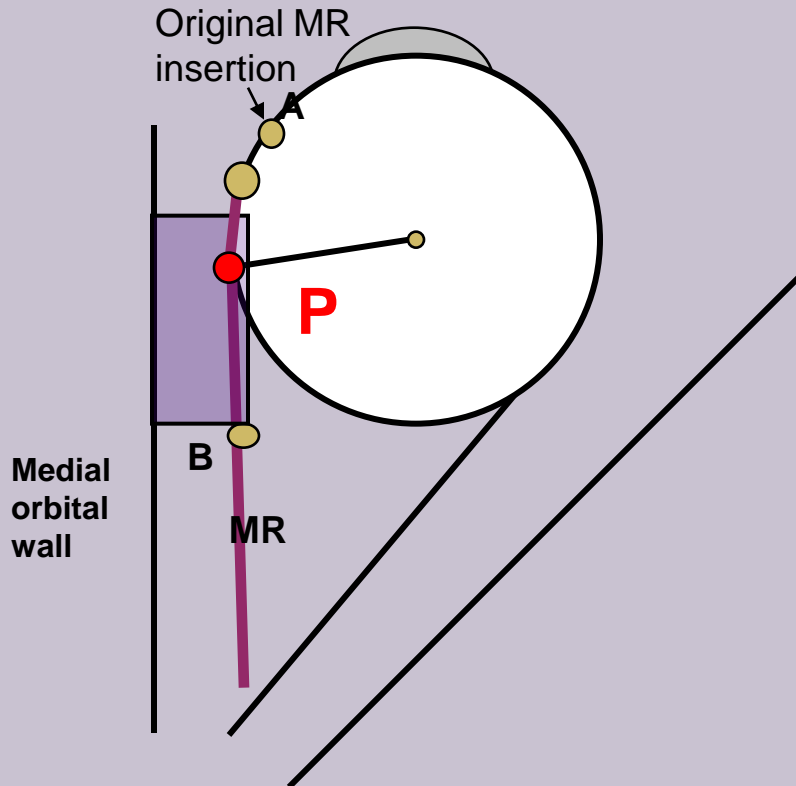
A, B : ant & post extent of pulley sleeve

SCLERAL SUTURE

Primary gaze

P = scleral suture

18 degrees ADd



A, B : ant & post extent of pulley sleeve

P prevents normal MR movement through MR pulley - Adduction restricted by P

SCLERAL FADEN

- ▣ Many different techniques - all seem to work similarly

RARE COMPLICATIONS

- ▣ Perforation
 - ▣ Scarring ant to suture
- As if muscle is super- glued to sclera

THE NEW FADEN: PULLEY SUTURE

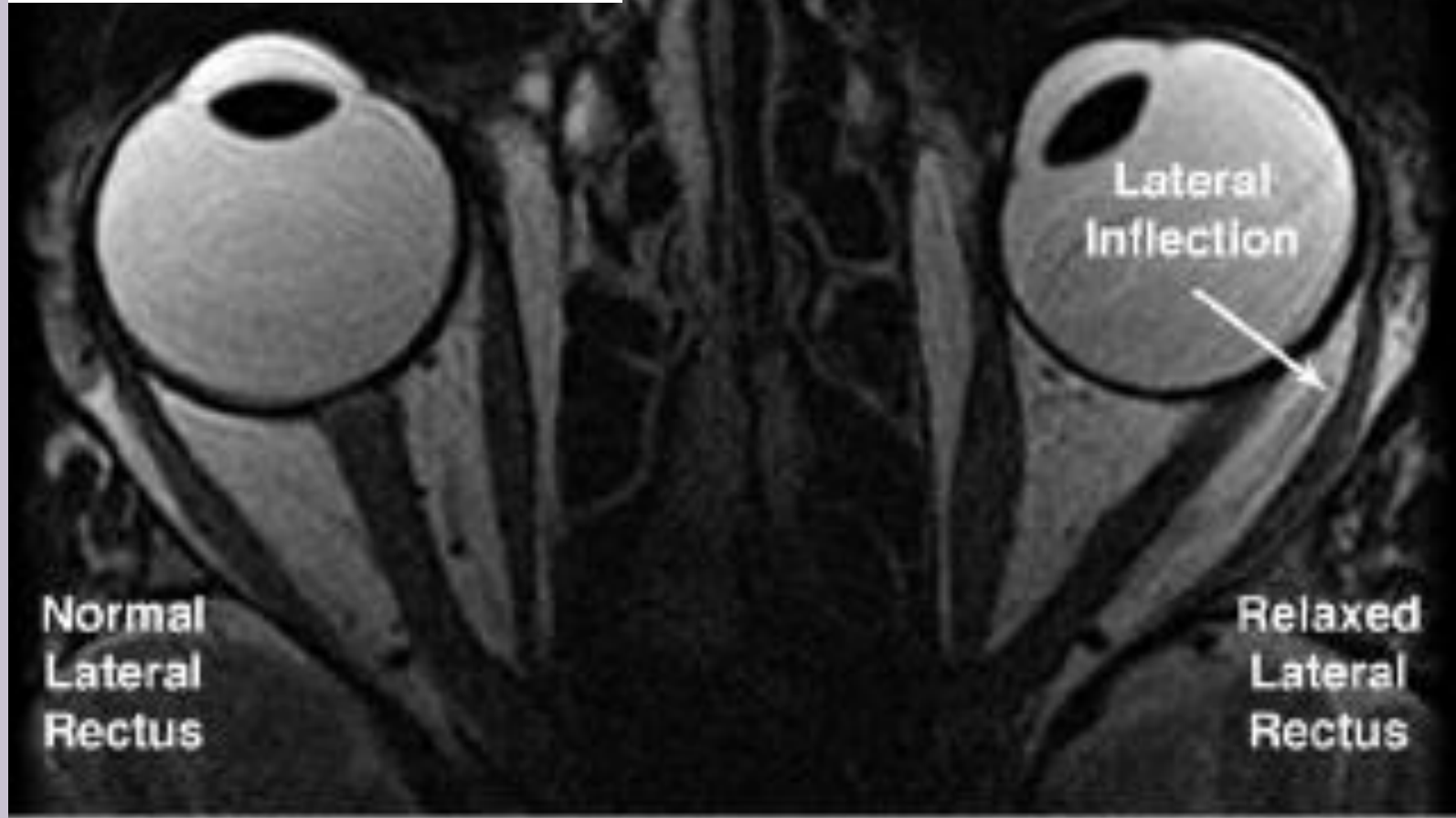
- ▣ Technically more difficult than scleral Faden - **the surgical anatomy of the pulley is NOT well defined** though radiological & histological anatomy are



From Clark & Demer

Pulley deflects paretic LR from straight-line course to apex of orbit

Radiological Anatomy
defined by Demer x
many e.g. IOVS 2008



'Lateral inflection' caused by Lateral Rectus having to go through its [orbital] pulley, a fixed & constant orbital structure

THE NEW FADEN: PULLEY SUTURE

- ▣ **Creates a restriction of movement of the muscle through the pulley by suturing muscle to the pulley itself**
- ▣ Theoretically safer - no scleral suture
- ▣ Technically difficult
- ▣ Not titrateable(so far!)
- ▣ No long term results

Thank you Dr Joe Demer

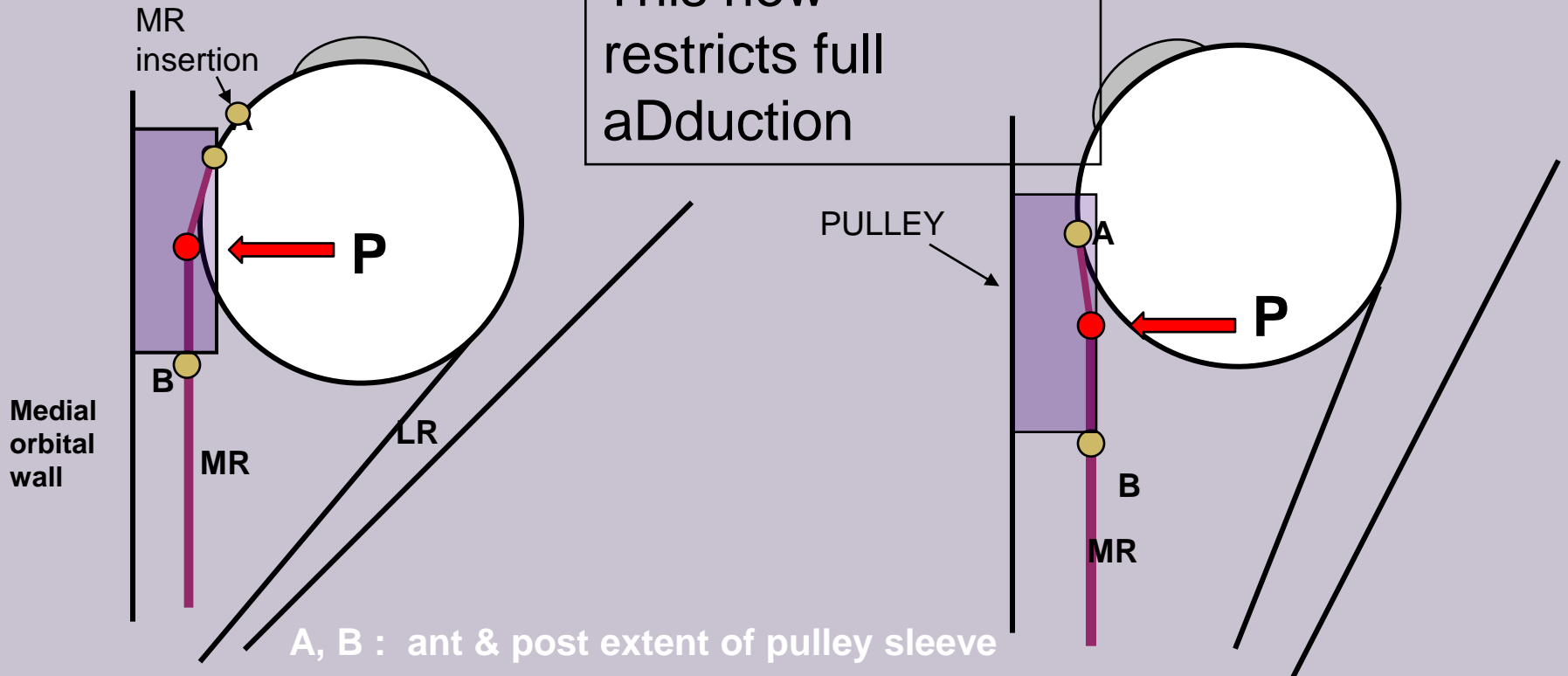
- ▣ ...who taught me the technique and held my hand by remote control for ~ 15 cases

Pulley suture

P = muscle sutured to its pulley.
This now restricts full aDduction

Primary gaze

18 degrees ADd



VIDEO

Medial rectus pulley posterior fixation: a novel technique to augment recession

- ▣ 16 pts : standard Rs and/or Rc with MR PS
- ▣ 9 pts – recurrent ET with conv Xs
 - 5 – BMR re-Rc + PS
 - 4 – MR re-Rc + PS + ipsilateral LR Rs

Postop: D/N disparity 11 Δ . (avg)
All pts : Dist ET \leq 10 Δ . No pt overcorrected.

Medial rectus pulley posterior fixation for acquired ET with high AC/A

9 pts : standard BMR + Faden

2 – only scleralfaden

7 – BMR + scleralfaden

Postoperatively

6/9 – improved stereoacuity

8/9 – no longer needed bifocals

↓ D/N disparity av of 12Δ

13 pts : BMR ± pulley sutures

3 – only pulley suture

10 – BMR + pulley suture

Postoperatively

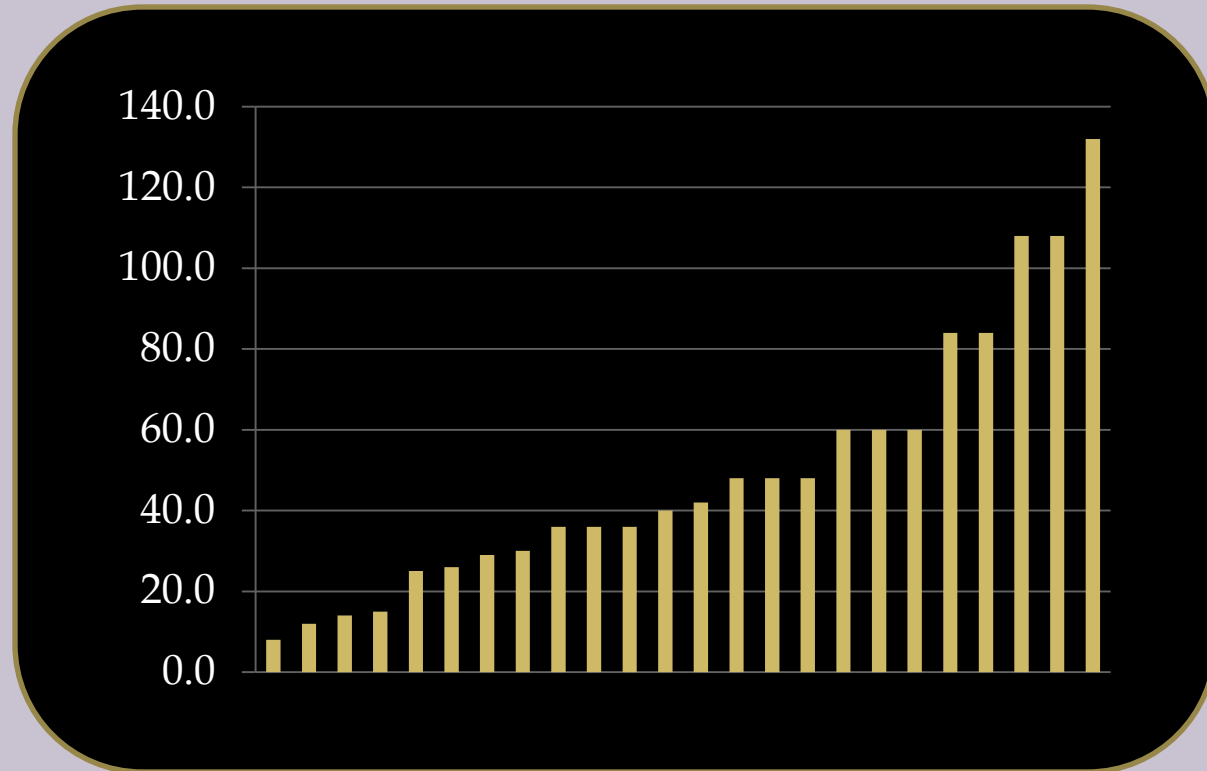
8/13 – improved stereoacuity

2/13 – no longer needed bifocals

↓ D/N disparity av of 14Δ

Pulley sutures in Melbourne

- ▣ 25 patients
- ▣ 25 Follow-up



- ▣ Mean age: 4 years
- ▣ Range: 8 months to 11 years

Types of patients for PS

- ▣ 1. Very variable ET $n = 3$
- ▣ 2. Convergence Xs $n = 14$
- ▣ 3. Adding PS to previous BMR $n = 2$
- ▣ 4. Adding PS to BMR for anticipated poor glasses compliance $n = 4$
- ▣ 5. PS for face turn of LMLN $n = 1$
- ▣ 6. Conv Xs in sensory ET $n = 1$

Very variable ET

- ▣ 3 patients
 - ▣ 3 to 4 -fold range in angle variability
 - ▣ 1 - PS only \implies Inadequate \implies BMR added as 2nd procedure
 - ▣ 2 - PS and BMR
-
- ▣ All straight (17 months min FU)

When I have been using pulley sutures for convergence Xs

- ▣ ET 25 Δ , ET' 35 Δ : I use Parks' BMR 5.
- ▣ Large experience – reliable. PS can't compare.

- ▣ ET 15 Δ , ET' 40 Δ . What dose BMR?
- ▣ Smaller international experience. Less agreement / less reliable.
- ▣ LK: 27 Δ of surgery + pulley sutures

Convergence XS n=14

- ▣ Mean age at surgery: 54.4 mo
- ▣ Gradient AC/A ratio: 8.6(5.3-16)
- ▣ D/N disparity: 20.1 Δ (8 - 35)
- ▣ All BMR with PS

Post-op n=14

- ▣ D/N reduced to 2.2 Δ (-5 to 10)
- ▣ FU Mean 5.5 mo (1w to 20 mo)
- ▣ 11: angle $< 10^\Delta$
- ▣ 6 straight N&D
- ▣ 1 recurrent convergence XS ET
- ▣ No further Sx so far

PS to previous BMR for conv Xs

- ▣ 2 patients
- ▣ 1 Unilateral - inadequate
- ▣ 1 Bilateral - good result

Poor glasses compliance

- ▣ 4 patients (2 older)
- ▣ Avg refraction 3.4 D (2 to 4.5)
- ▣ Partially accom ET
- ▣ BMR with PS
- ▣ 3 straight D and N (without glasses)
- ▣ 1 - ET' 10 Δ

Complex cases 1

- ▣ LMLN following Sx for congenital SO palsy and ET
- ▣ Typical face turn 25° to 30°
- ▣ PS to both medial recti
- ▣ Face turn 20° at 3 months
- ▣ Cosmetically better

Complex cases 2

- ▣ Left poor VA (PHPV)
- ▣ Constant left ET 30 - 40 Δ
- ▣ More for near
- ▣ LMR recess with PS
- ▣ LLR resect
- ▣ Straight D and N (4 months)

Pulley sutures : the future

- ▣ How much intra-op restriction is needed for a particular post-op result
- ▣ Need long term results - does the PS fall apart after x years?
- ▣ Long term comparison of pulley vs scleral suture : clinical data and histology needed.

Thank You

