

ANESTHETIC CHALLENGES IN ORO-FACIAL CLEFT REPAIR IN ILE-IFE, NIGERIA

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Abstract

Background and Methods: A retrospective review of all patients with oro-facial lip defects operated at the Obafemi Awolowo University Teaching Hospital, Ile-Ife, Nigeria over an 18 month period was undertaken with a view to determine: the pattern of presentation; associated clinical problems and congenital anomalies; perioperative complications; anaesthetic techniques used and outcomes; and the determinants of outcome.

Results: Of the 80 patients treated, 74 were managed under general anaesthesia but the case records of only 60 (81%) of these patients were available for review. The ages ranged between 3 months and 59 years. The male to female ratio was 1:1. Eighty percent of all cases studied were cleft lip (CL) ± cleft palate (CP). Of these, 65% were left sided CL, 23% were right sided while 12% were bilateral. All patients had ASA score 1 or 2 at the time of surgery. Halothane in O₂ induction was employed in 60% of the patients while 40% had IV induction. Intubation was facilitated with muscle relaxant in 63.3% of these patients. Naso-tracheal intubation was performed in 82% of all cleft palate repairs. Preoperative complications were encountered in 18% of the patients. Associated congenital anomalies were noted in 5% of the cases. One case each of difficult intubation and failed intubation were encountered. Intra-operative dysrhythmia was noted in 5% of cases; no life-threatening complication was encountered peri-operatively.

Conclusions: There is a dramatic increase in the number of patients presenting for care due to improved awareness of the population. Peri-operative attention to detail is essential in handling the challenges posed by the condition.

Introduction

Oro-facial cleft is a common congenital deformity with a worldwide incidence of 1 in 7-800 live births¹. The actual aetiology is largely unknown². Oro-facial cleft is associated with facial disfigurement, feeding difficulty, and speech and dental development problems. It is accompanied with significant psychosocial consequences. However, patients with oro-facial cleft can achieve their ultimate potential through aesthetic and functional treatment. In recent times, surgical treatment of patients with oro-facial cleft has been facilitated by the SmileTrain, USA globally. This has led to an increasing number of patients presenting for care in Nigeria.

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The occurrence of these congenital defects in Nigeria has been documented by previous reports^{3,4}. Oro-facial cleft can be repaired within the first year of life. In limited resourced economies, many of the patients present much later probably due to ignorance, poverty, and limited available material and human resources^{5,6}. However, little is known about the anaesthetic challenges in oro-facial cleft repair in Nigeria.

This study was undertaken to assess: the pattern of presentation of oro-facial cleft; associated clinical problems and congenital anomalies; perioperative complications; anaesthetic techniques used and outcomes; and the determinants of outcome.

Method

A retrospective review of anaesthesia for all oro-facial cleft repairs performed over an 18 month period (between January 2006 to June 2007) at the Obafemi Awolowo University Teaching Hospital, Ile-Ife, was undertaken. The hospital is a tertiary health facility located in South-western Nigeria with referral from over 200 kilometres radius.

The theatre records were reviewed to identify all cases of oro-facial clefts operated during the period. The case records of the patients identified were then reviewed.

The data retrieved include demographic details of the patients, diagnosis (including the type of cleft, medical diagnosis, additional craniofacial deformities), proposed surgery, preoperative packed cell volume (PCV), pre-induction vital signs, premedication used, anaesthetic technique, induction technique and relaxant use for intubation. Also, the intubation route, number

of attempts, intubation aids, outcome and analgesic used were noted. Details of intraoperative monitoring, critical incidents, recovery room complications, and postoperative complications were documented. Data were analysed using SPSS version 12.0.1 and summarized into tables and relationships tested using the Chi-square test at 5% level of significance.

Results

Eighty patients were treated during the study period. They were all Nigerians residing in Ile-Ife and its environs. Of these, seventy four patients (92.5%) were managed under general anaesthesia (GA) while the rest (7.5%) were operated under local anaesthesia (LA). However, the case records of only sixty patients (81%) managed under GA were available for review at the time of this study.

Table 1 shows the age distribution of the patients. The ages ranged between 3 months and 59 years with a mean of 10.08 ± 11.60 years. Majority (86.7%) of the patients presented after the first year of life, while 7 patients (11.7%) presented after the age of 20 years. No gender predilection was observed.

Table 1
Age and Gender Distribution of Patients

Age	Male No (%)	Female No (%)	No of Pts No (%)	%
1-4 Months	3	0	3 (5.0)	5.0
5-12 Months	2	3	5	8.3
1-10 Years	19	14	33	55.0
10-20 Years	3	9	12	20.0
>20 Years	3	4	7	11.7
Total	30	30	60	100.0

Table 2
Cleft Deformity type by Gender

Type of Cleft	Gender		Side		Total (%)
	Male No (%)	Female No (%)	Right No (%)	Left No (%)	
Cleft lip only	17 (54.8)	14 (45.2)	7 (22.6)	24 (77.4)	31 (51.7)
Cleft lip and palate	7 (63.6)	4 (36.4)	4 (36.4)	7 (63.6)	11 (18.3)
Cleft palate alone	6 (54.5)	5 (45.5)	-	-	11 (18.3)
Bilateral Transverse	-	1	-	-	1 (1.7)
Bilateral cleft Lip	-	6	-	-	6 (10)
Total	30 (50%)	30 (50%)	11(26.2%)	31(73.8%)	60 (100)

Type of defect by gender in this series is shown in Table 2. Isolated cleft lip, isolated cleft palate and combined cleft lip and palate were commoner in males than females (17: 14, 7:4, and 6:5 respectively). Bilateral cleft lip (n = 6) and bilateral transverse cleft lip (n = 1) observed in this series were exclusively in females. However, the difference observed is not statistically significant ($p = 0.43$).

The PCV ranged from 26-44% and mean was $32.78 \pm 3.76\%$. Table 3 shows the pattern of distribution of medical complications among the patients. Pre-operative complications were noted in 18% of cases (n = 11). Anaemia was the commonest, occurring in 11.7% (n = 7). One 6 month old child with cleft lip had severe anaemia and was transfused before presentation for anaesthesia. Others were under-nutrition (5%, n = 3), delayed developmental milestone with growth retardation (1.7%, n = 1), upper respiratory tract infection (1.7%, n = 1) and chronic suppurative otitis media (1.7%, n = 1). Besides the cleft palate patient with chronic suppurative otitis media and another with anaemia, the remaining patients (n = 9) were cases of cleft lip with or without associated cleft palate. However, there was no statistically significant relationship between the type of oro-facial cleft and medical complications ($p = 0.88$).

Table 3
Distribution of medical complications among oro-facial cleft patients

<i>Clinical complications</i>	<i>Cleft lip ± cleft palate</i>	<i>Cleft palate</i>
Anaemia	3	1
Anaemia + Transfused before surgery	1	-
Anaemia + Severe under-nutrition	2	-
Under-nutrition	1	-
Delayed dev milestone + growth retardation	1	-
Upper Respiratory Tract Infection	1	-
Chronic suppurative otitis media	-	1
Nil	41	8
Total	50	10

Three patients (5%) had associated congenital abnormalities. Two of these (3.4%) were craniofacial abnormalities while one (1.7%) was cardiovascular. One of the patients with craniofacial abnormalities had Wolf-Hirschhorn syndrome⁷ (- a one year old girl with a combination of microcephaly, low set ears, hypertelorism, growth retardation, delayed developmental mile stones in addition to a right complete cleft lip and incomplete cleft palate). The other was a case of complete cleft palate with lower lip pits. The third patient had congenital cardiac disease (membranous ventricular septal defect) with left complete cleft lip.

All patients were either ASA physical status-1 (77%) or ASA-2 (23%) at the time of surgery. Eighty five percent had IV atropine premedication to dry their airway; six (10%) patients who had intravenous induction with ketamine also had IV diazepam premedication in addition.

Induction with halothane in oxygen was employed in 60% of the patients while 40% had intravenous induction (thiopentone or ketamine). All cases had endotracheal intubation with halothane \pm N₂O in O₂ for maintenance. Intubation was facilitated with muscle relaxant (suxamethonium) in 63.3% of these patients. Naso-tracheal intubation was performed in 18% of all cases (but 82% of all cleft palate repairs). Respiration was assisted in all patients less than 2 years old. Ketamine anaesthesia either in form of intermittent boluses or total intravenous anaesthesia was not employed in this case series.

One case of difficult intubation was noted in a 5-month old boy with cleft lip. After multiple unsuccessful attempts during the initial presentation, he was rescheduled and successfully intubated at representation for anaesthesia and surgery two weeks later. Failed intubation occurred in one patient. This was in the child with Wolf-Hirschhorn syndrome. The patient has not been represented for anaesthesia as at the time of this review.

Intraoperative dysrhythmia was noted in three (5%) of the patients. Delayed recovery was experienced in 2 (3.4%) cases. These patients were induced with ketamine. Postoperative complications noted were palatal fistula in one patient and palatal fistula with bifid uvula in another. There was no perioperative mortality.

Discussion

In this review, 80 patients were treated over a 1½ year period. An earlier report from the same centre 12 years ago⁸ reported an average of 7 patients presenting over 18 months or 4.4 patients per year (57 cases over 13 years period). The current report represents over 1000% increase in the number of patients presenting for care in about 1 decade. In contrast with earlier reports^{4,8} majority (86.7%) of the patients in this series presented after the first year of life. This is particularly unlike the findings of Ugboko *et al*⁸ where 90% of the patients presented within the first year of life while only 1.7% reported in adulthood. The pattern of presentation observed in this study suggests positive attitude towards oro-facial cleft surgeries.

There was equal number of male and female in this review in agreement with earlier reports including that of Sullivan among black patients in the United States^{2,9}. It however differs from the findings in some other Nigerian studies^{5,10} which showed female preponderance and others^{8,11,12} which showed male preponderance.

Anaemia was the commonest preoperative complications noted in this series (11.7%). Under-nutrition (5%) and growth retardation with delayed developmental milestones (1.7%) were also observed. These are usually due to feeding problems. Cleft lip defect interferes with lip closure and sucking while cleft palate patients have swallowing difficulties. Repeated infections could also be contributory and these complications can be prevented by early presentation and repair of the defects¹³.

Chronic rhinorrhoea is common in oro-facial cleft and patients may present with recurrent upper respiratory tract infection (URTI). Surgical repair reduces rhinorrhoea and URTI. Therefore, the risks of anaesthesia and adverse respiratory events should be individually balanced against the benefits of the surgery¹⁴. URTI was noted in 1.7% of the patients but no adverse respiratory event was observed.

Atropine premedication can be administered to dry the airway particularly when difficult intubation is anticipated or ketamine induction is to be used. Difficult laryngoscopy occurs in up to 10% of patients with oro-facial cleft and the incidence rises in those with

associated syndrome¹⁵. The incidence of associated abnormalities with or without recognized syndrome is quoted to be 10-60%¹⁶. Craniofacial abnormalities are the most common and these may affect intubation outcome. The only case of failed intubation encountered was in the child with Wolf-Hirschhorn syndrome. It is hoped that intubation outcome will be good during representation at which time the child would have been older. Congenital cardiac disease occurs in 5-10% of patients with oro-facial cleft¹⁶. One (1.6%) of the patients in this series had ventricular septal defect. The anaesthesia was however uneventful.

Naso-tracheal intubation was used in 82% of all cleft palate repairs in this series. This reflects the surgeons' preference as against oro-tracheal intubation which is often used. Besides providing greater access to the mouth, the risk of kinking of endotracheal tube following application mouth gag is removed. The risk of inadvertent extubation or endobronchial intubation may also be less with this route. However, naso-tracheal intubation requires greater expertise and is associated with the risk of damage to nasal mucosa and bleeding. Disruption of palatal repair during extubation may also be a remote complication. The possible role of this technique in the two cases of postoperative palatal fistula observed out of 15 cases of palatoplasty in this series cannot be established.

Intraoperative dysrhythmia was noted in three (5%) of the patients. Possible causes include inadequate depth of anaesthesia, hypercapnia and halothane in the presence of catecholamines. The risk of dysrhythmia is much lower with the use of isoflurane, enflurane, or desflurane. However, halothane because of its affordability remains the primary inhalational anaesthetics in Nigeria. Delayed recovery was experienced in 2 patients (3.3%). This might be related to diazepam premedication and ketamine induction used in these cases.

Conclusion

There has been a dramatic increase in the number of patients presenting for care particularly adults. Increased support from donor organizations and training of appropriate manpower will help to clear the backlog of patients with oro-facial cleft.

Early presentation and repair may help in reducing the incidence of preoperative complications. Airway management challenges are not uncommon; however, anaesthesia for oro-facial cleft repair can be given

relatively safely in developing countries with attention to detail and the careful use of available facilities and anaesthetic agents.

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