

Surgical Treatment of Hypertrophy with Weakening of Superior Rectus Muscle Function in the Ophthalmology Clinic, University Clinical Centre of Kosovo, Prishtina 2012-2013

Mire Hoxha Shoshi^{1*}, Fitore Shoshi², Fjolla Shoshi² and Flaka Shoshi²

¹Eye Clinic UCKK, Prishtina, Kosovo

²Faculty of Medicine, University of Prishtina, Kosovo

Abstract

Strabismus is a deviation of the eyes, when both eyes simultaneously cannot be directed at the object which is observed [1]. Strabismus occurs in about 2% of children under 3 years old and about 3% of all children [3]. This study included 130 patients with strabismus who were treated surgically in the Eye Clinic at UCC in Kosovo in the period 2012-2013. Depending on the type of deviation, patients were divided into four groups: a. Esotropia, b. Exotropia, c. Hypertropia and Hypotropia.

- In Esotropia were included 84 patients of whom 19 with monolateral amblyopia and 65 with alternans esotropia with preserved vision. Two of our patients were with paresis of the abducens nerve and one patient with Duane syndrome.
- In Exotropia were 36 patients of whom 12 with amblyopia and 24 with preserved vision.
- In Hypotropia were 8 patients. Hyperfunction MOI3.Exotropia alt form A SOOA.1.Exotropia alt form V.IOOA.1.EsotropiaHypotropia IOOA.1. Paresis n.Trochlearis Bitshovski positive 2.
- Hypertropia MRS.1 (hyper-function of m.recti superior).

Keywords: Hypertropia; Surgical Treatment with Weakening of MRS

***Corresponding Author:** Mire Hoxha Shoshi, Eye Clinic UCKK, Prishtina; Kosovo, E-mail: mireshoshi@hotmail.com

Introduction

The people with full muscular, sensory and anatomical construction the eyes remain straight, visual axes are parallel, without the influence of irritation for fusion [4]. This condition is called orthophoria. Such patients usually have good visual acuity.

Eye movements are performed with the help of six external muscles of which four are straight and two are oblique. All external muscles of the eyeball eye fixed on the eyeball, in the sclera, but in different places [5].

The superior rectus muscle (MRS) is inserted 8mm behind the corneoscleral junction. This muscle elevates the eye upwards and also rotates the eye inward.

Etiology

In the group of etiological factors are included [1, 2]:

- Optical factors
- Sensorial
- Anatomic and motor, and
- Innervations factors

There are various methods of surgical treatment of strabismus

- Surgical treatment for aesthetic purposes
- Surgical treatment for functional purposes.

Aim of this Paper

The aim of surgical treatment of hypertrophy is balancing the mobility of the eyes (ocular mobility)

During the surgical treatment, our main focus is on the regulation of position straight ahead and downwards, positions which are necessary in everyday activity.

As well as, to present surgical treatment of hyperopia for aesthetic purposes (of the superior rectus muscle).

This patient has good visus on both eyes; no amblyopia and she have binocular vision.

At the same time, we observe in primary position of the right eye that the degree of ocular deviation goes upwards by 2-3 mm and with the cover test by 4-5mm.

Material and Methodology

This study included 130 patients on which the surgical intervention of strabismus was performed at the Ophthalmology Clinic at UCKK in the period 2012-2013.

Depending on the type of surgery, we have divided the patients into four groups:

1. In Esotropia were included 84 patients of whom 19 with monolateral Esotropia (amblyopia) and 65 with bilateral Esotropia with preserved visus.
2 patients with paresis nerves abducens (with preserved visus).
1 patient with Duane syndrome
2. In Exotropia were 36 patients of whom 12 with amblyopia and 24 with preserved visus.
3. 8 patients with Hypotropia
3 patients with Hyperfunctio MOI.
1 patient with Exotropia alt forms A –SOOA.
1 patient with Exotropia alt form V-IOOA.
1 patient with Hypotropia IOOA.
- 2 patients with Paresis nerves Trochlearis Bitshovski positive.
4. 1 patient with Hypertropia MRS (hyper-function of m.recti superior muscle)

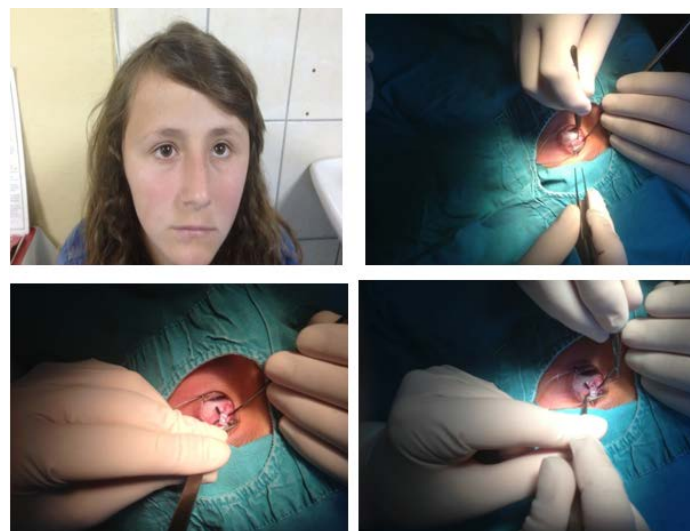
Following the conservative treatment (refractory anomalies correction, occlusion and orthoptoeptic exercises) the patients underwent surgical treatment (for aesthetic and functional purpose).

The object of study of this paper is a ten-year-old child. Since her birth, the parents noticed that her right eye was aiming upwards and she was constantly examined by an ophthalmologist. With the age, it has upset aesthetically both the parents and the child. The patient was admitted to the clinic with laboratory and roentgen logical analyses, and the opinion of paediatrician that surgical intervention can be performed under a general anaesthetic.

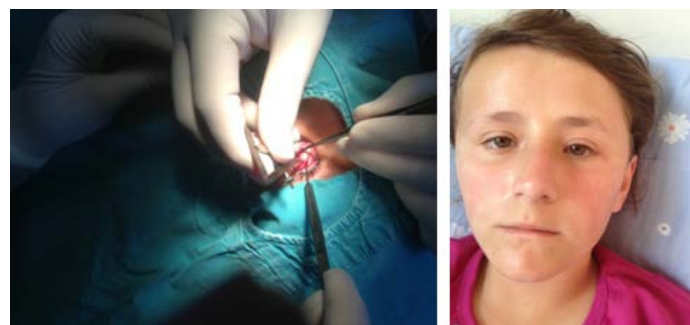
All ophthalmological examinations were performed as well as the degree of deviation upwards – Hypertropia.

The patient underwent general anaesthesia.

The bulbar conjunctiva was carefully opened from a 7-8mm distance through the nasal limb in the 10-11 o'clock position.



The muscle is shown; the Tenon's capsule was opened above and below the muscle. The muscle was released in its entirety from all partial connections.



Under the muscle was inserted the crochet hook from rear upper side and then the second crochet hook was inserted from rear lower side. The crochet hooks were pulled thereby severing the muscle connections to the surroundings. Photo

The muscle is attached to the sclera by 6.0 Vicryl suture 2mm from the insertion. Then one crochet hook is removed, beneath the muscle are placed the scissors which supported on the sclera surface, they are then rotated in vertical position before severing the muscle. Muscle is cut at the place where it is attached to the sclera, and then the muscle is elevated and released.

Size of the retro position is measured in mm and recorded in the sclera. Then, very carefully, with needles with spatulated tips at the measured place the muscle is reattached to the sclera 5mm from the insertion point. Then we stitch the bulbar conjunctiva with continuous suture 6.0 Vicryl. We add eye drops and antibiotic fatty acids with corticosteroid and we close the eyes until the following day. Treatment with eye drops continues for 10 days.

Sutures were removed after 2 weeks.

Results

The study included 130 patients who underwent the strabismus surgery. There were 84 were patients with esotropia, of which 2 patients with paresis nervus abducens and 1 patient with Duane syndrome. There were 54 females of which 11 with amblyopia and 43 with esotropia alternans. There were 30 males of which 8 with amblyopia and 22 with Esotropia alternans.

There were 36 patients with Exotropia of whom 22 were females, of which 6 patients were with amblyopia and 16 patients with Exotropia alternans. There were 14 male patients of whom 6 were with amblyopia and 8 with Exotropia alternans. Whereas, there were 10 patients with vertical strabismus.

- 3 patients with Hyper function MOI (Retro position MOI)
- 1 patient with Exotropia alternans form a / SOOA (OU Op Tenotomia MOS).
- 1 patient with Esotropia Hypertropia IOOA (op Myectomy MOI 4.0mm.Retroposition MRM, Myectomy MRE.

- 1 patient with Exotropia alternans form V.IOOA (op UO Retro position MRL 10mm. Retro position MOI 8.0mm.

-3 patients with Paresis n.Trochlearis positive Bitshovski (Op Retro position 10mm and Antepositio 4.0mm MOI.

- 1 patient with Hypertropia MRS (Op Retro position MRS 5.0mm) where we a presentation of the case.

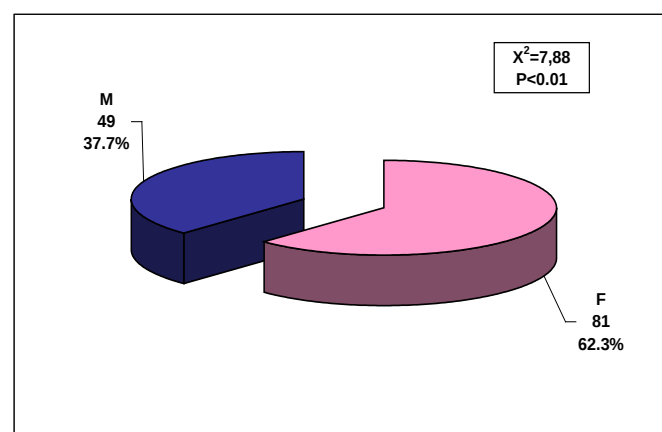
The MRS Retro position of a 10-year-old patient aged 10 years was done under a general anaesthetic. Operational and postoperative course was without any complications. In the primary position, the bulbus is in orthophoria. Corneal reflex in the centre of the cornea. The bulbus is mobile in all directions.

The research included 130 patients of which 84 or 64.6% were with Esotropia, 36 or 27.7% with Exotropia and 10 or 7.7% with vertical Strabismus. In both genders, pathologies are presented with similar structures. Females with Esotropia were 66.7%, with Exotropia 27.2%, and with vertical Strabismus 6.2% compared to males with Esotropia 61.2%, with Exotropia 28.6% and 10.2% with vertical Strabismus (Table 1 and Chart 1)

Table 1: Research by gender and pathology

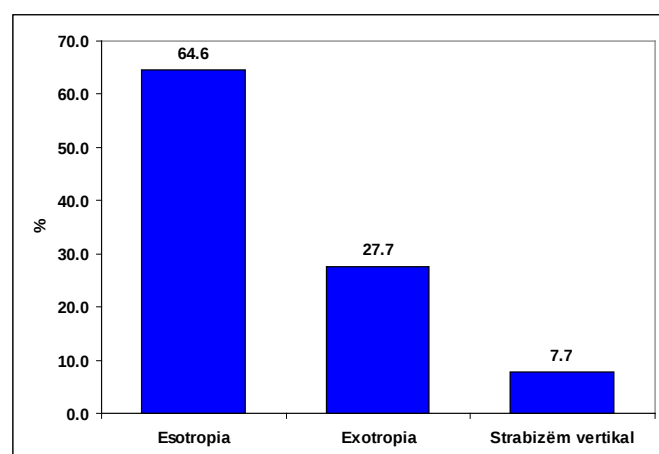
Pathology		F		M		Total	
		N	%	N	%	N	%
Esotropia		54	66.7	30	61.2	84	64.6
Exotropia		22	27.2	14	28.6	36	27.7
Vertical strabismus		5	6.2	5	10.2	10	7.7
Total	N	81	100.0	49	100.0	130	100.0
	%	62.3	-	37.7	-	100.0	-

Chart 1: Structure by pathology



Of all the cases involved in the research, 81 or 62.3% were females and 49 or 37.7% were males. Through the X2-test, we have obtained a difference of important statistical significance according to gender ($X^2 = 7.88$, $P < 0.01$), (Chart 2).

Chart 2: Structure by gender



Out of 84 cases with Esotropia, 19 or 22.6% were with amblyopia and 65 or 77.4% were with Esotropia alternans. The males have more cases with amblyopia, 26.7% compared to 20.4% of females. However, through the X2-test, we have not obtained any difference of important statistical significance ($X^2\text{-test} = 0.151$, $P > 0.05$), (Table 2).

Table 2: Cases with Esotropia by gender

Esotropia	F		M		Total	
	N	%	N	%	N	%
Amblyopia	11	20.4	8	26.7	19	22.6
Esotropia alternans	43	79.6	22	73.3	65	77.4
Total	54	100.0	30	100.0	84	100.0
$X^2\text{-test}$	$X^2=0.151$, $P>0.05$					

Out of 36 cases with Exotropia, 12 or 33.3% were with amblyopia and 24 or 66.7% were with Exotropia alternans. The males have more cases with amblyopia, 42.9% compared to 27.3% of females. However, through the X2-test, we have not obtained any difference of important statistical significance ($X^2\text{-test} = 0.365$, $P > 0.05$), (Table 3).

Table 3: Cases with Exotropia by gender

Exotropia	F		M		Total	
	N	%	N	%	N	%
Amblyopia	6	27.3	6	42.9	12	33.3
Exotropia alternans	16	72.7	8	57.1	24	66.7
Total	22	100.0	14	100.0	36	100.0
$X^2\text{-test}$	$X^2=0.365$, $P>0.05$					

Of the 10 cases with vertical strabismus, there were 3 patients with Hyper function MOI or 30.0% (on these patients, the Retro position MOI was performed). There was 1 patient with Exotropia alternans forma A/SOOA or 10, 0% (Op OU Tenotomia MOS). There was 1 patient with Esotropia Hypertrofia IOOA or 10, 0% (op Myectomy MOI 4.0 mm.Retro position MRm, Myectomy MRE). There was 1 patient with Exotropia alternans form V.IOOA or 10, 0% (op OU Retro position MRL 10mm.Retro position MOI 8mm). There were 3 patients with paresis n.Trochlearis positive Bitshovski or 30.0% (op Retro position 10 mm and Anteposition 4.0 mm MOI). As well as, 1 patient with Hypertrofia MRS or 10, 0% (Op Retro position MRS 5.0 mm, where we have case presentation), (Table 4).

Table 4: Cases with vertical strabismus by pathology

Vertical Strabismus	N	%	Operation
Hiperfunktio MOI	3	30.0	Retro position MOI
Exotropia alternans form A/SOOA	1	10.0	Op. OU Tenotomia MOS
Esotropia Hypertrofia IOOA	1	10.0	Op Myectomy MOI 4.0 mm. Retro position MRM, Myectomy MRE.
Exotropia alternans form V.IOOA	1	10.0	Op. OU Retro position MRL 10 mm.Retro position MOI 8.0 mm.
Paresis n. Trochlearis Bitshovski positive	3	30.0	Op. Retro position 10 mm dhe Antepositio 4.0 mm MOI
Hypertrofia MRS	1	10.0	Op. Retro position MRS 5.0 mm
Total	10	100.0	

Conclusion

Strabismus is observed in about 3% of all children depending on the direction of heterophoric and heterotropic deviation:

- Esophoria and Esotropia when deviation is directed inwards
- .Exotropia and exophoria when deviation is directed outwards.
- hyperphoria and Hypertropia when deviation is directed upward
- hypophoria and Hypotropia when deviation is directed downward.

In our research were included 130 patients of whom 84 patients were with Esotropia. There were 54 females of whom 11 were with amblyopia, while 43 people were with preserved visus.

There were 30 male patients; 8 patients with amblyopia and 22 patients with preserved visus.

There were 36 patients with Exotropia. 14 females of which 6 were with amblyopia and 8 were with visus. There were 22 male patients of which 6 with amblyopia and 16 with good visus. Presence of amblyopia according to the age of patients. There were 5 patients aged 0-5 years old, 4 patients with Esotropia and 1 patient with Exotropia with preserved visus. There were 17 patients aged 6-10 years old; 16 with Esotropia, of which 1 were with amblyopia, and 1 patient with Exotropia. There were 24 patients aged 11-15 years old; with Esotropia 14 patients, of which 2 patients with amblyopia, and 10 patients with Exotropia, of which 1 patient with amblyopia. There were 44 patients aged 16-20 years old; 31 patients with Esotropia, 7 with amblyopia, and 24 patients with preserved

visus. 13 patients with Exotropia of which 3 with amblyopia. There were 16 patients aged 21-25 years old; 10 patients with Esotropia, of which 5 with amblyopia. 6 patients with Exotropia, of which 4 with amblyopia. There were 5 patients aged 26-30 years old; 4 patients with Esotropia, of which 2 with amblyopia. 1 patient with Exotropia with preserved visus. There were 3 patients aged 31-35 years old, of which 1 patient with amblyopia, whereas none of them had Exotropia. There were 2 patients aged 36-40 years old; 1 with Esotropia and amblyopia and 1 patient with Exotropia without amblyopia. There was 1 patient aged 41-50 with Esotropia and amblyopia, while there was none with Exotropia. There were 3 patients aged 51-60 with Exotropia and amblyopia, while there was none with Esotropia.

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