

## Original Research Article

# Trends in female sterilization in north central Nigeria

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### ABSTRACT

**Background:** Contraception is key to the reduction of maternal mortality. Tubal ligation is a good option for women seeking out a safe, effective, permanent and convenient form of contraceptive. However, due to variety of reasons, there is aversion to it especially in developing world. The objective of this study was to determine the trends, uptake, socio-demographic characteristics of acceptors, indications and complications of bilateral tubal ligation (BTL) in our environment.

**Methods:** A retrospective study of BTL at UATH was conducted over a five year period, from 1 January 2015 to 31 December 2019. The records of women who had BTL were retrieved from the medical records department, family planning clinic, and the theatre. The data was analyzed using SPSS 21.

**Results:** The mean age and parity were  $36.0 \pm 4.0$  and  $5.0 \pm 2.0$  respectively. The incidence of BTL was 1.3%. Majority of those that had BTL had at least secondary level of education 100 (83.4%) and 58 (48.3%) were grand multiparous. Majority of cases 87 (72.5%) were done during caesarean section/laparotomy. Postpartum BTL accounted for 15.0%, while interval BTL accounted for 12.5%. Completed family size was the commonest indication 48.3%. No client came back with regrets. There was one case of failed BTL.

**Conclusions:** BTL is a safe and effective method of sterilization. There is an increasing trend in utilization of BTL however the rate is still low.

**Keywords:** Contraception, Permanent, Bilateral tubal ligation, Sterilization

### INTRODUCTION

Unexpected or unplanned pregnancy poses a major public health challenge in women of reproductive age, especially in developing countries like Nigeria where abortion is illegal (unless medically recommended to save a mother's life). It has been estimated that of the 210 million pregnancies that occur annually worldwide, about 80 million (38%) are unplanned and 46 million (22%) end in abortion.<sup>1</sup> Unexpected or unplanned pregnancy poses a major public health challenge in women of reproductive age, especially in developing countries.<sup>2</sup> More than 200 million women in developing

countries would like to delay their next pregnancy or even stop bearing children altogether but many of them still rely on traditional and less effective methods of contraception or use no method at all.<sup>1</sup>

Female sterilization, which is also called BTL or tubal occlusion is a surgical procedure, which aims at permanent contraception.<sup>3</sup> It is just not permanent but highly effective. Tubal sterilization is the most practiced method of contraception globally.<sup>4,5</sup> It has been estimated that the procedure has been performed on 190 million women worldwide.<sup>6</sup> Sterilization however is practiced to a limited extent in African countries because of aversion

to the procedure and irreversibility of the method.<sup>7</sup> Nigeria however is reported to record low acceptance and utilization of female sterilization due to several factors. Among the reasons advanced for this low acceptance rate of sterilization are myths, misconceptions and fears of a variety of health risk thought to be associated with the procedure.<sup>3,8</sup> Other limitations include cultural and religious factors, great desire for a large family size, inadequate facilities and shortage of trained personnel.<sup>3,9</sup>

Increasing the uptake of the family planning in low resource countries has attracted a lot of interest. Nigerian studies have shown that the demand for tubal ligation is low but is commonly accepted in conjunction with another surgical procedure, such as a cesarean section (CS) or laparotomy for repair of uterine rupture.<sup>1,8</sup>

### Objective

The objective of this study was to determine the pattern of female sterilization carried out, the socio-demographic characteristics of the clients the safety of female sterilization procedures in UATH.

### METHODS

This was a hospital-based study. The university of Abuja teaching hospital is a 500-bed tertiary hospital located in Gwagwalada a satellite town of federal capital territory (FCT) Abuja. It receives patients from within the FCT and the surrounding states of Kogi, Nasarawa, Niger and Kaduna states.

### Study design

The study was a retrospective study spanning from 1 January 2015 to 31 December 2019. The case notes of all clients who had female sterilization between 1 January 2015 and 31 December 2019 were retrieved. Records were also obtained from the family planning unit, theatre and the labour ward.

### Population

The cases of female sterilization included those that had the procedure effected at CS or during laparotomy for ruptured uterus, in the immediate postpartum period and as an interval procedure in the family planning mini theatre. Socio-demographic characteristics of clients such as age, educational status and parity were obtained. Other factors considered were indications for sterilization, the timing, and type of anaesthesia used for the procedure. From the operation notes the technique of tubal ligation used was noted. Details about the immediate and late complications were extracted and the time of onset of the complications. The notes during the subsequent visit were studied to see any psychological complaints or effects. The annual delivery rate for duration of study was obtained from labour ward records.

### Data management

The data obtained was entered into a proforma and were analyzed using the statistical package for social science (IBM SPSS version 23). Frequency, percentages and timelines were used to present the data.

### RESULTS

Over the period of review, a total of 10,416 deliveries were conducted with the average annual delivery of 2083. There were one hundred and thirty-nine (139) tubal ligations performed given a prevalence of 13.3/1000 deliveries (1.3%). Among them 120 case notes were retrieved from the medical record department, giving a retrieval rate of 86%. Only one client was not married. The age range was from 21 to 46 years and the mean age was 36.0±4.0 years.

**Table 1: Socio-demographic distribution of the clients.**

Parameters	Frequency	Percentage (%)
<b>Age (in years)</b>		
20-24	2	1.7
25-29	7	5.8
30-34	26	21.7
35-39	61	50.8
≥40	24	20.0
<b>Parity</b>		
1	1	0.8
2-4	61	50.8
≥5	58	48.4
<b>Number of living children</b>		
1	1	0.8
2-4	61	50.8
≥5	58	48.4
<b>Educational status</b>		
None	6	5.0
Primary	14	11.7
Secondary	44	36.7
Tertiary	56	46.4
<b>Religion</b>		
Christianity	93	77.5
Islam	27	22.5
<b>Marital status</b>		
Single	1	0.8
Married	119	99.2
<b>Total</b>	<b>120</b>	<b>100</b>

Majority of patient that consented to BTL are multiparous and within the age range of 35-39 years.

Table 1 shows the socio-demographic characteristics of the clients studied. Half of the clients, (50.8%) were aged 35 to 39 years. Only 9 clients (7.5%) were less than 30 years of age and above 40 years accounted for 24 (20%). Their parity prior to sterilization procedure ranged from 1 to 11 births. There were 61 (50.8%) multiparous clients and almost half (48.3%) were grand multiparous.

Majority of the clients (83.4%) had at least secondary level of education as depicted in Table 1 and only 6 (5%) had no formal education. Almost all clients 99.2% were married, only one was single. Majority of the clients (77.5%) were christians, while the remaining 22.5% were muslim.

**Table 2: Yearly distribution of clients who had BTL.**

Year	Frequency	Percentage (%)
2015	14	11.6
2016	20	16.7
2017	15	12.5
2018	26	21.7
2019	45	35.7
<b>Total</b>	120	100

The highest number of BTL was recorded in the year 2019. Table 2 shows yearly frequency of tubal sterilization. From this, it is observed that there is gradual increase in the number of clients having BTL yearly except in 2017.

**Table 3: Distribution of clients by indication for BTL, timing and surgical technique of BTL, surgical approach.**

BTL	Frequency	Percentage (%)
<b>Indication</b>		
Completed family size	58	48.3
Multiple CS	46	38.3
Ruptured uterus	10	8.3
Medical disorders	6	5.1
<b>Timing of BTL</b>		
At CS/laparotomy	87	72.5
Postpartum	18	15.0
Interval	15	12.5
<b>Method of BTL</b>		
Modified Pomeroy	98	81.7
Pomeroy	15	12.5
Parkland	6	5.0
Electrocoagulation	1	0.8
<b>Surgical approach</b>		
CS/laparotomy	87	72.5
Mini laparotomy	32	26.7
Laparoscopy	1	0.8
<b>Total</b>	120	100

The timing and surgical technique employed during the BTL was shown in Table 3, majority of them 87 (72.5%) had it done during CS/laparotomy for ruptured uterus, while 18 women (15.0%) had postpartum BTL and 15 (12.5%) had interval BTL. The most employed surgical technique was the modified Pomeroy method (81.7%), while the Pomeroy method was employed 15 times (12.5%), electrocoagulation employed once (0.8%).

Majority of the clients sterilized, 87 (72.5 %) had the procedure done at CS/laparotomy for ruptured uterus, 32 (26.6%) had the procedure through mini laparotomy. Only one client had laparoscopic bilateral tubal ligation during the period of review.

Table 3 showed the method of anaesthesia employed, the predominant anaesthetic technique was spinal anaesthesia (subarachnoid block) in 65% of cases followed by local anaesthesia plus mild sedation in 16.7% of the cases then

local anaesthesia in 10.8% of the cases. General anaesthesia was employed in 7.5% of the cases.

One patient had slipped ligature after interval BTL. This was managed by exploratory laparotomy and patient subsequently did well. The effectiveness of the method during the period of review was 100% with no mortality recorded. One patient who had BTL during the period was a case of BTL which was done two years prior to study period.

**DISCUSSION**

Acceptance of bilateral tubal ligation in sub-Saharan Africa is still low due to its permanency and socio-cultural factors.<sup>5,7</sup>

This study has shown increasing trend in the use of tubal sterilization for contraception. This could be accounted for by the increasing awareness of the method and its safety profile, also it could be due to increased CS rates with tubal sterilization indicated by multiple CS. This is however contrary to what was reported in Jos Nigeria and Uganda where it was found that the yearly rate of female sterilization appeared to have been reducing over the years in the centre despite the low cost.<sup>10,11</sup> In another study in a rural hospital in Niger Delta there was no trend found in BTL cases.<sup>5</sup>

The incidence of tubal sterilization in this study is 1.3%, which is similar to the 1.2% reported in a tertiary center in Maiduguri. The low incidence of female surgical contraception may be due to low awareness coupled with aversion for any surgical procedure, with socio-cultural and psychological aversions towards permanent cessation of childbearing through tubal ligation.<sup>12</sup> Other reasons adduced include the poor utilization of maternity services, higher frequency of unstable marital relationships and remarriages and myths that they may reincarnate with blocked tubes and infertility.<sup>5</sup> This study revealed a mean age of 36.0±4.0years, which is similar to the 35.0±5.0 years from a tertiary center in Kano. This age is considered appropriate for sterilization because, it is higher than the age mark of 30 years where regret rates are particularly high (up to 30% in some studies). For this individual, which constituted up to 7.5% of the clients in this study, especially those in which pregnancy is contraindicated, counseling pre and post procedure is key in preventing its occurrence or in its management.

Additionally, in this part of the world, early marriage is still practiced so that a woman may just be 30 years old but will have had 5 living children therefore, such women may opt for a BTL. Whereas majority 114 (95 %) of clients had formal education, 6 (5%) had no formal education, thus suggesting that education might have played a major role in the acceptance of voluntary surgical contraception.

Almost all 119 (99.2%) clients in this study were married. Being married in a stable relationship makes it easier to accept permanent method of contraception and it reduces the incidence of regret. In this study however, one client was unmarried this is not common in this environment considering the high premium placed on fertility. This patient had this because she had neglected obstructed labour and had an extensive uterine rupture that future pregnancy would be very dangerous for her. Majority of clients 93 (77.5%) who were sterilized in this study were Christians, the remaining were Muslims. This study however is expected to reveal the true impact of religion on surgical sterilization considering the centrality of the location of this city and its cosmopolitan nature. Other studies in southern and north central part of this country agreed with this study.<sup>5,12</sup> These were however Christian dominated areas, while another study in north eastern part of this country reported contrary findings. A study in University of Ilorin teaching hospital in north central Nigeria concludes that religious belief influences the choice of bilateral tubal ligation among women in the study area.<sup>9</sup> The choice of contraceptive method therefore depends on reproductive status, completed family planning and maternal age, couple's demographic situation, educational level and religious beliefs.<sup>13</sup>

Completed family size/grand multiparity was the commonest indication for BTL (48.3%), which was followed by multiple CS (38.3%), then ruptured uterus and the least was medical disorder 6 (5%). This was not different from what was found in a tertiary center in Kano where it was reported that, ruptured uterus with grand multiparity was the commonest indication for BTL and which explained why majority of the cases were done as emergencies with most of the clients being grand multiparae, unbooked and with low literacy level.<sup>14</sup>

Bilateral tubal ligation can be carried out taking advantage of an abdominal incision for elective CS or during other abdominal surgery like repair of ruptured uterus, which accounted for majority of cases 72.5% in this study. And laparoscopy even though is the modern method of performing BTL, accounted for only 0.8% of the method employed likely reasons being lack of skill, the cost of the procedure and patient's choice. The most common surgical technique employed was the modified Pomeroy technique accounting for 98 (81.7%) clients, followed by Pomeroy technique accounting for 12.5%. This is because it is the simplest to perform and it is effective.

The use of local anesthesia and mild sedation has been recommended for sterilization by mini-laparotomy and laparoscopy in order to minimize anesthetic risks. This type of anesthesia was cheap, safe, affordable and readily available. However in this study, sub arachnoid block was the most common technique since most of the procedure was carried out in conjunction with other surgical procedures (CS and laparotomy for ruptured uterus).

It has been reported that complications of BTL are usually not primarily due to the procedure, but are usually that of anesthesia or other procedures that were done in addition. This was observed in this study where only 1 (0.8%) of the clients returned with complaints. One presented with features of partial intestinal obstruction that was managed conservatively. No patient returned with regret and rare complication like failed tubal ligation which has 15-33% chance of being an ectopic gestation was not encountered in this study. In this study however, one of the clients who had a BTL done at caesarean had a failed procedure two years earlier. Other complications like infection, haemorrhage, visceral and vascular injuries, anaesthetic complication and mortality were not encountered in this study.<sup>15</sup>

#### **Limitation**

The limitation of this study was that it was a retrospective study.

#### **CONCLUSION**

In conclusion, female sterilization at the UATH Abuja-FACT is relatively low but showed increasing trend. It was also found that female sterilization was more acceptable in conjunction with other surgical procedure like CS and it was cheap, available, effective and safe in this center. More sensitization, awareness and advocacy needed to be carried out to improve the uptake of BTL as a method of contraception.

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