



CLEFT LIP AND PALATE; PREVALENCE, PATIENTS PRESENTING TO A SURGICAL WARD AT ALLIED HOSPITAL FAISALABAD, IN ONE YEAR

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ABSTRACT: A prospective study was conducted to look for prevalence of cleft lip and palate in a population presenting to a surgical unit in a teaching hospital. **Objectives:** To see prevalence of cleft lip and palate alone, lip and palate combined, right or left sided, male to female distribution, and possible factors responsible for clefting. **Study Design:** A prospective study. **Setting:** Surgical Unit II at Allied Hospital Faisalabad. **Period:** March 2009 to March 2010 for one year. **Materials and Methods:** Total 55 patients were treated in year 2009 out of total 17900 (0.3 %) patients admitted in all surgical wards and 6508 patients admitted in surgical unit II (0.8%). Patients were divided into three groups, cleft lip alone (group A), cleft palate alone (group B) and combined cleft lip and palate (group C). Children up to the age of 5 years with congenital abnormality were included in study. **Results:** Out of 6508 patients admitted in surgical unit II 55 patients (0.8%) had cleft lip and palate defect. 55 patients were divided in three groups. In group A, 32 patients presented with cleft lip alone (58.1 %), 16 (29 %) were males and 16 (29 %) were females, 21 patients have left sided (38 %), 4 right sided (7.27%) and 7 patients have bilateral (12.72 %) defects. 2 patients (3.63 %) had family history of cleft lip and both were males. In group B, 12 patients (21.8 %) had cleft palate alone, 7 patients (12.72 %) were males and 5 patients (9 %) were females, 10 patients (1.18 %) had soft palate only while 2 patients (3.63 %) had complete (hard and soft) palatal defect. In group C, 11 patients, had cleft lip and palate combined (20 %), 6 patients were males (10.9 %) and 5 patients (9 %) were females, 8 patients (14.54 %) had only soft palate defect while 3 patients (5.45 %) had complete palatal defect associated with 8 patients (14.54 %) left sided unilateral lip defect and 3 patients (5.45%) had bilateral cleft lip. All patients were operated without any mortality. Ages of mothers at earliest were 16 and 18 years, 3 cousin marriages, (5.45 %) all fathers were smokers, belonged to poor socio economic families and no history of mother's exposure to radiation, drug abuse during gestational life. **Conclusion:** As it is obvious from this study that all patients belongs to poor socio economics group, and all fathers were smokers, 3 patients born in parents who had cousin marriages (5.45 %) 2 patients (3.63 %) with family history, cleft lip and palate are multifactorial congenital abnormalities, runs in families and is influenced by various environmental factors.

Key words: Cleft, Lip Palate, smoking, poor socio economic groups.

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INTRODUCTION

The word cleft means a gap or opening. Cleft lip or palate means a defect or opening in normal fusion of lip and palate. Cleft lip is a congenital abnormality that appears during 6th to 10th weeks of gestation¹ due to non-fusion of maxillary and medial nasal processes. Worldwide 1 in 700 (0.7 %) ^{2,3,16} new born babies have a cleft lip or palate or both. Defect that does not affect palatal structures is termed as a cleft lip¹² which may be complete or incomplete. Complete cleft lip extends up to nose. Bilaterality may exist in same

child. Microform cleft lip⁴ is a scar like depression extending from lip to nostrils.

Cleft palate has also two varieties, complete and incomplete. Palate that affects hard and soft palate is termed as complete cleft palate while incomplete cleft palate affect only soft palate. Uvula is also splitted in most cases of soft cleft palate defects. Cleft palate results due to non-fusion of lateral palatine processes which connects mouth to nasal cavity.



Unilateral cleft lip

Microform cleft lip
Figure - I

Bilateral cleft lip



Incomplete cleft palate

Complete cleft palate
Figure - II

Complete cleft lip and palate

Repair of cleft lip or palate during early age does not affect the speech and psychosocial life^{5,11} however delayed repair affects these behaviors. Cleft lip and palate usually leads to certain complications like inability to suck leading to feeding problems, speech problems and recurrent ear and chest infections.

Development of face is a complex series of rapid events that may be affected by genetic, congenital and environmental factors. Clefts run in families and in syndromes.⁷ Certain genes⁸ have been identified which are responsible for clefting for examples; cleft lip and palate trans-membrane protein 1, GAD 1, AXIN2, FGFR11, IRF6¹² and so on. Environmental factors contributing to cleft lip and palate are hypoxia¹⁵ during gestation, maternal hypoxia due to smoking⁹, alcohol abuse and hypertension. Mother inhalation of certain pesticides, mother's diet like some retinoid, anti-convulsant drugs¹⁰, nitrates, organic solvents, lead, heroin, and cocaine also contribute to these developmental defects while intake of folic acid^{13,14}

during early gestation seems to be protective.

Diagnosis of cleft lip and palate is obvious at birth. Cleft lip repair is usually performed at 8th to 12th weeks after birth but in most of cases rule of 10 is employed.¹⁷ Repair should be best done at the age of 10th week, weight 10 pounds and HB 10gm/dl. The most common procedure for lip repair is Millard's lip repair. Cleft palate is also repaired surgically after temporary use of oral obturator usually at the age of 6th to 12th month of age.¹⁸ Speech problems, hearing loss and chest infection are common complications of cleft palate that can be minimized by proper care.

MATERIALS AND METHODS

This prospective study was conducted in Surgical Unit II at Allied Hospital Faisalabad, which is a teaching hospital, during March 2009 to March 2010 for one year period. In this research study patients were divided in three different groups.

Group A 32 patients with single cleft lip defect,

Group B 12 patients have cleft palate alone and Group C 11 patients have both cleft lip and palate. (Shown in figure-3.)

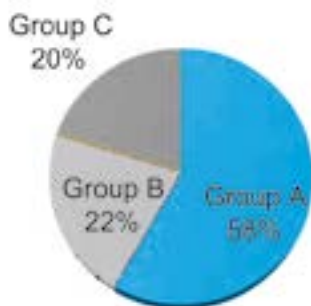


Figure 3 shows different % of patients in three groups.

Patients up to the age of 5 years with congenital birth defects were included in this study while patients with traumatic defects and syndromes were excluded. Complete family history, social status, living standards and obstetrics history was taken. Pre-operative CBC and urine complete was done. All patients were operated in Surgical Unit II by well experienced surgeons. Millard’s lip repair¹⁷ was done for cleft lip in complete defects while lip apposition¹⁹ was done in incomplete lip defects. Mucoperiosteal flaps were utilized for palatal repair.¹⁸ All patients were repaired well without any mortality and full post-operative recovery.¹⁹ All patients were discharged on 2nd post-operative day. No failure was seen during study period.

DISCUSSION

Total 55 patients (0.8 %) out of 6508 were recorded in our study for cleft lip and palate birth defects while internationally it is 0.7% (1/700). These patients were divided into 3 groups. Group A patients had cleft lip alone. The patients presenting during this study period in this group were 32 (58.18%). If we compare these figures with international studies it is (63.55%).^{21,22} Among these 32 patients 16 (50%) were males and 16 (50%) were females while international sex distribution ratio is 1:87.²⁴ Two patients (9.52%) have family history of cleft lip and both were males, the earliest age of mother at presentation was 16 and 18 years. 3 patients (14.2 %) parents were cousins. Out of these 32 patients 21 patients (65.62 %) had left sided cleft lip, 4 patients

(12.5 %), had right sided the sum of total 78.12% and 7 patients (21.87 %) had bilateral cleft lips, while international it exists as 79% and 20%^{21,22} respectively. All mothers were non-smokers, no radiation and drug intake history during gestation, all fathers were smokers and all patients belongs to poor socio-economic group, living in low lying areas, utilizing impure water supplies in old lead pipes and adopting poor standards of life.

Group B patients had cleft palate alone. Out of total 55 patients in this group 12 patients (21.81 % while internationally it is 36.44%) were included.²¹ 7 patients (58.33%) were males and 5 patients (41.66%) were females while international this ratio is 1,²¹ almost same as in our study. 10 patients (83.33%) have incomplete and 2 patients (16.77%) had complete palatal defect, if we compare this with international figures it is 57% and 43%.²¹, No family history, cousin marriages existed but other risk factors were same as in group A.

Group C had both cleft lip and palate at the same time. Out of total 55 patients 11 patients (20%) belonged to this group. If we compare this data with international studies it is 23.67^{21,22}. Among these 11 patients 8 patients (72.72%) had incomplete (soft) palate defect and 3 patients (27.27%) had complete palate defect, associated with 8 patients (72.72%) left sided cleft lip and 3 patients (27.27%) bilateral cleft lips. No family history and cousin marriage were noted but all other risk factors discussed in above two groups were common.

The diagnosis of cleft lip and palate is obvious on physical examination. As we had discussed complications of cleft lip and palate these patients must be treated to avoid these complications at proper time. All patients were treated by utilizing standards surgical procedures. Millard’s lip repair¹⁷ was done for cleft lip in complete defects while lip apposition¹⁸ was done in incomplete lip defects. Mucoperiosteal flaps¹⁹ were utilized for palatal repair.

Figure 4 and Figure 5 shows pre-operative and post-operative picture of same patient.



Fig-4. Pre-operative Cleft Lip & Palate



Fig-5. Post-operative Cleft Lip & Palate

RESULTS

From this study we had observed that congenital cleft lip and palate affects with 1 in 800 (0.8%) new born babies while internationally it is 0.7 %. Cleft lip alone (58.18 %), is more prevalent than cleft palate alone (21.81 %) and combined cleft lip and palate (20 %), left sided cleft lip is more common alone (65.62 %) and combined with palate (67.44 %) than bilateral cleft lip alone

(12.72 %)and combined with palate (18.18 %). Right sided alone cleft lip is (7.27 %) only. There was clear evidence of genetic or family history (9 %) in cleft lip alone and almost equal gender distribution (50%) in each.

On the other hand cleft palate alone is less prevalent (21.81 %), males 7 (12.72%) are more affected than females 5 patients (9 %) and soft

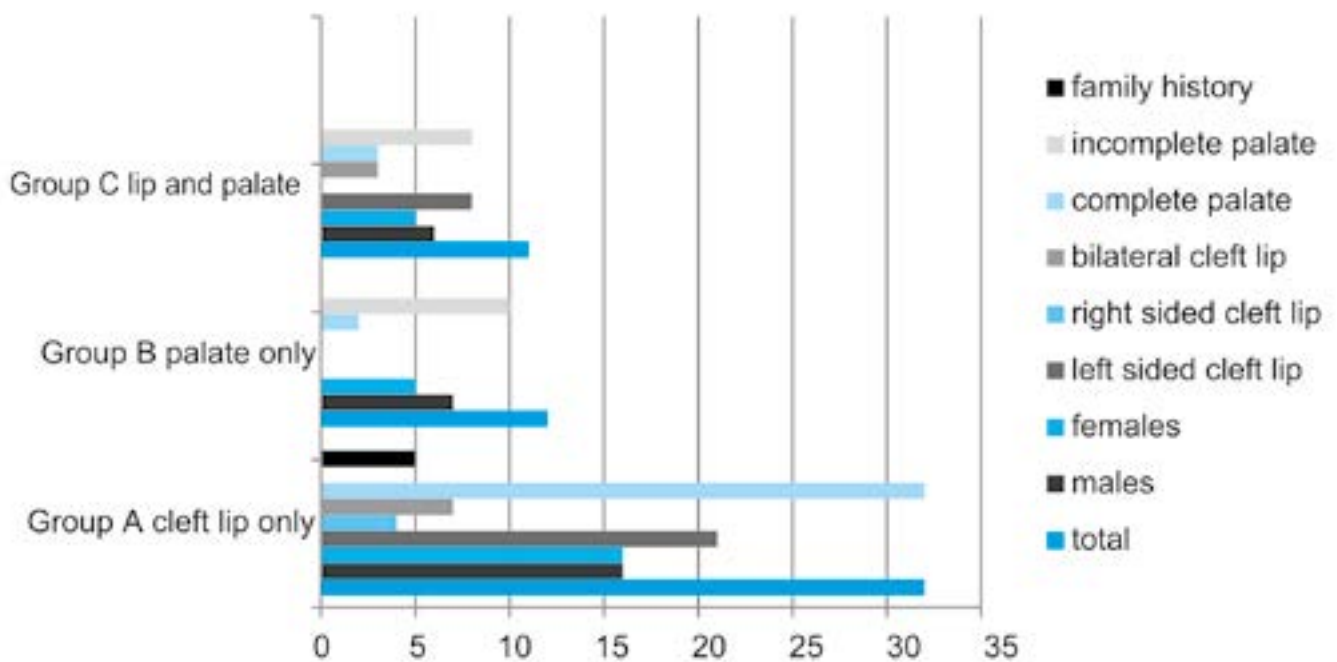


Figure-6: Shows prevalence of different parameters of study.

palate or incomplete palate 10 (83.33 %) is more common than hard palate or complete cleft palate 2 (16.66%). As for as combined cleft lip and palate affecting same baby are concerned these are more commoner in males 7 (12.72%) than females 5 patients (9 %) but almost same defects appears as in cleft palate alone with incomplete palatal defect 8 patients (72.72%) and 3 patients (27.27%) with complete cleft palate while associated left sided cleft lip is in 8 patient (72.72 %) and bilateral in 3 patients (27.27%).

In this study it is observed that patients with cleft lip had family history of this defect. Other factors common for all patients presented and treated with these defects were that all patients belonged to poor socio-economic groups, living in low lying areas with impure drinking water in old lead pipes, all males were smokers although no radiation history and drug abused were found during gestational period. (Shown in figure-6.)

CONCLUSION

Cleft lip and palate are multifactorial congenital abnormalities caused by certain genetic, congenital, and environmental factors that affect lip alone more commonly than palate alone and combined and left sided cleft lip defects are much commoner than right sided with almost equal male to female distribution.

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REFERENCES

- Parker SE, Mai CT, Canfield MA, Rickard R, Wang Y, Meyer RE, Anderson P, Mason CA, Collins JS, Kirby RS, Correa A; for the National Birth Defects Prevention Network. Updated national birth prevalence estimates for selected birth defects in the United States, 2004-2006.
- Elahi, M.M., Jackson, I.T., Elahi, O., Khan, A.H., Mubarak, F.M., Tariq, G.B., & Mitra, A. (2004). **Epidemiology of cleft lip and cleft palate in Pakistan**. *Plastic & Reconstructive Surgery*, 113(6), 1548-1555.
- Tolarova MM, Cervenka J. **Classification and birth prevalence of orofacial clefts**. *Am J Med Genet*. 1998; 75:126-137.
- Kim EK, Khang SK, Lee TJ, Kim TG (May 2010). "**Clinical features of the microform cleft lip and the ultrastructural characteristics of the orbicularis oris muscle**". *Cleft Palate Craniofac. J*. 47 (3): 297-302.
- Pope AW, Snyder HT (July 2005). "**Psychosocial adjustment in children and adolescents with a craniofacial anomaly: age and sex patterns**". *Cleft Palate Craniofac. J*. 42 (4): 349-54.
- Little J, Cardy A, Munger RG. **Tobacco smoking and oral clefts: a meta-analysis**. *Bull World Health Organ*. 2004; 82:213-18.
- Nopoulos P, Richman L, Andreasen N, et al. **Cognitive dysfunction in adults with van der Woude Syndrome**. *Genet Med*. 2007; 9:213-218.
- Shaw GM, Wasserman CR, Lammer EJ, et al. **Orofacial clefts, parental cigarette smoking, and transforming growth factor-alpha gene variants**. *Am J Hum Genet*. 1996; 58:551-561.
- Honein MA, Rasmussen SA, Reefhuis J, Romitti P, Lammer EJ, Sun L, Correa A. **Maternal smoking, environmental tobacco smoke, and the risk of oral clefts**. *Epidemiology* 2007; 18:226-33.
- Antiepileptic drugs as human teratogens**. Eadie MJ. *Expert Opin Drug Saf*. 2008 Mar; 7(2):195-209.
- Werler MM, Ahrens KA, Bosco JL, Michell AA, Anderka MT, Gilboa SM, Holmes LB, National Birth Defects Prevention Study. **Use of antiepileptic medications in pregnancy in relation to risks of birth defects**. *Annals of Epidemiology* 2011; 21:842-50.
- Kapp-Simon KA (2006). **A brief overview of psychological issues in cleft lip and palate**. In S Berkowitz, ed., *Cleft Lip and Palate*, 2nd ed., pp. 257-261. New York: Springer.
- Zucchero TM, Cooper ME, Maher BS, et al. **Interferon regulatory factor 6 (IRF6) gene variants and the risk of isolated cleft lip or palate**. *N Engl J Med*. 2004; 351:769-780.
- Badovinac RL, Werler MM, Williams PL, et al. **Folic acid-containing supplement consumption during pregnancy and risk for oral clefts: a meta-analysis**. *Birth Defects Res A Clin Mol Teratol*. 2007; 79:8-15.
- Shaw GM, Carmichael SL, Laurent C, et al. **Maternal nutrient intakes and risk of orofacial clefts**. *Epidemiology*. 2006; 17:285-291.
- Berkowitz S. **A comparison of treatment results in complete bilateral cleft lip and palate using a conservative approach versus Millard-Latham PSOT procedure**. *Semin Orthod*. 1996; 2:169-184.
- Millicovsky, G.; Johnston, M.C. (1981). "**Hyperoxia**

and hypoxia in pregnancy: simple experimental manipulation alters the incidence of cleft lip and palate in CL/Fr mice". Proc. Natl. Acad. Sci. U.S.A. **78** (9): 5722–5723.

18. Bitter K. Repair of bilateral cleft lip, alveolus and palate. **Part 3: Follow-up criteria and late results.** J Craniomaxillofac Surg. 2001; 29:49-55.

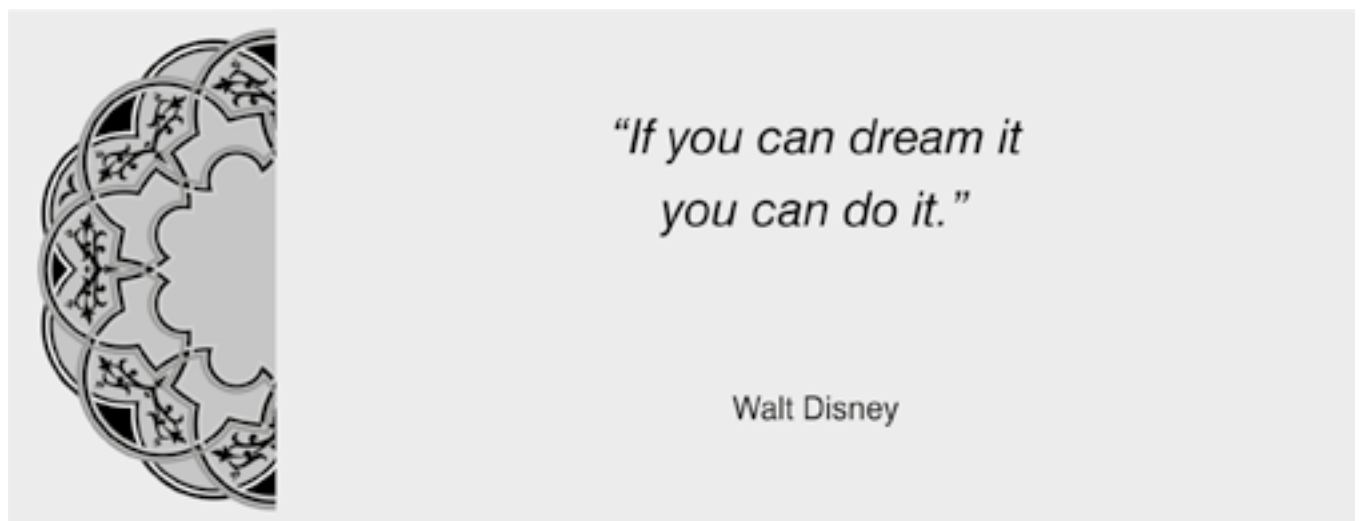
19. Liao YF, Mars M. **Hard palate repair timing and facial growth in cleft lip and palate: a systematic review.** Cleft Palate Craniofac J. 2006; 43:563-570.

20. Onizuka T, Hosaka Y, Aoyama R. **Operations for microforms of cleft lip.** Cleft Palate Craniofac J. 1991; 28:293-300.

21. Muzaffar AR, Byrd JS, Rohrich RJ, et al. **Incidence of 1. cleft palate fistula: an institutional experience with two-stage palatal repair.** Plast Reconst Surg. 2001; 108:1515-1518.

22. DeRoo LA, Gaudino JA, Edmonds LD. **Birth Defects Res A Clin Mol Teratol.** 2003 Sep; 67(9):637-42.

23. Shapira Y, Lubit E, Kufninec MM, Borell G. **Angle Orthod.** 1999 Dec; 69(6):523-8.



AUTHORSHIP AND CONTRIBUTION DECLARATION

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