

Cleft Lip and Palate Repair Surgeries in a Tertiary Care Center: A Descriptive Cross-Sectional Study

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ABSTRACT

Introduction

The burden of cleft lip and palate in Nepal is high. Surgeries should be performed at the right age and weight for the safety and optimal development. We aimed to identify the socio-demographic and peri-operative attributes of cleft lip and palate patients.

Methods

A descriptive, cross-sectional study of cleft lip and palate surgeries conducted in Tribhuvan University Teaching Hospital, over a two-year period. Variables studied include age and weight at the time of surgery, gender, ethnicity, type of repair, other congenital defects, the length of stay, and complications.

Results

Overall, 28 cleft lip and palate surgeries were performed. The median age at operation of cleft lip patients was six months and of cleft palate patients was 20.5 months. The median weight in kilograms of cleft lip patients was six, whereas of cleft palate patients was 10. The male-to-female ratio among all the patients was 1.2:1. The patients hailed from all seven provinces of Nepal. For cleft lip, Millard technique 13 (93%) was most commonly performed and for cleft palate, the Bardach repair 10 (71.4%) was mostly preferred. Only two patients suffered from peri-operative complications.

Conclusion

Millard technique and Bardach repair were the most commonly performed surgeries for cleft lip and palate respectively. Two peri-operative complications were encountered.

Keywords

Cleft lip; cleft palate; socio-demographic profile

INTRODUCTION

Cleft lip and palate are the most common congenital oro-facial malformations. Their prevalence rates range from 0.18 - 4.04 per 1,000 live births, according to their specific race and geography.¹ Phenotypic differentiation present with various combinations including complete or incomplete clefts that may be isolated to the unilateral or bilateral lip or palate only. Furthermore, cleft deformities can be a part of a syndrome with cardiac, musculoskeletal, renal, and other developmental defects associated as well.² Therefore, treatment of this complex entity requires a multidisciplinary approach involving pediatricians, orthodontists, otolaryngologists, plastic surgeons and speech therapists with some requiring multiple surgeries.

Under the guidelines of the American Cleft Palate Association (ACPA), cleft lip should be repaired withing six months and cleft palate within 2 years of life.³ It is pertinent to perform these surgeries at the right age for the optimal physical and social development of the baby.⁴ Furthermore, children with cleft palate are likely to be underweight for their age and are therefore, more prone to complications.⁵

The calculated maximum burden of cleft in Nepal was 42640 in 2013.⁶ The Department of Plastic Surgery and Burns, Tribhuvan University Teaching Hospital (TUTH), Kathmandu, has been providing regular surgical services for cleft lip and palate repair. However, no study has been done regarding the socio-demographic profile of these patients: their gender distribution, ethnic background, region of origin and more importantly their age and weight at the time of operation. Peri-operative details such as the type of repair performed, presence of some other congenital defects, the length of stay and any complications encountered during the surgery, have not been analyzed.

METHODS

A descriptive, cross-sectional study was conducted and ethical approval taken from the Institutional Review Committee. Data of patients who had undergone primary cleft lip or cleft palate surgery from January, 2020 to August, 2022 was collected retrospectively. Data of these individuals were divided into socio-demographic variables and peri-operative variables. The socio-demographic variables and peri-operative variables like age and weight at the time of surgery, type of repair technique, congenital deformity, complications and hospital stay were studied.

All the data were recorded and analyzed using Microsoft Excel 2013 Worksheet. The categorical data were represented in percentages or ratio as

appropriate. The median for age and weight was used as the measure of central tendency to offset the right sided skew of the data set, as some patients had done secondary surgeries at a later date.

RESULTS

Overall, there were 28 patients who had undergone cleft lip and/or cleft palate surgery in the department during the study period. The socio-demographic distribution of the patients is given in Table 1. The male to female ratio among all the patients was 1.2:1. The patients hailed from all the seven provinces of Nepal and belonged to 10 different ethnicities.

Table 2 provides the peri-operative details of the cleft lip and cleft palate patients. Among the patients, three patients had both their cleft lip and palate repaired in our institution within the time period of the study. The median age at operation of cleft lip patients excluding revision patients was six months with an Inter-quartile range (IQR) of two and half months. The youngest patient we had operated was three months old. At the same time, the median age at surgery of cleft palate patients was 20.5 months with IQR of six months.

The median weight at the time of surgery of cleft lip patients was six kilograms. The median weight of patients at the time of cleft palate surgery was

Table 1. Socio-demographic distribution of cleft lip and/or palate patients (n=28)

Characteristics	Number (%)
Gender	
Males	15 (53.6)
Females	13 (46.4)
Male:Female ratio	1.2:1
Caste/Ethnicity	
Brahmin	5 (17.9)
Chhetri	5 (17.9)
Newar	3 (10.7)
Magar	3 (10.7)
Madheshi	3 (10.7)
Tamang	2 (7.1)
Rai/Limbu	1 (3.5)
Sherpa	1 (3.5)
Others	5 (17.9)
Province	
Koshi	4 (14.3)
Madhesh	3 (10.7)
Bagmati	7 (25)
Gandaki	5 (17.9)
Lumbini	4 (14.3)
Karnali	4 (14.3)
Sudurpashchim	1 (3.5)

Table 2. Peri-operative details of cleft lip and cleft palate patients

Characteristics	Cleft Lip (n=14)	Cleft Palate (n=14)
Median age at surgery (months)	6	20.5
Median weight at surgery (kgs)	6	10
Type of repair n(%)	Millard - 13 (93) Others - 1 (7)	Bardach - 10 (71.4) von Langenback - 2 (14.3) Veau-Wardill-Kilner - 2 (14.3)
Other congenital deformity n(%)	2 (14.3)	2 (14.3)
Complications n(%)	2 (14.3)	1 (7.1)
Average length of stay (days)	6.5	9

10 kgs. The average length of stay in the lip repair group was six and a half days whereas in the palate group was nine days. There was no mortality recorded during their stay.

For cleft lip repairs, Millard's rotation-advancement flap was most commonly performed (93%) and for cleft palate, the Bardach repair was preferred (71.4%).

Among all the patients, four patients were noted to have other congenital anomalies, where two of them had septal defect of the heart, one with Poland Syndrome and another associated with Pierre Robins Sequence. These four patients' peri-operative course was, however, unproblematic.

DISCUSSION

Socio-demographic profiling of cleft lip and palate patients in Nepal has not been studied. Paudel et al., claims that birth defects are more common in the disadvantaged ethnicities of Nepal (other than Brahmin/Chhetris). However, in our study, among the nine different ethnicities, more than 35% of the patients were from advantaged ethnicities. Nonetheless, most of the cleft lip and/or palate patients hailed from the Bagmati province (25%), where the capital city and our institution is located. Therefore, the result maybe a consequence of accessibility rather than true distribution. Wide-scale epidemiological studies are warranted for complete analysis.

Like in previous other studies,^{7,8} boys are affected more than girls in this study as well. However, some newer studies suggest that greater percentage of females tend to have more severe forms of cleft.⁹

Appropriate timing of the repair is of utmost importance. In our study, we observed the median age of lip repair to be six months. In another study carried out in Nepal in 2010, the median age at cleft lip surgery was 24 months.⁶ From our results, we can concur that the parents are well informed about the proper timing of these repairs. Not surprisingly, even though Nepal has poor WHO indicators, it is

among the top three countries with the highest Relative Search Volumes (RSV) recorded for the terms "cleft lip," "cleft palate," "cleft lip and palate," "cleft surgery," and "cleft repair according to Google Trends."¹⁰

For palate repair, the appropriate timing has long been a matter of debate.¹¹ Studies have shown that repair done before the age of 12 months result in better speech outcomes with significantly less hyper-nasality.¹² However, this early palatal scarring can also result in reduction of mid-face growth requiring maxillary advancement surgery later on.^{13,14} Our study shows a median age of cleft palate repair at 20.5 months. Due to the short duration of study, data on the speech results of the patients and their facial growth patterns could not be analyzed.

Fortunately, in our study, the median weight at time of cleft palate surgery was 10 kilograms, which is within normal limits. There is high burden of malnutrition among patients accessing surgeries in LMICs. Interventions prompting early identification and appropriate feeding management of this group is advised.¹⁵

Millard's rotation and advancement flap is the most popular technique used for cleft lip repair.¹⁶ In this technique, the surgical scar is camouflaged in the philtrum line and produces symmetrical nostrils. Furthermore, minimal tissue is thrown-away and muscle and lip tissue are returned to the normal position. Long-term patient related outcome studies are warranted for complete analysis.

Of note, two patients in the cleft lip repair group had immediate post-anesthetic (non-surgical) complications of difficulty in extubation and had to be transferred to the Pediatric Intensive Care Unit (PICU). Both the patients recovered fully and were discharged within the next few days. In the cleft palate group, one patient suffered partial tip necrosis of one side of the muco-periosteal flap exposing the hard palate minimally. However, the muscle and nasal mucosa were intact, therefore there was no resultant oro-nasal fistula, which is a severe and dreaded complication.¹⁷

CONCLUSION

Millard technique and Bardach repair were the most commonly performed surgeries for cleft lip and palate respectively. Two peri-operative complications were encountered. The median age and weight at repair for cleft lip and palate surgeries were within the international community guidelines.

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CONFLICT OF INTEREST

The author(s) declare that they do not have any conflicts of interest with respect to the research, authorship, and/or publication of this article.

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