Surgical Strategies for the Management of Duane Retraction Syndrome

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Surgery does not eliminate the fundamental abnormality of innervation!
Surgical Indications in Duane Syndrome

Anomalous Head Posture

Ocular Deviation in Primary

Significant globe retraction

Significant up or downshoot
Surgical Strategies in the Management of DRS patients – Objectives

Describe the surgical techniques that can be used in these patients

Suggest an algorithm of treatment for these patients
• Improve AHP
• Correct any angle of strabismus
• Ameliorate globe retraction
• Expand binocular field of Single Vision
Medial Rectus Recession

Corrects up to 20 PD ET

Not more than 5 mm!

Preoperative

Postoperative
When should you add a contralateral Medial Rectus recession?

- Large angle ET over 20 PD
- Cases with ET and significant globe retraction
- To prevent the recurrence of contracture of the MR of the affected eye.

If asymmetric, larger recession always on the non-affected eye!
Lateral Rectus recession

- Corrects up to 20 PD XT
- If larger, consider recessing contralateral LR but beware when significant globe retraction or adduction limitation
- Recessions can be larger 7-10 mm
The Efficacy of Rectus Muscle Transposition Surgery in Esotropic Duane Syndrome and VI Nerve Palsy

Arthur L. Rosenbaum

(J AAPOS 2004;8:409-419)

Vertical Rectus Muscle Augmented Transposition in Duane Syndrome

Federico G. Yelez, MD*; R. Scott Foster, MD*; and Arthur L. Rosenbaum, MD*

(J AAPOS 2001;5:105-13)

Vertical Rectus Muscle Transposition Surgery for Duane's Syndrome

Althea B. Molite, MD; Arthur L Rosenbaum, MD

Journal of Pediatric Ophthalmology and Strabismus
July/August 1990 - Volume 27 - Issue 4 - 171-177
How does transposition work?
Transposition vs. Recession

**PRO’S**
- Improves abduction
- Augments SBVF
- Less recurrences

**CON’S**
- Secondary torsional/vertical deviations (up to 30%)
- ASI risk
- Increased globe retraction
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Transposition Techniques

Vertical rectus muscle transposition

Two vertical muscles

Augmented with Foster suture or resection

Whole muscle

Part of the muscle

Without disinserting the muscle

One vertical muscle

Superior rectus

Inferior rectus
Lateral Rectus Resection Strabismus Surgery in Unilateral Duane Syndrome with Esotropia and Limited Abduction

STEPHEN P. KRAFT, MD, FRCSC

Unilateral Recession and Resection in Duane Syndrome

Yair Morad, MD, Stephen P. Kraft, MD, and James L. Mims III, MD

(J AAPOS 2001;5:158-62)
Indications for Recess/Resect in Duane Patients

- ET at least 25 diopters in primary position
- Narrowing of palpebral fissure less than 33% in adduction compared to Primary Position
- No adduction deficit
- Abduction déficit at least $-3.5$
- Absent or very slight Up or downshoot
- Negative or slight positive traction test to abduction

Recessions of MR up to 5 mm and resection of LR up to 3.5 mm
Combined horizontal rectus recessions

- Use in cases of significant globe retraction
- Recessing both horizontal rectus muscles
- Recess lateral rectus more than medial rectus
- Adjust muscle recessions accordingly to correct any deviation in primary position
Faden Procedure

• On the lateral rectus of the affected eye, in order to avoid the side-slipping of the muscle in cases of significant up or down shoot of mechanical origin.

• On the contralateral medial rectus of a Duane eye with significant limitation of abduction in order to limit the excursion of the operative eye when looking towards the affected eye to match the duction deficits.
Y Splitting
Vertical rectus muscle recessions

Lateral and superior rectus recession (Y splitting)
Surgical Strategy  ORTHO-DUANE

- Recessing both horizontal recti
- Y splitting
- Faden
SURGICAL STRATEGY  ESO-DUANE

- Up to 20 PD ET: medial rectus recession of the affected eye.
- To improve globe retraction consider recessing both horizontal recti.
- To ameliorate up and down-shoots consider Y splitting or faden of the lateral rectus.

Left MR recession 5 mm + left LR recession 2 mm with Y splitting
SURGICAL STRATEGY ESO-DUANE

Preoperative Evaluation:

- Superior rectus transposition with Foster suture and 4mm medial rectus recession

Postoperative Evaluation:

- Recession 4.5 mm of the medial and resection of 3.5 mm of the lateral
SURGICAL STRATEGY  EXO-DUANE

- XT up to 20 consider recessing lateral rectus of the affected eye.
- If noticeable up and downshoot consider adding Y splitting.

Right lateral rectus recession 7 mm
No rigid rules regarding surgical treatment

Each case should receive individualized consideration according to the clinical manifestations observed

Surgery does not eliminate the fundamental abnormality of innervation.
• 2 years-old male
• Chin up posture
• Right eye variable ptosis
• Limitation of elevation of the right eye
• Limitation of abduction of the left eye
Esotropia and right hypotropia

No right elevation

No left abduction

Diagnosis:
RE: MED
Ptosis
Marcus Gunn
LE: DRS
Surgery:
OD: MR transposition to the superior rectus with Foster suture
OS: SR transposition to the lateral rectus with Foster suture and MR recession of 4 mm
Preop  1 day postop
2 Months postoperative
Multiple CCDD

• Transpositions are powerful and useful procedures in these cases