

**CONGENITAL PALSY OF THE SUPERIOR RECTUS MUSCLE – CASE REPORT.****Mammadkhanova A.I. MD**

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**Abstract**

Superior rectus muscle palsy is a rare ocular condition that can lead to vertical diplopia and restricted eye movement. We present a case of a 8-year-old child who presented with complaints of difficulty in looking upward. The purpose of this case report is to highlight the clinical presentation, diagnostic workup, management strategies, and the final outcome of a patient with superior rectus muscle palsy.

**Keywords:** Superior rectus muscle palsy, pseudoptosis .

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**Case report**

The parents of an 8-year-old boy came to us with complaints that their child had a drooping right eyelid, as well as isotropia. In the two years since he came to us, the lateral rectus muscle of the right eye

was recessed and the medial rectus muscle of the same eye was resected due to esotropia, and nothing was done about his vertical strabismus. After this surgery, the eye continued to squint inwards; according to the parents, there was no improvement. Additionally, there was no head position. There were two more children in the family, and no pathologies were observed.

The examination revealed that the BCVA in the right eye (OD) was 20/2000 (0.01) with refraction spheria+1.50 dioptria cyl-1.75 ax164 and the BCVA in the left eye (OS) was 20/28 with refraction sph+0.25 cyl-1.25 ax6. Slit lamp examination of the anterior segment and fundus were both unremarkable.

Extraocular motility evaluation revealed elevation limitations of approximately –3 during direct upgaze, dextro, and levo elevation in the right eye (Fig. 1). He had esotropia of 20 prism diopters in primary gaze and right hypotropia of 14 prism diopters in upgaze. A three-step test revealed the following: Hypotropia in the SR field of action; excyclotropia; overaction of the ipsilateral IR; and overaction of the contralateral IO. The patient also had pseudoptosis. Abnormal head position was not observed. The contralateral inferior oblique muscle overacts when the paralyzed eye is fixed during elevation and abduction (secondary deviation).



**Figure 1.** Cardinal positions of the gaze.

The forced duction test revealed some restriction, which was apparently associated with the surgery performed on the lateral and medial rectus muscles two years ago.

The patient was diagnosed with superior rectus palsy. Under general anesthesia. A superior rectus recession procedure was performed on the right eye. The patient showed significant improvement in his symptoms postoperatively (Figure 2).



**Figure 2.** Primary gaze position. 1 month after surgery.

## Discussion

First, a differential diagnosis of superior rectus muscle palsy should be determined. These differential diagnoses include mechanical causes that limit eye elevation, such as fibrosis, contracture, a blow-out fracture of the orbital floor, myositis, endocrine orbitopathy, or high myopia <sup>1</sup>. Therefore, it is important to conduct a forced-duction test to identify mechanical limitations of any muscle movement. We identified a certain limitation in the movement of the horizontal muscles, which is associated with the previous surgery. In addition, there was a slight limitation of the action of the inferior rectus muscle. This limitation was more likely due to congenital dysfunction of the inferior rectus antagonist, namely, paralysis of the superior rectus muscle. Thus, the restriction we observe is the so-called contracture of the ipsilateral inferior rectus muscle.

Superior rectus paralysis frequently causes head tilt with chin elevation <sup>2</sup>. However, the direction of head tilt (i.e., towards the right or left shoulder) is not constant and therefore has no diagnostic value. Since the right eye of our patient had deep amblyopia, the left eye was fully compensated, and the right eye was ignored. Therefore, in this patient, an abnormal head position was not observed.

A 3-step test revealed the following: hypotropia in the SR field of action <sup>3</sup>; overaction of the ipsilateral IR; and overaction of the contralateral IO. The Bielschowsky head tilt test distinguishes between SO and SR palsy. However, the head tilt test is more suitable for diagnosing vertical oblique palsy than rectus palsy. In the case of SO paralysis, when the paretic superior oblique muscle is used for fixation, due to increased innervation of the depressors of the fixing eye, the inferior rectus muscle of the contralateral eye also receives additional innervation. Its antagonist, the elevator superior rectus muscle, as well as the levator palpebral muscle on that side, is inhibited, resulting in hypotropia and, more importantly, pseudoptosis. When the normal eye begins to fixate, ptosis disappears. In this patient, the upper eyelid rises when the eyeball is raised and falls when the eye moves downwards, indicating pseudoptosis secondary to the hypotropic position of the eyeball <sup>4</sup>. There are several causes of superior rectus paralysis. It can appear at birth. Sometimes, it presents due to injury to the superior division of the third cranial nerve during childbirth. Various circumstances, such as head injury, skull injury and inflammation of the third cranial nerve, can cause disorders.

However, sometimes the cause of superior rectus paralysis is unknown. In children, trauma is one of the most common causes of superior rectus palsy <sup>5</sup>. According to the parents of our patient, the child has had strabismus since birth, and they deny any trauma.

Superior rectus muscle is a challenging condition to diagnose and manage. A thorough clinical evaluation, including detailed history, visual acuity assessment, ocular motility examination, and forced duction test, is crucial for accurate diagnosis. Surgical intervention is often required in cases of persistent or severe symptoms. The choice of surgical technique depends on the severity of the paresis and the presence of associated ocular misalignment. The prognosis of superior rectus muscle palsy is generally favorable, and most patients achieve satisfactory outcomes post-surgery.

## Conclusion

Superior rectus muscle palsy is a rare cause of vertical diplopia and restriction of eye movement. Early diagnosis and appropriate management, either conservative or surgical, are crucial for improving the patient's quality of life and minimizing visual disturbances. Further studies and long-term follow-up are required to enhance our understanding of this condition and its optimal management strategies.

## Conflict of interests

The author declares that there is no conflict of interests.

## Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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## Study association

This study is not associated with any thesis or dissertation work.

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