

A Case Report on - Congenital Third Nerve Palsy and their associated Findings

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Abstract

Abducens nerve or 6th Nerve it is having the longest intracranial course of all the cranial nerves. Any damage to the abducens nerve along its long course may result in a palsy. Congenital 6th nerve palsy is very rare as against DRS. No study data available on its epidemiology due to its rarity. Congenital 6th nerve palsy is taken as DRS unless proved otherwise. 2 years old female child came to Laxmi Eye Institute with a complain of abnormal turning of both eyes towards nasal side since Childhood. All the clinical examination was performed to get the right diagnosis and to give best treatment and management to patient. As congenital sixth nerve palsy may be confused with Duane's Retraction Syndrome and Congenital Esotropia. So, A careful clinical evaluation is essential to differentiate between these.

Keywords: Abducens Nerve Palsy; Congenital 6th Nerve Palsy; Duane's Retraction Syndrome; Congenital Esotropia

Introduction

The most prevalent cause of ocular movement paralysis in adults and the second-most in kids is abducens nerve palsy, which affects the sixth cranial nerve. The lateral rectus muscle, which abducts the eye, is controlled by the abducens nerve. Because of the antagonist medial rectus muscle's unopposed action, abducens nerve palsy results in an esotropia. Affected eyes medially turn and are unable to properly abduct. The esodeviation is synchronous, more pronounced when the patient is gazing in the direction of the affected side, and while fixating far away as opposed to close.

Congenital sixth nerve palsy is a rare disorder. Usually, it results from fetal cranial trauma or a relative delay in the sixth nerve's myelination compared to the third nerve. A post viral syndrome may also be the cause of certain instances that spontaneously resolve within a few weeks with sporadic relapses. Congenital Sixth nerve palsy may also stimulate Duane's retraction syndrome

[1]. Acquired abducens nerve palsies in children can result from idiopathic, neoplastic, traumatic, infectious, inflammatory, and infectious causes [2].

Case History

A two-year-old female child came to our squint clinic of Laxmi Eye Institute on Jan 15th, 2022, with a chief complain of (BE) abnormal turning of eyes since age of 4 months with abnormal turning of head since age of 4 months and (LE) restricted eye movement for 9 months. And the informer were her parents. They also gave a history of doing MRI which was in previous ophthalmic consultation and suggested a normal study, patient took treatment for the same no improvement hence came for a second opinion (as per mother).

In Birth History it was caesarean delivery and normal developmental milestone, and everything was within Normal limit.

	OD	OS
UCVA	Fixates and follows to light	Fixates and follows to light
Retinoscopy	+2.00/-3.00X20	+1.50/-2.50X180
Dilated retinoscopy	+2.50/-1.50X20	+2.00/-2.00X180

Table 1: Ocular Examination.

On Examination the uncorrected visual acuity was follow and fixating in both eyes. On Objective refraction i.e. In Dry Retinoscopy we got +2.00DS/-3.00 DC X 20 in Right Eye and +1.50 DS/-2.50 DC X 180 in Left Eye. In Wet Retinoscopy we got a value of +2.50 DS/-1.50 DC X20 and +2.00 DS/-2.00 DC X180 in right eye and left eye respectively.

	OD	OS
Pupil	Round, regular, reacting to light	Round, regular, reacting to light
Anterior segment	WNL	WNL
Disc/Macula/Central retina	WNL	WNL

Table 2: Ocular Examination- Slit Lamp Examination.

On Ocular Examination everything was within normal limits the pupil was Round, regular, reacting to light and No RAPD in both eyes, the anterior segment, disc, macula central retina everything was within normal limit.



Eye motility	WNL	Abduction restricted (no palpebral fissure narrowing, on adduction, no globe retraction)
	OD	OS
Ocular motility		

Table 3: Squint Evaluation.

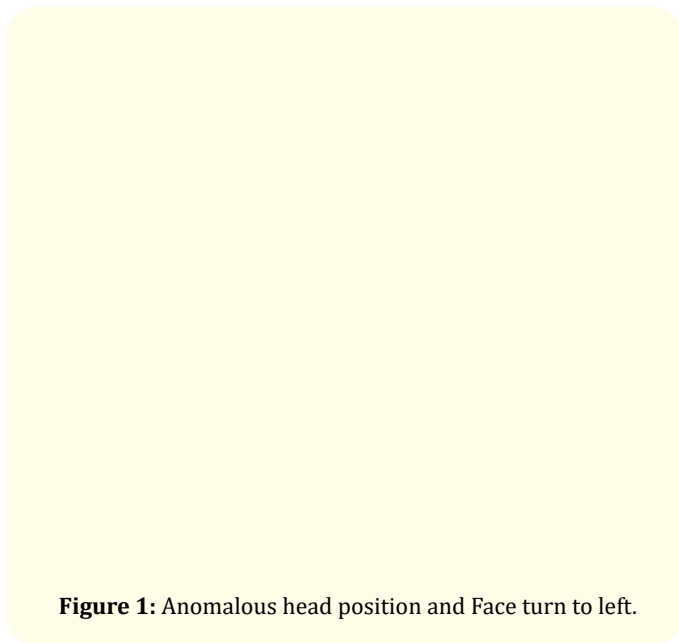


Figure 1: Anomalous head position and Face turn to left.

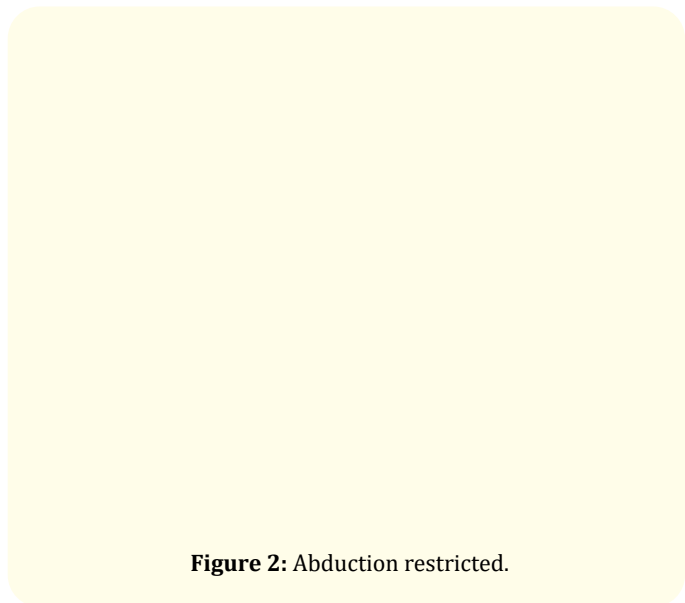


Figure 2: Abduction restricted.

In Motor Examination the eye motility of left eye was having abduction restricted (no palpebral fissure narrowing, on adduction, no globe retraction) as shown in Figure 2. In Cover/Uncover test we got Cover/uncover test- LE esotropia, RE dominant. There was a Head posture- face turn to left as shown in Figure 1 and on squint measurement in Krimsky 30 prism diopter of esotropia and the was eyes in right gaze. The patient was advised MRI brain orbit with contrast. In which we got atrophic lateral rectus. Based on the clinical finding the patient was diagnosed with Congenital 6th nerve palsy. And the plan of management left eye Squint surgery (parents of the patient were explained that more surgeries may be required in future). The aim of the surgery was to correct AHP – Abnormal Head Posture, to restore binocularity and to improve abduction.



	OD	OS
Vision	3/4.8, 6/6RS	3/4.8, 6/6RS
Retinoscopy	+1.00DS	+1.00DS
Eye motility		 -2

Table 4: Post operative Examination.

The Patient came for follow post operative 7 months on 15 Feb 2022 left eye squint surgery was done at Laxmi Eye Institute. And c/o diplopia when sees in extreme left gaze.

On examination the vision was 3/4.8 for distance and 6/6 RS for near in Right Eye and 3/4.8 for distance and 6/6 RS for Near in left Eye. Limitation of abduction was improved post-surgery.

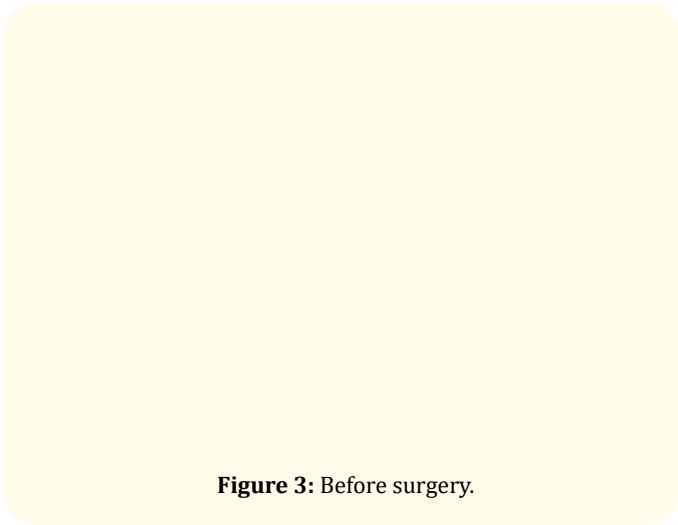


Figure 3: Before surgery.

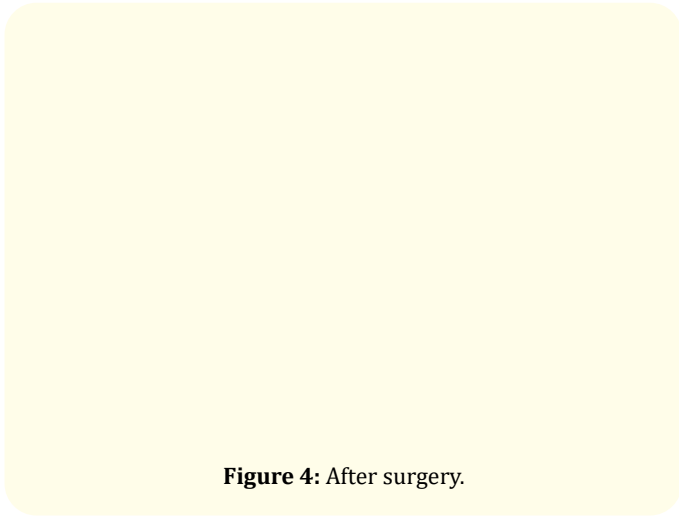


Figure 4: After surgery.

Improvement in abduction.

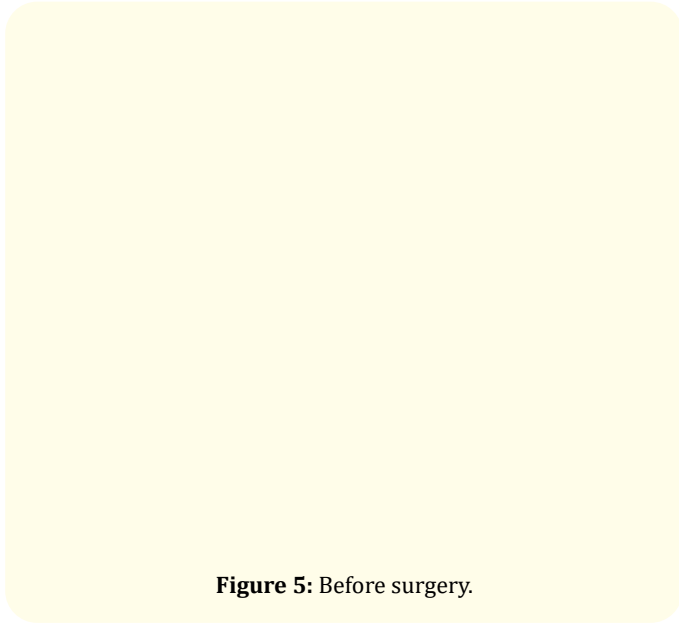


Figure 5: Before surgery.

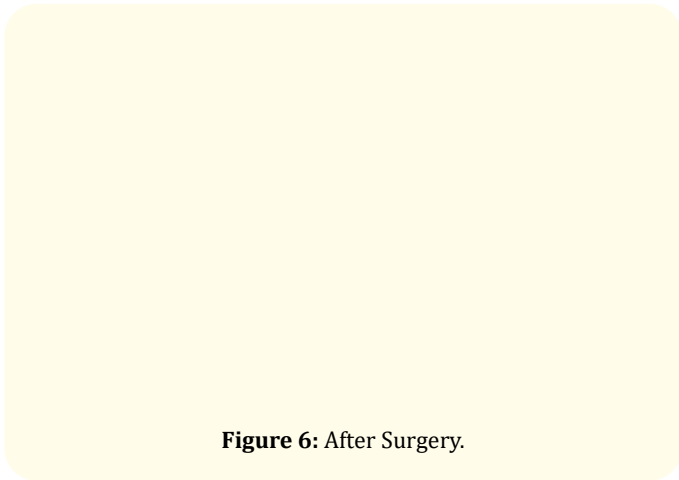


Figure 6: After Surgery.

Improvement in Abnormal Head Posture.

After Surgery there was a decrease in limitation of abduction and the abnormal head posture was also corrected.

Results and Discussion

Infants that have difficulty abducting or having esotropia are usually diagnosed with DRS Duane’s retraction syndrome or Infantile esotropia. In our case also same complain occurred we can say the differential diagnosis for this can be 1. Infantile esotropic 2. (LE) DRS 3. (LE) Congenital sixth nerve palsy. In infantile esotropia the age of onset of deviation is 3-4 months and the deviation will be >40 prism diopters of esotropia and with these there will be Inferior oblique overaction and Latent nystagmus in most of the cases diagnosed with infantile esotropia [3]. And in our case, none of the signs or symptoms were correlating to that of infantile esotropia. In DRS which includes symptoms like palpebral fissure constriction and upshots or downshoots during adduction. When a new-born has no additional diagnostic symptoms, it might be

challenging to discern between an esotropic Duane sine retraction and congenital sixth nerve palsy. Because of the differences in these illnesses’ evaluations and surgical care, it is crucial to distinguish between the two. On the basis of the following indicators, esotropic DRS and congenital sixth nerve palsy can be distinguished: 1) Patients with DRS have globe retraction in adduction, whereas patients with sixth nerve palsy do not; 2) DRS patients typically have a smaller esotropic angle than patients with sixth nerve palsy who also have the same abduction limitation; and 3) Patients with DRS have different levels of abduction deficit in up gaze and downgaze, whereas patients with sixth nerve palsy have levels that are similar [4].

In our case we have found that esotropia was there with abduction deficit and a large Abnormal head posture. With a large esotropia in the primary gaze. In MRI we got LR atrophy. There was no narrowing of palpebral fissure on adduction and neither abduction deficit nor the shoots were there. So, with these findings we come to diagnose the case as Congenital Sixth Nerve palsy.

Table for Differential Diagnosis	Infantile Esotropia	Type 1 DRS	Congenital sixth nerve palsy
Abduction deficit	Absent	Present	Present
Anomalous head posture	Absent	Small turn	Large turn
Esotropia (in primary gaze)	Very large	Small	Large
Narrowing of palpebral fissure (on adduction)	Absent	Present	Absent
Adduction deficit	Absent	Absent	Absent
Shoots	Absent	Present	Absent
MRI	Normal	LR normal size	LR atrophy

Table a

Conclusion

When a child has congenital abduction impairment, it is important to thoroughly check for sixth nerve palsy. Investigations should be conducted in those with clinically confirmed sixth nerve palsy. Idiopathic cases may have a well-defined etiology with a thorough history and follow-up. Every patient needs to be followed up on, but it’s especially important for people with idiopathic conditions because recurrence of the sickness has the potential to change the diagnosis if it’s confirmed by a thorough medical history and physical examination findings.

Conflict of Interest

There is no financial interest, or any conflict of interest exists.

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