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Review

Surgical Treatment of Residual Esotropia

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A B S T R A C T

Residual esotropia is a common problem following bilateral medial rectus (MR) recessions for esotropia. The patient was 30 years old men who underwent billateral MR recession of both eyes in the childhood. Recession was repeated on the right eye few years after the first surgery, but residual esotropia progressed. Prior to our surgery residual angle of esotropia was 50PD° with restriction of abduction and elevation of the left eye. Sinechiolysis et myectomia of right MR and sinechiolysis and recession of left MR were performed using operating microskop. One week after surgery residual angle was 4 PD. Motility of both eyes was free except slight residual reduction of left eye elevation. During postoperative period of 2 years residual angle was not greater than 8 PD, with good motility of both eyes.. We suggest that sinechiolysis and myectomia of MR together with recession of the prior operated muscle, when possible, can be a reasonable surgical option in the treatment of large-angle residual esotropia.

Abbreviations: MR – medial rectus, PD – prism dioptry.

Key words: *infantile esotropia, residual angle, MR recession, sinechiolysis*

Introduction

Esotropia is a form of strabismus, or »squint«, in which one or both eyes turns inwards. The condition can occur intermittently, or can be constantnly present and can give the affected individual a »cross-eyed« appearance. Onset of primary esotropia is usually in the early childhood, true infantile or congenital esotropia appears between the ages of 2–4 months. The baby with infantile esotropia often uses either eye to fixate in the opposite direction. The right eye is used to look toward the left side, and the left eye is used to fixate towards the right side. In cases like this non surgical methods (optometric vision therapy or glasses) although necessary are often insufficient and the surgical treatment is method of choice.[1] Esotropia is sometimes erroneously called »lazy eye«, which describes the condition of amblyopia—a reduction in vision of one or both eyes that is not the result of any pathological lesion of the visual pathway and cannot be resolved by the use of corrective lenses. Amblyopia can, however, arise as a result of esotropia occurring in childhood: In order to relieve symptoms of diplopia or double vision, the child's brain will ignore or »suppress« the image from the esotropic eye, which when allowed to continue untreated will lead to the development of amblyopia. Non surgical treatment options for esotropia include glasses to correct refractive errors, the use of prisms and/or orthoptic exercises and/or eye muscle surgery. The chance to develop binocular vision diminishes with age since onset of stereopsis is between 4–6 months and occurs in visual centers in brain, not in the eye muscles. The vision is a learning process and during the early childhood we are able to learn new binocular vision patterns, or restore normal pathways that have been lost or underutilized. However prior to performing surgery complete orthoptic care should be performed to be aware what goals can we achive and to be able to inform the patient about the treatment and possible results.[2,3]

Patients and Methods

The patient was a 30 year old man who had a confirmed esotropia when he was under 1 year of age with no accomodative component confirmed. After being diagnosed, he underwent amblyopia treatment and at the age of three first surgery was performed: billateral medial rectus recession of 5 mm. Three years later, due to residual esotropia he underwent another operation: right eye medial rectus recession of 4 mm. At the time of the second surgery, he was 5 years old and a lack of stereopsis was confirmed. Although the ocular aligment was satis-

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factory immediaetly after the surgery, after a period of time, the residual esotropia progressed.

Prior to surgery:

Residual angle was 50 PD, no diplopia with PAT test of 40 PD

Restriction of abduction and elevation of the left eye

Cycloplegic refraction was:

right eye: +0,50/+1,25/90°

left eye: +0,25/+0,75/90°

No accomodative component confirmed

Visual acuity was 1,0 in both eyes, no amblyopia

No stereopsis was confirmed.

Patients underwent thorough preoperative councelling and was informed about the treatment and possible

Fig. 1. Preoperative esotropia in primary posititon, restriction of abduction and elevation of the left eye.

Fig. 2. One week after surgical treatment: Ortotropia in primary position of gaze, residual restriction in elevation of the left eye, free abduction of the left eye.

results. Patient was informed about variable response to treatment: possibility of following treatment side-effects.

Results

Sinechiolysis and myectomia of the right medial rectus and sinechiolysis and recession of the left medial rectus 4 mm were performed using a surgical microscope (magnification 0,4). Postoperatively, the patient was considered »successful« by the conventional criteria of binocular alignment within 8 PD of ortotropia, which was stabile and unchanged for 2 years after the surgery was performed.

One week after surgery, the residual angle was 4 PD. Motility of both eyes was complete with residual discrete

Fig. 3. Two years after surgical treatment: Ortotropia in primary position of gaze, residual restriction in elevation of the left eye, free abduction of the left eye.

restriction of elevation of the left eye. During the postoperative period of 2 years, the residual angle remained stable with good motility of both eyes. No double vision appeared and the patient was satisfied with the aestetic outcome, but according to expectations no stereopsis was gained.

Discussion

Taking into consideration the age of the patient, strabismus surgery targets different things. During early childhood performing strabismus surgery together with orthoptic vision therapy we try to prevent the occurrence of amblyopia and other binocular vision dysfunctions. In preschool children the goal is recovery of binocular vision, while in older children and adults, surgery is usually performed for cosmetic reasons or correction of motility disorders.[4] Infantile esotropia is defined as an esodeviation confirmed by the age of 6 months in a child who is otherwise neurologically normal and in whom there is no refractive or accommodative component. Due to early onset of visual disturbances early surgical correction may be optimal because it minimizes the duration of misalignment during a critical period of visual maturation. Furthermore even multiple surgeries may end up yielding cosmetic benefits only, that means that two eyes might look normal to outside observers, but two eyed vision has not been achieved, as surgery not necessarily enables the brain to utilize information from both eyes.[5] Residual or recurrent esotropia as a common problem following bilateral medial rectus recession for esotropia.[6] Successful surgical management of residual esotropia is essential for patients satisfaction after previous surgery insufficiency. Tends to occur immediate postoperative, or many months or years after surgery is still under debate and various surgical techniques are being advocated. If previous surgery is insufficient, unilateral or bilateral medial rectus re-recession can be performed. Another technique commonly performed is unilateral or bilateral rectus resection. The most effective type of intervention depends on the magnitude of angle deviation. For small angle deviations (]50 PD) unilateral or bilateral medial rectus recession is a method of choice.[7] However there is controversy over the management of larger angles of esotropia (>50 PD) since two muscle surgery can be not sufficient. Some surgeons operate on 3 or 4 horizontal muscles, while others prefer a maximal recession of the medial recti alone.[8] In some cases when previously operated muscle has a difficult access it is possible to weaken a muscle by performing hang back sutures and leaving the muscle hanging back from sutures attached to the original insertion rather than placing the sutures posteriorly on the globe. Some studies have also proposed the faden operation or marginal myotomy.[9,10] It is important to take into consideration that repeating surgeries can rise a possibility of scar formation around the muscle which can diminish the effect of the surgery, as well as to be aware that during the surgeries can be necessary to change the work schedule depending of the present circumstances of the previously operated muscles found in the operating field. However our purpose was to report that even in cases of large residual angles the outcome of sinechiolysis and myectomia combined with recession of the medial rectus can be a successful surgical option.[11,12]

Conclusion

Our result suggests that sinechiolysis and myectomia of the medial rectus together with recession of the previously operated muscle, when possible, can be a reasonable surgical option in the treatment of large-angle residual esotropia following bilateral medial rectus muscle recession. When planning surgeries in the adults it is im-

portant to take into cinsideration that the outcome will be only cosmetic, and inform the patient that surgery will not influence visual acuity or gain some more stereopsis. Performing surgery under a surgical microscope can give us better control in the operating field and help to avoid complications and gain more prescise outcome.

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KIRURŠKO LIJEČENJE REZIDUALNE EZOTROPIJE

SAŽETAK

Rezidualna ezotropija najčešći je problem nakon bilateralne retropozicije m.rectusa medialisa. Tridesetogodišnjem pacijentu u djetinjstvu je napravljena bilateralna retropozicija m.rectusa medialisa. Retropozicija na desnom oku ponovljena je nekoliko godina nakon prve operacije, međutim sa progresijom rezidualne ezotropije. Prije naše operacije rezidualni kut bio je 50PD s ograničenom abdukcijom i elevacijom lijevog oka. Pod operativnim mikroskopom učinjena je sinehioliza i mijektomija medijalnog rektusa desnog oka te sinehioliza i retropozicija lijevog medijalnog rektusa. Tjedan dana nakon operacije ostatni kut bio je 4PD. Pokretljivost oba oka bila je slobodna osim diskretno ograničene elevacije lijevog oka. Tijekom postoperativnog perioda od 2 godine rezidualni kut nije bio veći od 8PD s dobrom pokretljivošću oba oka. Sinehioliza i mijektomija medijalnog rektusa zajedno s retropozicijom prethodno operiranog mišića učinkovita je operativna metoda u liječenju rezidualne ezotropije s velikim ostatnim kutem.