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Literature search results

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Search details

Surgery for convergent squint. Is bimedial or unilateral resection or recession more effective.

Resources searched

NHS Evidence; National Library for Health; Cochrane Library, Trip Database; MEDLINE; EMBASE; Google Scholar

Database search terms: squint*; exp STRABISMUS; strabismus; esotropia; ESOTROPIA; bimedial; bilateral; unilateral; recession; resection; accommodative; surg*; ophthalmology; eye; OPHTHALMOLOGY; OPHTHALMOLOGIC SURGICAL PROCEDURES; treatment; outcome; TREATMENT OUTCOME

Google search string: (esotropia OR "convergent squint") and ((bimedial OR unilateral) and (recession OR resection))

Summary

There is limited research comparing unilateral or bimedial resection in the treatment of esotropia:

No statistically significant difference was found between BR and RR as surgery for infantile esotropia.¹ Medial rectus muscle re-recession can be a substitute for lateral rectus muscle resection in patients with residual esotropia.⁴ Unilateral medial rectus recession is a predictable method for surgical correction of small-angle pediatric esotropia. The change in deviation per millimeter of recession after unilateral recession is significantly less than that obtained from equivalent amounts of bilateral recession (P <.01).⁷

Medial rectus recession was less effective in patients with Duane Syndrome. Bilateral medial rectus recession with simultaneous botulinum injection is a safe and effective primary surgical procedure for very large angle esotropia.¹²
<table>
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<th>Guidelines</th>
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| **American Academy of Ophthalmology**  
**Esotropia and Exotropia** 2008 |
| There is no consensus among strabismus surgeons on the criteria for unilateral or bilateral surgery, nor is there level I evidence to provide guidance as to which approach is superior. |

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<tr>
<td><strong>Guidelines for the management of strabismns in childhood</strong> 2007</td>
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<td>Doesn’t indicate preferred surgical intervention</td>
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<th>Evidence based reviews</th>
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| **Cochrane Database of Systematic Reviews**  
**Interventions for infantile esotropia** 2005 |
| The available literature suggests that bimedial recessions is the surgical method of choice, and there seems to be general agreement that any intervention should be earlier rather than later. |

<table>
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<tr>
<td>1. A randomised comparison of bilateral recession versus unilateral recession-resection as surgery for infantile esotropia.</td>
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<td><strong>Citation:</strong> British Journal of Ophthalmology, July 2009, vol./is. 93/7(954-7), 0007-1161;1468-2079</td>
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<td><strong>Publication Date:</strong> July 2009</td>
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<td><strong>Abstract:</strong> OBJECTIVE: Infantile esotropia, a common form of strabismus, is treated either by bilateral recession (BR) or by unilateral recession-resection (RR). Differences in degree of alignment achieved by these two procedures have not previously been examined in a randomised controlled trial. DESIGN: Controlled, randomised multicentre trial. SETTING: 12 university clinics. PARTICIPANTS AND INTERVENTION: 124 patients were randomly assigned to either BR or RR. Standardised protocol prescribed that the total relocation of the muscles, in millimetres, was calculated by dividing the preoperative latent angle of strabismus at distance, in degrees, by 1.6. MAIN OUTCOME MEASURE: Alignment assessed as the variation of the postoperative angle of strabismus during alternating cover. RESULTS: The mean preoperative latent angle of strabismus at distance fixation was +17.2 degrees (SD 4.4) for BR and +17.5 degrees (4.0) for RR. The mean postoperative angle of strabismus at distance was +2.3 degrees (5.1) for BR and +2.9 degrees (3.5) for RR (p = 0.46 for reduction in the angle and p = 0.22 for the within-group variation). The mean reduction in the angle of strabismus was 1.41 degrees (0.45) per millimetre of muscle relocation for RR and 1.47 (0.50) for BR (p = 0.50 for reduction in the angle). Alignment was associated with postoperative binocular vision (p = 0.001) in both groups. CONCLUSIONS: No statistically significant difference was found between BR and RR as surgery for infantile esotropia.</td>
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2. Esotropias that totally resolve under general anesthesia treated exclusively with bilateral fadenoperation.

Author(s): Thouvenin DA, Sotiropoulos MC, Arne JL, Fournie PR

Citation: Strabismus, 2008, vol./is. 16/4(131-8), 0927-3972;1744-5132

Publication Date: 2008

Abstract: PURPOSE: Fadenoperation has been proven to be an efficient method to treat convergence excess because it treats medial rectus (MR) overaction. We wanted to evaluate its efficiency in esotropias that totally disappear under anesthesia, regardless of the amount of deviation in waking hours. METHODS: Included were 122 successive cases of children of ages 3 to 16 years with esotropia that completely disappears under general anesthesia (GA), representing 26.25% of all patients with esotropia that had surgery between August 2002 and July 2004. They all received a fadenoperation (retroequatorial strapping) of both MR without recession with a 5/0 nylon suture. RESULTS: Patients were evaluated between 27 and 51 months postoperatively. Mean initial deviation was 21 prism dioptries (PD) at distance and 31 PD at near fixation. Of the 122 cases, 102 (83.6%) showed stable postoperative deviation between +8 and -8 PD, 7 showed exotropias (< 20 PD), and 13 showed esotropias (< 20 PD). These results were found without correlation to preoperative angle of deviation, ametropia, age at surgery, or association with vertical surgery. CONCLUSION: Our results suggest that fadenoperation of MR is an option to treat esotropias that disappear under anesthesia. The retroequatorial strapping we use seems safer than classical fadenoperation. We believe that the position of the eyes under GA should be considered for the surgical approach of esotropias.

Source: MEDLINE

3. The clinical course of consecutive esotropia after surgical correction.

Author(s): Jung SH, Rah SH

Citation: Korean Journal of Ophthalmology, December 2007, vol./is. 21/4(228-31), 1011-8942;1011-8942

Publication Date: December 2007

Abstract: PURPOSE: To investigate the clinical course in patients who underwent surgical correction of consecutive esotropia. METHODS: The medical records of 13 patients who underwent surgical correction of consecutive esotropia were reviewed retrospectively. The authors investigated the deviation and surgical method at the time of exotropia surgery. During the follow up period, the authors also studied incidence of amblyopia development, the effect of occlusion therapy, surgical methods for consecutive esotropia, and postoperative change of deviation. RESULTS: The average exodeviation was 27.1 prism diopter (PD). Bilateral lateral rectus muscle recession was performed in all patients. In all patients, alternate occlusion was tried from 2 weeks after development of consecutive esotropia. However, there was no effect on 7 patients. None of the patients developed amblyopia. Surgery for consecutive esotropia was performed on the average 15.3 months after exotropia surgery. The average esodeviation was 21.1PD. Medial rectus muscle recession was performed in 10 patients and lateral rectus muscle advancement in 3 patients. The average deviation of the subject group immediately after surgery was 1.2PD esodeviation, 0.9PD esodeviation one month after surgery, 2.4PD exodeviation 6 months after surgery, and 4.7PD exodeviation at the last follow up, and it showed a tendency to progress to exodeviation as the follow up period increased. Ten patients (76.9%) showed deviation within 8PD at the last follow up. CONCLUSIONS: The success rate of surgical correction for consecutive esotropia was a favorable outcome. But, careful decisions of the surgical method and amount is needed because the conversion of exodeviation during long-term follow-up is possible.

Source: MEDLINE
4. Lateral rectus resection versus medial rectus re-recession for residual esotropia: early results of a randomized clinical trial.

Author(s): Rajavi Z, Ghadim HM, Ramezani A, Azemati M, Daneshvar F

Citation: Clinical & Experimental Ophthalmology, August 2007, vol./is. 35/6(520-6), 1442-6404

Publication Date: August 2007

Abstract: PURPOSE: To compare lateral rectus muscle resection with medial rectus muscle re-recession for patients with residual esotropia. METHODS: This randomized controlled clinical trial included 25 patients (mean age, 18.8 +/- 8.7 years) with residual esotropia who were candidates for reoperation. They were randomly assigned into two groups: re-recession group (n = 12), in which the medial rectus muscle was recessed again, and the resection group (n = 13), in which lateral rectus muscle resection was performed. Postoperative deviation < or =10 prism dioptres was considered to be treatment success. RESULTS: The success rate of the re-recession group and the resection group was 67% and 54%, respectively; this difference was not statistically significant. Each 1 mm of medial rectus re-recession and lateral rectus resection corrected 7.5 +/- 1.2 and 2.5 +/- 0.5 prism dioptres of residual esotropia, respectively. In 50% of the re-recession group, mild medial rectus muscle underaction occurred; however, only 16.5% developed an increase in the near point of convergence. Major intraoperative and postoperative complications, including overcorrection and slippage or a lost muscle, did not occur in any of the patients. CONCLUSIONS: Medial rectus muscle re-recession can be a substitute for lateral rectus muscle resection in patients with residual esotropia. The resultant underaction of the medial rectus muscle after re-recession is relatively mild and causes no major problems.

Source: MEDLINE

5. One-muscle surgery in small-angle residual esotropia.

Author(s): Nucci P, Serafino M, Trivedi RH, Saunders RA

Citation: Journal of Aapos: American Association for Pediatric Ophthalmology & Strabismus, June 2007, vol./is. 11/3(269-72), 1091-8531

Publication Date: June 2007

Abstract: PURPOSE: To report the outcome of unilateral lateral rectus resection for treatment of small-angle residual esotropia following bilateral medial rectus muscle recession. METHODS: A retrospective medical record review was performed for all patients who had undergone bilateral medial rectus muscle recession for congenital esotropia prior to 6 years of age that required further surgical treatment of residual esotropia. We compared two different dosing strategies for resection of a single lateral rectus muscle in the nondominant eye. In group 1, the amount of resection was calculated by doubling the angle of strabismus and applying the recommended surgical dosage to one lateral rectus muscle. In group 2, the amount of unilateral resection was the same as the bilateral dosage for the measured angle, but augmented by 1.5 mm. Postoperative evaluation was performed 1 and 6 months after surgery. RESULTS: Data from 35 patients were analyzed, 17 in group 1 and 18 in group 2. No significant intergroup difference was noted in terms of age at first surgery (p = 0.266), initial surgical dosage (p = 0.693), residual angle of esotropia (p = 0.881), or age at reoperation (p = 0.679). Postoperative alignment was better in group 1 patients at 6 months than at 1 month (residual deviation 3.5(Delta) versus 6.7(Delta), p = 0.022). CONCLUSIONS: Resection of a single lateral rectus muscle with the surgical dosage calculated by doubling the angle of strabismus and applying the recommended surgical dosage to one lateral rectus muscle is a treatment option for patients with small-angle residual esotropia following bilateral medial rectus muscle
6. [Early-onset esotropia operated before the age of 24 months: long-term results of Cupper's retroexy combined with simultaneous recession of both medial recti]. [French] Esotropie precoce: resultats a long terme d'une serie de 82 cas operes par myopexie retro-equatoriale et recul simultane des deux muscles droits mediaux avant l'age de 24 mois.

Author(s): Klainguti G, Lise-Schneider B, Bremart-Strickler J

Citation: Klinische Monatsblatter fur Augenheilkunde, April 2007, vol./is. 224/4(260-4), 0023-2165;0023-2165

Publication Date: April 2007

Abstract: BACKGROUND: When and how to operate an early-onset esotropia (onset before 6 months of age) is still controversial. We conducted a retrospective study of such patients operated before the age of 24 months. PATIENTS AND METHODS: 82 patients were operated by one surgeon (GK) and followed by the same team. At 5 years post-operation, evaluation criteria included the residual angle of deviation, visual acuity (Birkhauser Nr 505, 5 m) and binocularity (Lang stereotest I, Bagolini glasses). RESULTS: At 5 years, the residual angle was excellent (0 degrees to + 5 degrees) in 67 % good, (>+5 degrees to +10 degrees or 0 to -5 degrees) in 23 %, and poor (>+10 degrees or <=5 degrees) in 10 %. During the 5 years of follow-up the rate of reoperation was 9.7 %. Isoacuity was obtained in 62 %, slight amblyopia (2 lines of interocular difference) was present in 32 %, and average amblyopia (> 3 lines of interocular difference) was noted in 6 %. Simultaneous perception was present in 53 %, whereas one eye was suppressed or results were undetermined in 47 %. No patient demonstrated stereoscopy using the Lang's stereotest I. CONCLUSION: The results from our study demonstrate that early surgery of early-onset esotropia has a favourable outcome on both visual acuity and the residual angle of strabismus. Simultaneous perception was achieved in 53 %. These figures are comparable to the results of the ELISSS multicentric study.

Source: MEDLINE

7. Results of surgery in Duane's retraction syndrome: Comparison of unilateral recession and resection versus bilateral medial rectus recessions

Author(s): Vodickova K., Autrata R., Senkova K., Rehurek J., Pellarova H.

Citation: Scripta Medica Facultatis Medicae Universitatis Brunensis Masarykianae, 2007, vol./is. 80/1-2(71-80), 1211-3395

Publication Date: 2007

Abstract: To evaluate a long-term efficacy of lateral rectus resection with medial rectus recession in the affected eye of patients with Duane's retraction syndrome (DRS) with esotropia and limited abduction, compared with bilateral medial rectus recessions. The medical records of 23 patients with DRS who underwent a recession-resection procedure (Group A) and 26 patients with DRS who underwent bilateral medial rectus recessions (Group B) were reviewed and compared. Ocular alignment ( prism dioptres-PD), head position, ocular ductions (graded from 0 = full duction to -4 = total deficit), severity of retraction, and binocular single vision field in each group were evaluated pre- and postoperatively. Statistical analysis of the data was performed. Before surgical treatment, both groups (Group A and B) did not differ in mean primary position esotropia (21.3 and 24.7 PD, respectively), mean head-face turn (17.9degrees and 18.5degrees), average limitation of abduction (-3.2 and -3.4), or adduction (-0.4 and -0.3). After surgery, both groups had similar mean esotropia (4.2 PD and 3.5 PD), mean face turns (4.1degrees and 2.8degrees). However, the mean abduction limitation in the affected eye was greater in the group B (-1.2 and -2.6, P = .03) and the mean adduction was significantly worse in the control group B than in the group A (-1.6 vs -0.5, P = .04). Globe retraction improved in all
subjects of the group B. It worsened in 6 patients of the group A and did not improve in the other 11. In this group, 3 patients required reoperation for undercorrection. Seventeen of 23 patients with DRS, selected on the basis of esotropia, limited abduction, and mild retraction, benefited from a recession-resection procedure in the affected eye. Abduction improved to a higher degree as seen after bilateral medial rectus recessions. However, unilateral recession-resection procedure should be performed in patients with mild retraction of the globe and good preoperative adduction.

Source: EMBASE

8. Bilateral medial rectus muscle recession: results in children with developmental delay compared with normally developed children.

Author(s): Habot-Wilner Z, Spierer A, Glovinsky J, Wygnanski-Jaffe T

Citation: Journal of Aapos: American Association for Pediatric Ophthalmology & Strabismus, April 2006, vol./is. 10/2(150-4), 1091-8531;1091-8531

Publication Date: April 2006

Abstract: PURPOSE: We sought to compare bimedial rectus muscle recession (BMR) results for esotropia in children with developmental delay with the results in normal children.

METHODS: A retrospective analysis of all the children that underwent standard BMR surgery for esotropia during a 10 year period was undertaken. The surgical results of children with developmental delay were compared with those of normal children.

RESULTS: In the developmentally delayed group, the mean angle of esotropia before surgery was 53+/−12 PD, the mean amount of medial rectus recession was 5.4+/−0.56 mm, 0.84 mm less than the standard amount of recession, and at the last follow-up visit only 56% achieved surgical success (within 10 PD of orthophoria). Among the failures, 86% were undercorrected, only one patient developed consecutive exotropia after surgery. In the developmentally intact group, the mean angle of esotropia before surgery was 37.4+/−8 PD, the mean amount of medial rectus recession was 5.2+/−0.65 mm, and 94% achieved surgical success. Among surgical failures, we observed only a single case of overcorrection.

CONCLUSION: A higher rate of surgical failure was found in developmentally delayed children who received a smaller recession amount of the medial rectus muscles when compared with the developmentally normal children who received a standard amount of recession. The main reason for surgical failure in the developmentally delayed group, in a follow-up period of 2 years, was undercorrection of the angle of esotropia. It seems that decreasing the surgical table by a certain amount in children with developmental delay may lead to undercorrection. Therefore, we need to delineate the ideal amount of surgery in this unique group of individuals.

Source: MEDLINE


Author(s): Gharabaghi D, Zanjani LK

Citation: Journal of Pediatric Ophthalmology & Strabismus, March 2006, vol./is. 43/2(91-4), 0191-3913;0191-3913

Publication Date: March 2006

Abstract: BACKGROUND AND PURPOSE: According to the literature, accommodative esotropia has an unpredictable course when nonsurgical treatment is considered, especially in cases with a high accommodative convergence/accommodation ratio (AC/A). The aim of this study was to compare the results of augmented recession, slanted recession, and recession with posterior fixation suture of the medial rectus muscles in the treatment of high AC/A esotropia. SUBJECTS AND METHODS: Twenty-eight children (4 to 14 years old) with high AC/A esotropia with a near-distance disparity greater than 10 PD were included in a prospective, randomized, blinded clinical trial. Nine children underwent
Recession of both medial rectus muscles and posterior fixation suture (Faden procedure), 9 children underwent augmented recession of the medial rectus muscles, and 10 children underwent slanted recession of both medial rectus muscles. The amount of esodeviation was measured before strabismus surgery and at least 6 months postoperatively.

RESULTS: In the augmented recession group, the mean near-distance disparity was reduced from 16.33 +/- 2.17 PD preoperatively to 7.55 +/- 3.87 PD postoperatively (54.21%; P = .056). In the Faden procedure group, it was reduced from 15.22 +/- 4.08 PD to 2.55 +/- 4.03 PD (80.7%; P = .056). In the slanted recession group, it was reduced from 15.50 +/- 4.30 PD to 4.10 +/- 4.80 PD (67.55%; P = .056). CONCLUSIONS: The Faden procedure had the best outcome, but slanted recession also was successful. Because of our good results and an easy, non-invasive approach without any additional complications, we recommend slanted recession to treat high AC/A esotropia.

Source: MEDLINE

10. Strabismus outcomes/quality control: the application of statistical process control (SPC) to one muscle and two muscle simple horizontal strabismus of 25 PD or less.

Author(s): Jatla KK, Enzenauer RW

Citation: Binocular Vision & Strabismus Quarterly, 2006, vol./is. 21/4(215-22), 1088-6281;1088-6281

Publication Date: 2006

Abstract: INTRODUCTION: Statistical Process Control (SPC) techniques were originally used for evaluating quality in manufacturing. The SPC chart consists of data plotted in a time sequence with the mean and upper and lower control limits (approximates +/- 3 standard deviations), graphically showing trends in the data. We employed SPC charts to analyze one and two muscle surgery for simple horizontal strabismus of 25 prism diopters (PD) or less. METHODS: We reviewed the records of 47 patients, 18 years and younger with consistent preoperative strabismus measurements of 25 PD or less, who underwent pure horizontal rectus muscle recession, resection, or both. SPC charts were used to compare the differences in preoperative and postoperative measurements of one muscle versus two muscle esotropia and exotropia using the QI analyst software package.

RESULTS: The average preoperative measurements for esotropia were 19.6 PD of one muscle cases, and 23.8 PD for two muscle cases. For exotropia, these values were 16.7 PD for one muscle cases and 20.6 PD for two muscle cases. The average postoperative measurements for esotropia were 5.4 PD for one muscle cases, and 10.0 PD for two muscles cases. For exotropia, the values were 2.2 PD for one muscle cases, and 11.0 PD for two muscle cases. SPC charts displaying pre- and postoperative measurements for one and two muscle surgery for both esotropia and exotropia showed normal statistical fluctuation. Interestingly, two muscle postoperative measurements for both esotropia and exotropia had higher upper control limits (UCL) than one muscle measurements. Those patients requiring additional surgery, or whose postoperative measurements were greater than 15 PD were considered failed cases. The differences in failure rates between one muscle and two muscle cases were not "statistically significant" [p less than 0.05].

CONCLUSION: One muscle horizontal rectus surgery should be considered as an option when planning surgical treatment for medium angle strabismus. Statistical process control may be a valuable method to analyze variability in many ophthalmologic procedures, with the goal of minimizing variability to achieve better outcome.

Source: MEDLINE

11. [Clinical features of V patterns strabismus and its long-term effect of surgical treatment].

Author(s): Yu XP, Mai GH, Yu HY, Chen JC, Deng DM, Lin XM, Wu HP

Citation: Chung-Hua Yen Ko Tsa Chih [Chinese Journal of Ophthalmology], July 2005, vol./is. 41/7(585-9), 0412-4081;0412-4081
Abstract: OBJECTIVE: To investigate the features and treatment of V patterns strabismus. METHODS: Pre- and post-operative deviation and oblique muscle action as well as binocular visual function were evaluated in sixty-three V pattern patients. The difference between upgaze and downgaze of deviation were recorded before and after operation. RESULTS: Sixty-two patients (98.4%) with binocular or unilateral inferior oblique overaction + 2 to + 3 were treated with inferior oblique weakening procedure and horizontal rectus recession-resection procedure. 1 patient with binocular inferior oblique overaction + 1 treated with horizontal recti recession-resection procedure. The difference between upgaze and downgaze is 25.6 prism diopters (PD) preoperatively and 4.5 PD postoperatively. The primary-position exotropia preoperatively of 48 V pattern exotropia is 37.2 PD, after surgery, the average deviation is 3.4 PD of esotropia [38 cases (79.2%) with deviation within +/- 10 PD]. 15 cases of V pattern esotropia had deviation 50.6 PD preoperatively, after surgery, the average deviation is 2.4 PD of esotropia [11 cases (73.3%) with deviation within 10 PD]. 21 patients (33.3%) obtained stereo visual function after surgery. CONCLUSION: V patterns always had inferior oblique over action and could be treated with the inferior oblique weakening procedure. The primary-position deviation should be treated by traditional horizontal rectus recession-resection procedure. The stereoscopic function had a good prognosis with surgery.

Source: MEDLINE

12. Two horizontal rectus eye muscle surgery combined with botulinum toxin for the treatment of very large angle esotropia. A pilot study

Author(s): Khan A.O.

Citation: Binocular Vision and Strabismus Quarterly, March 2005, vol./is. 20/1(15-20), 1088-6281

Publication Date: March 2005

Abstract: Purpose: To evaluate the effectiveness of a proposed new protocol for the primary treatment for very large angle esotropia: two muscle horizontal rectus muscle surgery with simultaneous botulinum toxin A injection in a small pilot study. Methods: Eight patients who had esotropia at near (ET') greater than 60 prism diopters (in actuality 70 to 100 prism diopters ET') underwent 2 muscle horizontal rectus surgery with simultaneous botulinum toxin A injection of the medial rectus intraoperatively. This was the only surgical procedure for all patients included in this report. Seven patients underwent bilateral medial rectus recession, and bilateral injection, and one patient underwent a unilateral medial rectus recession / lateral rectus resection procedure with unilateral medial rectus injection. Results: Postoperatively, 6 of the 8 patients demonstrated residual esotropia at near of less than 10 prism diopters and were considered "successful" by the conventional criteria of binocular alignment within 8 prism diopters of orthotropia. Two undercorrections occurred in patients with 100 and 85 prism diopters of preop ET' respectively. But 3 other patients with such large deviations had satisfactory results. All patients and families were satisfied with postoperative binocular alignment, so no further surgery was undertaken. The patient who underwent unilateral surgery had the least surgical effect and was the largest undercorrection, probably because only one medial rectus received a Botox injection. Considering only the bilateral cases, results were "successful" in 6 of 7 cases. Most patients suffered an extended period of Botox induced exotropia in the postop' period before recovery from the paresis. One patient had a transient, successfully treated, postoperative strabismic amblyopia while exotropic. Conclusions: Bilateral medial rectus recession with simultaneous botulinum injection is a safe and effective primary surgical procedure for very large angle esotropia. A more extensive study is indicated to confirm these findings.

Source: EMBASE

Author(s): Jang GJ, Park MR, Park SC

Citation: Korean Journal of Ophthalmology, December 2004, vol./is. 18/2(161-7), 1011-8942; 1011-8942

Publication Date: December 2004

Abstract: Unilateral or bilateral lateral rectus resection is commonly performed for the correction of residual esotropia, but few results have been reported. Twenty-eight patients with residual esotropia underwent bilateral lateral rectus (BLR) resection. Six months after operation (n = 25), there were 17 (68%) successful cases, 7 (28%) cases of undercorrection, and 1 (4%) case of overcorrection. The success rate at the 24th postoperative month (n = 11) was 72.7%. The success rate for cases of infantile esotropia (n = 18) was higher than that for acquired esotropia (n = 7) at the 6th postoperative month (p = 0.156). The results were not significantly affected by the presence of other deviations (p = 0.387), the performance of other surgery (p = 0.393), the presence of amblyopia (p = 1.00), or the amount of residual esotropia (p = 0.604). Performance of BLR resection in patients with residual esotropia after bilateral medial rectus (BMR) recession is considered appropriate due to its high success rate and provision of a stable alignment during two-year follow up.

Source: MEDLINE


Author(s): Keskinbora KH, Pulur NK

Citation: Journal of Pediatric Ophthalmology & Strabismus, November 2004, vol./is. 41/6(351-5), 0191-3913; 0191-3913

Publication Date: November 2004

Abstract: PURPOSE: This study assessed the long-term results of orthophoria obtained with bilateral medial rectus recession for congenital esotropia. PATIENTS AND METHODS: The medical records of 214 patients who underwent bilateral medial rectus muscle recession between January 1995 and January 2000 were reviewed. Patients were excluded if neurological abnormalities or developmental delays were documented and if structural eye abnormalities were present. Mean follow up was 54.2 months (range, 36 to 96 months). Rates of reoperation for residual esotropia, consecutive exotropia, oblique muscle overaction, or dissociated vertical deviation were determined. RESULTS: Forty-five (21%) patients underwent surgery for residual esotropia, 32 (15%) underwent surgery for consecutive exotropia or dissociated horizontal deviation, and 39 (18%) underwent surgery for oblique muscle overaction and dissociated vertical deviation. CONCLUSION: To maintain long-term alignment of congenital esotropia, additional surgical procedures may be required. The success rate of bilateral medial rectus recession for ocular realignment with one operation is approximately 50%. This method is quicker, simpler, and less traumatic than three or four muscle operations. In addition, the lateral rectus and oblique muscle are left unoperated for future surgeries if necessary.

Source: MEDLINE

15. Some clinical characteristics of V-pattern exotropia and surgical outcome after bilateral recession of the inferior oblique muscle: a retrospective study of 22 consecutive patients and a comparison with V-pattern esotropia.

Author(s): Caldeira JA

Citation: Binocular Vision & Strabismus Quarterly, 2004, vol./is. 19/3(139-50), 1088-6281; 1088-6281

Publication Date: 2004
Abstract: BACKGROUND AND PURPOSE: A V-pattern exotropia (XT) with bilateral overaction of the inferior obliques (IO) and/or underaction of the superior obliques (SO) is a common finding. The clinical characteristics of this condition in a large series are not available in the scientific literature. Also, data is lacking about the surgical outcome of graded bilateral IO recession. Lastly, a comparison of the pre- and postoperative findings of a V-pattern exotropia population with those of a V-pattern esotropia population is also lacking in the literature. SUBJECTS AND METHODS: Twenty-two consecutive patients without complicating factors were fully evaluated and submitted to bilateral graded recessions of the IO; 19 were also operated for a horizontal binocular alignment imbalance. RESULTS: Preoperative findings: The distribution of V patterns showed 77.2% in the range of 15 to 25 prism diopters (PD) and 22.8% in the range 26 to 35 PD. An overaction of the IO was present bilaterally in 86.4% of the patients and unilaterally in 4.5%. Bilateral underaction of the SO was observed in 4.5% and unilaterally in 13.6%. Bilateral overaction of the SO was seen in 18.2% and unilaterally in 31.8%. Elevation in adduction was observed bilaterally in 13.6% and unilaterally in 31.8%. A vertical deviation was seen in 50.0% and a marked tendency of it to vanish or diminish in the up- and down positions, as well as at near, was observed. After surgery, 72.7% had less than 15 PD of V pattern or less than 10 PD of A pattern; 36.4% had the V pattern fully corrected. Surgery eliminated a vertical imbalance in 72.7% of the patients, reduced in 9.1%, left unchanged in 9.1% and increased in 9.1%. Of the 11 patients devoid of vertical deviation, 72.7% remained so and in 27.3% a vertical deviation was created. Binocularity: There was an improvement of the fusional status with surgery, (ascertained with the Worth Four Dot Test and the major amblyoscope measurement). CONCLUSION: All cases were in the range of 15-35 PD preop’. Overaction of the IO was a prominent finding. Underaction of the SO was less prevalent as compared with a V-ET population. Overaction of the SO was observed bilaterally in 18.2% and unilaterally in 31.8%, a finding never detected in a V-ET population. A vertical imbalance was observed in one-half of the cases. A good outcome (collapse of the V pattern) was obtained with bilateral graded recession of the IO; This procedure is relatively safe concerning the vertical alignment.

Source: MEDLINE

16. Three horizontal muscle squint surgery for large angle infantile esotropia.

Author(s): Forrest MP, Finnigan S, Finnigan S, Gole GA

Citation: Clinical & Experimental Ophthalmology, December 2003, vol./is. 31/6(509-16), 1442-6404;1442-6404

Publication Date: December 2003

Abstract: BACKGROUND: To report the long-term outcome of a series of 49 patients who underwent three horizontal muscle squint surgery for large angle infantile esotropia. METHODS: The patient records were retrospectively reviewed of 49 (24 girls [49%], 25 boys) consecutive patients with infantile esotropia of angle > or =60 Delta, who had undergone three horizontal muscle surgery performed by one surgeon (author GG). Surgery consisted of bilateral medial rectus recession combined with graded unilateral lateral rectus resection. Surgeries were carried out over a 6-year period with a mean follow-up period of 32.9 months (3.7-71.8 months). RESULTS: Using Kaplan-Meier life-table analysis, cumulative surgical success (orthotropia +/-10 Delta) was 93.9% at 1 week, 91.8% at 2 and 6 months, 87.7% at 12 and 18 months, 79.9% at 2 years, 77.1% at 3, 4 and 5 years, and 70.6% at 6 years. The mean preoperative deviation was 68.7 Delta. The mean age at surgery was 12.9 months. The failure rate was independent of preoperative deviation. Prevalence of residual esotropia (>10 Delta) varied from 2.0% at 1 week to 17.0% at 6 years. Similarly the prevalence of consecutive exotropia (>10 Delta) varied from 4.0% at 1 week to 12.4% at 6 years. CONCLUSION: Operating in a graded fashion on three horizontal muscles in children with large angle infantile esotropia has a high success rate, even over long-term follow up. Based on the study’s results, amounts of surgery for a given angle of strabismus are proposed.

Source: MEDLINE
17. Unilateral versus bilateral medial rectus recession.

Author(s): Stack RR, Burley CD, Bedggood A, Elder MJ

Citation: Journal of Aapos: American Association for Pediatric Ophthalmology & Strabismus, August 2003, vol./is. 7/4(263-7), 1091-8531;1091-8531

Publication Date: August 2003

Abstract: BACKGROUND: Unilateral medial rectus recession is suitable for some cases of small-angle deviation in esotropia. This approach limits surgery to one eye, leaves other muscles untouched, and should be quicker than bilateral muscle surgery. This study compared the results of a range of medial rectus recessions, both unilateral and bilateral, performed by one surgeon. METHODS: Data were collected on all pediatric patients who had undergone medial rectus recession, unilateral and bilateral, performed by one surgeon between August 1, 1995, and March 31, 2002. Postoperative deviations were calculated from the short- (2 to 8 weeks) and long-term (6 to 48 months) follow-up visits. RESULTS: Medial rectus recessions were performed on 107 patients, 56 unilateral and 51 bilateral. After exclusions were made, 45 (80%) of the unilateral procedures and 41 (80%) of the bilateral cases were studied. At long-term follow-up, the mean prism diopter (PD) change in deviation per millimeter recessed (at distance) for unilateral recessions of 5 mm, 6 mm, 7 mm, and 8 mm were 2.3, 2.2, 2.3, and 2.5, respectively. For equivalent bilateral recessions the mean changes in deviation were 4.2, 4.0, 4.3, and 5.0 PD/mm. CONCLUSION: Unilateral medial rectus recession is a predictable method for surgical correction of small-angle pediatric esotropia. The change in deviation per millimeter of recession after unilateral recession is significantly less than that obtained from equivalent amounts of bilateral recession (P < .01).

Source: MEDLINE

18. Poor results after recession of both medial rectus muscles in unilateral small-angle Duane’s syndrome, type I.

Author(s): Greenberg MF, Pollard ZF

Citation: Journal of Aapos: American Association for Pediatric Ophthalmology & Strabismus, April 2003, vol./is. 7/2(142-5), 1091-8531;1091-8531

Publication Date: April 2003

Abstract: PURPOSE: To eliminate an abnormal face turn in unilateral Duane's syndrome, type I, the medial rectus muscle of the Duane's eye is commonly recessed. Additional recession of the normal contralateral medial rectus muscle has been advocated in selected cases, although little has been published regarding this technique. We present poor results in a small consecutive series. METHODS: Four consecutive cases of unilateral Duane's syndrome, type I, with small-angle primary position esotropia are retrospectively reviewed with attention to postoperative face turn. In all cases, the medial rectus muscle of the "normal" eye was recessed as was the medial rectus muscle of the Duane's eye. RESULTS: Two subjects showed little to no improvement in face turn; one subject developed an increased turn; and the last subject developed a consecutive exotropia. CONCLUSIONS: In small-angle Duane's syndrome, type I, recession of the normal medial rectus may decrease the positive effects of recessing the Duane's medial rectus muscle with respect to face turn as well as increase the risk of consecutive exotropia. An alternate theory of normal-eye Duane's surgery is proposed.

Source: MEDLINE


Author(s): Breckenridge AL, Dickman DM, Nelson LB, Attia M, Ceyhan D

Citation: Journal of Pediatric Ophthalmology & Strabismus, March 2003, vol./is. 40/2(81-4),
Abstract: PURPOSE: To report long-term results with the hang-back technique for medial rectus muscle recession. METHODS: Medical records of 341 consecutive patients who underwent unilateral or bilateral hang-back medial rectus recession were reviewed. The amount of recession was based on the size of the esotropia as measured at near fixation. Patients were divided into two groups according to age at onset of esotropia: patients <1 year comprised group 1 and patients ≥ 1 year comprised group 2. Surgical outcomes were analyzed for all patients included in the study. RESULTS: A total of 189 patients met the inclusion criteria. In group 1 patients (n=32), average deviation improved from 48.3 prism diopters (PD) preoperatively to 1.1 PD postoperatively. Eleven patients required a second procedure: 9 with recurrent esotropia and 2 with consecutive exotropia. Average time to second procedure was 27.4 months. In group 2 patients (n=157), average deviation improved from 29.6 PD preoperatively to 1.1 PD postoperatively. Twenty-one patients required a second procedure: 20 with recurrent esotropia and 1 with consecutive exotropia. Average time to second procedure was 22.7 months. CONCLUSION: The hang-back technique represents a safe, effective alternative to conventional medial rectus recession.

Source: MEDLINE

20. V-pattern esotropia: a review; and a study of the outcome after bilateral recession of the inferior oblique muscle: a retrospective study of 78 consecutive patients.

Author(s): Caldeira JA

Citation: Binocular Vision & Strabismus Quarterly, 2003, vol./is. 18/1(35-48; discussion 49-50), 1088-6281;1088-6281

Publication Date: 2003

Abstract: BACKGROUND: A V-pattern esotropia with bilateral overaction of the inferior oblique (IO) is a common finding. The clinical characteristics of this condition in a large series are not available. Also, data is lacking about the surgical outcome of graded bilateral inferior oblique recessions. Lastly, it is not known whether patients with a V pattern below 15 prism diopters (pd) should have IO weakening when horizontal eye muscle surgery is to be performed. SUBJECTS AND METHODS: Seventy-eight consecutive patients without complicating factors were fully evaluated and submitted to bilateral graded recessions of the IO. In Group 1, 59 patients had a V pattern of 15 pd or more; 55 were also operated for a horizontal imbalance. In Group 2, 19 patients in whom a horizontal surgery was required and who also had a V pattern of less than 15 pd, also had a bilateral graded recession of the IO performed. RESULTS: Preoperative findings: In Group 1, the distribution of V patterns showed 88.1% in the range 15 to 35 pd. A bilateral overaction of the IO, a bilateral underaction of the superior oblique (SO), and elevation in adduction OU were present in 62.7% of the patients. A vertical imbalance was observed in 20.3%. In Group 2, a bilateral overaction of the IO, a bilateral underaction of the SO, and elevation in adduction OU were noticed in 42.1% of the patients. A vertical deviation was seen in 26.3%. After surgery, in Group 1, 83% had less than 15 pd of V pattern or less than 10 pd of A pattern. Surgery reduced a presurgical vertical imbalance, but created a vertical deviation in some cases devoid of hypertropia before surgery. After surgery in Group 2, a full correction or undercorrection was obtained in 63.1% of the patients and an overcorrection to an A pattern in 21.0% Surgery was also prone to induce a vertical deviation. Binocularity: There was an improvement of the fusional status with surgery, (ascertained with the Worth Four Dot Test and major amblyoscope measurement), in patients of both Groups 1 and 2. CONCLUSION: In V-pattern esotropia cases of 15 pd or more the vast majority were in the range 15-35 pd. Overaction of both IO, underaction of both SO, and elevation in adduction OU constituted a triad of co-occurrent signs present in a significant number of patients. A vertical imbalance was detected in 1/5 of the cases. A good outcome (collapse of the V pattern) was obtained with bilateral graded recession of the IO, but this surgery can create a vertical imbalance. In cases of V pattern less than 15 pd, and requiring horizontal surgery, weakening of both IO’s can be advised.

Author(s): Uretmen O, Pamukcu K, Kose S, Ucak E

Citation: Strabismus, September 2002, vol./is. 10/3(215-24), 0927-3972;0927-3972

Publication Date: September 2002

Abstract: PURPOSE: Our aim was to evaluate the binocular visual function in congenital esotropia after bimedial rectus recession with loop suture and to address the factors that could take part in the attainment of binocular function. SUBJECTS AND METHODS: Forty children with congenital esotropia who were operated on between 12 and 48 months of age were included in the study group. Postoperative follow-up ranged from 2 to 10 years. In order to determine the factors affecting the sensory results in congenital esotropia, we classified our patients into two groups according to their fusion status. We compared the preoperative and postoperative characteristics of patients in these two groups. RESULTS: Twenty-one of 40 patients (52.5%) fused the Worth four-dot at near (Group 1), 19 patients (47.5%) did not (Group 2) at the final examination. No patient showed evidence of stereopsis. We found significant differences between these two groups in respect to the final angle of vertical deviation, the age at surgery, the presence of postoperative inferior oblique overaction, dissociated vertical deviation and abnormal head position. Correlation analysis revealed that early alignment of the eyes and the absence of postoperative vertical deviation were associated with increased incidence of achieving some degree of binocular vision. CONCLUSION: In congenital esotropia, not all infants may have the potential for normal binocular function owing to yet unknown constitutional factors. We determined that achieving some degree of binocular function may be related to early alignment of the eyes. Additionally, close follow-up and precise treatment of the accompanying vertical deviation, especially inferior oblique overaction and dissociated vertical deviation, in a timely manner may enhance the attainment of binocular sensory function.

Source: MEDLINE


Author(s): Tran HM, Mims JL 3rd, Wood RC

Citation: Journal of Aapos: American Association for Pediatric Ophthalmology & Strabismus, April 2002, vol./is. 6/2(112-9), 1091-8531;1091-8531

Publication Date: April 2002

Abstract: PURPOSE: In 1982, Mims et al generated the first rigorous dose-response curve for bilateral medial rectus recessions for infantile esotropia (ET). Curve fitting calculations were hampered by substantial variability of surgical effect for the larger angles of ET, and an exponential curve was chosen for angles below 30 ET and a straight line for angles above 30 ET. In a continuing effort to improve the surgical success rate, a new series of results of 113 bilateral medial rectus recessions performed from 1990 to 1998 for infantile ET has been analyzed to produce a new dose-response curve and to study other potentially useful variables. METHODS: The amount of medial rectus recession performed in this series was the original dose-response curve from 1982, with conjunctival recessions performed for angles above 35 ET. RESULTS: The best curve that could be fitted to the effect versus millimeters of bilateral medial rectus recession was a single exponential curve. Other parameters explored with multivariate analysis, including head circumference, developmental delay, and intraoperative angles under anesthesia were not helpful in predicting effect of surgery at 6 weeks postoperative. A total of 87% were aligned at 6 months after surgery. Surgical failure at 6 months was more prevalent with larger preoperative angles (P =.0007) and with developmental delay (age when child first sat alone; P =.0078). CONCLUSION: Between 1982 and 1990, decreased variability of results of bilateral medial rectus recessions for larger angles of infantile ET enabled the generation
of a single exponential dose-response curve for the entire range of angles of infantile ET.

Source: MEDLINE

23. Bilateral lateral rectus resection for residual esotropia

Author(s): Gunasekera L.S., Simon J.W., Zobal-Ratner J., Lininger L.L.

Citation: Journal of AAPOS, 2002, vol./is. 6/1(21-25), 1091-8531

Publication Date: 2002

Abstract: Purpose: Residual or recurrent esotropia is a common problem following bilateral medial rectus recessions for esotropia, and various surgical techniques have been advocated. We have favored bilateral lateral rectus resections. Methods: We reviewed our results in 25 patients, aged 7 to 89 months (mean 27 months), with a follow-up of 7 to 95 months (mean 39 months) following the second surgery. Survival analysis was used, with success (survival) defined as alignment within 10 PD at last follow-up. Results: Median survival was 84 months with an estimated mean survival of 55 months. There are 15 of 25 patients (60%) currently successful. There were 8 undercorrections and 2 overcorrections. Three patients, included among those not successful, required a third procedure. Survival was similar to previous reports of primary esotropia and consecutive exotropia. Conclusions: Our results suggest that bilateral lateral rectus resection is a reasonable surgical option in the treatment of residual esotropia following recessions of both medial recti. Copyright copyright 2002 by the American Association for Pediatric Ophthalmology and Strabismus.

Source: EMBASE


Author(s): Felius J, Stager DR Jr, Beauchamp GR, Stager DR

Citation: Journal of Aapos: American Association for Pediatric Ophthalmology & Strabismus, December 2001, vol./is. 5/6(381-7), 1091-8531;1091-8531

Publication Date: December 2001

Abstract: PURPOSE: Retrospective evaluation of changes in ocular motility after surgical re-recession of the medial rectus (MR) muscles as treatment of recurrent esotropia (ET). METHODS: We describe 115 patients (age, 11 months-77 years; median, 11.1 years; 83 children and 32 adults) with an average amount of non-accommodative ET before surgery of 18.7 PD (SD = 8.8 PD). Preoperative alignment, amount of re-recession, distance from insertion to the limbus, and postoperative alignment and versions were collected. RESULTS: In most cases, MR muscles were re-recessed to a fixed distance of 12 mm from the limbus, with unilateral re-recessions in cases with relatively small ET (typically < 20 PD) and bilateral re-recessions in cases with larger amounts of ET (typically > 20 PD). No clear relation was found between the amount of re-recession and the change in alignment in prism diopters. The success rate (esotropia [ET] < or = 10 PD or exotropia [XT] < or = 8 PD) 4 weeks to 8 months after surgery was 85%, with 4 patients still showing ET and 13 patients showing XT. Incidence of XT was higher for bilateral than for unilateral re-recessions. Significant underaction of the MR muscles was noted in 7% of the patients. None of the undercorrected patients and only 1 of the overcorrected patients were adults. Among adults, incidence of MR underaction was 4%. Long-term follow-up (8-120 months; median, 25 months) data from 59 patients indicated that good stability in alignment can be expected. CONCLUSION: The results support the notion that MR re-recession to 12 mm from the limbus successfully corrects recurrent ET up to 35 PD and that it is particularly effective in adults.

Source: MEDLINE

25. Two-muscle surgery for congenital esotropia: rate of reoperation in patients
with small versus large angles of deviation.

**Author(s):** Vroman DT, Hutchinson AK, Saunders RA, Wilson ME

**Citation:** Journal of Aapos: American Association for Pediatric Ophthalmology & Strabismus, October 2000, vol./is. 4/5(267-70), 1091-8531;1091-8531

**Publication Date:** October 2000

**Abstract:** INTRODUCTION: Standard surgical treatment of congenital esotropia (CET) in patients with preoperative angles of deviation measuring < smaller recession muscle rectus medial bilateral compare to was study this purpose The alone. muscles recessions large perform prefer others while muscles, horizontal 4 3 on operate surgeons Some esotropia. angles management over controversy is there However, defined. well PD>50 PD) CET. METHODS: Medical records of 102 patients who underwent bilateral medial rectus muscle recessions between January 1991 and December 1997 were reviewed. Patients were excluded if neurologic abnormalities or developmental delays were documented before the operation, if major structural abnormalities of the eye were present, or if less than 1-month follow-up after surgery was documented. The remaining 56 patients were assigned to either the larger angle (>50 PD) or smaller angle (< or =50 PD) group, based on the magnitude of their preoperative esotropia. Rates of reoperation for residual CET, for consecutive exotropia or dissociated horizontal deviation, or for dissociated vertical deviation with or without oblique muscle dysfunction were determined for each group. RESULTS: Forty of 56 patients (71%) were assigned to the smaller angle group and 16 of 56 patients (29%) to the larger angle group. In the larger angle group, 4 patients (25%) underwent surgery for residual esotropia. In the smaller angle group, 8 patients (19%) underwent surgery for residual esotropia, 8 (19%) underwent surgery for consecutive exotropia or dissociated horizontal deviation, and 8 (19%) underwent surgery for dissociated vertical deviation or oblique muscle dysfunction. CONCLUSION: The success rate for ocular realignment in patients with CET by using bilateral medial rectus muscle recession did not appear to diminish when applied to deviations greater than 50 PD as compared with smaller angle deviations. Surgery on 3 or 4 horizontal rectus muscles may be unnecessary in the treatment of patients with very large angles of CET.

**Source:** MEDLINE


**Author(s):** Shirabe H, Mori Y, Dogru M, Yamamoto M

**Citation:** British Journal of Ophthalmology, May 2000, vol./is. 84/5(536-8), 0007-1161;0007-1161

**Publication Date:** May 2000

**Abstract:** AIM: To investigate the postoperative eye alignment and binocular visual function after early surgery for infantile esotropia. METHODS: Both the postoperative eye position and stereopsis were reviewed using the Titmus stereo test in nine patients who received unioocular medial rectus recession and lateral rectus resection under general anaesthesia before 8 months of age and were followed up for a minimum of 4 years. RESULTS: Orthophoria was attained in three cases, whereas esotropia was found in four patients. Dissociated vertical deviation was noted in two other cases at the final examination. Static stereoaucuity was achieved in five cases. These results also showed that most infants in whom stereopsis was attained had satisfactory eye alignment during the follow up period and at the final examination. Infants who did not achieve stereopsis still had deviation throughout the follow up period. CONCLUSIONS: It was concluded that early surgery in infantile esotropia is beneficial to achieve binocular visual function, but it is necessary to confirm a stable angle of deviation with accurate preoperative evaluation, and to maintain good postoperative eye alignment throughout the follow up period.

**Source:** MEDLINE

**Full Text:**
27. **Esotropia surgery in children: Long term outcome regarding changes in binocular alignment; A study of 956 cases**

**Author(s):** Maruo T., Kubota N., Sakaue T., Usui C.

**Citation:** Binocular Vision and Strabismus Quarterly, 2000, vol./is. 15/3(213-220), 1088-6281

**Publication Date:** 2000

**Abstract:**
Purpose: To study the correlation between the outcome at 1 month (when the postoperative eye position is at the earliest stabilized), and 4 years after surgery. Method: Retrospective review of medical records. Cases: The authors reviewed 956 patients under 15 years of age who underwent unilateral or bilateral recession of the medial rectus muscle during a 22 year period representing the entire practice period of the senior author since the department was founded in 1977. The series comprised 521 cases of congenital/infantile esotropia (manifest before 6 months of age with no accommodative component) and 435 cases of acquired esotropia (manifest after 6 months of age with no accommodative component or with an accommodative component but excluding those with a high AC/A ratio). A consistent surgical plan was employed throughout this period for each condition. Results: Both types of esotropia showed a slight tendency to become exotropic during the 4 years after surgery. There was no difference in general success with regard to the reconstructive restoration of normal appearance or improvement of appearance between 1 month and 4 years after surgery. Patients with normal retinal correspondence or simultaneous perception achieved better binocular alignments at the 4 year followup than those who did not have such sensory binocular cooperation. Conclusions: In infantile and acquired esotropia, it is essential that orthotropia or minimal esotropia be present at 1 month of surgery in order to obtain a binocular alignment within +/-4Delta of orthotropia 4 years after surgery. It is strongly recommended to avoid overcorrection (consecutive exotropia) at 1 month after surgery for both congenital/infantile and acquired esotropia.

**Source:** EMBASE

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**Unilateral medial rectus recession for moderate angle esotropia**
*Journal of American Association for Pediatric Ophthalmology and Strabismus, 2007, Volume 11, Issue 1, Pages 92-92 – no abstract available*

**One-muscle surgery in small-angle residual esotropia**
*Journal of American Association for Pediatric Ophthalmology and Strabismus, Volume 11, Issue 3, Pages 269-272 – no abstract available*

Purpose: To report the outcome of unilateral lateral rectus resection for treatment of small-angle residual esotropia following bilateral medial rectus muscle recession. Methods: A retrospective medical record review was performed for all patients who had undergone bilateral medial rectus muscle recession for congenital esotropia prior to 6 years of age that required further surgical treatment of residual esotropia. We compared two different dosing strategies for resection of a single lateral rectus muscle in the nondominant eye. In group 1, the amount of resection was calculated by doubling the angle of strabismus and applying the recommended surgical dosage to one lateral rectus muscle. In group 2, the amount of unilateral resection was the same as the bilateral dosage for the measured angle, but
augmented by 1.5 mm. Postoperative evaluation was performed 1 and 6 months after surgery. Results: Data from 35 patients were analyzed, 17 in group 1 and 18 in group 2. No significant intergroup difference was noted in terms of age at first surgery (p = 0.266), initial surgical dosage (p = 0.693), residual angle of esotropia (p = 0.881), or age at reoperation (p = 0.679). Postoperative alignment was better in group 1 patients at 6 months than at 1 month (residual deviation 3.5° versus 6.7°, p = 0.022). Conclusions: Resection of a single lateral rectus muscle with the surgical dosage calculated by doubling the angle of strabismus and applying the recommended surgical dosage to one lateral rectus muscle is a treatment option for patients with small-angle residual esotropia following bilateral medial rectus muscle recession. copyright 2007 American Association for Pediatric Ophthalmology and Strabismus.

The Effect of Lateral Rectus Muscle Advancement in Consecutive Esotropia After Bilateral Rectus Muscle Recession (Korean)


Unilateral lateral rectus muscle advancement was an effective procedure for patients with consecutive esotropia under 25PD who did not show any limitation of motion after bilateral lateral rectus recession.

Second surgery for infantile esotropia

Journal of American Association for Pediatric Ophthalmology and Strabismus, Volume 13, Issue 1, Pages e14-e14 – no abstract available

Bilateral combined resection and recession of the medial rectus muscle for convergence excess esotropia