Please find below the results of your literature search request. If you would like the full text of any of the abstracts included, or would like a further search completed on this topic, please let us know.

“Google can bring you back 100,000 answers, a librarian can bring you back the right one.” — Neil Gaiman

Literature Search Results

Search completed for: Participants with Convergence Excess Esotropia
Search completion date: 12/12/2013
Search completed by: Jan Badcock

Enquiry Details
Disclaimer
Every effort has been made to ensure that this information is accurate, up-to-date, and complete. However it is possible that it is not representative of the whole body of evidence available. No responsibility can be accepted for any action taken on the basis of this information. It is the responsibility of the requester to determine the accuracy, validity and interpretation of the search results.

All links from this resource are provided for information only. A link does not imply endorsement of that site and the Lincolnshire Knowledge and Resource Service does not accept responsibility for the information displayed there, or for the wording, content and accuracy of the information supplied which has been extracted in good faith from reputable sources.

Opening Internet Links
The links to internet sites in this document are ‘live’ and can be opened by holding down the CTRL key on your keyboard while clicking on the web address with your mouse.

Full Text Papers
Links are given to full text resources where available. For some of the papers, you will need a free NHS Athens Account. If you do not have an account you can register by following the steps at: https://register.athensams.net/nhs/nhseng/ You can then access the papers by simply entering your username and password. If you do not have easy access to the internet to gain access, please let us know and we can download the papers for you.

Guidance on Searching within Online Documents
Links are provided to the full text of each of these documents. Relevant extracts have been copied and pasted into these Search Results. Rather than browse through often lengthy documents, you can search for specific words and phrases as follows:

Portable Document Format / pdf. / Adobe
Click on the Search button (illustrated with binoculars). This will open up a search window. Type in the term you need to find and links to all of the references to that term within the document will be displayed in the window. You can jump to each reference by clicking it. You can search for more terms by pressing ‘search again’.

Word documents
Select Edit from the menu, the Find and type in your term in the search box which is presented. The search function will locate the first use of the term in the document. By pressing ‘next’ you will jump to further references.
Guidance

**Guidelines for the Management of Strabismus in Childhood**
The Royal College of Ophthalmologists March 2012
There is a large section on p. 22 on the presentation and management of Convergence Excess Esotropia here is an excerpt:

**“Convergence Excess Esotropia**

**Definition:** An intermittent esotropia with binocular single vision present at distance fixation but esotropia on accommodation for near fixation.

**Terminology:** The term convergence excess is sometimes used to include patients with a constant esotropia and no binocular vision. In the UK this would be called a constant esotropia with an accommodative element.

A near esotropia is a condition with an increased angle for near viewing but not associated with a high AC/A ratio. The term non-accommodative convergence excess is sometimes used for this condition.

Near distance disparity is considered relevant if over 8-10 prism dioptres.

**Incidence:** 27% of esotropia have near distance disparity\(^73\), but the prevalence of convergence excess is less.

**Age:** Onset is usually between 1-4 years old, but can be up to aged 10 years.

**Underlying Cause:** High AC/A ratio: not fully understood what underlies this.

**Presenting Scenario:** Parents see inwardly moving eye when tired, or concentrating on near objects. Children occasionally exhibit signs of distress when the eye is squinting. Older children may report double vision at near.

---

<table>
<thead>
<tr>
<th>Good vision each eye</th>
<th>Amblyopia rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Binocular in the distance, reduced at near unless corrected with near add</td>
<td></td>
</tr>
<tr>
<td>May control to a fully accommodative esotropia at distance (with hypermetropic glasses)</td>
<td></td>
</tr>
<tr>
<td>Variable control at near</td>
<td></td>
</tr>
<tr>
<td>Esotropia at near, which may be phoric to a non accommodative target</td>
<td></td>
</tr>
<tr>
<td>High AC/A – leading to deterioration of control(^85)</td>
<td></td>
</tr>
<tr>
<td>Poor near controlled binocular vision (CBA)</td>
<td></td>
</tr>
</tbody>
</table>

**Classic Findings:**

**Differential Diagnosis:**
Non accommodative esotropia
Constant esotropia
Near Esotropia
Hypo accommodative Esotropia\(^86\)
Congenital esotropia
**Treatment:**
Full cycloplegic hypermetropic correction where present
Bifocal glasses – split pupil

Orthoptic exercises
Miotics
Surgery

**Indications for Surgery:**
Reducing binocularity at near
Reducing control with other forms of treatment (e.g. bifocals)
Parent/Doctor preference over other treatments (e.g. bifocals). Orthoptic exercises not progressing.
Consider prism adaptation to the near angle

**Type of surgery:** large bilateral medial rectus muscle recession, pulley surgery, slanted recession, posterior fixation, medial rectus recession with resection.

**Controversies:** The terminology
Use of bifocal glasses
Indications for surgery
Surgical Procedure

**Outcome:** Is generally good. Most data suggest consecutive exotropia at distance occurs in approximately 10% of cases

**Evidence**

**Reviews and RCTs**


Richard G. Scobee was an internationally renowned strabismologist whose life was short yet very productive. The first section of this paper describes his life and contributions to strabismology and orthoptics. The second section of this paper reports the results of our strabismological study.

INTRODUCTION AND PURPOSE: Many different surgical procedures exist for the treatment of children or adults with convergence excess esotropia. We report on our results of augmented recession, slanted recession, and recession with posterior fixation of the medial rectus muscle in such situations. We also report on the incidence of induced vertical deviations.

METHODS: Using a retrospective chart review of 800 patients, we excluded patients with confounding strabismus conditions and pharmacological treatments leaving 131 patients included in the study. Slanted reinsertion of medial rectus (twenty-seven patients); posterior fixation with recession of medial rectus (twenty-two patients); augmented medial rectus recession (fifty-eight patients); nonaugmented recession of medial rectus (seventy-three patients). The distance near disparity postoperatively was evaluated using a life table analysis in which all patients were grouped according to the length of time postoperatively. Induced vertical deviation was evaluated at least 6 months postoperatively.
RESULTS: At all time periods postoperatively, the patients with slanted recessions showed the greatest reduction in distance near disparity and that reduction was the most stable over time. At 12-14 months postoperatively, the range in reduction measured 7.9-11(Δ) among all three procedures. At 15-18 months postoperatively, the range in reduction measured 16.9-19.3(Δ) diopters among the three procedures. At greater than 6 months postoperatively, the slanted and augmented recession groups showed up to 1(Δ) of right hypertropia and the posterior fixation and nonaugmented groups showed up to 0.6(Δ) of left hypertropia.

CONCLUSIONS: All three medial rectus procedures used in our retrospective study (slanted recession, augmented recession, recession with posterior fixation) reduced the distance near disparity. The greatest and most stable reduction at all time periods postoperatively occurred with the slanted recession. The induced vertical deviation is small in all procedures and is acceptable at 1(Δ) or less. The augmented and slanted recessions are easier to perform than the posterior fixation with recession. We recommend that the slanted reinsertion of the medial rectus recession be considered as a viable option in the surgical correction of esotropia with a distance near disparity.


PURPOSE: To evaluate the efficacy of 3 different surgical techniques for convergence excess esotropia: augmented medial rectus recession, medial rectus recession plus Faden, and slanted medial rectus recession.

METHODS: Twenty-nine patients with convergence excess esotropia were divided into 3 groups. Group A included 9 patients treated with medial rectus muscle recession augmented with 1-2 mm more of the standard recession. Group B included 10 patients treated with standard recession plus Faden. Group C included 10 patients treated with slanted medial rectus recession. Surgical success was defined as esotropia (ET) 10 prism diopters (Δ) or less at distance and near with collapse of distance/near disparity.

RESULTS: Satisfactory alignment with elimination of bifocal correction was noted in group A (66.6%). In groups B and C, the results were 70%. Group A patients had a mean reduction in distance/near disparity from 15.5±1.5Δ prism diopters preoperatively to 4.7±2.5Δ prism dipters postoperatively, while in group B the preoperative distance/near disparity was 16.5±1.8Δ prism diopters and decreased to 3.8±3.1Δ prism diopters postoperatively, and group C also showed reduction in distance/near disparity from 18.1±1.6Δ prism diopters preoperatively to 4.5±3.6Δ prism diopters postoperatively. There were no statistically significant differences among the 3 groups.

CONCLUSIONS: The 3 procedures are effective surgical options to treat convergence excess esotropia with acceptable motor outcomes.

Do Bifocals Reduce Accommodative Amplitude in Convergence Excess Esotropia?

BACKGROUND: As therapy with bifocal lenses can generate a condition of acquired hypo-accommodation, we assessed the results of bifocal therapy in children with non-refractive accommodative esotropia in whom near point of accommodation (NPA) was measured before the prescription of the lenses and at the end of the study.

METHODS: We examined 28 consecutive patients orthophoric for far, but with esotropia due to excess convergence for near (group 1), and 28 matched controls, orthophoric for far and near (group 2). The patients were prescribed bifocal lenses between the age of 5 and 8. The NPA was measured at time zero and after 4 years of follow-up in both groups.

RESULTS: NPA values, measured at time 0, were lower than average (10 dioptres) in ten of the 28 patients in group 1, and increased over the 4 years of follow-up without exceeding 10 dioptres. Only one of the other 18 patients in group 1, with normal NPA, had a lower value at the end of the study, although the values were still above 10 dioptres.
CONCLUSIONS: In several patients, excessive convergence is secondary to the extra accommodative effort required due to the presence of a primitive NPA deficit. In these subjects, the prognosis can be made on the basis of NPA measurement, and treatment with bifocal lenses will always be required to compensate. Furthermore, the parents of these small patients should be informed, even before the prescription of bifocals, that prospective surgery of medial rectus muscles will not eliminate the need for bifocals.

Convergence Excess Esotropia: A Proposed New Classification and the Effect of Monocular Occlusion on The Ac/A Ratio.
BACKGROUND: Convergence excess esotropia defines an esotropia on accommodation at near fixation with binocular single vision and motor fusion at distance fixation associated with a high accommodative convergence: accommodation (Ac/A) ratio. The effect of occlusion on esotropia has been well described and is known to alter the Ac/A ratio. This study examines the effect of monocular occlusion on convergence excess esotropia.
METHODS: The Ac/A ratio was measured using the gradient method at 1/3 and 6 m in 10 patients with convergence excess esotropia immediately prior to and following a 30-minute period of monocular occlusion.
RESULTS: Clinically and statistically significant differences to the angle of deviation and the Ac/A ratio were found in some patients following occlusion.
CONCLUSION: Ac/A ratio measurement in convergence excess esotropia is influenced by fusional tenacity. Disrupting this fusion with a period of monocular occlusion results in changes to the angle of deviation in some patients, suggesting subcategorization of this condition into true and simulated convergence excess esotropia. Measurements of the Ac/A ratio are influenced by fixation distance.

Preoperative Prism Adaptation in Acquired Esotropia with Convergence Excess.
Wygnanski-Jaffe T, Trotter J, Watts P, Kraft SP, Abdolell M
Journal of AAP: the official publication of the American Association for Pediatric Ophthalmology and Strabismus / American Association for Pediatric Ophthalmology and Strabismus 2003 Feb Volume 7 Issue 1 Pages 28-33
PURPOSE: The prism adaptation test (PAT) is used preoperatively to determine the surgical target angle for acquired esotropia. We assessed the surgical outcomes for children with convergence-excess esotropia (near esotropia greater than distance esotropia by 10 prism diopters [PD] or more) whose target angle was based on the results of the PAT geared to the near deviation.
METHODS: We reviewed the charts for all of one surgeon’s patients who underwent the PAT for near convergence-excess esotropia and who were followed-up for at least 6 months after surgery. Patients who wore prisms were classified as PAT responders (esotropia <= 8 PD at distance and near with four-dot fusion at near) or nonresponders (esotropia at distance or lack of four 4-dot fusion at near). Responders underwent surgery for the adapted angle at near. The nonresponders who had esotropia at distance had surgery for an angle between the near and distance angles. Nonresponders with esotropia angles <= 8 PD at distance and near underwent surgery for the total near deviation.
RESULTS: Fifty-four (83%) of the 65 children were PAT responders. Thirty-nine (72%) of the 54 responders and 6 (55%) of 11 nonresponders had excellent results (heterotropia <= 8 PD at distance and near with four-dot fusion at near). All 13 responders whose angles built with prism had excellent results. Among 61 patients who had an esotropia <= 8 PD at near with prisms preoperatively, only 4 (6.6%) developed overcorrections at distance by the latest follow-up examination; 3 were responders and 1 a nonresponder.
CONCLUSIONS: PAT for the near deviation in children who have convergence-excess esotropia is a useful test in estimating the target angle for surgery. Responders whose angles built with prism had a particularly high success rate. Surgery geared to the near-adapted angle has a low risk of creating an overcorrection in the distance regardless of the response to PAT.
Bilateral Recess vs Recess-resect Surgery in Infantile Esotropia: a Prospective, Randomised, Multicenter Trial
Source IOVS 2002 Volume 43 Pages ARVO E-abstract 217

Abstract Purpose: Differences between bilateral recession (BR) and recession-resection (RR), the most common surgical procedures for horizontal strabismus, have never been assessed in a randomised study. Methods: 9 German and 5 Dutch clinics recruited 3- to 8-year-old children with infantile esotropia. Exclusion criteria were: previous surgery, binocular vision (including Bagolini), near angle / far angle > 3/2, far angle > 24° or < 10°, acuity 1 line acuity difference, large hypermetropia or myopia, substantial up- or downshoot, V- or A-pattern or manifest hypertropia > 4°. The day before surgery, the latent angle at distance fixation in degrees was divided by 1.6 to obtain millimeters of recession and/or resection. Then the child was randomised to receive either BR or RR surgery the following day. Uniform guidelines on orthoptic and operative techniques were enforced by regular visits and photographs taken during surgery. Primary outcome measures were angle with alternating cover at distance fixation and remaining convergence excess, 3 months postoperatively. Results: 120 children will have been operated at conclusion of the study on December 31st 2001. Preliminary analysis without breaking the code (n=85) showed no difference between BR and RR. Average effect was only 1.4° per mm, s.d. 0.4. A smaller preoperative angle was correlated with less effect. Conclusion: This prospective, randomised, controlled study failed to confirm purported differences between BR and RR in effect on angle with alternating cover at distance fixation. Cases with a preoperative angle <15° had less average effect. The average effect was approx. one s.d. below current guidelines for horizontal strabismus surgery, reflecting the tendency to avoid overcorrection.

Controversy in the Management of Convergence Excess Esotropia

Much of the controversy that has arisen in the management of convergence excess esotropia results from differences in definition. A review of the literature reveals a number of studies concerning the management of convergence excess esotropia which are clearly dealing with different, although related, conditions. This makes comparison of outcomes difficult. The major difference in management is the use of optical treatment in North America (mainly bifocal glasses), whereas in Europe the same condition is more likely to be treated with surgery. Miotics are no longer used to treat this condition.

The objective of this review is to determine whether there is evidence to suggest one form of treatment is more effective than the other. Does it depend on definition? Are some patients with convergence excess esotropia more effectively managed with optical correction and some with surgical correction? What are we trying to achieve with treatment and at what point do we concur that a treatment has been a success or failure? Does the method of bifocal management affect the outcome? Are some surgical strategies more effective than others?
Evaluation of the Posterior Fixation Plus Recession Operation with Saccadic Velocities.


Kushner BJ

I performed a posterior fixation of the medial rectus in seven patients with convergence excess esotropia and successfully reduced their esotropia at near. Postoperative saccadic velocity testing did not reveal the expected decrease in saccadic velocity as the eye moved increasingly into the field of action of the operated muscle. Posterior fixation of a rectus muscle may enhance the effect of the standard recession operation by increasing the amount of slack created in the functional part of the muscle after recession. Also, it may make a large percentage of the muscle fibers ineffective.

Publication Type: Case Reports; Journal Article
Source: MEDLINE

Medial rectus muscle pulley posterior fixation sutures in accommodative and partially accommodative esotropia with convergence excess.


BACKGROUND: The use of medial rectus pulley posterior fixation sutures to treat esotropia with convergence excess has limited support in the literature. We describe our results using this technique to treat patients with large near-distance disparities.

METHODS: We retrospectively analyzed records of patients with accommodative or partially accommodative esotropia and convergence excess 13(Δ) or greater treated with bilateral medial rectus muscle recessions augmented by pulley posterior fixation. Surgical doses of recessions were calculated for the mean of distance and near deviations. Primary outcome measures were ocular alignment at distance and near and near-distance disparity.

RESULTS: A total of 26 patients were identified by the record review. Mean age at surgery was 5.4 years (range, 1.8-11.0 years) and mean follow-up time 12.7 months (range, 1.0-37.6 months). Mean preoperative distance esotropia was 22.9(Δ) (range, 0(Δ)-53(Δ)), with a mean near-distance disparity of 26.4(Δ) (range, 13(Δ)-53(Δ)). At 1 to 3 months postoperatively, mean distance deviation was 0.5(Δ) exotropia (range, 18(Δ) exotropia to 12(Δ) esotropia), with a statistically significant decrease in mean near-distance disparity to 4.5(Δ) (range, 0(Δ)-26(Δ); P < 0.001). Three-quarters of patients (77%) achieved 0(Δ) to 9(Δ) esotropia at 1 to 3 months, with 4 overcorrections for distance and 2 undercorrections for distance and near. At final follow-up 2 patients had persistent exotropia less than 10(Δ).

CONCLUSIONS: Augmentation of bilateral medial rectus recessions with pulley posterior fixation resulted in a significant decrease in near-distance disparity in this group of patients with accommodative and partially accommodative esotropia and convergence excess, with a low rate of persistent overcorrection for distance.

Arguing with Success: Pulley Surgery versus Conventional Surgery for Convergence Excess Esotropia

Journal of AAPOS, April 2012, vol./is. 16/2(110-111), 1091-8531;1528-3933 (April 2012) Archer S.M.

Publication Type: Journal: Editorial
Source: EMBASE
Insertion slanting strabismus surgical procedures
Citation: Archives of Ophthalmology, December 2011, vol./is. 129/12(1620-1625),
0003-9950;1538-3601 (December 2011) Kushner B.J.
Insertion slanting recessions or biased resections have been reported to be useful for
treating A- and V-pattern strabismus, convergence insufficiency, and convergence excess
esotropia. Paradoxically, good results have been reported with methods that are opposite
in nature. For example, some researchers would recess the medial rectus muscles and
slant the superior pole of each muscle back farther than the inferior pole (Simonsz/von
Graefe method) for a V-pattern esotropia, and others would slant the inferior poles back
farther (Bietti method). The Simonsz/von Graefe method seems to be based on sound
concepts of oculomotor mechanics. The Bietti method has been justified based on a
misquoting and misinterpretation of previous work by Alan Scott, MD. Probably neither
method contributes substantially to the outcome of strabismus surgery because sarcomere
remodeling should rapidly negate the effect of the slanting. Most likely it is the recession
or resection itself that affects the outcome. 2011 American Medical Association. All
rights reserved.
Publication Type: Journal: Article
Source: EMBASE
Full Text: Available from Silverchair Information Systems in Archives of Ophthalmology

Surgery for Residual Convergence Excess Esotropia.
Patel HI, Dawson E, Lee J. Strabismus. 2011 Dec;19(4):153-6. doi:
10.3109/09273972.2011.626831
The outcome of bilateral medial rectus posterior fixation sutures +/- central tenotomy was
assessed as a secondary procedure for residual convergence excess esotropia in 11
patients. Ten had previously undergone bilateral medial rectus recessions. One had
recess/resect surgery on the deviating eye. The average preoperative near angle was 30
prism diopters with a range of 16 to 45 prism diopters. Eight patients underwent bilateral
medial rectus posterior fixation sutures with central tenotomy. Two had bilateral medial
rectus posterior fixation sutures only, and one had bilateral medial rectus posterior fixation
suture, a lateral rectus resection, and an inferior oblique disinsertion. The postoperative near
angle ranged from 4-30 prism diopters, with mean of 12 prism diopters. Five patients
demonstrated some stereopsis preoperatively, all needing bifocals. Postoperatively, nine
patients demonstrated an improvement in stereopsis, none needing bifocals. Two showed
smaller near angles and better control without bifocals. Final stereopsis ranged from 30
seconds of arc to 800 seconds of arc. We feel that bilateral medial rectus posterior fixation
sutures with or without central tenotomy is a viable secondary procedure for residual
convergence excess esotropia.

Surgery for residual convergence excess esotropia
Citation: Strabismus, December 2011, vol./is. 19/4(153-156), 0927-3972;1744-5132
(December 2011) Patel H.I.; Dawson E.; Lee J.
The outcome of bilateral medial rectus posterior fixation sutures +/- central tenotomy was
assessed as a secondary procedure for residual convergence excess esotropia in 11
patients. Ten had previously undergone bilateral medial rectus recessions. One had
recess/resect surgery on the deviating eye. The average preoperative near angle was 30
prism diopters with a range of 16 to 45 prism diopters. Eight patients underwent bilateral
medial rectus posterior fixation sutures with central tenotomy. Two had bilateral medial
rectus posterior fixation sutures only, and one had bilateral medial rectus posterior
fixation suture, a lateral rectus resection, and an inferior oblique disinsertion. The
postoperative near angle ranged from 4-30 prism diopters, with mean of 12 prism
diopters. Five patients demonstrated some stereopsis preoperatively, all needing bifocals.
Postoperatively, nine patients demonstrated an improvement in stereopsis, none needing
bifocals. Two showed smaller near angles and better control without bifocals. Final
stereopsis ranged from 30 seconds of arc to 800 seconds of arc.
We feel that bilateral medial rectus posterior fixation sutures with or without central tenotomy is a viable secondary procedure for residual convergence excess esotropia.

Publication Type: Journal: Article
Source: EMBASE

Potential linkage of different phenotypic forms of childhood strabismus to a recessive susceptibility locus
Khan A.O.; Shinwari J.; Dhaim N.A.; Khalil D.; Sharif L.A.; Tassan N.A.
Purpose: To perform linkage analysis on an inbred family with members who exhibit different phenotypic forms of childhood strabismus. Methods: Prospective clinical examination and linkage analysis. Results: Three of the ten siblings and their cousin each had a different phenotypic form of childhood strabismus: infantile esotropia with convergence excess, esotropia associated with anisometropic amblyopia, unilateral esotropic Duane syndrome, and monocular elevation deficiency. Linkage analysis for the four strabismic individuals, an unaffected sibling, and the unaffected parents identified a single disease locus on chromosome 16p13.12-p12.3 (Ensembl cytogenetic band) with a 2.5 maximum logarithm of odds score. The region is 6 MB in size and comprises 80 genes. Discussion: Linkage analysis in this unique family suggests that childhood strabismus can be recessive and that different phenotypic forms of childhood strabismus can share the same underlying genotype. 2011 Molecular Vision.

Publication Type: Journal: Article
Source: EMBASE
Full Text: Available from National Library of Medicine in Molecular Vision

Bilateral Combined Resection and Recession of the Medial Rectus Muscle For Convergence Excess Esotropia.
Five patients with true convergence excess esotropia were surgically managed with combined resection and recession of the medial rectus muscles. This technique was chosen to address the near/distance angle disparity. The use of this surgical technique produced full asymptomatic binocular control at near and distance fixation in four patients. One patient developed a consecutive exotropia but regained full binocular control following a second surgical procedure.

Preoperative Prism Adaptation in Acquired Esotropia with Convergence Excess.
PURPOSE: The prism adaptation test (PAT) is used preoperatively to determine the surgical target angle for acquired esotropia. We assessed the surgical outcomes for children with convergence-excess esotropia (near esotropia greater than distance esotropia by 10 prism diopters [PD] or more) whose target angle was based on the results of the PAT geared to the near deviation.
METHODS: We reviewed the charts for all of one surgeon's patients who underwent the PAT for near convergence-excess esotropia and who were followed-up for at least 6 months after surgery. Patients who wore prisms were classified as PAT responders (esotropia <= 8 PD at distance and near with four-dot fusion at near) or nonresponders (esotropia at distance or lack of four 4-dot fusion at near). Responders underwent surgery for the adapted angle at near. The nonresponders who had exotropia at distance had surgery for an angle between the near and distance angles. Nonresponders with esotropia angles <= 8 PD at distance and near underwent surgery for the total near deviation.
RESULTS: Fifty-four (83%) of the 65 children were PAT responders. Thirty-nine (72%) of the 54 responders and 6 (55%) of 11 nonresponders had excellent results (heterotropia <= 8 PD at distance and near with four-dot fusion at near). All 13 responders whose angles built with prism had excellent results. Among 61 patients who had an esotropia <= 8 PD at near with prisms preoperatively, only 4 (6.6%) developed overcorrections at distance by the latest follow-up examination; 3 were responders and 1 a nonresponder.

CONCLUSIONS: PAT for the near deviation in children who have convergence-excess esotropia is a useful test in estimating the target angle for surgery. Responders whose angles built with prism had a particularly high success rate. Surgery geared to the near-adapted angle has a low risk of creating an overcorrection in the distance regardless of the response to PAT.

Bilateral Medial Rectus Recession in Convergence Excess Esotropia, With and Without Distance Orthophoria.

PURPOSE: To evaluate the effectivity and safety of bilateral medial rectus recession for the correction of acquired convergence excess esotropia, with and without distance orthophoria.

METHODS: Thirty-five pediatric patients with acquired convergence excess esotropia were operated with bilateral medial rectus recessions based on the near angle measured through the distance correction. Preoperatively, in 26 patients, full hypermetropic correction did not fully correct the distance angle; these patients were operated for the residual angle for distance and near. In nine patients full hypermetropic correction produced distance orthophoria and these cases also had near orthophoria through a near add; these patients could have used bifocals, but surgery was chosen instead.

RESULTS: postoperatively, 19 of the 26 patients with distance esotropia (73%) and 6 of the 9 with distance orthophoria (66.6%) were successfully aligned. Consecutive exotropia developed in two patients (7.6%) in the distance esotropia group and one (11.1%) in the distance orthophoria group.

CONCLUSIONS: These results suggest that bilateral recession of the medial recti based on the near deviation is effective in eliminating the near angle in convergence excess esotropia. In patients with distance orthophoria this operation can be used as an initial treatment instead of bifocals. Although the risk of consecutive exotropia was low in this series, a larger number of patients would determine its actual rate more accurately.

Posterior Fixation Suture and Convergence Excess Esotropia.

The present study investigates the results of Cuppers’ ‘Fadenoperation’ in patients with non-accommodative convergence excess esotropia. Particular attention is given to postoperative eye alignment at distance fixation. Group 1 (n=96) included patients with a ‘normal’ convergence excess. The manifest near angles (mean ET 16.73 degrees +/- 6.33 degrees, range 4 degrees -33 degrees ) were roughly twice the size of the distance angles (mean ET 6.50 degrees +/- 3.62 degrees, range 0 degrees -14 degrees ). These patients were treated with a bilateral fadenoperation of the medial recti without additional eye muscle surgery. Three months after surgery, the mean postoperative angles were XT 0.5 degrees +/- 3.3 degrees (range XT 11 degrees -ET 5 degrees ) for distance fixation, and ET 2.7 degrees +/- 3.6 degrees (range XT 5 degrees -ET 14 degrees ) for near fixation, respectively.

Postoperative convergent angles at near fixation >ET 10 degrees were present in two patients (1.9%). Group 2 (n=21) included patients with a mean preoperative distance angle of ET 9.2 degrees +/- 3.7 degrees (range 6 degrees -16 degrees ) and a mean preoperative near angle of ET 23.4 degrees +/- 3.1 degrees (range 16 degrees -31 degrees ). These patients were operated on with a bilateral fadenoperation of the medial recti and a simultaneous recession of one or both medial rectus muscles.
Mean postoperative angles were XT 0.5 degrees +/- 4.6 degrees (range XT 12 degrees - ET 7 degrees) for distance fixation and ET 1.4 degrees +/- 4.5 degrees (range XT 8 degrees - ET 13 degrees) for near fixation, respectively. In this group, 2 patients (10.6%) had a postoperative exotropia > XT 5 degrees at distance fixation, and two patients had residual esotropia > ET 10 degrees at near fixation. Group 3 (n=17) included patients with a pronounced non-accommodative convergence excess. Near angle values (mean of 17.8 degrees +/- 5.3 degrees, range ET 7 degrees - 26 degrees) were several times higher than the distance angle values (mean ET 1.9 degrees +/- 4.2 degrees, range XT 3 degrees - ET 6 degrees). These patients were treated with a bilateral fadenoperation of the medial recti and a simultaneous resection of one or both medial rectus muscles. Mean postoperative angles were ET 0.2 degrees +/- 4.7 degrees (range XT 8 degrees - ET 6 degrees) for distance fixation and 5.3 degrees +/- 6.1 degrees (range XT 3 degrees - ET 12 degrees) for near fixation, respectively. One patient had a postoperative distance angle > XT 5 degrees, whereas two patients displayed postoperative convergent angles > ET 5 degrees at near fixation.

Convergence Excess Esotropia Treated Surgically with Fadenoperation and Medical Rectus Muscle Recessions.


Convergence excess esotropia has been treated with bifocals, miotics, medial rectus recession(s), fadenoperation, or a combination of these. However, comparatively few studies on the sensory status of these patients exist. We present the sensory findings in 31 children treated surgically. Twenty-one had fadenoperations combined with bimedial rectus recessions, one had a fadenoperation alone, and nine had augmented bimedial rectus recessions. Five children (16%) achieved bifoveal fusion, 22 (71%) had varying degrees of peripheral fusion, and four (13%) had no detectable binocularity after a mean postoperative follow-up of 2.4 years.

The Management of Esotropia with High AC/A Ratio (Convergence Excess).


This paper reviews the long-term follow-up of esotropia with a high AC/A ratio defined as an increase of 20 delta or more of the esotropia at near compared with distance with the full optical correction of any refractive error in place. Ninety-nine patients were studied for an average follow-up of eight years. Eighty-six achieved fusion but only five achieved central fusion. Forty-five were treated with bifocals. No significant difference in the sensory results were recorded in those patients wearing bifocals compared with those who did not wear bifocals. No patient had miotic therapy for more than a few months. The suppression characteristic of this condition is reviewed.

Sensory Outcome with Nonsurgical Management of Esotropia with Convergence Excess (A High Accommodative Convergence/Accommodation Ratio).


Twenty-seven patients with esotropia and convergence excess (a high accommodative convergence/accommodation [AC/A] ratio) managed nonsurgically underwent a final standardized evaluation of their sensory and motor status after a follow-up period of at least 8 years. All had a deviation with distance fixation of less than 10 prism dioptres (PD) of esotropia with full optical correction both initially and throughout the follow-up period. The average spherical-equivalent refractive error was +2.3 D. The AC/A ratio had tended to decrease with age, and most patients had fusion, although only a small proportion had central fusion and stereopsis. Approximately half of the patients had been treated with bifocals, but their sensory outcome did not differ from that of the other patients. Miotics had not been used for more than a few months in any patient, as they were ineffective in reducing the deviation with near fixation to less than 10 PD of esotropia.
A study, possibly a multicentre one, involving larger numbers of patients should be designed to find out whether bifocal therapy offers an advantage in the final sensory outcome of such patients.