

Management of Congenital Malformations of the Face in the Gbèkè Region (Côte d'Ivoire)

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Abstract

Background: Congenital malformations of the face are relatively frequent in the Gbèkè region (Côte d'Ivoire). **Objectives:** Identify the epidemiological aspects, describe the management method, distinguish the anatomical-clinical aspects and identify the therapeutic methods and their results. **Material and methods:** A retrospective and descriptive study was carried out over a period of 8 years (2012-2019) in the Odontostomatology and Maxillofacial Surgery Department of the University Hospital Centre (Bouaké) and in the “Jean Baptiste Vatelot” religious hospital of Bouaké. The study concerned patients whose congenital malformations of the face had undergone primary surgery. **Results:** 439 patients were collected, *i.e.* an annual frequency of 54.88 cases per year. The sex ratio was 1.07 and the mean age was 6.82 years (range 5 months to 48 years). There were 434 (98.86%) cleft lips and palates and 5 (1.14%) Tessier's clefts. Among the cleft lip and palate, there were 214 (49.31%) cleft lip, 127 (29.26%) cleft palate and 93 (21.43%) combined cleft lip and cleft palate. Surgical treatments numbered 532 and included 293 (55.08%) cheiloplasties, 113 (21.24%) pushback uranostaphyloraphies and 90 (16.92%) double flap palatoplasties. Complications were noted in 43 cases. **Conclusion:** Congenital malformations of the face were managed relatively late in the Gbèkè region with satisfactory results. Ante-natal diagnosis, early psychotherapy and a better screening system should allow an improvement of the management.

Keywords

Congenital Malformation, Face

1. Introduction

Congenital malformations of the face are dysmorphic features observed at birth. They have various clinical expressions. The most frequent and best known are cleft lip and palate (CLPA) [1] [2] [3]. The incidence of cleft lip and palate in all races is estimated to be 1 per 2000 births [4] [5]. These congenital malformations of the face are a real public health problem worldwide.

In Africa, the delivery of a child with a facial malformation is experienced as a real tragedy due to the mystico-religious considerations surrounding it and the burden it places on families [6]. Moreover, the children affected often come from impoverished families who cannot afford relatively expensive treatments. For several decades, numerous humanitarian missions for the treatment of cleft lip and palate have been carried out in Africa, mostly by Western practitioners [6]. These short and non-periodic missions often aimed only at cleft lip and palate and excluded other facial malformations. They also did not allow for proper patient follow-up [6]. To overcome these shortcomings (economic difficulties and exclusion of other clinical forms), Ivorian practitioners joined forces within the non-governmental organization (NGO) denominated “sourire a la vie”, in order to provide free treatment for all forms of maxillofacial malformations. Their goal was to provide free treatment for all forms of maxillofacial malformations. Since then, the work carried out has focused exclusively on clefts lip and palate [4] [6]. The study thus aimed to take into account all the clinical forms of maxillofacial malformations treated in the Gbèkè Region (Côte d’Ivoire), with the general objective of contributing to the development of one database for a registry of congenital malformations in this region. The specific objectives were to:

- Identify the epidemiological aspects of congenital anomalies of the face;
- Distinguish the anatomical aspects, to describe the management method;
- Identify the therapeutic methods used.

2. Methodology

This was a retrospective and descriptive study which took place from January 2012 to December 2019, *i.e.* over a period of 8 years, in the departments of odonto-stomatology and maxillofacial surgery, gynaeco-obstetrics of the University Hospital of Bouaké and at the Jean Baptiste Vatelot (JBV) Socio-medical-Surgical Centre of Bouaké (Côte d’Ivoire). It included patients surgically treated by the practitioners of the NGO “sourir a la vie” in the context of humanitarian missions, regardless of their place of residence, age and sex. All patients included in the study had informed consent signed by the patient or his/her legal guardian. All patients with an acquired facial deformity and patients who underwent revision surgery were not included in the study. All incomplete or poorly completed medical records were excluded. The variables studied were epidemiological (age and gender obtained at interview), anatomical-clinical (type of malformation and classification based on clinical examination), therapeutic (surgical treatment) and evolutionary (postoperative monitoring). Data analysis was

based on descriptive statistics through calculations of frequency distribution (absolute, relative, cumulative) and measures of central tendency (mean, median, mode).

3. Results

From 2015 to 2018, 24,042 births were registered at the Gynaecological-Obstetrics Department of the University Hospital of Bouaké. There were 99 cases of facial malformations, *i.e.* 4.11 cases per 1000 births. Cleft lip and palate (CLPA) were 15, *i.e.* 0.6 cases per 1000 births and 15.15% of all facial malformations. However, the number of patients managed from January 2012 to December 2019 was 439, *i.e.* an annual frequency of 54.88 cases. At the JBV Centre, 411 (93.62%) patients were treated, of whom 195 (47.44%) were men and 219 (52.56%) were women. At Bouaké University Hospital, 28 (6.38%) patients were treated, of whom 13 (46.43%) were men and 15 (53.57%) were women. The overall sex ratio was 1.07. Patients with cleft lip had an average age of 7.17 years for unilateral forms and 7 years for bilateral forms. Patients with cleft palates had a mean age of 6.92 years for unilateral forms and 7.11 years for bilateral forms (**Table 1**). The overall mean age was 6.82 years with extremes of 5 months and 48 years. Cleft lip and palate accounted for 98.86% of the malformations managed and the other congenital malformations of the face were Tessier's clefts N° 2 and N°7 which accounted for 1.14% (**Table 2**). Unilateral cleft lip accounted for 188 (87.85%) of all clefts lip (**Figure 1(a)**, **Table 2**). There were 26 bilateral clefts lip, representing 12.15% of all clefts lips (**Table 2**). There were 106 complete clefts palate (hard and soft palate), *i.e.* 83.46% of all clefts palate (**Figure 2(a)**). The complete clefts palate was unilateral in 35 cases (33.02%). Complete clefts palate were bilateral in 71 cases (66.98%). Incomplete clefts palate, corresponding soft palate forms only, were observed in 21 patients (**Table 2**). The combination of cleft lip and palate (CLAP) was observed in 93 cases. There were 86 cases (92.47%) of combination of CLAP that were unilateral. Of these, 58 cases (67.44%) were located on the left and 28 cases (32.56%) on the right. There were also 07 cases of bilateral CLAP. The malformations and associated anomalies concerned the nose in 5 cases (4.95%), the ear in 3 cases (2.98%) and the elocution function in 93 cases (92.08%) (**Table 3**).

The method of therapeutic management consisted of:

- Primary treatment of clefts lip and Tessier's cleft was performed on patients aged at least 10-week-old, weighting over 10 kg and with more than 10 grams of haemoglobin.
- Primary treatment of clefts palates was performed from 9 months of age.

The surgical treatment methods used were: cheiloplasty according to the Millard technique in 269 cases (50.56%), cheiloplasty according to the Manchester technique in 24 cases, uranostaphylorrhaphy in 113 cases (21.24%), double flap palatoplasty in 90 cases (16.92%), the "Collerette" technique in 17 cases (3.19%) and Z-plasty in 19 cases (3.57%) (**Table 4**) (**Figure 1(b)** and **Figure 2(b)**).

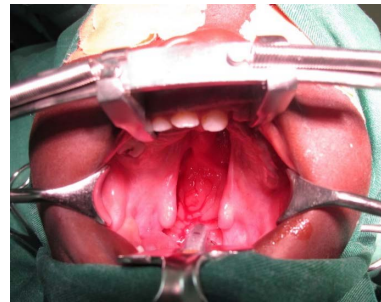


(a)

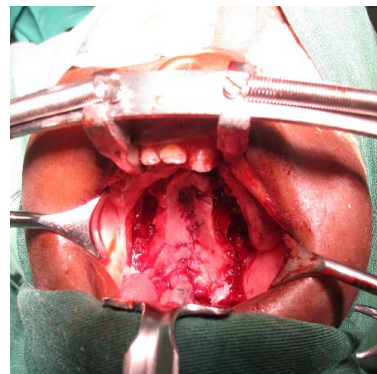


(b)

Figure 1. (a) Left unilateral complete cleft lip before surgery; (b) Left unilateral complete cleft lip after cheiloplasty according to the Millard technique.



(a)



(b)

Figure 2. (a) Complete bilateral cleft of the cleft palate before surgery; (b) Complete bilateral cleft of the cleft palate after double flap palatoplasty.

Table 1. Distribution according to anatomical-clinical forms of congenital malformations and age.

Anatomical forms (cleft)		Average ages (in years)		General Average
		Male	Female	
Clefts lip	Unilateral	6.33	8	7.17
	Bilateral	6.92	7.83	7
Clefts palate	Unilateral	6.87	7	6.92
	Bilateral	6.71	7.61	7.11
Tessier cleft N°2			5.65	5.65
Tessier cleft N°7	Unilateral	6.12		6.12
	Bilaterale	7.40	8.1	7.75

Table 2. General distribution according to the anatomical-clinical forms of congenital malformations of the face.

Anatomical-clinical forms of clefts		Side	Population (%)		Total (%)
			Male (%)	Female (%)	
Cleft lip	Unilateral	Left	53 (12.07%)	68 (15.49%)	121 (27.56%)
		Right	27 (6.15%)	40 (9.11%)	67 (15.26%)
	Bilateral	17 (3.87%)	9 (2.05%)	26 (5.92%)	
Complete Clefts palate (Hard + Soft)	Unilateral	Left	10 (2.28%)	9 (2.05%)	19 (4.33%)
		Right	9 (2.05%)	7 (1.59%)	16 (3.64%)
	Bilateral	40 (9.11%)	31 (7.06%)	71 (16.17%)	
Isolated Clefts of soft palate			8 (1.82%)	13 (2.96%)	21 (4.78%)
Lip and palate clefts combined	Unilateral	Left	39 (8.89%)	19 (4.33%)	58 (13.22%)
		Right	19 (4.33%)	9 (2.05%)	28 (6.28%)
	Bilateral	3 (0.68%)	4 (0.91%)	7 (1.59%)	
Tessier Cleft N°2. (Unilateral left)			0	1 (0.23%)	1 (0.23%)
Tessier Cleft N°7.	Unilateral	Left	1 (0.23%)	0	1 (0.23%)
		Right	0	0	0
	Bilateral	1 (0.23%)	2 (0.46%)	3 (0.69%)	
General Total			227 (51.71%)	212 (48.29%)	439 (100%)

Table 3. Distribution of patients according to malformations and associated anomalies.

Malformations or anomalies	Population		Total
	Male	Female	
Nose	3 (60%)	2 (40%)	5 (4.95%)
Ear	1 (50%)	1 (50%)	2 (1.98%)

Continued

Finger and ear	1 (100%)	0 (0%)	1 (1%)
speech impairment	48 (51.61%)	45 (48.39%)	93 (92.08%)
Total	53 (52.47%)	48 (47.52%)	101 (100%)

Table 4. Distribution according the repair technique.

Surgical Techniques	Clefts lip		Clefts palate	Other malformations	Total
	Unilateral	Bilateral			
Chéiloplasty (Millard)	269 (50.56%)	0	0	0	269 (50.56%)
Chéiloplasty (Manchester)	0	24 (4.51%)	0	0	24 (4.51%)
Uranostaphylorrhaphy (Veau-Wardill-Kilner) or pushback	0	0	113 (21.24%)	0	113 (21.24%)
Double flap palatoplasty	0	0	90 (16.92%)	0	90 (16.92%)
Collerette Technique	0	0	17 (3.19%)	0	17 (3.19%)
Z-Plasty and/or Flaps	5 (0.94%)	9 (1.69%)		5 (0.94%)	19 (3.57%)
Total	274 (51.50%)	33 (6.2%)	220 (41.35%)	5 (0.94%)	532 (100%)

In the case of combination of CLAP, the cleft lip was treated followed by the cleft palate in a second surgery. Thus per patient in this configuration, there was 2 primary surgeries. The outcome was favourable in 396 of the cases. Complications were observed in 43 cases (**Table 5**).

4. Discussion

The annual frequency of patients managed during the study period was 54.88 cases of congenital facial malformations per year. This relatively high figure is attributable to the inclusion of all congenital facial malformations, which is not the case in most existing African studies on the subject. Diop *et al.* recorded 17.8 cases per year of cleft palate at Aristide Le Dantec Hospital in Dakar [7]. Furthermore, it should be noted that the total number of cases varies considerably from one country to another. Most patients (93.62%) were treated in a religious hospital in the city of Bouaké. This situation is explained by the fact that social hospitals offer surgical and hotel infrastructures that are often better suited to humanitarian missions aimed at populations that are predominantly rural and often from remote areas. Indeed, most humanitarian missions for cleft lip and palate surgery take place in social hospitals [8]. The average age of the patients

Table 5. Distribution of patients according complications and gender.

Complication	Male	Female	Total
Fistula	4 (9.30%)	5 (11.63%)	9 (20.93%)
Labio-narinal defect	8 (18.60%)	13 (30.23%)	21 (48.83%)
Bucco-nasal communication	6 (13.96%)	7 (16.28%)	13 (30.24%)
Total	18 (41.86%)	25 (58.14%)	43 (100%)

was 6.82 years old. This relatively high age is explained by the lack of prenatal diagnosis, the tendency for malformed children to be subject to infanticide and the lack of information about treatment options [4] [9]. This situation is non-existent in developed countries where the ease and routine of prenatal diagnosis allows a treatment schedule to be established, usually starting at 3 months of age and sometimes during intrauterine life [10]. The sex ratio (male to female) for isolated cleft lip is 0.82, for isolated cleft palate 1.12 and for combined CLAP 1.91. This means that there were more male subjects with cleft palates. This male pattern of cleft palates is corroborated by Crezoit *et al.* in Côte d'Ivoire [6]. However, these results are in contrast to those of Bankolé and Diombana in Mali who observed a female predominance of cleft palate [11] [12]. The frequency of cleft palates was 28.93% among all congenital malformations of the face. They were therefore second only to cleft lip. In addition, among the congenital malformations of the face, there are rare so-called oblique facial clefts for which Tessier proposed the most practical description since 1976 [13]. The present study revealed 5 cases of Tessier clefts out of 439 facial malformations. They were therefore very rare and included one Tessier cleft No. 2 and 4 Tessier clefts No. 7. For cleft lips, cheiloplasty using the Millard technique was used in the majority of cases. The choice of the Millard technique is motivated by several factors. Indeed, it is the most used technique for the closure of unilateral cleft lips and has the advantage of allowing harmonious symmetry of the nostril and the nostril margin. In addition, this technique is well suited to mass surgical campaigns as it allows short hospital stays of less than 24 hours [7]. It should also be added that the imperfections of the Millard technique can be corrected by a simple Z-plasty or by a complete revision using the old scars [8]. The results of the Millard technique are satisfactory in the present study as well as in other studies in Africa [7]. Uranostaphylorrhaphy according to the Veau-Wardill-Kilner or pushback technique (51.46%), double flap palatoplasty (40.78%) and the "collar" technique (07.77%) were used for the surgical treatment of cleft palates. Indeed, the choice of techniques is based on the anatomical shapes, the mastery of the technique and the duration of hospitalization. Double flap palatoplasty has taken over from the pushback technique that predominated in previous studies [6]. The "flange" technique is used for nasal lesions. The "collerette" technique is used for nasal plane closure of palatal fistulas [14]. Z-plasty and flaps have been performed for the treatment of Tessier's clefts. Complications were observed in 9.38% of cases, such as fistulas, labio-narinal defects and oral-nasal communica-

tions. These complications were attributable to multiple factors involving both the practitioners (the technique used and the surgeon's experience) and the patients (compliance with postoperative treatment, oral hygiene, use of traditional therapies and inadequate nutrition). This relatively low proportion of complications may be related to the long experience of the surgical team managing cleft lip and palate in the Gbèkè region of Côte d'Ivoire. However, this study has some limitations, particularly in terms of identifying the genetic and environmental factors that may explain the frequency of occurrence of these congenital facial deformities. There is also a bias in the frequency of these malformations in relation to all births as not all patients were born in the same hospital.

5. Conclusion

The management of patients with congenital malformations of the face is still performed late in the Gbèkè region and is essentially conducted during humanitarian missions. They are dominated by lip and palate clefts, particularly unilateral clefts lip. Management is essentially surgical with satisfactory results. The prospect of improving information on their therapeutic possibilities and setting up a regional, or even national, registry of these malformations, could enable the establishment of a national programme for their management.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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