

Tubal Sterilization at Jos University Teaching Hospital, Jos: A Ten- Year Review

Lawal Abdulfattah Mohammed^{1*}, Ibrahim Habib¹, Abubakar Shehu Muhammad², Shuaibu Yusuf¹,
Rasheed Abubakar Fatima¹ and Mufahir Josiah Turi³

¹Obstetrics and Gynecology Department, Federal Teaching Hospital, Katsina.

²Obstetrics and Gynecology Department, Abubakar Tafawa Balewa University Teaching Hospital, Bauchi.

³Obstetrics and Gynecology Department, Jos University Teaching Hospital, Jos.

*Correspondence:

Dr. Abdulfattah Mohammed LAWAL, Consultant Obstetrician and Gynecologist, Obstetrics and Gynecology Department, Federal Teaching Hospital, Katsina, Tel: +2348036193138.

Received: 01 Jun 2024; Accepted: 23 Jul 2024; Published: 30 Jul 2024

Citation: Lawal AM, Ibrahim H, Abubakar SM, et al. Tubal Sterilization at Jos University Teaching Hospital, Jos: A Ten- Year Review. *Gynecol Reprod Health*. 2024; 8(4): 1-5.

ABSTRACT

Introduction: Tubal sterilization is a form of permanent contraception that is offered to women of reproductive age group who have either completed their desired family size or in whom further pregnancy poses danger to their survival.

Objectives: To review all the consecutive tubal sterilizations done at Jos University Teaching Hospital (JUTH) during the study period.

Methodology: A retrospective study of all consecutive bilateral tubal ligations (BTL) at JUTH from January 2000 to December 2009. Data was obtained from patients' case notes, records from association for voluntary surgical contraception (AVSC) clinic, booking registers as well as operation notes. The socio-demographic features, reproductive history, previous contraceptive history, surgical procedure done and its timing, of all the 1,217 consecutive tubal sterilizations done were extracted. The data was entered into personal computer and analyzed using Epi-Info Statistical Software, 2008.

Results: One Thousand Two Hundred and seventeen (1217) tubal sterilizations were performed during the study period. The mean age and parity of the clients were 38.2 ± 4.2 years and 7.4 ± 2.1 respectively. Forty one point five percent of the clients were Berom women, that were married (97.7%) and without any gainful employment (39.4%). 80.8% of the clients had formal education and injectable hormonal contraceptive was the method of contraception used by 45.0% of the clients prior to the procedure.

Pomeroy's method was the only form of the procedure done, mainly via interval mini-laparotomy (88.4%). 78.5% of the clients knew of the procedure through family planning clinic, and the desired family size was the reason for the procedure in 80.6% of the clients.

Conclusion: Tubal sterilization mainly via interval minilaparotomy, was found to be a method of contraception accepted by older clients with a higher parity in JUTH, Jos.

Keywords

Tubal sterilization, JUTH, 10-year review.

Introduction

Voluntary female sterilization (VFS) is the world's most widely used family planning method by an estimated 138 million women of reproductive age^{1,2}. Despite that, its acceptance and practice are lowest in sub-saharan Africa. While the prevalence of sterilization

is as high as 31.3% in the United States, it is less than 1% in Nigeria. The incidence in JUTH was 1% [1-3].

Female sterilization is a permanent, safe and effective method of contraception. It is achieved surgically, mechanically or chemically. It is a procedure offered by a trained health care provider, under some form of anaesthesia, to block both fallopian tubes, via laparotomy, minilaparotomy, culdotomy, culdoscopy

and laparoscopy using different anaesthetic techniques [1-3]. The different types include Pomeroy's method that involves division and separation of the tubes, the Irving method that involves ligation, division and further separation of the tubes via burying the proximal end within the myometrium, while Parkland's method involves isolation of a segment of a tube, excision of the segment and ligating the ends which are therefore separated [4].

Mechanical methods involve occlusion of the tubes with clips such as Filschle or Hulka clips that cause tubal occlusion at the point of application (2cm), Rings such as Falope rings which cause tubal occlusion distal to the point of application (2-3cm on either side of the ring) or using bands [5]. Chemical methods involves the use of Quinacrine or Mepacrine that are injected into the fallopian tube under hysteroscopic guidance, and the use of Silicone gel. Essure (micro-insert) is inserted at the isthmic ends of tubes under hysteroscopic guidance, resulting in tubal blockage, following adhesion formation within three months. With this method, back up contraception is required while waiting for the effect to occur, and hystero-salpingography is required to confirm its effect [6].

Minilaparotomy has transformed female sterilization into a quick, safe, effective and easily available out-patient procedure that can be performed under local anaesthesia through open or endoscopic methods with their peculiarities [2,6,7]. Technical difficulties such as in visualizing the tubes, were significantly higher with endoscopic procedures as compared to open procedures. Rates of operative complications were significantly higher with culdoscopy as compared to culdotomy, laparoscopy or laparotomy [6,7]. Early post-operative complications (those occurring within 8 weeks) and postoperative convalescence were significantly lower following laparoscopy [6,7]. Technical failure, technical difficulties and failure rates are higher with spring loaded clip methods due to either misapplication of the clip to the tube or due to defects in the clip [6,7]. Pelvic infections mostly follows vaginal approach, compared to superficial wound dehiscence and infection with abdominal techniques [6]. Laparoscopic methods may be used at anytime other than the postpartum period [6]. Banding method eliminates burn injury and reduces tubal destruction. Its success however depends more on tubal morphology [5].

Tubal sterilization has been shown to reduce the incidence of gynecological malignancies (non-mucinous ovarian and endometrial cancers) with the protection persisting for many years after the procedure, with the effects mainly with the cutting procedures [8,9]. The effect is via reduced blood supply to the ovary, thus altering ovarian hormone levels and functions on the endometrium. It also block the ascension into the peritoneal cavity of potentially carcinogenic agents such as Talc, Asbestos, contraceptive foams or gels, uterine growth factors or retrograde menstruation [8].

Tubal sterilization is not without complications, such as anaesthetic complications, increased risk of pelvic infections,

especially following colposcopy. Others include wound infections, wound haematoma, and bleeding from the incision sites. Uterine perforation, bladder injury, intestinal injury, as well as bleeding from torn fallopian tube/ mesosalpinx are among other surgical complications of tubal sterilization [7-9]. Sterilization failure is another complication presenting as pregnancy, which can be intrauterine, or commonly as extrauterine pregnancy [7,10]. Post sterilization ectopics are beginning to account for over 12% of all ectopic pregnancies [5,7,10]. The absolute risk for developing ectopic pregnancy after sterilization is less than that observed for general population, with the risk being 1/7th the normal [10]. Ectopic pregnancy occurs due to recanalization or development of tubo-peritoneal fistula, which allows Sperm to pass through but not a fertilized Ovum. This typically occurs after two years of the procedure, with the incidence increased when the procedure was done in postpartum period [10]. In some rare instances, death also complicates tubal sterilization, with the incidence quoted as 3-19 per 100,000 tubal sterilizations, as compared to 0.5 per 100,000 vasectomies [6,7]. Causes attributable to the mortality include anaesthesia, infection and haemorrhage, which could be prevented by the use of local anaesthesia, aseptic technique and training of personnel [5,12].

Majority of patients (80%) regret the procedure (mostly postpartum, especially when there was associated fetal anomalies) but only 15% would request for reversal and ultimately 1% would have it reversed [5,13]. In order to reduce the rate of remorse or request for reversal, American College of Obstetricians and Gynaecologists (ACOG), recommends the sum of patient's age and parity to be at least 120 prior to the procedure. Surgical reversal is recommended in patients less than 37 years, who would have 72% chances of successful delivery after reversal, compared with 52% following *in vitro* fertilization (IVF) [12,13]. For patients older than 37 years, IVF is recommended. Age appears to be the most important factor in reversal and not the type of the procedure done [13].

Tubal sterilization, though the most widely used method of contraception, is surrounded by lots of issues, thereby making careful patient selection as well as thorough counseling, an essential aspect of the procedure. Indications for the procedures are mainly for desire of permanent contraception, following completion of desired family size. Another indication is when medical or other complications pose grave danger on woman's health, thereby precluding further pregnancies. Some of the contra-indications to the procedures includes patient's ambivalence about the procedure, gynaecologic malignancy or symptomatic gynaecologic pathology in which hysterectomy is required [6].

Laparoscopic procedure is relatively contra-indicated when there is diaphragmatic hernia, and in the morbidly obese patients, and following multiple abdominal surgeries with adhesion formation [14].

The aim of this study was to:

Review all the cases of tubal sterilizations during the study period in JUTH.

The objectives of this study were:

To determine the socio-demographic variables of the clients that had tubal sterilization

To determine the factors that contribute to the acceptance of this permanent method of contraception.

Materials and Methods

During the study period, the case notes of all the clients that had bilateral tubal ligations were retrieved with data on their socio-demographic characteristics; the timing and techniques of sterilization, their previous reproductive history, the indications for the procedure, et cetera (etc), were extracted, entered into a personal computer and analyzed using Epi-Info Statistical software 2008.

Results

In this 10-year review, 1,217 women had tubal sterilization. Their age ranges between 25 and 52 years, with a mean \pm SD of 38.2 ± 4.3 years.

Table 1: Age Distribution of Clients that Had Tubal Sterilization.

Age (Years)	Number	Percentage (%)
25-29	30	2.5
30-34	157	13
35-39	535	44
40-44	382	31.3
45-49	103	8.5
≥ 50	10	0.7
Total	1,217	100

The mean age was 38.2 ± 4.3 years. Most of the clients (59%) were between 30 and 39 years of age, and only (5.2%) were less than 30 years of age.

Table 2: Parity Distribution of Clients.

Parity	Number	Percentage (%)
2	6	0.5
3	17	1.4
4	61	5.0
5	145	11.5
6	180	14.8
7	262	21.5
8	203	16.7
≥ 9	325	28.6
Total	1,217	100

The mean parity was 7.0 ± 2 , with 66.4% of the patients being ≥ 7 . Only 5.9% were para ≤ 4 .

Most of the clients (45.7%) were having 5 or 6 living children at the time of the procedure, while only 6.4% were having ≤ 3 .

Table 3: Number of Living Children at the Time of Sterilization.

Living children	Number	Percentage (%)
2	36	2.9
3	43	3.5
4	159	13.1
5	337	27.7
6	219	18
7	149	12.2
8	103	8.5
≥ 9	171	14.1
Total	1,217	100

Table 4: Education of Clients.

Education	Number	Percentage (%)
None	233	19.2
Primary	290	23.9
Secondary	485	40
Tertiary	206	17

19.2% of the clients did not have any formal education while 57.7% had either a secondary or higher education.

Table 5: Marital Status of Clients.

Marital status	Number	Percentage (%)
Married	1,186	97.7
Widow	17	1.4
Separated	6	0.5
Divorced	5	0.4

Most of the patients (97.7%) were married in a stable relationship while 1.4% were widowed and 0.5% were separated.

Majority of the clients were Berom (41.5%) while Hausa- Fulani accounted for 14.2% of the patients that had the procedure.

Table 6: Occupation of Clients.

Occupation	Number	Percentage (%)
Unemployed	479	39.4
Civil Service	275	22.6
Farming	245	20.1
Business	218	17.9
Total	1,217	100

Majority of the clients were unemployed house wives (39.4%) while civil service, farming and business contributed 22.6, 20.1 and 17.9% of clients occupations, respectively.

Most of the patients (88.4%) had the procedure via mini-laparotomy, while 11.6% had the procedure via laparotomy including Caeserean section.

Table 7: Timing of the Procedure.

Timing	Number	Percentage (%)
Interval	991	81.4
Concurrent with C/S	135	11.1
Postpartum	91	7.5
Total	1,217	100

Most of the procedures were done as an interval procedure (81.4%), while postpartum sterilization accounted for (7.5%) of the cases.

Table 8: Previous Contraceptives Used by Clients.

Contraceptive	Number	Percentage (%)
Injectables	546	45
IUCD	195	16.1
COCs	178	14.7
Implant	85	7
Barrier Method	22	1.8
None	188	15.4
Total	1,217	100

Most of the clients (84.6%) had used one form of contraception or the other, with Injectables being the most widely used method (45%) while 15.4% of the clients had never used any form.

Table 9: Outcome of Last Pregnancy.

Outcome	Number	Percentage (%)
Alive	1086	89.4
Stillbirth	24	2
Neonatal Death	21	1.7
Abortion	72	5.9
Total	1,217	100

Most clients had a favourable last pregnancy outcome, with a live birth (89.4%), while 6.9% ended in first trimester and 3.7% ended as either stillbirth or neonatal death.

Table 10: Reason for Tubal Sterilization.

Reason	Number	Percentage (%)
Completed Family size	979	80.6
Medical reason	192	15.7
Failed previous method	46	3.7
Total	1,217	100

Most clients (80.6%) had tubal sterilization on account of completed desired family size. Medical (Health) reason ranked second among the indications for the procedure (15.7%).

Table 11: Source of Information.

Source	Number	Percentage (%)
Family planning Clinic	953	78.5
Through Health worker	206	17
Through a friend	47	3.9
Through Media	8	0.7
Total	1217	100

Most of the clients knew about tubal ligation through Family Planning Clinic (78.5%), while only 0.7% learnt about it through media Houses.

Discussion

Voluntary female sterilization is fast gaining acceptance in many parts of Africa because of its recognized efficacy, increasing

availability and general freedom from serious side effects [11,2,15]. It is widely used in many countries by couples who do not want more children [1,2]. In this 10-year review, 1217 women had tubal sterilization. Their age range was between 25 to 52 years, with a mean age of 38.2 ± 4.3 years. This is in keeping with similar findings by Aisien and Mutihir and other authors [2,3,15,16]. Fifty Nine percent (59%) of the clients were between 30 and 39 years of age, which agrees with similar reports [2,3,13,14,16].

The mean parity was 7.0 ± 2.0 , and 66.4% of the patients were of para ± 7 . The mean number of living children was 6.4 ± 3.1 , with only 22.6% having ≥ 8 children at the time of sterilization. These findings were in agreement with similar reports by some authors where only people of high parity accepted sterilization [2,3,12,15-17]. However, where medical disorders precludes large family size, clients of lower parity also opt for the procedure, similar to the trend in developed countries, Asia, and the Far East where couples commonly opt for fewer children and to complete their families at younger ages [1-3,15,17].

Some of the reasons for the high parity before tubal ligation in our setting included uncertainty of survival of children in view of the high perinatal and infant mortality in Nigeria, security in marriage, and the need to have a full compliment of both genders [2,3,7,17].

The data showed that 80.8% of the women had formal education, which is in agreement with similar reports by Ruminjo and Nuwagaba, where 88.6% of the clients had formal education, but at variance with a report by Aisien and Mutihir where 74.9% had no formal education [2,14,16,17]. This, coupled with high awareness as well as utilization of other methods of contraception prior to the sterilization (84.6%), added to the acceptance of the procedure [2,7,16,17].

Most of the clients were married and in a stable relationship (97.7%), a factor that helps reduce the incidence of regret in female sterilization [2,7,14,16,17]. 81.7% of the clients had tubal ligation as an interval procedure. This is in agreement with a similar study where 93.5% of the clients had interval tubal sterilization [2,3,7,17]. The main method of approach is via minilaparotomy. However, due to a rising rate of caesarean section, either primary or repeat, sterilization concurrent with the procedure is now a significant contributor (11.1%). This is slightly different from similar study done in the same institution where other procedures were employed, such as the use of Clips, with some approaches via colpotomy as well [2,15,16,17]. Postpartum sterilization was the least acceptable method, as the acceptance of the procedure is strongly tied to the survival of the last child born, and whose survival in our setting is still not without a cause for concern [2,7,14,16,17]. In the series, only 7.2% had postpartum sterilization. The entire clients had Pomeroy's technique, due to its simplicity, and being the main technique used in mini-laparotomy in our institution [2,3,7,16,17].

Most of the women (80.5%) accepted sterilization because they

had completed their desired family size, while medical indication (13.1%) is now contributing more than before, as reported in similar study by Aisien and Mutihir, where desired family size and health reasons accounted for 95% and 5% respectively^[2,7,15,17].

Conclusion

Tubal sterilization, though a permanent method of contraception, is becoming an increasingly acceptable method of contraception in our setting, owing to increased awareness of the clients, and further enhanced by the utilization of other methods of contraception. Its acceptance is strongly tied to parity as well as number of living children. Also, favourable outcome of last pregnancy influences its utilization.

Due to the availability of tubal sterilization via minilaparotomy as an outpatient procedure, done under local anesthesia and at a very affordable rate in JUTH, other methods previously utilized and that are still expensive, appears to have been abandoned as alternatives.

Recommendations

There should be an improved enlightenment of the populace about the role of contraception in maternal and child life and survival. Female education should be encouraged at all levels, for effective utilization of available contraceptive services.

References

1. Church CA, Geller JS. Voluntary female sterilization: number one and growing. *Pop Rep.* 1990; 10.
2. Aisien AO, Ujah IAO, Mutihir JT, et al. Fourteen years' experience in Voluntary Female Sterilization through Minilaparotomy in Jos, Nigeria. *Contraception.* 1999; 60: 249-252.
3. Mutihir JT, Aisien AO, Ujah IAO, et al. Anaesthetic Experience in Female Sterilization at Jos University Teaching Hospital, Nigeria. *East Afr Med J.* 2007; 84: 373-378.
4. Glasier A. Contraception. IN: Edmonds D.K (ed) Dewhurst's Textbook of Obstetrics and Gynaecology for postgraduates 6th edition, Blackwell Science. 1990; 373-386.
5. Mark DA, William LG, Ahn YW. Laparoscopic Silastic Band Sterilization Failures. *J Gynecol Surg.* 2009; 11: 159-162.
6. Brenner WE. Evaluation of Contemporary Female Sterilization Methods. *J Reprod Med.* 1981; 26: 439-453.
7. Aisien AO, Mutihir JT, Ujah IAO, et al. Fifteen Years Analysis of Complications Following Minilaparotomy Female Sterilization in Jos, Nigeria. *Nig Postgrad Med J.* 2002; 9: 118-122.
8. David MP. Does tubal Sterilization reduce the risk of Gynaecological Cancers. *Int J Epidemiol.* 2004; 33: 603-604.
9. Cibula D, Windschwendter M, Majek O, et al. Tubal ligation and the risk of Ovarian cancer; Review and Meta-analysis. *Human Reprod Update.* 2011; 17: 55-67.
10. Shah JP. Paulekar SV, Hinduja IN. Ectopic Pregnancy after tubal sterilization. *J Postgrad Med.* 1991; 37: 17-20.
11. Omu AE, Akagbosu F. Attitudes, Knowledge and Practices-University of Benin Teaching Hospital Studies. *Trop J Obstet Gynaecol.* 1990; 2: 22-26.
12. Michael JP, Alan EC, David LO. Pregnancy Rates Following Tubal Anastomosis: Pomeroy's partial Salpingectomy Versus Electrocautery. *J Gynecol Surg.* 2009; 6: 173-178.
13. Ann B, Paul D, John C, et al. Getting Pregnant After Tubal Sterilization: Surgical Reversal or IVF? *Hum Reprod.* 2007; 22: 2660-2664.
14. Daor B, Bambara M, Touré B, et al. Voluntary female sterilization via minilaparotomy: report from Burkina Faso. *Est Afr Med J.* 1997; 74:100-102.
15. Aisien AO, Olarewaju RS, Ujah IA, et al. Anaesthesia for minilaparotomy female sterilization in JUTH, Nigeria: A fourteen-year review. *Afr J Med Sci.* 2001; 30: 119-121.
16. Kahansim ML, Pam VC, Mutihir JT. The Rise and Fall of Female Sterilization in Jos, Nigeria: A case for concern. *Niger Med J.* 2020; 61: 196-200.
17. Mutihir JT, Nyango DD. Quarter of a century of female sterilization in Jos, Central Nigeria. *Afr J Reprod Health.* 2011; 15: 101-106.