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## RESEARCH ARTICLE

# CLEFTS LIP AND PALATE IN CAMEROON: EPIDEMIOLOGICAL AND CLINICAL ASPECTS. SURGICAL AND ORTHODONTIC TREATMENT

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### ABSTRACT

**Introduction and objectives:** Clefts lip and palate are congenital malformations due to a lack of fusion facial bud of the embryo between the 35<sup>th</sup> to 40<sup>th</sup> day of the intra uterine life. Cleft affects higher lip, palate and occasionally velum. The aim of our work was to describe the follow up of cleft lip and palate in Central Africa precisely in Cameroon. **Methodology:** To attain our aim, we have done a prospective descriptive and analytic study over a period of 25 months from October 2013 to November 2015 in Ngaoundere Protestant Hospital. Our sample was done by consecutive recruitment without limitation of the number of patients to include in our study. **Results:** Our study concerned 145 patients with 60% (n=87) of male and patients of the age of 2 to 9 years old gave 37.8% (n=55) of the total effective. Labio-alveolar cleft were the most frequent and represented 42.2% (n=61) of all clefts. The left part of the mouth was the most affected part registered 46.7% (n=21) and patients presented in majority a complete character of their malformations (62.2%, n= 78). 84% (n = 122) of patients received 1 cleft repair while 11% (n = 8) had 2 repairs. Cheiloplasty according to Millard was the most popular surgical technique (95.6%, n = 138). **Conclusion :** Cleft lip and palate are congenital malformations causing many disorders as functional, esthetical and psychological aspects. So, considering troubles due to this malformation, it urges to include Bucco-dental Doctor and orthodontists in the multidisciplinary team for better follow up of clefts in our milieu. Many factors as genetic and environmental increase the risk to develop this affection.

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## INTRODUCTION

Cleft lip and palate are malformations affecting the upper lip, the palate and eventually the veil, resulting from a defect of fusion of facial buds of the embryo between 35<sup>th</sup> and 40<sup>th</sup> day of life aspiration (Rajgopal, 2005). These clefts can be at the origin of many disorders with repercussions on language, food, aesthetics, basic periodontal dental, breathing or even the psychology of the subject. Very common in the world; nearby a birth on 700. In Africa, the prevalence is estimated at 1.2/1000 live births. The overall objective of our study was to describe the management of cleft lip and palate at the Protestant hospital of Ngaoundéré (PHN).

## MATERIAL AND METHODS

To achieve these objectives, we conducted a prospective study with a descriptive and analytic purpose over a period of 16 months, from October 2013 March 2015 to the Protestant hospital of Ngaoundéré.

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Our sampling is done by consecutive recruitment without limiting the number of patients to be included in our study. So were included, patients presenting a cleft lip operated to PHN, and agreeing to participate in our study. Patients with cleft and a polymalformative syndrome, patients seen only for scarre vision lip and those with other malformations than cleft have been excluded. The data collection is made on standard data sheets and registration of the information is done by the CSPro.4.1 software. The analysis of the data was conducted by the software SPSS 17.1 while the paintings were executed by the software Microsoft Excell 2007. The test of Chi-square used to compare two qualitative variables was considered statistically significant for a p-value < 0.05. The value V-Cramer was used to determine the intensity of the relationship between two variables. This binding was large for a value greater than 0.2.

## RESULTS

**Epidemiological characteristics:** Our study involved 145 people including 60% (n = 87) male. Patients aged 2-9 years were the largest and accounted for 37.8% (n = 55) of the total.

Muslim patients were the most of our patients and accounted for 71.1% (n = 103) sample. Both of these patients with a low standard of living were the most counted (68.9%, n = 100). Folic acid was not routinely taken during gestation. Thus, 36 women (62%) reported taking folic acid while 22 mothers (38%) reported not taking this medication.

**Clinical characteristics:** The labio-alveolar cleft were the most found and were 42.2% (n = 61) of all identified cleft so that the left side was the most reached 46.7% (n = 68). Patients were mostly slots to a complete character 62.2% (n = 90). The lateral incisor was the most affected tooth by dental Agenesis and was 42.85% (n=62) of the cases. 41 men (59,26%) had complete clefts, 37 women (66.67%) had complete clefts while 31 women (33.33%) and 36 men (40.74%) had incomplete clefts as shown in the table.

#### Distribution of patients by sex and the character of the cleft

		Sex		Total
		Female	Male	
character	Incomplete	29	26	55
	Complete	39	51	90
Total		68	77	145

**Orthodontic and surgical therapy:** Cheiloplasty according to Millard was the most popular surgical technique (95.6%, n = 138). 84% (n = 122) of patients received 1 cleft repair while 11% (n = 8) had 2 repairs. As for the orthodontic treatment, the Palatine shutter was 62.5% (n=28) orthodontic appliances received by patients. The prognosis was mostly good for the patients operated 64.4% (n = 93) of patients. The evolution was satisfactory for most subjects (82.2%, n = 119) of our study.

## DISCUSSION

The overall objective of our study was to describe the management of cleft lip and palate in Central Africa precisely in Cameroon search that lasted 25 months was specifically to describe the clinical aspects of the labiopalatines slots and determine an epidemiological profile of these malformations. It concerned also specify braces used in the treatment of cleft and determine the different surgical techniques practiced in Cameroon.

**Epidemiological characteristics:** In our study, we found a clear predominance of the male sex with a sex ratio of 1.5 in favour of men. This result is similar to that found by Martelli and al in a study in Brazil (Badoe, 2000), which reported 64% of boys with diagnosed slot. Patients in our sample had a mean age of 7.49 years  $\pm$  7. 5. However, the data collected are still less symmetrical. These results are still higher than those found by Metomo in his thesis of medicine where the average age was 3 years (Metomo Roland, 2012). This high age of the patients received in consultation would be due to the delay to the consultation of patients, low socio-economic level and the lack of information. The Muslim religion was the most found and represented 71.1% of religious beliefs. This would find its reason in that investigations were conducted in the region of Adamaoua, deemed predominantly populated by Muslims. In this study, the folic acid intake was not found in all mothers investigated. Thus, 17 mothers (37.8%) admitted not taking folic acid through out their pregnancy.

In our series, the  $P = 0.021$  square Chi value less than 0.05 suggests that there is a significant difference between women who take folate during pregnancy and those who do not.

**Clinical characteristics:** The type of cleft found in our sample was the labio-alveolar and accounted for 42.2 percent of all saved cleft. These results are similar to those found by a study conducted by Rakotoarison *et al.* (2011). Madagascar which stipulated that the labial cleft with palatine division accounted for 56.6% of the diagnosed clefts. The left side was the most (46.67%) among both men and women. These results are stackable to those of Badoe *et al.* (2009), which indicated that 60% of the unilateral cleft touch the left side. However, the P value computed and contributions to 0.064 tells us that there is no significant link between sex and the side reached as  $P < 0.05$ . In our study, the complete or incomplete cleft was systematically searched. According to our investigations that 62.2% of oral clefts in our series had a complete character.

However, the clefts were more complete among boys (57.8%) and girls (42.2%). The encrypted 0.068 and greater than 0.05 P-value shows in our study that he don't would not be a meaning link between sex and the character complete or incomplete from the cleft. Dental Agenesis was frequently observed in terms of the lateral incisors and constituted 42.85% infecund teeth. The dental Agenesis were noticed at 15.55% of patients received in consultation. These results are similar to those of Rakotoarison (Rakotoarison, 2011) who had found in a survey conducted in Madagascar, dental Agenesis in 12.7% of subjects. Our findings are also similar to those of a study done by Kim *et al.* (1990) in Korea who stated that a genesis of upper lateral incisors was the most common dental anomalies found in the cleft lip. The lateral incisors in our statistical series were the incriminated under the super numerary teeth and represented all of super numerary teeth. This observation is the even that one made by Jagodinska *et al.* (2006) in 1990 in Poland, where a case of bilateral labiopalatine clefts full has been released and was supernumerary lateral incisors.

**Orthodontic and surgical therapy:** The most used surgical techniques in our research were the cheiloplasty according to Millard and the staphylorrhaphy according to Wardill VY. These results are in part similar to the study by Ribeiro *et al.* (8) in Brazil, which presented the cheiloplasty according to Millard and the staphylorrhaphy according to veal and as technical Langenbeeck advocated in surgical treatment. This difference would find its justification in that the use of a surgical technique depends mainly on the dexterity of the operator and sometimes, the clinical presentation of the cleft.

In our study, the Palatine shutter was the mos tused apparatus in orthodontic treatment of palato-Velar and labio-alveolo-palato-Velar cleft, representing 37.5% of the crafted plates. The p-value encrypted to 0.04 and significant at the 5% threshold shows that there is a significant link between the labio-alveolo-palato-Velar slots and the use of Palatine shutters. This binding between Palatine shutter and palato-Velar slot is not low (V cramer = 0.397 > 0.2). Satisfactory evolution was most often found in patients in their output and was 82.2% of the saved changes. The prognosis was generally good in our investigation, this result is somewhat similar to the conclusions of Dixon *et al.* (10) who found a favorable prognosis in nearly 80% of the operated cases.

## Conclusion

Cleft lip and palate are malformations of the face that may be at the origin of various disorders on plans as various as social, functional or aesthetic. We hold that this congenital malformation was more present in male subjects (60%) while the left side was the most hit as well among girls than boys. Cheiloplasty according to Millard (95.6%) was the most used surgical technique and the Palatine shutter, more made-up orthodontic apparatus to patients. Considering the different damage that produce these clefts, it is important that adequate support through its multidisciplinary characteristics established in our midst. Many genetic and environmental factors increase the risk of developing these clefts. The topography of these oral malformations varies according to a number of factors including gender, race, socio-economic and even level the place of residence.

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