

Large bilateral lateral rectus recession in large angle divergence excess exotropia

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PURPOSE. *Classic teaching suggests that surgery for intermittent exotropia should be based on distance/near differences. True divergence excess exotropia should be treated with symmetric lateral rectus recession. The aim of this study was to investigate the effect of large bilateral lateral rectus (LR) recession in large-angle intermittent exotropia.*

METHODS. *Thirty-three consecutive patients with large-angle divergence excess exotropia ranging from 50 to 65 (mean 56.7 ± 6.3) prism diopters were treated with 8.0 to 9.5 mm (mean 8.8 ± 0.7 mm) recession of both LR muscles.*

RESULTS. *Successful alignment was achieved in 25 cases (76%) while residual exotropia was seen in eight patients (24%) within the limit of 15 prism diopters. Mean follow-up time was 28.5 ± 8.4 (range 13 to 38) months. Abduction deficit due to this procedure was not seen in any case.*

CONCLUSIONS. *We conclude that large bilateral LR recession is an appropriate surgical method for large-angle divergence excess exotropia. (Eur J Ophthalmol 2001; 11: 6-8)*

KEY WORDS. *Intermittent exotropia, Divergence excess exotropia, Large-angle exotropia, Lateral rectus muscle, Large bilateral lateral rectus recession*

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INTRODUCTION

Exotropia is a manifest outward deviation of the visual axes of one or both eyes and may be either constantly present or intermittent (1). Exodeviations are classified according to fusional control as exophoria, intermittent exotropia [X(T)] and constant exotropia (2). X(T) is the condition in which the patient's deviation alternates between a latent and manifest state (3). X(T) is by far the most frequent cause of exodeviation and is often a progressive disease; an exophoria decompensates to intermittent exotropia and finally constant exotropia (1). Today, Duane's classification is the main reference, according to which exodeviations are classified as: divergence excess type, basic type, convergence insufficiency type, simulated divergence excess type (2, 3). Divergence excess exotropia is a fairly common anomaly of binocular vision, characterized by constant or intermittent exotropia at distance, absence of significant amblyopia, and normal stereopsis at near (4).

Non-surgical methods are the first therapeutic choice in intermittent exotropia (1-3). Non-surgical treatment of X(T) comprises observation, correction of refractive error, prisms, overcorrecting minus lenses, occlusion therapy, and orthoptics (1-3, 5). If the response is unsatisfactory then surgery should be preferred (1-3). Surgery is indicated in cases where the deviation is manifest, the manifest phase of intermittent cases is increasing, the deviation is larger than 15 prism diopters (PD) suppression is developing and stereopsis is lost (2, 3, 6). Many surgeons advocate recession of both LR muscles in true divergence excess exotropia (7-10). In large-angle exotropia (greater than 50 prism diopters) it may be necessary to retract both LR muscles maximally and resect one or both medial rectus muscles in one session (2). Commonly recommended maximum LR muscle recession for exotropia ranges from 7 to 11 mm (2, 6, 9).

In this study, we investigated the efficiency of 8.0 to 9.5 mm of bilateral LR recession in patients with large-angle divergence excess exotropia.

MATERIALS AND METHODS

This study included patients with large-angle divergence excess intermittent exotropia who underwent large bilateral LR recession between September 1995 and February 1999. Patients with deep amblyopia, paralytic strabismus or previous strabismus surgery were excluded. All patients underwent a comprehensive ophthalmic examination pre- and post-operatively. This included best corrected visual acuity, cycloplegic refraction, cover-uncover test and prism-cover test for near and distance, binocular function tests (Worth 4-dot test and the Titmus stereoacuity test) and funduscopy. In the alternate prism-cover test, the patients were fixated on a target 1/3 m away for near and 6 m for distance. When distance deviation was at least 15 PD more than near deviation, it was accepted as divergence excess exotropia. To eliminate pseudodivergence excess exotropia, we added a (+)3.0 diopters lens and/or repeated the near deviation examination after three-hour monocular occlusion (11).

We performed bilateral 8.0 to 9.5 mm LR recessions simultaneously. In each patient, the decision to do the bilateral recession was made according to the surgical table reported by Stoller et al (7). These amounts were adjusted to within 1 mm at the surgeon's discretion. We avoided bilateral recessions larger than 9.5 mm because of the fear of creating abduction deficits. The operations were done under local anesthesia for adults and general anesthesia for children. The patients were prescribed 1% prednisolone acetate eyedrops three times a day for two weeks. Follow-up visits were planned at 7, 30, 90 days and then every three months.

RESULTS

Thirty-three consecutive patients (15 male and 18 female), aged 4 to 51 years (mean 9.6 ± 7.5) were studied. Mean visual acuity was 20/20 in both eyes. All patients had variable levels of normal binocular functions. Preoperatively, during distant fixation, the average deviation was 56.7 ± 6.3 PD (range 50 to 65) and the average recession of bilateral LR muscles was 8.8 ± 0.5 mm (range 8.0 to 9.5). Mean follow-up was 28.5 ± 8.4 months (range 13 to 38). Optimal alignment was achieved within the limit of 10 prism diopters at near and distance fixation in 25 cases (76%). Residual deviation within the limit of 15 PD was measured at distant fixation in 8 cases (24%). No case

was complicated with overcorrection or restriction in abduction during the early or late postoperative period and no additional muscle surgery was required.

DISCUSSION

Non-surgical methods are the first therapeutic choice in X(T). If the response is unsatisfactory then surgery should be used (1-3). The general opinion about the timing of surgery is after the age of four years, but this is still controversial (2, 12, 13). This allows more detailed examination and better surgical predictability (2, 3, 6, 14). On the other hand, it has been suggested that early surgery prevents the development of permanent sensorial defects (2, 3, 5, 14). Jampolsky stated that if surgery was done between the ages of 6 and 16 years, there was less consecutive exotropia and less need for reoperation (15); this study found rates of reoperation were 32% in patients operated under the age of 3 years, 21% between the ages of 3 and 6, and 7% over the age of 6 years (15). In our study, the mean age was 9.6 years and no reoperation was required during follow-up.

The preferred surgical method in true divergence excess exotropia is bilateral symmetrical recession of the LR muscles (7-10, 14). In patients with large-angle divergence excess exotropia whose deviation amounts to more than 50 PD, the preferred surgical method is unilateral or bilateral medial rectus resection in addition to recession of the bilateral (2, 16-18). However, some studies suggest symmetrical bilateral large LR recession for large-angle exotropia (1, 9, 19, 20). Schwartz and Calhoun reported a series of only 14 patients who underwent LR muscle recession of 8 to 11 mm for exotropia of 35 PD to 65 PD (20); 79% of their cases had postoperative deviation within 15 PD of orthophoria at a mean follow-up of 11 months. In another study, it was stated that the success rate was 80% and there was no restriction in abduction after 8 to 9.5 mm symmetrical LR recession (9). Our success rate was within 10 PD in 76% of cases during the follow-up period. There was no case with restriction in abduction.

A number of studies suggest that for children the surgical plan should aim for early postoperative overcorrection in order to provide long-term orthophoria (21, 22). There are a few opponents to this, however (23). The overcorrection is stated to be within the limits of 10 to 15 PD (2, 3, 6, 12). If overcorrection is less than 10 PD the

exotropia may recur (24). This early overcorrection may resolve in six weeks (25). In contrast, in adults, because of probable persistent postoperative diplopia, an undercorrection within the limits of 15 PD should be preferred instead of overcorrection (23).

A good fusional potential is essential for postoperative orthophoria. In our study, we aimed at orthophoria by two-muscle surgery instead of over or undercorrection because of the presence of cases with good fusional potential.

The outcomes of surgical treatment vary depending on the length of follow-up and accepted success criteria. Our success criterion was to be within the limits of 10 PD. In some studies success is defined as either exophoria

or small-angle residual intermittent exotropia (1, 2). The success rate is reported to be 60 to 90% after initial surgery (1, 2). During follow-up, 76% of our cases remained within the limits of 10 PD and the remaining 24% were within the range of 10 to 20 PD. As a result, we suggest that large bilateral LR recession is an appropriate surgical method for large-angle divergence excess exotropia.

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