AN UNEASY DUANE'S

Lionel Kowal
Australia

Assisted by Rod O'Day

Ms T

- 38F, fitness instructor

- **Problem: XT & face turn**
  - **Bothered by appearance of XT**
  - **Face turn to R: up to 20-25 deg, giving neck problems & visual field deficit**

- VA 6/9 OU, -5 myope
- Gross stereopsis: Titmus fly

LMR - 4mm to caruncle
LLR -1mm to lat canthus

XT distance:

R gaze	Primary	L gaze
40	12	0

LIO & LSO 3+ [variable]

R gaze:
moderate L globe retraction

Questions

- Duanes: why are some in/ some out?

- Can I reliably and safely make her better?...with no new problems

Duane's: why are some in and some out?

- Probably
  - Higher % III cf VI to LR more likely to produce XT pattern

- Jampolsky in Rosenbaum and Santiago, 1999
  - Gradual 'fibrosis' of LR over time.. increasing numbers of XT Duane's in older patients
  - *?selection bias of AJ's practice*

Treatment options

- **Contralateral Unilateral LR Rc**
  - *Snir (Eye, 2014)*: 7 of 8 with contralateral LR Rc with reduction in deviation from 17PD XT in primary to 4PD XT

- **LR Rc OU**
  - Symmetrical
  - Asymmetrical
    - *Personal communication: n=7.*
    - 7 eyes improvement from mean of 28PD XT in primary to 8PD XT
    - 1 of 7 did not have full correction of AHP (had > 40PD XT initially)

- **LR disinsertion / periosteal suture & SR / IR [one or both] transposition**
  - Consider if very marked retraction

Plan: Asymmetric LR Rc

- Recess the normal LR more than Duane's LR

- <u>Underlying theoretical rationale</u>
  - Recess LR in unaffected eye →fixation duress: more innervation to MR of DS eye (Hering) & reduce XT
  - Tighter LR in affected eye → more effect per mm recession

Surgery & early outcome

- Adjustable LR Rc OU o (RLR 6mm, very tight LLR 5mm)
  - Day 1 result:
  - 4 ET in primary, increasing on L gaze
  - Straight with small L face turn
  - Tried to advance LLR a little: couldn't
  - Week 4
  - Randot 200"

By 4 months, continuing BIG new problem: L gaze ET & unXed diplopia

R gaze	Primary	L gaze
Before surgery		
XT 40	XT 12, XT' 40	0
Now		
XT 25	**0 [RF=LF], X'10**	**ET 20**

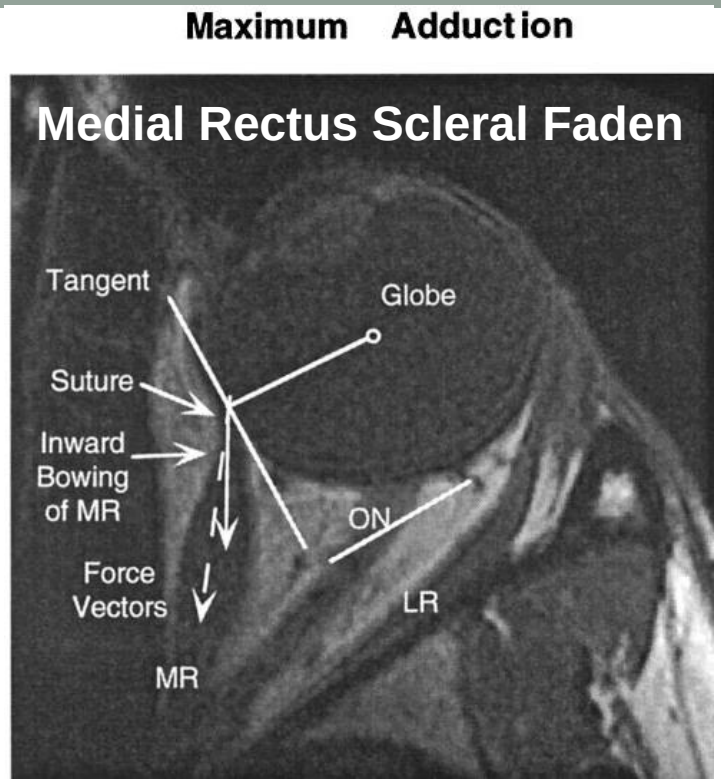
- Range Of Single Vision: R gaze 30 deg, L gaze 10 deg

- I'm OK 75% of the time BUT….
  - "Can't see left side of face"
  - Problems night driving
  - Feels that has to hold head in an abnormal position
  - Bothering her more and more

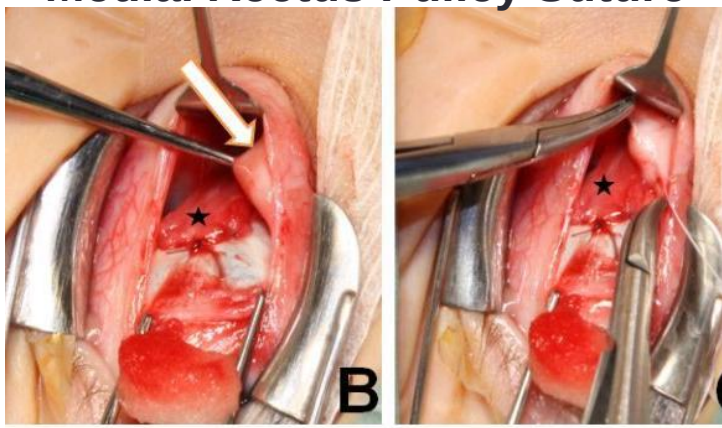
Q: Can I improve ET / unXed diplopia on L gaze without compromising primary and R gaze?

How to improve ET/ unXed diplopia on L gaze

- Options 1&2 :
- **RMR pulley suture or RMR scleral faden** → reduce RMR action on left gaze without affecting primary position
  - How does scleral Faden work?
    - Faden operation: *Clark et al (1999 AJO)*: mechanical restriction due to posterior displacement of the pulley sleeve NOT a change in EOM torque
      - *No change in saccadic velocity*
      - *Change in force vector (on MRI) in maximum action of muscle not significantly changed by posterior fixation Suture*
  - The New Faden: **The Medial Rectus Pulley Suture**
  - (Clark et al AJO, June 2004)
- Option 3:
- Adjustable RMR recess



Medial Rectus Pulley Suture



RMR pulley suture surgery

- On adduction, RMR temporal canthus 5mm from ant edge of caruncle; after RMR PS is 9mm = significant restriction of aDduction produced by PS

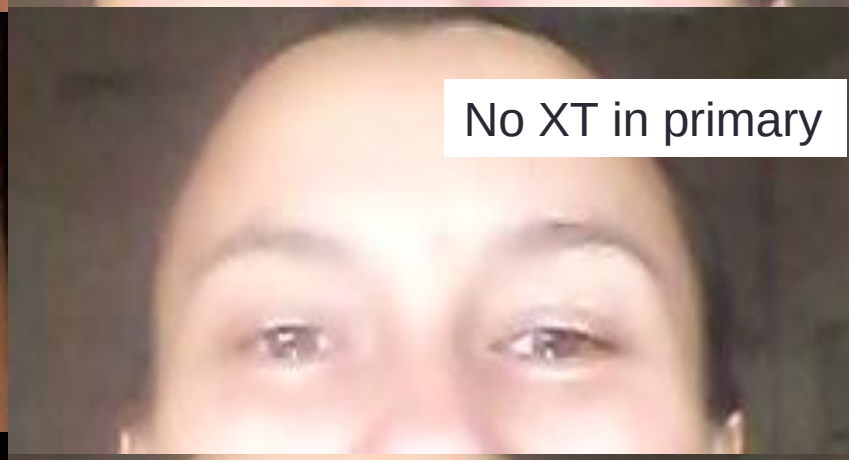
Postop

- Day 1: large ROSV on left gaze
- Week 9:
- L gaze: 30 deg for distance, 40 deg for near
- R gaze: full range for distance, 60 deg for near
- Full vertical range

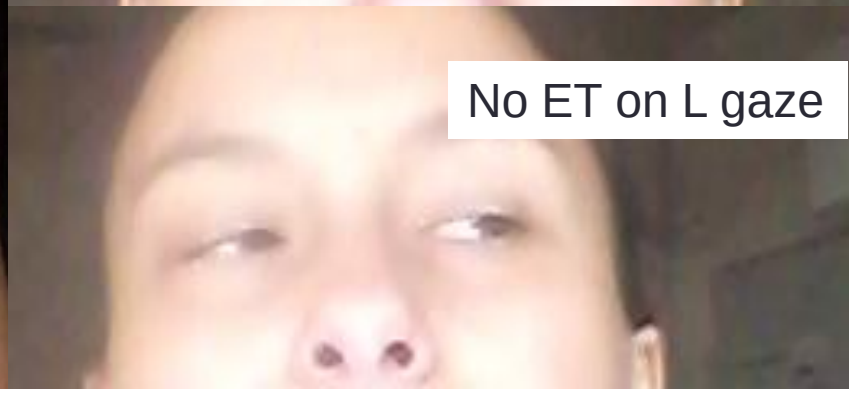
Before first surgery

Patient took these followup photos

Improved LMR version
less retraction



No XT in primary



No ET on L gaze

Take away…….1
There are no easy Duane's cases

Applies even more to:

- Adult Duane's:
- Changing the incomitance may make the pt subjectively worse, introduce new disabling diplopia, no matter how good the measurements are

- XT Duane's
- No large experience
- Asymmetric LR Rc OU is often effective in XT Duane's

Take away…….2
There are no easy Duane's cases

MR Pulley suture [or MR scleral Faden]:

Safe effective way to fix lateral incomitance without affecting primary position