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UPTAKE OF BILATERAL TUBAL LIGATION (BTL) AT THE UNIVERSITY OF CALABAR TEACHING HOSPITAL, CALABAR, NIGERIA

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ABSTRACT

Background: Female sterilization, also known as Bilateral tubal ligation (BTL) is one of the most effective and permanent contraceptive methods in females. Being a permanent method of contraception, it is not readily accepted especially with the myths surrounding its use. The objective of this study is to document its incidence, trend, sociodemographic characteristics, techniques, effectiveness and associated complications in the University of Calabar Teaching Hospital (UCTH), a tertiary health institution in Calabar Nigeria.

Method: This is a retrospective analysis of 141 clients, who had bilateral tubal ligation at UCTH over a six-year period between January 1st2016 and December 31st, 2021.

Results: There were 141 bilateral tubal ligations done during the study period. 130 (92.2%) were done during Caesarean section, 7(5.0%) were done during repair of uterine rupture, 3(2.1%) had immediate postpartum BTL and 1(0.7%) had interval BTL.There were 4,549 Caesarean sections and 13,056 total deliveries during the period under review. Therefore, BTL was associated with 1.08% of the total deliveries. The mean age and parity of the clients were 35.9 years and 4.35 respectively. The commonest indication for BTL was previous caesarean section in 92(65.2%). Only one complication specific to tubal ligation was recorded during the study period.

Conclusion: Bilateral tubal ligation is a permanent, very effective, and safe modern contraceptive method. It has a remarkably low rate of complications. The increased uptake of this permanent contraceptive method will ultimately lead to reduction in maternal mortality rates.

Keywords: Bilateral tubal ligation, Calabar, Nigeria

INTRODUCTION

Female sterilization, also known as bilateral tubal ligation (BTL) and tubal occlusion , is a modern and very effective surgical method of permanent contraception.It is the commonest method of permanent contraception used worldwide[1, 2,3] with an estimated219 million couples around the world choosing it. [3, 4]However, in Nigeria (and many developing countries), the uptake of bilateral ligation is still low due to several factors. These factors include the irreversibility of the method, ignorance, legal restrictions, requirements for operation, lack of widespreadavailability/ accessibility, religious beliefs, superstitious beliefs and myths (related to incarnation and subsequent infertility in the after-life).[2, 5] This is further compounded by the aversion to caesarean section and surgery in general. [2,5,6]

The different surgical approaches to bilateral tubal ligation include laparotomy (during caesarean section), mini-laparotomy, and vaginal approaches (culdotomy, colposcopy).[7, 8]The different techniques of bilateral tubal ligation reported in literature include Pomeroy, modified Pomeroy, Uchida, Irving, Madlener, Aldridge, Kroener methods. It has been found that mini-laparotomy under local anaesthesia using the modified Pomeroy method is the commonest, effective, safe and affordable technique of bilateral tubal ligation.[9]

Bilateral tubal ligation may be requested by a couple after completion of desired family size. It can also be indicated when future pregnancy is deemed to pose serious threat to life due to severe medical conditions (egcardiac/liver/renal disease), multiple caesarean sections, grandmultiparity, following extensive uterine rupture.[10]Good and extensive counselling is necessary to reduce incidence of regret after bilateral tubal ligation. Reasons for regret following the procedure may be due to desire to have a child with a new partner, the desire to have a particular sex of a child and following the death of a child.[11] It has been shown by a systematic review that people who are 30 years old and younger are twice more likely to exhibit regret than those who are above 30 years old.[12]

Maternal mortality ratio is still very high in Nigeria.[13] It has been shown that contraception directly leads to reduction in maternal mortality which would have resulted from unplanned pregnancies.[14, 15]Bilateral tubal ligations is one of the most effective contraceptive methods. Its overall failure rate is 0.7 percent with the commonly used Pomeroy technique being the lowest at 0.1 to 0.5 percent.[9]

The objective of this study is to determine the incidence, trend, sociodemographic characteristics, techniques, effectiveness and complications associated with bilateral tubal ligation in University of Calabar Teaching Hospital, Calabar, Nigeria. Due to the fact that this is the first of this type of study in our Centre, it would enhance our knowledge and serve as a template for further research in this area.

MATERIALS AND METHODS

This was a retrospective analysis of 141 clients, who had bilateral tubal ligation at the University of Calabar Teaching Hospital, Calabar, Nigeria between January 2016 and December 2021.

The clinical records of the clients were retrieved from the theatre, family planning unit and medical records of the hospital. Data extracted include age, pairty, methods of anaesthesia used for the procedure, indications for tubal ligation, surgical approach and complications.Clients who were offered bilateral tubal ligation at elective caesarean section had extensive counselling (usually at booking or at least a month before the procedure) along with their husbands by a senior member of the obstetric team. This included the advantages and disadvantages of the procedures, alternative methods of long term contraception and failure rates of each method.The modified Pomeroy technique is the method usually performed at our centre. Modified Pomeroy procedure involves clamping either of the fallopian tubes at its middle section with a pair of Babcock forceps and elevating a loop of the tube. The base of the loop of the tube was then transfixed and ligated with plain catgut or chronic catgut number I and the suture held long. A 2cm section of the tube in the ligated loop was then transected and removed with scissors. The cut ends of the tube were cleaned and inspected for any haemorrhage. The suture was cut short. A mirror procedure was performed on the contralateral tube. The data was analyzed using SPSS version 25.0Simple descriptive statistics were produced.

RESULTS

There were a total of 141 cases of bilateral tubal ligations (BTL) during the period under review (2016 – 2021). 130 were done during caesarean sections. 7 cases of BTL were done with repair of uterine rupture; 3 were postpartum BTLdone from mini laparotomy and 1 had interval BTL.

There were 4,549 Caesarean sections and 13,056 total deliveries during the study period. BTL (141) therefore was associated with 1.08% of the total deliveries.

TABLE 1

Age group distribution of patients

Age group (years)	N	%	Mean ±SEM
20-24	1	0.7	
25-29	5	3.6	
30-34	46	32.6	35.91 ±0.34
35-39	53	37.6	
40-44	36	25.5	
Total	**141**	**100**	

TABLE 11

Prior Number of children had by patients

Parity group	N	%	Mean ±SEM
1-3	44	31.2	
4-6	85	60.3	
7-9	10	7.1	4.35 ±0.14
10-12	2	1.4	
Total	**141**	**100**	

TABLE 111

Anaesthesia used during operation of patients

Anaesthesia	N	%
Epidural	3	2.1
GA	11	7.8
SAB	127	90.1
Total	**141**	**100**

TABLE IV

Indications for bilateral tubal ligation

Indicators	N	%
1 Previous CS	19	13.5
2 Previous CS	36	25.5
3 Previous CS	33	23.4
4 Previous CS	4	2.8
Failed induction of labour	3	2.1
Ruptured uterus	3	2.1
Severe pre-eclampsia	9	6.4
Grand-multiparty	4	2.8
Others	30	21.3
Total	**141**	**100**

TABLE V

Types of operation conducted on patients

Operation	N	%
MINI LAPAROTOMY	3	2.1
ELLSCS	72	51.1
EMLSCS	58	41.1
INTERVAL BTL	1	0.7
EMERGENCY LAPAROTOMY	7	5.0
Total	**141**	**100**

TABLE VI

Distribution of complication suffered by patients

Complication	n	%
Fallopian tube haematoma	1	0.71
NIL	140	99.29
Total	**141**	**100**

Table VII

Total Deliveries and Caesarean Section/BTL Trend

Year	Bilateral Tubal Ligation	Total Deliveries	% Total Deliveries	Caesarean Sections	% Caesarean Sections
2016	27	3,106	0.87	959	2.82
2017	33	2,752	1.20	908	3.63
2018	21	1,505	1.40	521	4.03
2019	19	1,755	1.08	660	2.88
2020	12	1,995	0.60	739	1.62
2021	29	1,943	1.49	762	3.81
Total	**141**	**13,056**	**1.08**	**4,549**	**3.10**

DISCUSSION

Bilateral tubal ligation (BTL) is amodern, safe and very effective permanent contraceptive method that is suitable for all age groups provided they meet the criteria for its use and do not come up with any regrets in the future. The major reason for choosing this method of contraception is having the desired number of children or completion of family size. In Nigeria and other sub-Saharan African country, completion of family size used to imply 4-6 children, until recently

due to economic hardship and other factors, most families are now considering 2 -3 children as completion of family size. Table 1 of this study shows that majority (37.6%) of clients that chose this method of contraceptive were in the 35 – 39 age group. The ages of clients accepting BTL ranged from 22 – 42 years with a mean age of 35.9 ± 0.34. Table 11shows that majority (60.3%) had 4 – 6 children prior to uptake. The parity of clients ranged from 1 – 11with mean parity of 4.35 ± 0.14.

It was noted that only one client had BTL in the 20 – 24 age group. This client was a 22-year-old lady who had extensive uterine rupture following prolonged obstructed labour withdelivery at home which was unsupervised by a trained health provider or midwife.She had only one previous child alive. The index baby was already dead at presentation. She had emergency laparotomy with repair of uterine rupture and BTL. Table 111 shows that the commonest type of anaesthesia used during surgery was subarachnoid block (90.1%). This was followed by a far range by general anaesthesia (7.8%) and epidural anaesthesia (2.1%). The commonest indication for BTL during the study period was previous caesarean section(s), which had a total incidence of 65.2% (Table IV). Other indications include severe pre-eclampsia, grandmultiparity, ruptured uterus, failed induction of labour.Table V on the other hand shows that majority (130) had BTL during caesarean section (92.2%). This was followed by 7 (5.0%) during emergency laparotomy for ruptured uterus; 3 postpartum BTLs done using minilaparotomy and 1(0.7%) interval BTL.

A majority of the clients (51.1%) had sterilization at emergency caesarean section while 41.1% had sterilization at elective caesarean section. During the 6 – year study period, there was only one complication, which was specific for tubal ligation (0.71%). This was haematoma formation in the remaining portion of one of the ligated fallopian tubes(Table VI). The patient had laparotomy with evacuation of the haematoma. She was subsequently discharged in good condition.There was no definite trend in the BTL cases over the 6 years under review. However, 2017 recorded the highest number of cases, as shown in (table VII), while the lowest number of BTL cases was done in 2020. This may not have been unconnected with the Covid-19 pandemic when there was lock-down and most health facilities were not operating in full capacity. There were lots of speculations and uncertainties during the Covid-19 lockdown of 2020. The expectations were that because many couples were not going to work and a good number were working from home, there would be increased number of pregnancies and deliveries during that period. This however not the case as people were scared about becoming pregnant during the pandemic.

Bilateral tubal ligation is the most commonly used method of permanent contraception worldwide[1, 2]. However in Nigeria, like many other developing countries, its uptake is low and estimated to be <0.5%.[5]Majority of the clients were 35 years and above being 89(63.1%). This could also be explained by the fact that majority of the clients had four children and above being 97(98.8%). This is similar to findings in other studies[5, 8, 16, 18]

The mean parity of the clients in our study was 4.35. This islower than parity of 5 and above reported is similar studies done in other Nigerian cities such as, Benin, Jos, Makurdi and Maidugiri [5,8,16,19]respectively. The reasons for high parity in Nigeria's clients having BTL could be explained by the high perinatal mortality and infant mortality rates in Nigeria which makes children survival uncertain. Many Nigerian ethnic groups also place a high preference on male sex to have security in marriage. This usually results in high parity as confirmed by our high Total Fertility Rate (TFR) of 5.[17, 18]

The commonest indication for BTL in our study (Table IV) was previous Caesarean section in 92(65.2%). This was also the commonest indication for BTL in a study in Jos(55.5%)[8] and Makurdi (51.4%)[16]. It was however, the second commonest indication in Abraka (39.7%)[18] and Maidugiri (20.9%)[19]after grand multiparty/ ruptured uterus.

Out of the 130 clients who had BTL during Caesarean section, 72(51.1%) had emergency caesarean section and 58(41.1%) had elective caesarean section. Bilateral tubal ligation was done mostlyduring caesarean section; in92.2% of the clients in this study. This trend was also reported in other studies done in USA,[20] Turkey[21] and other centres here in Nigeria.[19,22]There is believed to be a higher risk of regret observed in clients who had BTL during emergency caesarean sections than those done during elective/planned caesarean sections. There was however no incidence of regret reported during our study period; probably because it was a retrospective study.

The technique of bilateral tubal ligation used in our centre is usually the modified Pomeroy technique, used both when during laparotomy and minilaparotomy.

In the developed countries, laparoscopic sterilization is often done using clips and rings egfischie clips, Hulka – Clemens clips, Falope rings and Yoon rings. This is safer when done by well-trained hands both during the immediate postpartum period and as an interval procedure. During the postpartum period, a systematic review has reported that modified Pomeroy technique through minilaparotomy and Fischie clips (using laparoscopy) have comparable failure and complication rates. However, Fischie clips application is easier to perform and has better reversal rates[23]. None of the BTLs during our study period was donelaparoscopically due to lack of endoscopic equipment and manpower training during the period under review.

During the study period, there was one case of failure of bilateral tubal ligation, who presented 2 years later for antenatal care after confirmation of normal intrauterine pregnancy. She subsequently had repeat elective caesarean section. Failure of bilateral tubal ligation is rare but has been reported in literature. [24,25,26]

In conclusion, majority of bilateral tubal ligations in UCTH, Calabar were done during caesarean section using the modified Pomeroy technique. This procedure has been found to be safe and effective. However, the uptake of mini laparotomy and interval BTL should be increased to meet the permanent contraceptive needs of a larger proportion of women. It is also anticipated that the introduction of laparoscopic sterilization would further improve the uptake rate as well as its safety and efficacy.

Laparoscopic procedures are however currently more expensive in our environment, though it has many advantages over laparotomy. We recommend subsidization of the cost of laparoscopic procedures and more extensive counselling to potential beneficiaries of bilateral tubal ligation in the antenatal clinics and the general population.This

would improve uptake of this permanent contraception method and ultimately lead to reduction in maternal mortality rates.

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