



## ASSOCIATION OF CONGENITAL SEVERE PTOSIS WITH FACIAL ASYMMETRY

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**ABSTRACT**

**Purpose:** To assess the association of congenital severe ptosis with facial asymmetry compared with general population with same age group with no lid abnormality. **Method:** Assessment of all 30 patients with severe unilateral congenital ptosis compared with age matched patients attending OPD with no lid abnormality was done. Various parameters were used to measure facial anthropometry. **Result:** We found significant asymmetry of upper and lower face index in 4 patients. Upper and lower face index was smaller on ptotic side as compared to the normal side. **Conclusion:** The observation suggests that severe congenital ptosis could be associated with facial asymmetry and a trend towards smaller face on the affected side in a certain number of cases.

**KEYWORDS :** severe congenital ptosis, facial asymmetry, anthropometry

**Introduction:** Asymmetry is the term used to make reference to dissimilarity between homologous elements which cause alteration between the structures. Facial asymmetry is common in the population and is often presented subclinically. Facial symmetry is the state of facial equilibrium, in which there is a correspondence in size, shape and arrangement of facial landmarks on the opposite sides of the sagittal plane<sup>1</sup>. It is an important part of clinical examination. Significant facial asymmetry results not only in functional but also esthetic issues.

Landmarks points are defined in terms of visible or palpable features on the subject. With the use of measuring instruments such as calipers, measuring tape, scale measurements can be taken between the various landmarks<sup>5</sup>.

The direct measurement, caliper, tape are reliable and inexpensive to make. Craniofacial anthropometry allows for identification and quantification of syndromic clinical features, treatment planning, and operative outcomes<sup>7</sup>.

Various studies have been done in the past associated with facial asymmetry:

- Evereklioglu C, Doganay S, Er H et al<sup>3</sup> studied anthropometric measurement between different races and sex.
- Farkas and James<sup>1</sup> reported that unilateral facial asymmetry with microtia was found in patients of lateral facial dystrophy. The great deficiencies in the surface measurements were accompanied by bone deficiencies.
- G.S.Oladipo, P.D. Okoh and J.S. Hart<sup>4</sup> documented the mean head circumference, nasal height, nasal width and nasal index of adult Ijaws of Nigeria with significantly higher values of all the parameters in males compared to the females.

However no studies are available in ptosis patients so far to the best of our knowledge.

**Materials and methods:** A prospective, comparative study was conducted at Vision eye centre, New Delhi from 1<sup>st</sup> July 2017 to 30<sup>th</sup> June 2019. Thirty patients, 21 males and 9 females of age ranging from 4 to 28 years having unilateral severe congenital ptosis were included in the study. Assessment of all 30 patients with severe unilateral ptosis compared with age matched patients attending OPD with no lid abnormality was done.

**Anthropometry of face and orbit**

We used direct measurement methods using non stretchable measuring tape and sliding caliper.

**Landmarks used for measurement of parameters in my study:**

Nasion (n): midpoint of the nasofrontal suture.

Stomion (sto): most anterior point of contact between upper and lower lip in midsagittal plane.

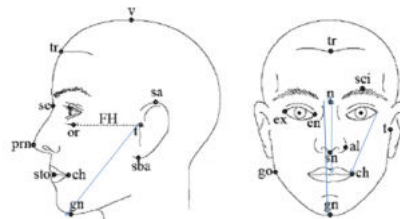
Gnathion (gn): lowest point on the anterior margin of lower jaw in midsagittal plane.

Tragion (t): at the notch above the tragus of the ear where the upper edge of the cartilage disappears in to the skin of the face.

Exocanthion (ex): outer corner of the eye fissure where the eyelids meet.

Endocanthion (en): inner corner of the eye fissure where the eyelids meet.

Chelion (ch): most lateral intersection of the upper and lower lip.

**Parameters used for assessment of facial asymmetry:**

- 1) t-gn: tragion to gnathion (lower face index), place the fixed tip at the subject's tragion and slide the movable part until it contacts gnathion.
- 2) ex-ch: exocanthion to chelion (upper face index), place the fixed tip of caliper at the exocanthion of subject and slide the movable part until it contacts chelion.

**Statistical analysis:**

Statistical testing was conducted with statistical package for the social science system version SPSS (version 21). Nominal categorical data between the groups was compared using Fisher's exact test and for intergroup comparison, Mann Whitney U test was used. Level of statistical significance was set at p-value less than 0.05.

**RESULTS AND OBSERVATIONS**

Comparison of Upper and lower face index in ptotic and normal side:

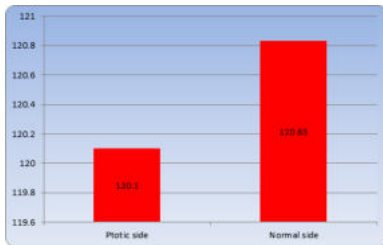
Mean tragion to gnathion distance (lower face index) in ptotic and normal side were  $120.10 \pm 17.16$  mm and  $120.83 \pm 17.50$  mm respectively with p value 0.801.

Mean exocanthion to chelion distance (upper face index) in ptotic and normal side were  $65.30 \pm 7.95$  mm and  $65.530 \pm 6.95$  mm respectively.

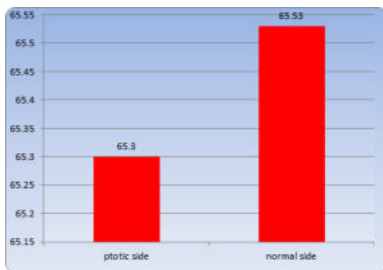
Table 1: Comparison of tragion-gnathion (lower face index) and exocanthion-chelion (upper face index) in ptotic side with normal side

		Tragion to gnathion (lower face index)	Exocanthion to chelion (upper face index)
Ptotic side	Mean	120.1000	65.300
	N	30	30
	Std. Deviation	17.16321	7.95875
Normal side	Mean	120.8333	65.530
	N	30	30
	Std. Deviation	17.50484	6.95875
P value		0.801 NS	

**Fig1: Lower face index in ptotic and normal side**



**Fig 2: Upper face index in ptotic and normal side**



Upper face index:

From 30 ptosis patients, asymmetry of upper face index was present in 9 patients. Upper face index was smaller on ptotic side in all 9 patients.

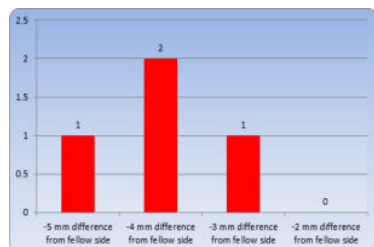
Significant difference was considered if difference of > 2 mm was found between two sides.

So we consider significant asymmetry in 4 patients.

**Table 2: Asymmetry in upper face index**

Asymmetry (in upper face index)	No of patients
-5 mm difference from fellow side	1
-4 mm difference from fellow side	2
-3 mm difference from fellow side	1
-2 mm difference from fellow side	0

**Fig 3: Asymmetry in upper face index**



**Lower face index:**

From 30 patients, asymmetry of lower face index was present in 10 patients. Lower face index was smaller on ptotic side in all 10 patients. Significant difference was considered if difference of > 2 mm was found between two sides.

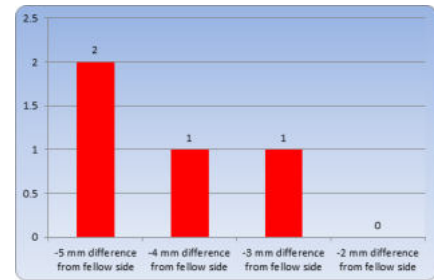
So in 4 patients significant asymmetry was noted.

**Table 3: Asymmetry in lower face index**

Asymmetry (in lower face index)	No of patients
-5 mm difference from fellow side	2
-4 mm difference from fellow side	1
-3 mm difference from fellow side	1
-2 mm difference from fellow side	0

-5 mm difference from fellow side	2
-4 mm difference from fellow side	1
-3 mm difference from fellow side	1
-2 mm difference from fellow side	0

**Fig 4: Asymmetry in lower face index**



From 30 patients asymmetry was found in 4 patients.

**DISCUSSION**

**Association of ptosis with facial asymmetry:**

In our study we tried to see association of facial asymmetry in patients suffering from severe congenital ptosis and to document any difference in mean upper and total facial height, mean upper and lower face index from controls.

Craniofacial anthropometry allows for identification and quantification of syndromic clinical features, treatment planning and monitoring of operative outcomes. To our knowledge this is the first study to assess soft tissue asymmetry of congenital severe ptosis patients.

**Upper face index:**

Upper face index is distance between Ex-ch (exocanthion to chelion). It is measured on both sides of face.

In controls difference in upper face index on both sides was seen in 3 patients In 1 patient difference was 1 mm, and in the rest two the difference was 0.5 mm when both sides were compared.

Significant difference was considered if difference of  $\geq 2$ mm was found between two sides.

From 30 patients we found significant asymmetry of upper face index in 4 patients. Upper face index was smaller on ptotic side as compared to the normal side. In 1 patient it was smaller by 5 mm, in 2 patients by 4 mm and 3 mm difference was noted in 1 patient.

**Lower face index:**

Lower face index is the distance from t-gn (tragion to gnathion).

In controls difference in lower face index on both sides was seen in 3 patients.

In 2 patients difference was 1 mm, and in 1 patient it was 0.5 mm when both sides were compared.

Significant difference was considered if difference of  $\geq 2$ mm was found between two sides.

From 30 patients we found asymmetry of lower face index in 4 patients. It was smaller on ptotic side as compared to the normal side. The difference on both sides was 5mm in 2 patients, 4 mm in 1 patient and 3 mm in 1 patient.

There was no case of larger measurements on ptosis side. All the cases of asymmetry occurred in cases of severe ptosis.

The observations suggest that severe congenital ptosis could be associated with facial asymmetry and a trend towards smaller face on the affected side in a certain number of cases. The observation however needs corroboration in a larger study.

**SUMMARY AND CONCLUSIONS**

We used comparison of upper face index (distance between exocanthion to chelion) and lower face index (distance between tragion to gnathion) on both sides as an indicator of facial asymmetry in patients of ptosis. We have observed an asymmetry of upper and lower

face in 4 patients of severe ptosis tended to show a reduced upper and lower face index on the ptotic side as compared to the fellow normal side. This observation of facial asymmetry in ptosis has not been reported so far to the best of our knowledge



**UPPER FACE INDEX ON NORMAL SIDE 70 MM**



**AND ON PTOTIC SIDE 65MM**

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