

## An Exotropia: A Report Of Three Cases With Three Different Variant

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### Abstract:

**Background:** Aim to report a case series of three cases of exotropia. Two patients had outward deviation in left eye and one patient had in right eye. Normally visual axis of the two eyes is parallel to each other in the primary positions of gaze. A misalignment of the visual axes of the two eyes is called strabismus or squint. It can be classified as pseudo strabismus, latent and manifest squint. Heterotropia again classified as concomitant and incomitant squint. Here we report three cases of exotropia with three different variations. Informed as well as pre operative consent was taken. We explained here a successful surgical method of strabismus surgery and its associated complications. Detail history with careful preoperative work up and examination was done.

### Cases and observations:

Case 1: A 11 years old female child came to our OPD with history of left eye outward deviation since more than six years , mild AHP (abnormal head position) and normal BSV . Left eye squint surgery was done under general anesthesia. Result was orthotropic post operatively, reduction in AHP with good satisfactory outcome.

Case 2: 19 years old female patient came with left eye sensory-secondary (stimulus deprivation) exotropia. The stimulus deprivation in left eye was due to pale optic disc and organic macular pathology. Surgery was done in left eye under local anesthesia with good post operative cosmesis.

Case 3: A 20 years old female patient came to our hospital with history of right eye outward deviation with typical V pattern since birth. The deviation in right eye was secondary to anisometric amblyopia. We did surgery in right eye. Two muscle recession - resection with transposition of half tendon length under local anesthesia was done .

**Conclusion:** Strabismus is not an ocular emergency except few conditions. The surgery is performed in any age group to treat misaligned eyes. The indication of surgery was only when non surgical treatment is ineffective. Eye health workers, ophthalmic assistant and optometrist are motivating to quickly refer all patients with ocular motility disorders to ophthalmologist.

**Keywords:** abnormal head posture (AHP), anesthesia, amblyopic, binocular single vision (BSV) ,exotropia, gaze, strabismus, surgery.

Date of Submission: 29-08-2023

Date of Acceptance: 09-09-2023

### I. Introduction:

As we know a misalignment of the visual axes of the two eyes is called strabismus. Here we deal with heterotropia with concomitant non paralytic squint. Concomitant is a type of manifest squint in which the amount of deviation in the squinting eye remains constant in the all direction of gaze and there is no associated limitation of ocular movements. Incomitant squint is a type of heterotropia in which the amount of deviation varies in different directions of gaze which can be further classified as paralytic strabismus, A - V pattern and restrictive squint [1]. Exodeviation take place as a result of certain barrier to development or preservation of binocular vision or due to under action of the medial rectus muscle.[2] Small exophorias are found in high prevalence in the normal population and 60-70 % of normal new born infants have a temporary outward deviation that settle by 4-6 months of age.[3,4,5]. Prevalence of exodeviation are usual in latent or intermittent form than eso deviation. Intermittent exotropia (IXT) consist of about 50-90% of cases of total exotropia and is commonly anticipated by a stage of exophoria. It commonly exerts influence on about 1% of the general population. [6, 7] Jenkins made the fascinating scrutinization that the nearer a country is to equator the higher the prevalence of exodeviation [8]. Elements to be considered for progression of exotropia : I. loss of fusional control as evidenced by increasing frequency of the manifest phase of strabismus. II. Development of secondary convergence insufficiency.III Increase in size of basic deviation. IV development of suppression. The clinico

etiological types of exotropia consist **A.** Congenital variety: it is rare and almost always present at birth. It is characterized by a large degree deviation, usually alternate with homonymous fixation in lateral gaze and no amblyopic. **B** Primary exotropia (unilateral or alternating). It may be due to convergence insufficiency, divergence excess and basic non specific. It also called as IXT. It is started at the age of 2 years with normal fusion but stereopsis is absent. The factors like bright light, illness, fatigue and certain drugs aggravate the condition. **C.** Secondary or sensory deprivation exotropia. It associated with low vision in affected eye due to trauma, cataract, opacity, optic atrophy, amblyopia, retinal detachment and macular pathology. **D.** Consecutive type. It is constant unilateral due to surgical overcorrection of esotropia.

**Work up of a patient:** Strabismus and orthoptic evaluation of all three cases were done.

Detail history was taken from all patients including chief complain, history of present illness, family history including marriage of parents with degree of consanguinity, past history, birth history, personal history, drug history, history of immunization, old photograph of all patient, history of aggravating and relieving factors. Detail orthoptic examination was done which include vision (UCVA and BCVA) on Snellen visual acuity chart and also with pin hole, cover-uncover test, pupil, IOP, color vision (Ishihara plate), extra ocular movements (duction and version), FDT forced duction test with active forced generation test, contrast sensitivity (Pelli Robson chart), diplopia charting (if required), Hess screening (in case of paralytic squint), synoptophore examination and dilated fundus. PBCT/PBRT (prism bar cover test/ prism bar reflex test) and Krimsky test (according to indication) was done in all patient of exotropia. Stereopsis checked using Titmus fly test (polaroid vectograph). Stereopsis is the potential to perceive depth and 3D composition binocularly and plays a role in spatial visual perception, including the perception of object motion and self motion. [9,10,11] The Worth four dot tests using red – green goggles that's is red color in front of right eye and green color in front of left eye (WTDT) for to test BSV. Dilated or wet retinoscopy with cyclopentolate (1%) eye drops was done.

**PD:**Prism Diopter,**BI:**Base in, **MR:**Medial Rectus **LR** : Lateral Rectus **HM** : Hand Movement

## **II. Case history and Examination:**

**Case 1.** 11 year-old female child presented to pediatric eye out patient department at Sagarmatha Choudhary Eye Hospital, Lahan, with a history of left eye outward deviation since more than six years, family and personal history non significant. Visual acuity in both eyes 6/6 on Snellen visual acuity chart. Normal anterior segment and fundus examination. She had mild AHP approximately 15 degree and normal BSV. PBCT shows left eye 40 PD BI exotropia. FDT was negative. Surgery was done in left eye under general anesthesia. 7.5mm LR recession and 6mm MR resection was done. Result was orthotropic post operatively, reduction in AHP with satisfactory end result. We made provisional diagnosis mostly congenital exo deviation with non specific cause.

**Case 2.** 19 year old female patient came to OPD with history of left eye exotropia since childhood. On detail examination stimulus deprivation in left eye secondary to macular scar with disc pallor was diagnosed. Her vision was HM in left eye with absent stereopsis. Krimsky test shows 60 PD BI exotropia. FDT was negative. We did 9 mm LR recession and 6.5mm MR resection. No AHP, Chin elevation was noted.

**Case 3:** 20 years old female patient noticed her right eye deviated outward progressively since last twelve to fifteen years due to unknown cause. Past history non significant. On examination, right eye vision 6/60, not improved with pin hole and left eye vision was 6/6. Right eye aniso hypermetropic amblyopia (+ 5.00 D in right eye and plano in left eye) refraction in was diagnosed. Absent stereopsis on Polaroid vectograph. Krimsky test shows 90 PD exotropia with typical V pattern strabismus. Monocular surgery was done under local anesthesia. Right eye supra maximal recession of LR up to 10 mm and 6.5mm MR resection with muscle transposition of half tendon length was done. FDT was negative.

There was no history of trauma or fall, no history of double vision (uniocular or binocular diplopia) in the above all three cases. No history of fever, vomiting, loss of consciousness, epilepsy, skin rashes or lesion. Birth history was normal with full term normal hospital delivery. Developmental milestones were normal. Immunization history is complete till date. Family history of strabismus was not significant.

A Case 1



B Case 2



C Case 3



### III. Discussion:.

Exotropia is the outward divergence of eyes that is aside from the nose. It can be acquired or congenital variety which further classified as con comitant ( non paralytic) and in comitant ( paralytic ) strabismus. In comitant are many times link with hindrance of extraocular movements happen from restrictive or paralytic cause. The non paralytic strabismus categorized in to congenital, primary , sensory and consecutive exodeviation.[12] In our case series we deal with one congenital variety and two sensory ( stimulus deprivation) exotropia. Paralytic squint is mostly due to third nerve palsy, isolated medial rectus palsy, convergence insufficiency. A, V, X pattern or restrictive squint mostly due to Duane retraction syndrome, thyroid induced fibrosis of extra ocular muscles and trauma following surgery. [13, 14] There are very few literature available on congenital and sensory exo deviation online. Most of the publication included a case series of intermittent exotropia (IXT). Swati shree nayak et al attributed a case of exotropia in Ellis Van Creveld Syndrome in a four

year old boy and interpret a clinical features , positive findings with ophthalmic manifestation.[15] Attada et al set up common of sensory exotropia in their study population as contrast to intermittent exotropia possibly due to the earliest intermittency of the strabismus and rural, unlettered, non educated population in the study who also held the faith that strabismus is harbinger of good luck.[16] Thakre S R et al allocate that origin of exotropia because of visual and neurological etiology. Sensory exotropia, refractive amblyopia and that because of visual morbidity tangential due to ocular trauma were most common. Additional sources concluded media opacity due to congenital cataract or corneal opacities, fundus pathology like macular coloboma, Stargardt's disease and children with developmental delay.[17]

#### **IV. Conclusion:**

Our case series mainly hub on exotropia in three non identical states. We does not focus on intermittent variety of exotropia. The first variant is congenital and non specific etiology. Second variant is due to fundus pathology which results in annoyance of development of BSV. It is also called as sensory or stimulus deprivation. Third variant is exotropia secondary to refractive amblyopia with typical alphabet pattern strabismus.

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