Original Research Article

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A case control study of nasal passage changes in repaired cleft lip and/or plate deformity with persons without any such deformity

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ABSTRACT

Background: Cleft lip with or without an associated cleft palate (CLP) is one of the most common congenital birth defects. Both the frequency with which it occurs and the high psychosocial and financial costs associated with CLP contribute to a significant public health interest in the condition. The aim of the present study is to assess the nasal passage changes in repaired cleft lip and/or plate deformity with persons without any such deformity.

Methods: It was a case-control study comprising of 2 groups. Carried out in 25 patients with 15 years and above admitted in plastic surgery or ENT Department of Gandhi Memorial and associated hospital or in patients in whom surgery has been performed earlier. After taking written informed consents from family members or legal guardians detailed history with presenting complaints was taken. Data entry and statistical analysis were performed using the Microsoft Excel and SPSS windows version 16.0 software. Tests of significance like Chi-square test are applied to find out the results.

Results: Mean age of cases in 25.8 years and control 28.7. Deviation of nasal septum was present in 68% cases and 28% in control. Nasal obstruction left side in higher in cases than control. Deviation of nasal septum (L) was more common in cleft because most of the patient had cleft in left side. Caudal dislocation was also common in cleft. It was opposite to the side of cleft. It was common on right side because most of the patients have cleft on left side.

Conclusions: Nasal airflow analysis would be particularly helpful in such investigations. The commonest presenting symptom is nasal obstruction. It is due to deviation of nasal septum.

Keywords: Cleft lip deformity, Nasal passage, Palate

INTRODUCTION

Cleft lip and palate (CLP) deformities are among the most common congenital malformations. The overall incidence of cleft palate with or without cleft lip is 1 case in approximately 1000 live births in the USA and in Europe. Surgical correction of CLP should be performed before the first year of age, usually between 3 and 6 months of age, prior to speech development. The aim of the operation is to reunite all tissue layers of the lip, to reposition the nasal septum and to separate the oral

and nasal cavities; and restore the valve function of the soft palate. 1,2 If this adequate primary surgical correction of CLP fails, the consequentially developing nasal deformity associated with CLP is one of the most challenging reconstructive problems in rhinoplasty. The characteristic cleft lip nose represents a stigma for the patient. This results from a combination of altered anatomy, surgical scaring from previous reconstructive operations and includes deformities of the septum, nasal pyramid, malformation of the nasal tip and malposition of alar cartilages. The indication for surgery is on one hand

the difficult nasal breathing and altered nasal function (tendency for chronic rhinosinusitis) and on the other hand the aesthetic look of the nose both of which may affect the patient's quality of life negatively and can psychosocial burden for cause heavy them. deformities Accompanying nasal are mainly characterized by a shortened columella, a depressed nasal tip, bilateral dislocation of the alar cartilage, eversion of the alar bases and nasal obstruction. 3-6 The condition requires multiple surgical procedures from birth to maturity and frequent outpatient attendances. Many patients suffer impaired facial growth, dental anomalies, speech disorders, poor hearing, and difficulties in psychological wellbeing and social relationships. A recent study from Denmark showed that subjects with CIUP aged between 20 and 30 years have double the incidence of suicide when compared with normal subjects. A significant number of associated syndromes (now over 342) result in problems for cardiac, limb, ophthalmological, and multiple other systems; many have genetic implications.8 All these features dictate that this condition should be managed by multidisciplinary teams whose members consult with the patient's together.9 Preferably their services should be provided in dedicated specialist centres. The present study was designed as a preface toward achieving this purpose. The aim of the present study is to assess the nasal passage changes in repaired cleft lip and/or plate deformity with persons without any such deformity.

METHODS

The present study was carried out in 25 patients with 15 years and above admitted in plastic surgery or ENT Department of Gandhi Memorial and associated hospital or in patients in whom surgery has been performed earlier. The study period was September 2014 to October 2015. It was a case-control study comprising of 2 groups.

Case

Inclusion criteria

- Patient in whom cleft lip and or palate has been repaired earlier.
- Age 15 years and above.

Exclusion criteria

• Patients below 15 years.

Control

Who never have history of cleft lip and/or plate.

After taking written informed consents from family members or legal guardians, following detailed history with presenting complaints was taken.

History of presenting complaints: Airway obstruction,

bleeding from nose, anosmia

General and systemic examination was done. Otorhino laryngological examination (anterior rhinoscopy posterior rhinoscopy nasal endoscopy tests for nasal patency) was done and ear examination was done. Investigations such as X-ray, CT scan, MRI (in cases where indicated) were done. Endoscopic photograph was taken. Nasal measurements by measuring horizontal and vertical portion of nostrils of cleft and non-cleft side in a basal view of a clinical photograph were taken.

Statistical analysis

Data entry and statistical analysis were performed using the Microsoft Excel and SPSS windows version 16.0 software. Tests of significance like Chi-square test are applied to find out the results. Statistical significance taken p value <0.05.

RESULTS

The present case control study of nasal passage changes in repaired cleft lip and/or plate deformity with persons without any such deformity to that who never had such deformity has been carried out in 25 patients and following observations were made.

Table 1: Mean age in control and cases.

Groups	Mean±SD	P value
Case	25.80±10.87	P>0.05
Control	28.72 ± 11.57	P>0.03

Table 1 depicts the average and variation in age in both groups. Most of the cases are in the age group 15-25 years at the time of diagnosis. Mean age at the time diagnosis is 25.8 years. Mean age of cases 25.8 and 28.72 that of controls. There is no significant difference in age of the two groups (Table 1).

Table 2 shows that nasal obstruction in right sides was higher in cases than control and significant. In 8 cases (32%) nasal obstruction was present right side. In 17 cases there was no nasal obstruction on right side. In control 2 patients (8%) nasal obstruction was present on right side. Nasal obstructions left were also significantly higher in cases than control because majority of patient have cleft lip in left side and deviation of septum is present in the same side. Nasal obstruction was due to deviated nasal septum. In 17 cases (68%) deviation of nasal septum was present and it was present in 7 (28%) control. Nasal obstruction left side in higher in cases than control (Table 2).

Table 3 illustrates the comparison of epistaxis and anosmia in control and cases. Epistaxis were higher in cases than control (p=0.44) because deviation in nasal septum is common in clefts than in control. In 5 cases

(20%) complain of bleeding from nose in present where as in 3 control (12%) history of bleeding from nose was present. Presence of anosmia were higher in cases than control (p=0.08). In 5 cases (20%) it is present and in 1 control (4%) complain of anosmia was present (Table 3).

Table 4 shows the distribution of nasal examination of cases. In which deviation of nasal septum left was most common in cases, followed by caudal dislocation.

Deviation of nasal septum (L) was more common in cleft because most of the patient in cleft left side. Caudal dislocation was also common in cleft. It was opposite to the side of cleft. It was common on right side because most of the patients have cleft on left side. In the present study 7 cases (28%) had caudal dislocation right side (Table 4).

Table 5 shows the comparison of nasal examination in control and cases. The deviation of nasal septum was present in most cases. Out of total cases 96 percent cases showed deviation of nasal septum and out of total control 36 percent control showed deviation of nasal septum. It was present in the side of cleft. In controls most of the patients do not have deviation of nasal septum. There was significant difference between groups (Table 5).

Table 2: Comparison of symptoms in left and right nasal obstruction.

Nasal obstruction		Control	Control		Case	
		Number	%	Number	%	P value
Right	Present	2	8	8	32	<0.0 5
	Absent	23	92	17	68	<0.05
Left	Present	7	28	17	68	<0.05
	Absent	18	74	8	32	<0.03
	Total	25	100	25	100	

Table 3: Comparison of epistaxis and anosmia in control and cases.

Complaint		Control	Control		Case	
Complaint		Number	%	Number	%	P value
Epistaxis	Present	3	12	5	20	>0.05
	Absent	22	88	20	80	>0.03
Anosmia	Present	1	4	5	20	. 0.05
	Absent	24	96	20	80	>0.05
	Total	25	100	25	100	

Table 4: Nasal examination of cases.

	Number	%
Deviation of nasal septum left	19	76
Deviation of nasal septum right	5	20
Inferior turbinate hypertrophy (R)	6	24
Inferior turbinate hypertrophy (L)	5	20
Caudal dislocation (R)	7	28
Nil	1	4

Table 5: Comparison of nasal examination in control and cases.

	Control		Case		P value	
	Number	%	Number	%		
Deviation of nasal septum	9	36	24	96	<0.001	
No deviation of septum	16	64	1	4		
Total	25	100	25	100		

DISCUSSION

Present study of change in nasal passage was done in 25 cases and controls each. Cases 15 years and above were included. In the present study included maximum number

of cases 16 (64%) were in age group 15-25 years mean age was in 25.8 years. Majority of the cases were male 20 cases (80%). The findings of the study are in concord with study of Andresen. ¹⁰ Several groups have examined the relationship between nasal structure, airflow and

olfaction in both cleft and typical populations. Hornung stated that unilateral obstructions have been shown to affect uninasal olfaction, although in general overall olfactory ability tends to reflect the ability of the higherfunctioning nostril.11 More recently, Grossmann and colleagues detected significantly decreased nasal airflow in both UCLP and BLCP subjects but no difference in odour detection threshold in BLCP subjects as compared with controls.¹² Moreover, In this study commonest presenting complaint is nasal obstruction. It is on the left side. Because number of deviation of nasal septum is on side of cleft and number of patient having cleft left side is more common than right. Hence, the commonest symptom is nasal obstruction on the side of cleft. Through a series (Fukuhara and Saito; Fukuhara) of radiographic studies, they discovered a variety of abnormalities in the bony nasal structures, nasal septum, and palates of unaffected relatives of CL/P individuals. 13-¹⁵ In present study cleft lip left side is more general than right due to unidentified cause. Cleft lip is more common on left side 21 cases (84%) it is less common on right side-03 cases (12%). Two cases had bilateral cleft lip. A study by Andersen et al comprised with 703 Danish patient and reported cleft lip was present in 60% cases.¹¹ Deviation of nasal septum is on the cleft side hence number of patients having deviation of nasal septum left is more than right. Bardach reported similar results. 16 In present study deviation of nasal septum is on side of cleft lip. Nasal obstruction is the commonest symptom presented by cleft patient. In 19 patients (76%) it is on the side of cleft. The findings are correlated with those of Drake et al, in this study deviation of nasal septum was present in 24 cases (96%).¹⁷ The deviation of nasal septum was in the side of cleft the findings correlate with those of Wahlmam et al. 18 Bardach concords with that hypertrophy of inferior turbinate was present in the side of cleft. 16 In this study 8 cases (32%) had hypertrophy of inferior turbinate. In 3 cases (12%) middle turbinate hyper trophy was present it was present on non-cleft side. In 7 cases (28%) caudal dislocation of septum was present. It was present at non-cleft side. In unilateral cleft horizontal orientation of the nostril is present. It is due to horizontal orientation of ala.

CONCLUSION

Nasal airflow analysis would be particularly helpful in such investigations. The commonest presenting symptom is nasal obstruction. It is due to deviation of nasal septum. Future studies to confirm and expand these results are the first step in this process.

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Institutional Ethics Committee

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