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## **Complications of Male Infant Circumcision in a Semi-Urban Niger Delta Town**

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### **Authors' contributions**

*This work was carried out in collaboration between both authors. Authors PJA and IG designed the study. Author PJA performed the statistical analysis and wrote the first draft of the manuscript. Author IG managed the literature searches. Both authors read and approved the final manuscript.*

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### **ABSTRACT**

**Aim:** This study aims at documenting the prevalence and complications of male infant circumcision and compares the complication rates between various circumcisers.

**Study Design:** A prospective study.

**Place and Duration of Study:** 300 consecutive male infants attending the infant immunisation clinic of the Niger Delta University teaching hospital, Okolobiri over a 6 month period; between the October, 2011 and March, 2012.

**Method:** Relevant information was obtained from the patients who were then examined. Information obtained was recorded on a proforma.

**Results:** The ages of the infants were between 1 day and 336 days. The circumcision rate was 93.3%. The mean age at circumcision was 15.5± 17.0days. Nurses performed 47.1%, Traditional circumcisers 32.9% and Doctors 20.0% of all circumcisions. Educational status of mothers was a determinant of the Circumciser. None of the infants whose mothers had primary school education was circumcised by a Doctor, most (64.4%) of them were circumcised by a traditional circumciser. The general trend showed that the more educated the mothers of the infants, the more likely it was for their infants to be

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circumcised by Doctors and Nurses. The complication rate was 24.3%; most were mild. Infants circumcised by Nurses had the most complications (25.8%), followed by those circumcised by Doctors (25.0%) and least 21.7% in infants circumcised by Traditional circumcisers. There was however no significant difference in complication rates between infants circumcised by nurses as compared with Traditional circumcisers ( $p=.79$ ); there was also no significant difference in complication rates between Doctors and Traditional circumcisers ( $p=.79$ ).

**Conclusion:** The prevalence of infant circumcision is very high in our community. The complication rate is also high. There was however no significant difference in complication rates between circumcisers. Efforts must be made to properly train all persons involved in this procedure.

*Keywords: Male; infant; circumcision; complications.*

## 1. INTRODUCTION

Male circumcision is the surgical removal of the foreskin from the penis in the human [1,2]. It is one of the oldest and most commonly performed surgical procedures worldwide with approximately one in three males circumcised globally [3,4]. It is performed for cultural, religious and aesthetic reasons among Africans, Jews and Moslems [3,5]. Such communities therefore experience a high prevalence of circumcision [6,7]. In Nigeria, the prevalence of circumcision is high [8]. A large proportion of this procedure is performed outside the hospital. Often, this is done by medically untrained persons who are traditionally recognized as Circumcision practitioners. This situation of unregulated practice has apparently contributed to the large numbers of circumcision complications.

We therefore undertook this study to document the prevalence of the practice of circumcision and to evaluate its complications and ascertain any differences in complication rates between Doctors, Nurses and Traditional circumcisers.

## 2. MATERIALS AND METHODS

All 300 consecutive male infants attending the infant immunisation clinic at the Niger Delta University Teaching Hospital, Okolobiri were recruited and studied over a 6 month period; from October, 2011 to March, 2012. Relevant information was obtained and recorded on a proforma. Information obtained included the circumcision status (circumcised or not circumcised), the age of the patient, age at circumcision, the performer of the procedure (Doctor, nurse, traditional practitioner etc). The patient was also asked on the occurrence of bleeding or other problems following the procedure. They were subsequently examined and findings were also noted.

Data was analysed using SPSS version 11.  $p$  values  $< 0.05$  were regarded as significant.

## 3. RESULTS

A total of 300 male infants were studied. The minimum age was 1 day and the maximum was 336 days. 280 (93.3%) had been circumcised while 20(6.67%) had not been circumcised. All those not circumcised had expressed their desire to do so in the near future.

Childhood illness, prematurity and the age being below 8 days were the reasons given for having not circumcised the infants.

The mean age at circumcision was  $15.47 \pm 16.99$  days. Most of the circumcisions were done by nurses 132 (47.1%), this was followed by traditional circumcisers 92 (32.9%) and doctors were responsible for 56 (20%). This is illustrated in Table 1.

When the educational status of the mothers of the circumcised infants was compared with the circumcisers, the following were observed: None of the infants whose mothers had primary school education alone was circumcised by a Doctor. 55% of such infants were circumcised by a Nurse and 64.3% were circumcised by a traditional circumciser. Among Infants whose mothers had up to secondary school education, 16.7% were circumcised by a Doctor, while 42.2% were circumcised by a nurse and 33.8% were circumcised by a traditional circumciser. Among infants whose mothers had tertiary education, 30.3% were circumcised by a Doctor, while 54.6% were circumcised by a Nurse and only 15.1% had their circumcision done by a traditional circumciser. (Table 2).

Of the 280 infants who had been circumcised, 68 (24.3%) had complications. The commonest complications observed were penile adhesions and redundant foreskin, each had 26 (38.2%) of complications. 8 (11.8%) had an excess of their foreskin removed, 6 (8.8%) had significant bleeding and 2 (2.9%) had urethrocutaneous fistula. (Table 3). The complication rate in the hands of Doctors was 25.0%. Nurses recorded a complication rate of 25.8% and that of traditional circumciser was 21.7%. (Table 4). There was no significant difference in complication rates between infants circumcised by Nurses as compared with those circumcised by Traditional circumcisers ( $p=0.79$ ). There was also no significant difference in complication rates between infants circumcised by Doctors as compared with those circumcised by Traditional circumcisers ( $p=0.8$ ).

**Table 1. Circumcisers of Infants**

Circumciser	Number of infants	Percentage
Doctor	56	20.0
Nurse	132	47.1
Traditional circumciser	92	32.9
	280	100.0

**Table 2. Educational status of mothers and circumciser**

Circumciser	Educational status of mother			Total
	Primary	Secondary	Tertiary	
Doctors	0 (0.0%)	36 (64.3%)	20 (35.7%)	56 (100%)
Nurses	5 (3.8%)	91 (68.9%)	36 (27.3%)	132(100%)
Traditional circumcisers	9 (9.8%)	73 (79.3%)	10 (10.9%)	92 (100%)
Total	14	200	66	280

**Table 3. Complications of circumcision**

Complication	Number of infants	Percentage	Percentage of total
Adhesions	26	38.2	9.2
Redundant foreskin	26	38.2	9.2
Excess removal of foreskin	8	11.9	2.9
Bleeding	6	8.8	2.1
Urethrocutaneous fistula	2	2.9	0.7
	68	100.0	23.2

**Table 4. Complications observed by various circumcisers**

Circumciser	Number of infants	Number of complications	% Complications
Doctor	56	14	25
Nurse	132	32	25.8
Traditional circumciser	92	20	21.7

#### 4. DISCUSSION

Worldwide, about one in every three males is circumcised [3,4]. In Nigeria and other African countries, the rates appear to be much higher [7,8,9]. In most of these countries, infant circumcision is widely practiced. In this study, we had an infant circumcision rate of 93.3%. This is expected. A similar study done in Ibadan showed a rate of 87% [8]. Only 6.7% of infants studied had not been circumcised. It must be noted though that they all plan to do their circumcision in the nearest future. Reasons given for not being circumcised were neonatal illness and those waiting for the eight day of life to perform the procedure. It is a widely held belief in this society that circumcision should be done on the eight day of life. It can be observed that circumcision in this study environment is performed at infancy unlike some places where it is done later in childhood or early adolescence as part of a traditional rite. It must be emphasized that all those studied were circumcised as a cultural-religious obligation.

Most circumcisions were performed by nurses. A similar pattern was noted by Okeke and his colleagues at Ibadan [8]. Traditional circumcisers were next and the least number of circumcisions were performed by doctors. This is largely so because circumcision in this Community is a cultural practice and in this semi-urban setting, there are traditional circumcisers who have over generations performed this procedure. Infants are therefore not routinely brought to hospital for this procedure. Nurses also run community practice and a sizeable number of circumcisions are performed by them after delivery of such male infants. The hospital and even the doctor are seen as intruders in this practice. Another reason is the relative poverty in the community. Patients are required to pay for hospital registration and for the procedure; traditional circumcisers are cheaper and are usually known members of the community. This may well explain the higher patronage of these traditional circumcisers by those with only primary school education.

Circumcision is relatively safe with an overall complication rate of 0.19-3.1% [10,11,12]. However, some studies show much higher complication rates even though these were relatively mild complications. Okeke et al observed a complication rate of 20.2% [8]. This is similar to what we obtained in this study with a complication rate of 24.3%. It must be noted

that even though both studies were conducted in Nigeria, there is a huge difference in both populations. Okeke et al conducted their study in Ibadan which is the home of Nigeria's first University and Teaching Hospital. The residents of that city are better educated and more exposed to modern health facilities. Ibadan is also a multi-religious city with predominantly Moslems and Christians. Our study took place in an almost rural environment, in the heart of the Niger Delta where modern development is lacking. Most of the inhabitants are illiterate and are mainly Christians and African traditional worshippers. It is therefore not surprising to observe that complication rates following circumcision are still very high several years after the study done by Okeke et al [8]. Also, Okeke et al did not give details of the circumcision methods that were used in their study. In ours, all the children were circumcised by the conventional free-hand method. This therefore makes a direct comparison difficult.

None of our study infants required hospitalization and most complications were mild and not life threatening. Complications are said to more in children circumcised for medical reasons like phimosis [13]. Those circumcised for religious and cultural reasons tend to have fewer complications. Although not statistically significant, complication rates were higher with nurses and Doctors than traditional circumcisers. This is unusual and at variance with other findings [14,15]. The possible explanation is that most of the Doctors who performed the circumcisions had no training in surgery. The Doctors were mostly young and inexperienced as is usually found in most semi-rural communities in Africa. Osuigwe et al, in their study in Southeastern Nigeria observed a complication rate as high as 27% when circumcision is done free-hand by the conventional dissection technique as was the case in our study [16]. They also noted that Midwives had a complication rate of 19% while Doctors had a complication rate of 7%. More importantly, they noted that Doctors in the Teaching Hospital had a complication rate of 1.7% as compared with 20% complication rate in Doctors in Private Hospitals. This was attributed to poor training and lack of supervision in these Hospitals. This also agrees with our findings. All our circumcisions were done free-hand since most people in this rural environment are not familiar with any of the minimally invasive techniques like the Plastibell. None of the circumcisions were done in the Teaching hospital and the Doctors lacked proper training and supervision as was in the study by Osuigwe et al. It appears that the method of circumcision used in our study also contributed to the high complication rate observed. This is also reinforced by the study done by Senel F et al [17]. They analysed 7,500 children who had been circumcised using a new minimally invasive clamp device (Ali's clamp). They observed a complication rate of 2% as against 10.4% in the conventional free-hand dissection technique. Other studies also reveal a significantly lower complication rate following circumcision using minimally invasive methods as compared with the free-hand conventional method [18,19].

It must however be mentioned that in Israel, circumcision is performed mostly by non-medical traditional circumcisers and complication rates are very low [11]. This therefore highlights the importance of training and the use of proper equipment during circumcision.

## **5. CONCLUSION**

The findings in this study further reinforce the fact that circumcision is widely practiced in this part of Nigeria, and that the practice of circumcision needs to be made safer. It is implied that the high complication rate observed may also be as result of the conventional free-hand technique presently widely used. Circumcision practitioners would require training particularly in the minimally invasive methods of circumcision like the use of Ali's clamp. The Local Authorities should incorporate circumcision services into the infant welfare service like

immunisation. This would make circumcision available to all who need it and provide the opportunity of identifying and managing complications.

## **CONSENT**

Both authors declare that informed consent was obtained from the mothers of each of the infants who participated in this study. When necessary, a local Nurse or Doctor served as an interpreter to facilitate this process to ensure proper understanding by the mothers. Only those who indicated that they understood and were willing to participate were included in this study.

## **ETHICAL APPROVAL**

The Ethical Committee of the Niger Delta University Teaching Hospital, Okolobiri gave approval for this study to be undertaken.

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## **COMPETING INTERESTS**

The authors declare that there are no competing interests.

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