INTRODUCTION

• Consecutive XT may be associated with limited adduction in the previously operated eye(s).
• Limited adduction may be caused by anatomical abnormalities of the medial rectus (MR) and lateral rectus (LR) muscles or their insertions.
• Other factors may include an excessively recessed MR muscle or LR tightness.

PURPOSE

• To determine the associations between abnormal adduction deficit in consecutive XT.
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METHODS

Grading of Preoperative Adduction Deficits

- Graded on a -5 to 0 scale.3,2
- -5 = unable to reach midline
- -4 = achieve midline, but no further
- -3 = rotate past midline but 50% deficit
- -2 = rotate past midline but 50% deficit
- -1 = rotate past midline by 75% deficit
- 0 = full duction
- “trace” = less than -1 limitation, but duction is incomplete (analyzed as -0.5)

Type of MR Attachment

- MR Attachment type classified2 based on the operative report as:
  - Normal attachment: MR rectus fibers attached directly to sclera.
  - Abnormal attachment: MR fibers not directly attached to sclera, but connected by the translucent membrane or thick scar (alternately known as stretched scar or slipped muscle)4
  - Attached to pulley: muscle fibers attached to anterior portion of pulley but not sclera.
  - Behind the pulley: distal end of muscle fibers found behind the pulley but not attached to the pulley.

- Mixed: features of normal attachment but also attached to pulley or behind the pulley.

MR Fiber Location

- Recorded from operative report in millimeters from the original insertion.
- When attached at the pulley but no exact distance recorded, the median of all available values for attachment to the pulley was imputed (12 mm).
- When attached behind the pulley but no exact distance recorded, 1 mm more remote than the most extreme attachment to the pulley was imputed (16 mm).

LR Tightness

- Assessed during surgery for forced duction testing.
- Restriction classified as normal (no restriction), mild, or moderate.

RESULTS

Demographics of 129 Patients Enrolled

- Race = 96% white
- Ethnicity = 95% Non-Hispanic or Latino
- 131 surgeries
- 125 unilateral
- 12 bilateral
- 143 eyes

CAUSES OF PREOPERATIVE ADDUCTION DEFICIT BY SEVERITY

• Race = 96% white
• Ethnicity = 95% Non-Hispanic or Latino
• 131 surgeries
• 125 unilateral
• 12 bilateral
• 143 eyes

- Most common associated cause of mild adduction deficit was LR tightness.
- The most common associated cause of moderate and severe adduction deficits was a combination of a non-normal MR attachment, overly recessed MR, and LR tightness.

- In general, more severe preoperative adduction deficits are associated with MR attachment abnormalities and tight LR muscles.
- Most eyes with good adduction have normal muscle attachments and normal forced adduction testing, but there are exceptions.
- Severe MR insertion abnormalities, including lost muscles, may be found despite mild preoperative adduction deficits.

REFERENCES


CONCLUSIONS

• Severity of preoperative adduction deficit is a poor predictor of MR muscle attachment type, location of the distal end of the MR muscle fibers, and LR tightness.