

PATTERNS OF CLEFTS IN VARIOUS ANGLE'S MALOCCLUSION IN CLEFT PATIENTS REPORTING TO KHYBER COLLEGE OF DENTISTRY, PESHAWAR

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Abstract

Objective: To determine the frequency of different types of clefts lip and palate (CLP) among various Angle's classes of malocclusion in a sample of Peshawar population.

Materials & Methods: This cross-sectional study was conducted by using consecutive sampling on 50 non-syndromic CLP patients started from June 2018 to Nov 2018. The demographic details of the subjects including age, sex, type of the cleft lip and palate and Angle's classes were recorded. The age of patients ranged from 13 to 18 years. Clinical examination was done according to the Angle classification of malocclusion given, and the relationship between the maxillary and mandibular first permanent molar was recorded.

Results: Twenty six (52.0%) were males and 24 (48.0%) were females. The mean age was 13.92 ± 4.82 years. The age range was from 8 to 30 years. Of total cleft patients Angle, class III cases were most common (54%). Unilateral cleft lip and palate was the most common pattern (44%) followed by bilateral cleft lip and palate (30%).

Conclusion: The most common Angle malocclusion in CLP patients was class III. Unilateral cleft lip and palate was carrying the largest numbers. Though more males affected than females.

Keywords: Cleft lip, Cleft palate, Orofacial cleft, Malocclusion

INTRODUCTION

Cleft lip and palate (CLP) are common congenital deformities that affect speech, hearing, and facial aesthetics and at times lead to the compromised airway.^{1,2} Cleft lip and palate affects an excess of 10 million people worldwide.^{3,4} The incidence at birth is acknowledged at one in 500 to one in 1000, varying by race, geographic location, sex, and nationality.⁵ Asians are at higher risk than whites or blacks.^{5,6} Increased incidence in males (ratio 2/1) and 80% of the deformity is unilateral.¹

There are large variations in shape and extension of the deformity, reaching from cleft of the lip to palate and alveolar process. Each cleft can be complete or incomplete, unilateral, or bilateral. The deformity

may be present as a single disorder or in association (10%) with a syndrome such as Pierre-Robin Syndrome, Crouzon Syndrome or Treacher-Collins Syndrome.^{7,8}

According to the literature, Kim et al. found a prevalence of total orofacial clefts to be 3.9% in the Korean population. The most common orofacial cleft was cleft palate only, followed by cleft lip only and cleft lip with cleft palate.⁹ Another study done by Gupta et al., found that the occurrence of the unilateral cleft lip was maximum followed by UCLP and bilateral cleft lip. Along with that Maximum subjects with Class II (10.7%) and Class III (4.9%) malocclusion were seen with unilateral cleft lip deformities. None of the patients with UCLP had Class III malocclusion.¹⁰ The research done in Pakistan showed Cleft lip with palate and cleft lip had a dominant male variety, while in the cleft palate variety, the dominant gender were females.^{4,11} However, the research is done in Pakistan did not

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include any relationship between patterns of clefts in various Angle's malocclusion. Hence It is important to understand how different type of clefts relates to different malocclusion. This study was performed to determine the frequency of different types of clefts lip and palate(CLP) among various Angle's classes of malocclusion of Peshawar population.

MATERIALS AND METHODS

This study was conducted on 50 non-syndromic CLP patients. The sample was selected by using consecutive sampling from Orthodontic department, Khyber College of Dentistry, Peshawar. The patients and their parents were informed about the purpose and procedure of the study. The study was started from June 2018 to Nov 2018. The demographic details of the subjects including age, sex, type of the cleft lip and palate, and Angle's classes of malocclusion were recorded. The age of patients ranged from 13 to 18 years. Clinical examination was done according to the classification of malocclusion given by Angle and the relationship between the maxillary and mandibular first permanent molar and was Class I, Class II (division 1 and 2), and Class III. To assess the molar relationship, impressions were taken with alginate, and each study subject was asked to bite a

wax to record centric occlusion and stone model were poured. These models were examined to acquire classification of the malocclusion. Information was obtained regarding the types of oral clefts from the patients by examination. Different types of clefts were noticed such as unilateral cleft lip and bilateral Cleft lip, isolated cleft palate (CP), unilateral cleft lip with the palate (UCLP) and bilateral cleft lip with the palate (BCLP). Data were analyzed using SPSS version 20.0. Descriptive statistics were calculated for age, gender, and pattern of CLP. Chi-square test was applied to see the association and distribution of CLP patterns in genders and Angle classes of malocclusion. P≤0.05 was considered as significant.

RESULTS

A total of 50 patients having cleft lip and palate were selected for the study. Male were dominant 26(52.0%) as compared to females 24(48.0%). The mean age was 13.92±4.82 years, which range from 8 to 30 years. Frequency of class III was the most common(54%) followed by Class I, 13(26%) and class II 10(20%). The most common age group was 8 to 10(34%), followed by 11 to 15 years (32%) (table 1).

Table 1: Age distribution of the sample

Age group (yr)	Frequency	Percent
8-10	17	34.0
11-15	16	32.0
16-20	14	28.0
21-25	1	2.0
26-30	2	4.0

Table 2: Patterns of cleft lip and palate

CLP Type	Frequency	Percent
unilateral cleft lip	5	10.0
bilateral cleft lip	1	2.0
unilateral cleft lip and palate	22	44.0
bilateral cleft lip and palate	15	30.0
isolated cleft palate	7	14.0

Table 3: Patterns of cleft lip and palate by genders

	unilateral cleft lip	bilateral cleft lip	unilateral cleft lip and palate	bilateral cleft lip and palate	isolated cleft palate	P Value
Male	1(2.0)	1(2.0)	13(26.0)	8(16.0)	3(6.0)	0.454
Female	4(8.0)	0(0.0)	9(18.0)	7(14.0)	4(8.0)	

*Use of chi-square test

Table 4: Patterns of cleft lip and palate by Angle classes of malocclusion

Angle class of malocclusion	Cleft					P Value
	unilateral cleft lip	bilateral cleft lip	unilateral cleft lip and palate	bilateral cleft lip and palate	isolated cleft palate	
class I	2(4.0)	0(0.0)	8(16.0)	3(6.0)	0(0.0)	0.46
class II	0(0.0)	0(0.0)	5(10.0)	4(8.0)	1(2.0)	
class III	3(6.0)	1(2.0)	9(18.0)	8(16.0)	6(12.0)	

Unilateral cleft lip and palate was the most common pattern (44%) followed by bilateral cleft lip and palate (30%). Bilateral cleft of the lip was the least common (2%). The details are given in table 2. Patterns of cleft lip and palate were statistically different between males and females ($P=0.454$). The detailed statistics are given in table 3.

Although cleft lip and palate was more common in Angle's class III, subcategories of CLP was not statistically significant among different classes of malocclusion ($P=0.46$). The details are given in table 4.

DISCUSSION

The study was conducted to determine the frequency of different types of cleft lip and palate among various classes of malocclusion in the local population. Angle classification was used for a malocclusion. Frequency of isolated cleft lip and complete cleft lip and palate was determined. In the current study, unilateral cleft lip and palate was most common compared to the bilateral cleft.

A cleft palate may occur as part of the cleft lip deformity (cleft lip/cleft palate) or as an isolated midline entity involving the secondary palate (isolated cleft palate or ICP). These two occurrences of cleft palate are distinctly different embryologic events and should be viewed as different congenital anomalies even though the surgical correction and goals of treatment are very similar.¹²

In the present study, 26(52.0%) were males, and 24(48.0%) were females. So males are more affected by CLP than females. Kim et al.⁹ carried out a study on Cleft lip and palate incidence among the live births in the Republic of Korea and reported that male to female ratio to be 2.1:1. These results are in consistent with Kim et al.

In the current study, the maximum CLP patients were Angle class III. This is due to the reason there

is a strong concordance between Angle classes and skeletal patterns. After one or two months of the lip, the repair is done, and it leads to scarring and as consequently maxilla becomes short, so become class III. Similar results are reported in the study done by Baek et al.¹⁴

In the current study, unilateral cleft lip and palate was the common pattern. This result is in agreement with previous studies by Wilson et al¹⁵ and Lee et al.¹⁶ Wilson et al¹⁵ surveyed all available records in the South West of England of children born with clefts of the lip and palate during the period 1955–1964. The series has been analyzed about incidence, sex, associated congenital deformities, age, parity and clinical condition of the mother, familial inheritance, and other factors. They reported that unilateral cleft lip and palate was the most common pattern.

In the current study, more males affected by CLP than females were not statistically and this is in contrast with previous studies.¹⁴ This may be due to genetic and environmental variation.

CONCLUSION

The most common Angle malocclusion in CLP patients was class III. Unilateral cleft lip and palate was the most common pattern. Though more males affected than females this was not statistically significant.

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