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Prevalence And Management of Cleft Palate Among Rivers State Indigenes

IBINABO FUBARA BOB-MANUEL[1], SONNY CLEMENT OKOSEIMIEMA[2], GOSPEL UCHECHUKWU COLLINS[3], IBINABO FUBARA BOB-MANUEL[4]
[1, 2, 3, 4]*Department of Anatomy, Faculty of Basic Medical Sciences, College of Health Sciences, University of Port Harcourt, Rivers State, Nigeria.*

Abstract- ***Cleft palate is a congenital anomaly that can significantly impact feeding, speech, hearing, and overall quality of life. This study aimed to examine the prevalence, demographic patterns, and management outcomes of cleft palate among children in Rivers State, Nigeria. A retrospective descriptive design was employed, reviewing hospital records from selected healthcare facilities spanning 2015 to 2024. A total of 127 cases were identified, comprising 62 females and 65 males, with the highest number of presentations occurring in the 1–5 years age group. Data on diagnosis, surgical interventions, type of repair, and post-operative outcomes were extracted and analyzed. Results indicated that combined cleft palate (CCP) was the most frequent diagnosis (n = 91), followed by isolated cleft palate (ICP, n = 34) and fistula (n = 2). Primary cleft palatoplasty (PCP) was the most commonly performed procedure (n = 97), with von Langenbeck (LV) and intravelar veloplasty (IVVP) being the predominant repair techniques. Most patients were successfully discharged following surgery, with a low overall complication rate (19.7%), and no significant association was found between age group and post-operative complications ($\chi^2 = 0.0774$, df = 3, $p > 0.05$). Early childhood presentations and high discharge rates suggest that, where accessible, cleft palate management is largely effective. The study highlights the need for continued early identification, timely surgical intervention, and consistent follow-up to optimize outcomes. It also underscores the importance of improving access to specialized cleft care in underserved and rural communities within Rivers State.***

Index Terms- ***Cleft Palate, Children, Rivers State.***

I. INTRODUCTION

Cleft palate is a congenital defect involving the roof of the mouth that develops during early pregnancy as a result of the failure of palatal tissues to fuse adequately. The defect may involve the hard palate, the soft palate, or both, and it can occur either in isolation or in association with cleft lip (Olszewska & Woodson, 2019; Askarian et al., 2022; Houkes et al., 2025). Infants born with cleft palate often experience significant feeding difficulties, which may lead to inadequate nutrition, poor weight gain, and early growth impairment (Cho et al., 2017; Phalke & Goldman, 2024). As affected children grow older, many develop recurrent ear infections, hearing impairment, and speech difficulties due to ineffective palatal function (Burg et al., 2016). These complications can negatively influence academic performance, self-esteem, and social interactions.

In many African communities, cleft conditions are frequently attributed to spiritual causes, curses, or maternal blame (Abue et al., 2020; Vyas et al., 2020). Such beliefs contribute to stigma and may delay or completely prevent affected children from receiving appropriate treatment. In contrast, high-income countries benefit from routine prenatal screening and well-coordinated multidisciplinary cleft care teams that facilitate early diagnosis, timely surgical intervention, and long-term follow-up, including speech and hearing rehabilitation (Phalke & Goldman, 2024).

Globally, cleft lip and/or palate occurs in approximately 1 in every 700 live births; however, reported prevalence rates in Nigeria range from about 0.3 to 3.2 per 1,000 live births, with higher figures often documented in large teaching hospitals (Butali et al., 2014; Abue et al., 2020; Vyas et al., 2020). In Nigeria, specialised cleft care services are largely concentrated in urban tertiary health facilities and are frequently supported by international partners such as Smile Train (Michael et al., 2018). Consequently, many children born in rural or riverine communities, including those in Rivers State, are delivered in small

maternity centres or traditional settings where cleft palate may go unrecognised or inadequately managed (Michael et al., 2018; Kini, 2023). Additional barriers such as transportation costs, limited awareness, and cultural misconceptions further hinder access to care. Moreover, there is limited local evidence on the prevalence, presentation, and management of cleft palate in Rivers State, thereby constraining effective health-care planning and service delivery.

Specifically, in Rivers State, there remains a marked paucity of research data on the prevalence and management of cleft palate among the indigenous population. Although hospital-based studies from other regions, such as Abuja and Ibadan, have reported prevalence rates as high as 3.2 per 1,000 live births (Abue et al., 2020), the absence of region-specific data creates a critical information gap for policy makers and health planners. This gap limits the development of targeted interventions and the efficient allocation of resources. Therefore, this study seeks to address this deficiency by investigating both the prevalence and management practices of cleft palate among indigenes of Rivers State.

II. METHODOLOGY

Research Design

This study adopted a retrospective descriptive research design, which enabled the systematic review and analysis of existing hospital records to determine the prevalence of cleft palate among indigenes of Rivers State and to evaluate the patterns of cleft palate management within selected healthcare facilities. The design facilitated the assessment of documented cases over a defined period without direct patient contact. Medical records spanning from 2015 to 2024 were examined.

Study Area and Population

The study was conducted in Rivers State, Nigeria, and encompassed both urban and rural settings. Rivers State includes major urban centres such as Port Harcourt as well as remote riverine communities. Healthcare institutions selected for the study were drawn from these diverse locations to ensure adequate representation of varying geographic and demographic populations. The study population comprised children diagnosed with cleft palate whose medical records were available in the selected healthcare facilities within Rivers State.

Selection Criteria

The inclusion criteria for this study comprised children diagnosed with cleft palate, with or without associated cleft lip, whose cases were documented in hospital records between 2015 and 2024 and whose records contained complete and relevant information regarding diagnosis and treatment. Conversely, children with isolated cleft lip without palatal involvement, those with incomplete or missing hospital records, and cases not documented within the specified study period of 2015–2024 were excluded from the study.

Sampling

The sample size for this study was 127, corresponding to the total number of cleft palate cases recorded in the selected healthcare facilities within the study period of 2015 to 2024. A convenience sampling technique was utilized, consistent with the retrospective, record-based design of the study. This non-probability sampling approach was considered appropriate as it enabled the inclusion of all accessible and relevant hospital records available during data collection.

Method of Data Analysis

The collected data were analyzed using SPSS version 25. Descriptive statistics (frequencies, percentages) were used to summarize the data, including the prevalence of cleft palate by demographic factors. The chi-square test was used to explore relationships particularly between age group and post-operative complication, and between demographic variables and diagnosis or treatment received. The results were presented in tables and figures for easy interpretation.

III. RESULTS

Between 2015 and 2024, a total of 127 cleft palate cases were recorded, with an almost equal sex distribution (62 females and 65 males), indicating no clear sex predominance. The highest number of cases occurred in 2022, followed by 2024 and 2023, suggesting increased case documentation in recent years. While some years showed male predominance and others female predominance, the overall pattern

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demonstrates annual fluctuation with a generally balanced male–female distribution across the study period (Table 1).

Table 1. Frequency of occurrence by year and sex

	Frequency (%)		
Year	Female	Male	Both
2015	5 (50.00)	5 (50.00)	10
2016	2 (28.57)	5 (71.42)	7
2017	2 (22.22)	7 (77.78)	9
2018	2 (20.00)	8 (80.00)	10
2019	7 (53.85)	6 (46.15)	13
2020	2 (100.00)	0 (0.00)	2
2021	9 (75.00)	3 (25.00)	12
2022	15 (62.50)	9 (37.50)	24
2023	9 (50.00)	9 (50.00)	18
2024	9 (40.91)	13 (59.09	22
TOTAL	62	65	127

Table 2. Age against Outcome of Surgery (Complication) by Gende

	Frequency (%)					
	Female			Male		
Age Group	Broken	Discharged	Total	Broken	Discharged	Total
1-5 YRS	10 (25.64)	29 (74.36)	39	7 (15.91)	37 (84.09)	44
6 - 12 YRS	4 (21.05)	15 (78.95)	19	2 (15.38)	11 (84.62)	13
13 - 19 YRS	0 (0.00)	2 (100.00)	2	1 (25.00)	3 (75.00)	4
≥ 20 YRS	0 (0.00)	2 (100.00)	2	1 (25.00)	3 (75.00)	4

Table 3. Age against Outcome of Surgery (Complication)

Age Group	Frequency (%)		
	Broken	Discharged	Total
1-5 YRS	17 (20.48)	66 (79.52)	83
6 - 12 YRS	6 (18.75)	26 (81.25)	32
13 - 19 YRS	1 (16.67)	5 (83.33)	6
≥ 20 YRS	1 (16.67)	5 (83.33)	6

The majority of cleft palate cases were observed in the 1–5 years age group, with 39 females and 44 males in one dataset and a total of 83 cases in another, indicating that most patients presented and received management during early childhood. Across all age groups and both sexes, the proportion of discharged patients was consistently higher than those with broken follow-up, suggesting generally good treatment completion and follow-up outcomes. Very few cases were recorded among adolescents and adults, which may reflect either early intervention in childhood or reduced presentation at older ages. Overall, these findings highlight that cleft palate management in this population predominantly occurs in early childhood, with minimal loss to follow-up across all age groups (Tables 2 and 3).

Table 4. Pattern of Occurrence of Cleft Palate and its Treatment Protocol (by Sex)

Parameter		Frequency (%)		
		Female (%)	Male	Both Gender
DIAGNOSIS	CCP	44 (48.35)	47 (51.65)	91
	ICP	17 (50.00)	17 (50.00)	34
	FISTULA	1 (50.00)	1 (50.00)	2
	TOTAL	62	65	127
ABNORMALITIES	PRESENT (SPEECH)	50 (48.08)	54 (51.92)	104
	ABSENT	12 (52.17)	11 (47.83)	23
	TOTAL	62	65	127
TYPE OF OPERATION	PCP	48 (49.48)	49 (50.52)	97

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	SCP	7 (36.84)	12 63.16)	19
	FR	7 (63.64)	4 (36.36)	11
	TOTAL	62	65	127
TYPE OF REPAIR	FC	7 (63.64)	4 (36.36)	11
	IVVP	13 (59.09)	9 (40.91)	22
	LV	36 (45.00)	44 (55.00)	80
	PV	0 (0.00)	1 (100.00)	1
	SLR	0 (0.00)	1 (100.00)	1
	TFP	6 (50.00)	6 (50.00)	11
	TOTAL	62	65	127
COMPLICATIONS	BROKEN	14 (56.00)	11 (44.00)	25
	DISCHARGED	48 (47.06)	54 (52.94	102
	TOTAL	62	65	127

*PCP - Primary Cleft Palatoplasty (first-time palate repair).
*SCP - Secondary Cleft Palatoplasty (revision/secondary repair after the primary surgery).
*FR - Fistula Repair (closure of an oronasal fistula).
*FC - Furlow (double-opposing Z-plasty) palatoplasty
*IVVP- Intravelar Veloplasty (Palatoplasty)
*LV - von Langenbeck palatoplasty (two relaxing incisions with mucoperiosteal flaps)
*PV - Pushback palatoplasty (Veau–Wardill–Kilner V-Y pushback technique)
*SLR- Straight-Line Repair (midline closure technique; straight incision/closure).
*TFP - *Two-Flap Palatoplasty* (bilateral mucoperiosteal flaps elevated and closed in layers).

Table 5. Chi-square test of age against complications after surgery

Age Groups	Frequency (%)		$\chi 2$			
	Broken	Discharged	df	cal	0.05	Inference
1-5 YRS	17	66	3	0.0774	9.35	No Significant Association
6 - 12 YRS	6	26				
13 - 19 YRS	1	5				
≥ 20 YRS	1	5				

The raw counts are: 1–5 yrs: 17 broken, 66 discharged; 6–12 yrs: 6 broken, 26 discharged; 13–19 yrs: 1 broken, 5 discharged; ≥20 yrs: 1 broken, 5 discharged. The chi-square results show df = 3, χ^2 (calculated) = 0.0774, and χ^2 (critical at 0.05) = 9.35. Since 0.0774 is far below 9.35, there is no statistically significant association between age group and the likelihood of a complication in this dataset. In simple terms, complication rates look broadly similar across the age bands, and most patients were discharged without complications.

IV. DISCUSSION

The present study reviewed 127 cases of cleft palate documented in selected healthcare facilities in Rivers State between 2015 and 2024. The cases were almost evenly distributed by sex, with 62 females and 65 males, and the highest number of cases occurred in 2022. Most patients were in the 1–5 years age group (83 cases), indicating that the majority of cleft palate presentations and interventions occur during early childhood (Tables 2 and 3). Analysis of treatment patterns showed that combined cleft palate (CCP) was the most common diagnosis, primary cleft palatoplasty (PCP) was the predominant procedure,

and von Langenbeck (LV) and intravelar veloplasty (IVVP) were the most frequently used repair techniques. Overall, post-operative complications were low, and there was no significant association

between age and complications following surgery ($\chi^2 = 0.0774$, df = 3, $p > 0.05$) (Table 5).

V.

Although this study is hospital-based and does not provide population-level prevalence, the data show trends in presentation and management. The increase in documented cases in recent years likely reflects improved case detection, reporting, or service activity rather than a true increase in population incidence. This observation is consistent with studies in other populations. For example, Shibukawa et al. (2019) reported an average prevalence of 0.51 per 1,000 live births in Brazil from 2005 to 2016, with regional variations, while Zhu et al. (2021) found a prevalence of 7.55 per 10,000 live births in Guangdong Province, China, with a decreasing trend from 2015 to 2018. These differences highlight the influence of surveillance systems, case ascertainment, and access to specialized care on reported rates.

The predominance of early childhood presentations and high discharge rates in this study suggest that when cleft care services are accessible, patients are able to complete treatment successfully. However, these data may underestimate the true burden, particularly in rural and riverine communities where access to healthcare is limited and some cases may remain unrecorded or present late. The distribution of surgical techniques reflects available local expertise, while the low complication rate and small proportion of lost follow-up are encouraging but may be influenced by incomplete long-term recording in hospital files.

The findings have important implications for policy and future research. Strengthening surveillance through a centralized cleft registry and improving outreach to underserved areas would provide a clearer picture of the true burden of cleft palate. Expanding multidisciplinary care including feeding support, early speech and hearing follow-up, dental care, and family counselling remains essential, especially with support from non-governmental organizations such as Smile Train (Michael et al., 2018). Furthermore, prospective population-based studies are needed to determine incidence rates and long-term outcomes. In settings like Rivers State, linking birth records with surgical databases could improve planning, resource allocation, and overall cleft care delivery.

VI. CONCLUSION

Based on the findings of this study, cleft palate cases in Rivers State were almost equally distributed between males and females, with the majority presenting in early childhood, particularly within the 1–5 years age group. Primary cleft palatoplasty was the most commonly performed procedure, with von Langenbeck and intravelar veloplasty being the predominant repair techniques. Post-operative complications were low, and there was no significant association between age and surgical outcomes, indicating generally successful management across age groups. These results highlight that while cleft palate management is largely effective where services are accessible, early presentation and consistent follow-up remain critical to achieving optimal outcomes.

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