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Original Article

Comparison of Duration of Surgery of Conventional Dissection Circumcision and Plastibell Device Circumcision

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ABSTRACT

Circumcision is a religious ritual of surgically dissecting the genitals in muslim males. Nowadays, two surgical procedures are being adopted: conventional dissection circumcision (CDC) and Plastibell Device Circumcision (PDC) **Objective:** To compare the conventional dissection circumcision and Plastibell device circumcision in terms of mean duration of surgery **Methods:** It is a Quasi-Experimental Study, conducted in eleven months from January 10, 2021, to December 10, 2021, in the Department of General Surgery, Nescom Hospital, Islamabad. Subjects were randomly allocated evenly into two groups. Group A contained 40 individuals who received conventional dissection circumcision, while group B included 40 patients who underwent Plastibell circumcision. Operative time was reported in minutes in both groups **Results:** Mean operative time found in Group A was 14.25 min ± 1.92 SD, and for Group B, it was 4.88 min ± 0.73 SD ($P<0.05$) **Conclusions:** Circumcision by plastic bell device method resulted in a significant reduction in operating time compared to conventional circumcision technique. This technique could be adopted on a routine basis to lessen the burden on the busy operation theater schedule.

INTRODUCTION:

Among human procedures, male circumcision is one of the most common [1]. As a religious ritual, Muslims and Jews are the most common participants. According to WHO statistics, more than two-thirds of Muslim males get their genitals cut (WHO) [2]. In Pakistan, many men undergo a rite of ritual circumcision. Getting male infants circumcised within the first year of life is a common procedure because the majority of people are Muslim. Plastibell and conventional dissection technique are some of the procedures and techniques employed during this surgery. Others include the Mogen clamp and the GOMCO clamp. Dissection techniques such as Plastibell and Conventional are the most widely utilised in Pakistan. Circumcision is known to have a number of medical benefits, including the avoidance of sexually transmitted diseases (STDs), phimosis, and urinary tract infections, and a lower risk of penile and cervical malignancies [3].Treatments for glans penis inflammation such as balanitis xerotica obliterans and Phimosis include circumcision as a therapeutic option. In heterosexual males, circumcision decreases the risk of HIV infection 38-66%, according to solid data from Africa [3]. According to the World Health Organization, circumcision is presently recommended as an intervention in countries with high endemic rates of HIV transmission [2]. Infants and babies are frequently circumcised with Plastibells, which were first published in 1956 [4]. Patients who are at high risk of bleeding and have waited too long to have their circumcision performed should opt for the less traumatic radical circumcision method. As a result of the frequency of this procedure and the importance of maintaining a clean operating room and the limited amount of doctors' time, hospitals are more focused on minimizing the time spent in surgery [5,6]. The most common methods of circumcision in Pakistan are PDC and CDC. PDC could be used as a unit protocol if this research shows that it takes less time than CDC. This, in turn, would save surgeons and operating room facilities a great deal of time.

METHODS:

The General Surgery Department at Nescom Hospital, Islamabad, undertook this quasi-experimental study. The WHO sample size calculator was used to compute the sample size, with the level of significance set at 5%, the power of the test at 80%, the pooled standard deviation at 1.535, the test value of the population mean at 5.08i, and the

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expected population mean at 16.66i. N = 80 was chosen as the sample size (40 patients in each group). Consecutive sampling was used as the sampling technique. Healthy male children within age range of 10days to 1 year, who were brought to the surgical OPD by their parents for circumcision were included. Exclusion criteria were Urologic Anomalies, Epispadias and Hypospadias found on clinical examination, Increased Bleeding time (BT), and Clotting time (CT). (BT>5min, CT>10min) and Neonates with Physiological Jaundice(Serum bilirubin level>5mg/dl).

Data Collection

The ethical committee of the hospital granted their permission. Both methods of circumcision were thoroughly discussed to all parents, and informed consent was obtained. There were two distinct groups formed: the CDC group "A" and the PDC group "B." Both groups used conventional dissection circumcision (CDC). CDC and PDC groups were assigned randomly based on the lottery system. All circumcisions on the elective list were conducted by the qualified consultants. A stopwatch was used by an OTA to record the time of surgery, and data were entered into a Performa.

Data Analysis

SPSS version 17 was used to analyze the data. The average and standard deviation of numerical variables, such as the time needed for surgery, were calculated using descriptive statistics. Time was compared between the two groups using an independent samples t-test. We considered a p-value of less than 0.05 to be significant.

RESULTS:

In this study, 80 children were recruited, with n = 40 in each group. In group A, there were 40 children with a mean age of 94.24 days ± 101.16 Standard Deviation (SD). In group B, there were 40 children with a mean period of 26.14 days ± 48.62 SD (Table 1).

Variable	Group A (CDC)	Group B (PDC)
MeanAge (Days)	94.24	26.14
± Standard Deviation (Days)	48.62	101.16

Table 1: Demographic Profile of the Study Population

Time for both the surgical procedures was noted in group A, and group B. Meantime found in Group A was 14.25 min ± 1.92 SD, and for Group B, it was 4.88 min ± 0.73 SD (Table 2). SPSS 17.0 was used to conduct an independent samples t-test to examine the differences in mean values between the two groups. Results of the independent t-test using SPSS-17 are mentioned in table 3.

Operating Time	Group A (CDC)	Group B (PDC)	*P*-value
Meantime (min)	14.25	4.88	.000 (<< 0.05)
Standard deviation	1.92	0.73	

Table 2: Mean operating time for each surgical procedure

Group I & II	Levene's Test for Equality of Variances	t-test for Equality of Means							
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	33.63	.000	28.78	78	.000	9.43	0.33	8.78	10.08
Equal variances not assumed			28.78	49.16	.000	9.43	0.33	8.78	10.08

Table 3: Results of independent t-test

Equal variances were assumed since the Levene test for equality of variances has a high significance value of 33.63 (usually more than 0.05). The significance level was set at.000 (0.05), indicating that the null hypothesis (that the mean values of the variables in the two groups are not significantly different) was rejected. Since both groups' mean values of variables differed significantly, it was determined that there was statistically significant variation between Groups A and B. Circumcision by plastic bell device method (group B) resulted in a substantial reduction in operating time as compared to conventional circumcision technique(group A).

DISCUSSION:

The prepuce (i.e. foreskin) of the penis is surgically removed during circumcision in men. For a variety of religious, cultural, and medicinal reasons, this practise, which dates back more than five centuries, is still carried out today [1]. The traditional method of circumcision is still widely used in several countries, despite recent technological advancements. WHO and UNAIDS have supported voluntary medical male circumcision (VMMC) since 2007 as an effective means of limiting heterosexual HIV transmission in high-prevalence HIV settings(VMMC)[7].

The plastic bell approach has been shown to be superior to the traditional method of circumcision in the literature. In their prospective trial, Bastos Netto JM and de Arajo JG Jr *et al.*, [8] compared and assessed phimosis treatment methods such as dissection and Plastibell(®) circumcision. Their findings indicated a 14.64-1.93-minute operating time for DC and a 3.29-1.48-minute operating time for PD(P 0.001). In contrast to acute problems, late complications were far more common. In the first two days following surgery, paracetamol use was equal between groups (P 0.05). Individuals with Parkinson's disease (PD) required considerably less time for surgery than patients with CDS (23.52–5.94 min; P = 0.01 HS) in a Brazilian study that compared parental satisfaction following Plastibell versus standard dissection circumcision. In comparison to the CDS group, both groups required 2.79 times the amount of analgesia after the procedure had been completed [9]. In 2010, 200 children in Punjab were subjected to a clinical experiment. The youngsters were given a choice between

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plastibell dissection and conventional dissection at random (sleeve resection). Patients in both groups had similar rates of problems, according to the researchers. Between 4-7 minutes and 15-22 minutes, the average process duration for PD and CDS techniques was statistically significant. This shows how much time it takes to accomplish two similar chores. The PD technique has been shown to be a safe and quick substitute for CDS in newborns [1]. In Kenya and Sub-Saharan Africa, where circumcision is a part of the traditional coming-of-age process, it was found that a novel application of VMMC was acceptable and could be easily adopted and scaled up [10].

While there is a higher rate of complications with the plastibell method, a study from Ahmedabad, India, found that it is superior to the conventional surgical method for treating children under the age of ten due to the lower risk of severe complications and the shorter surgery time with minor intraoperative bleeding using the Plastibell method for circumcision is safer than the traditional dissection procedure [11]. According to a study conducted at Baqai University Hospital Karachi. It is also a method that is both rapid and effective [12]. Plastibell took 3.29 minutes vs to 14.64 minutes for dissection circumcision in a prospective randomized trial. Plastibell surgery took an average of 3.4 minutes to complete, compared to a 9.2-minute open operation (sleeve resection) [13]. Freehand circumcision is safe for both sexes, according to a Nigerian research, but it takes longer. Compared to Plastibell, older children have a decreased complication rate.

A steady disintegration of the remaining plastic ring may occur as a result of the bleeding. Those in high-volume centres will benefit from these [14]. It has also been found that the Plastibell method, when conducted by skilled persons, has very minor adverse effects that may be addressed [15]. Plastibell circumcision was proven to offer a considerable advantage over the classic dorsal slit method when it came to process time and post-operative bleeding in a clinical trial[16]. The Indus Health Network provided the facilities. Non-physician health care providers can safely circumcise infants aged three months or younger, according to a training guide based on World Health Organization recommendations [17]. Circumcision for religious reasons is the most common explanation given by Lagos State University Teaching Hospital, Ikeja, according to their findings. In general, the PC is very safe, with only a few minor flaws that may be readily fixed in the early stages. Attention to ligature placement; careful selection of Plastibell size; and extensive parental education are all critical to preventing post-procedure mistakes [18].

A study done at the Bursa State Medical Center found this to be the case. It is fairly typical to conduct a circumcision on a male. If you're having surgery, you're going to have some complications. Careful surgery and follow-up treatment can prevent many of these problems. Reviewing the Past [19]. According to a paper published in 2021, neonatal circumcision is a regular procedure for infants in Nigeria. As much as 5% of the neonates evaluated had issues connected to circumcision. Better nurse training is indicated to lower the chance of urethra-cutaneous fistula, the most common recorded outcome [20].

In our study Plastibell and conventional dissection were also compared in terms of circumcision completion time. Group A had a mean duration of 14.25 minutes, whereas Group B had a mean time of 4.88 minutes and a standard deviation of 0.73 minutes. There was a statistically significant difference between the two groups. In comparison to traditional circumcision, the plastibell device method resulted in a significant reduction in operating time (P 0.05). As a result, our findings were in line with other research on the subject that had been done before.

CONCLUSIONS:

Circumcision by plastibell device method resulted in a significant reduction in operating time compared to conventional circumcision technique. This technique could be adopted on a routine basis to lessen the burden on the busy operation theater schedule.

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