

Short Report

Female sterilization by tubal ligation at caesarean section in Makurdi, Nigeria

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Abstract

Background: Female sterilization is an important tool in reducing unplanned pregnancy and maternal mortality in our environment. The aim of this study was to determine the incidence, sociodemographic characteristics, technique, effectiveness and complications associated with female sterilization by bilateral tubal ligation at caesarean section.

Method: This was a retrospective analysis of the clinical records of 78 clients who had female sterilization out of 1,346 acceptors of contraceptive methods at the Federal Medical Centre, Makurdi, over a 5-year period between November 2002 and October 2007.

Results: Of the 1,346 acceptors of family planning methods, 78 clients had bilateral tubal ligation. The majority of the clients (37 [47.4%]) had sterilization at caesarean section, representing 2.7% of all acceptors of family planning methods. The mean age and parity of the clients were 34.3 years and 5.5, respectively. The majority of the clients (36 [97.3%]) had sterilization using the modified Pomeroy's technique. Contraceptive effectiveness was 100%. No complication specific to tubal ligation was noticed.

Conclusion: Majority of female sterilization were performed at caesarean section. The procedure was found to be safe and effective.

Keywords: Caesarean section, female sterilization, laparotomy, tubal ligation

Résumé

Arrière-plan: Stérilisation féminine est un outil important dans la réduction de la grossesse non planifiée et de la mortalité maternelle dans notre environnement. L'objectif de cette étude était de déterminer l'incidence, caractéristiques sociodémographiques, technique, l'efficacité et les complications associées à la stérilisation féminine par bilatéraux ligature des trompes à césarienne.

Méthode: Cela a été une analyse rétrospective des dossiers cliniques de 78 clients qui avaient une stérilisation féminine de 1346 acceptors des méthodes contraceptives à la Makurdi Centre médical fédéral sur une période de cinq ans entre novembre 2002 et octobre 2007.

Résultats: Des acceptors 1346 des méthodes de planification familiale, les 78 clients avaient bilatéraux ligature des trompes. La majorité des clients, 37 (47.4%) avaient stérilisation à la césarienne représentant de 2,7% de tous les acceptors des méthodes de planification familiale. La moyenne d'âge et de la parité de clients étaient respectivement des années 34.3 et 5.5. La majorité des clients 36 (97.3%) avait la stérilisation à l'aide de la technique de la Pomeroy modifié. Efficacité contraceptive était 100%. Aucune complication spécifique à la ligature des trompes a été remarquée.

Conclusion: Majorité de stérilisation féminine ont été réalisées à la césarienne. La procédure a été trouvée pour être efficace et sans danger.

Mots clés: Stérilisation féminine, section Caesarean, Tubal ligation, laparotomie.

Introduction

Female sterilization by tubal ligation has become

increasingly popular since the late 1960s, and it is now the most commonly used method of fertility regulation worldwide.^[1-3] Although approximately

190 million couples use tubal ligation worldwide,^[4] it has not been accepted as a popular method of contraception in developing countries like Nigeria.^[1,5,6] This may be due to the reported aversion to operative procedures and the permanent nature of the method.^[7-9] Religious opposition, legal restrictions and lack of available services also contribute to the poor uptake of this method in developing countries.^[2] Moreover, the extremely high rates of childhood deaths in developing countries from preventable causes was, before now, considered a natural control measure.^[10]

Several methods of approach to the fallopian tubes have been reported in the literature.^[2,10] These include culdotomy, culdoscopy, laparoscopy, laparotomy and minilaparotomy.^[10] Culdoscopy, although used as an alternative approach in the past, is now discouraged because of the unacceptably high incidence of technical failures and major complications associated with this approach.^[11,12] For many years, laparotomy was the only approach for tubal ligation as it is still used for caesarean section today,^[13] providing easy access to the fallopian tubes.

Female sterilization is performed at caesarean section for medical reasons and when further pregnancies are deemed inadvisable and hazardous.^[10] However, good pre-operative counseling about the intended permanence of the procedure is central to reducing the incidence of regret,^[14] which several studies have shown to be higher with women sterilized at caesarean section,^[15-17] particularly when such women perceive that the decision was forced on them by a doctor.^[15] In developed countries, the most common reason for regret is the desire for a child with a new partner, whereas in developing countries, it is usually due to death of a child, particularly a male child.^[18] It has been advocated that sterilization be performed as a planned interval procedure between 6 and 12 months, when the baby would have survived the precarious time after delivery to guarantee its survival, proper growth and development.^[10] Tubal ligation at caesarean section is cost-effective as the cost of the procedure and the time out-of-job are all subsumed into the caesarean section.^[10] This study was conducted with the objective of determining the incidence, sociodemographic characteristics, technique, effectiveness and complications associated with female sterilization by bilateral tubal ligation at caesarean section at the Federal Medical Centre, Makurdi, Nigeria. Being the first of its kind in the study area, the findings will no doubt enhance our understanding of this important aspect of contraception.

Methods

This was a retrospective analysis of all 78 clients who had bilateral tubal ligation at the Federal Medical Centre, Makurdi, Nigeria, between November 2002 and October 2007. The clinical records of the clients were retrieved from the theatre, family planning and medical records of the hospital. Data extracted included age, parity, educational and marital status, indication for tubal ligation, surgical approach to abdominopelvic cavity, surgical technique employed, contraceptive effectiveness and complications. Contraceptive effectiveness was measured by the number of pregnancies (failure rates) following the procedure over the 5-year duration of the study. Documented damage to adjacent structures, significant procedure-related hemorrhage, regret and menstrual disturbances constituted complications in this study. Clients offered bilateral tubal ligation at caesarean section were counseled with their husbands verbally by the most senior member of the obstetric team on ground and written informed consent was given. This included information on alternative methods of long-term contraception, advantages and disadvantages as well as relative failure rates of each method. Clients offered tubal ligation at elective caesarean section had counseling at least 1 week before the procedure. The modified Pomeroy procedure entailed grasping either of the fallopian tubes at its midportion 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 chromic catgut number 1 and the sutures held long. A 2-cm portion 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 hemorrhage. The suture was cut short. A mirror procedure was performed on the contralateral tube. Additionally, data on all clients offered other forms of contraception were retrieved from the family planning records. The data were analyzed using Epi-Info 3.3.2 (CDC Atlanta Georgia USA). Simple descriptive statistics were produced.

Results

Of the 1,346 clients offered family planning methods during the review period, 78 clients had bilateral tubal ligation. Of the 78 women who had tubal ligation, 47.4% had the procedure at caesarean section, 46.2% had the procedure through minilaparotomy, while 6.4% had tubal ligation at laparotomy for ruptured uterus. The prevalence of bilateral tubal ligation at caesarean section accounted for 2.7% of all clients offered family planning methods in the study. No client had laparoscopic

bilateral tubal ligation during the period of review.

The age of the clients accepting female sterilization at caesarean section ranged from 25 to 47 years, with a mean age of 34.3 ± 3.4 years. The parity of clients ranged from 3 to 11, with a mean parity of 5.5 ± 1.4 . No client with parity of 2 and below had sterilization at caesarean section. The majority of the clients (59.5%) were grand multiparous [Table 1]. The mean number of surviving children among women accepting bilateral tubal ligation at caesarean section was 4.9.

The majority of clients (83.8%) that were offered sterilization at caesarean section had formal education [Table 1]. All clients offered this method were married. A majority of the clients (78.4%) had sterilization at emergency caesarean section while 21.6% had sterilization at elective caesarean section.

The most common indication for bilateral tubal ligation at caesarean section was repeat caesarean section in 51.4% of the clients. The least common indication was human immunodeficiency virus (HIV) infection in pregnancy in 2.7% of the clients [Table 2].

Tubal ligation was performed using the modified Pomeroy's technique in 97.3% of the clients. Tubal

ligation was performed with the Uchida method in 2.7% of the clients.

During the 5-year review period, there were no reported complications specific to tubal ligation. There was no pregnancy resulting from failure of sterilization in this study.

Discussion

Female sterilization by tubal ligation is the most commonly used method of fertility regulation. However, in some developing countries like Nigeria, it has not been accepted as a popular method of contraception.^[1] In Nigeria, the percentage of contraceptors who rely on female sterilization is $<0.5\%$.^[2] This study however showed that the incidence of female sterilization at caesarean section alone accounted for 2.7% of all clients offered contraceptive methods. Female sterilization at caesarean section was the most popular approach to female sterilization, accounting for 37 (47.4%) clients in this study. This finding was in agreement with the results of a recent study in Zaria, Nigeria, where 58.8% of the clients had the procedure performed at caesarean section.^[1] In contrast, a recent review of bilateral tubal ligation at caesarean section in Jos, Nigeria, showed that only 14.9% of the clients had the procedure performed at caesarean section.^[10] In Brazil, many women choose to have caesarean section because tubal ligation could be performed at the same time.^[19] This was however not the case in a recent review of 420 consecutive caesarean sections in Makurdi, Nigeria.^[9]

The mean age of women sterilized at caesarean section in this study was 34.3 years. This was higher than 32.1 years reported in Jos^[10] but lower than 36.9 years reported for sterilization by minilaparotomy in Benin, both in Nigeria.^[2] This finding also agrees with an earlier report that women having sterilization at caesarean section are younger.^[10] The mean age at sterilization is slightly lower (26.6–32 years) in Asia, Latin America, Caribbean and North America than that among African countries.^[20]

The mean parity of clients offered female sterilization at caesarean section in this study was 5.5. This was similar to 5.9 reported in Jos for women sterilized at caesarean section,^[10] but much lower than 6.4 reported in Benin.^[2] This finding may be explained by the fact that in countries where sterilization programs are matured, age at sterilization may be younger, with couples desiring smaller families and vice versa.^[20] Other reasons adduced for the high parity of clients opting for sterilization in Nigeria include uncertainty of survival of children in view of the high perinatal and infant mortality in

Table 1: Sociodemographic characteristics of clients sterilized at caesarean section

Characteristics	Number	Percentage
Age (years)		
<20	0	0
20–24	0	0
25–29	7	18.9
30–34	13	35.1
35–39	7	18.9
≥ 40	10	27.0
Parity		
1	0	0
2	0	0
3	2	5.4
4	13	35.1
≥ 5	22	59.5
Educational status		
Illiterate	6	16.2
Primary	13	35.1
Secondary	9	24.3
Tertiary	9	24.3

Table 2: Indication for female sterilization at caesarean section

Indication	Number	Percentage
Repeat caesarean section	19	51.4
Completed family size	15	40.5
Classical caesarean section	2	5.4
HIV infection	1	2.7

Nigeria,^[21] security in marriage and the need to have a full complement of both genders.^[22,23] Moreover, this is not surprising as the Nigerian woman has an average of 5.7 children.^[24]

This study found the mean number of surviving children of women sterilized at caesarean section to be 4.9. This was lower than 6.7 and 6.4 reported in Benin^[2] and Ibadan,^[25] respectively, for sterilization by minilaparotomy and laparoscopy. In Jos, the mean number of children alive was found to be two children lower for women sterilized at caesarean section.^[10] The risks and cost associated with repeat caesarean sections may also result in the lower number of children by these clients.

The majority of clients the (31 [83.8%]) accepting sterilization at caesarean section had formal education in keeping with earlier reports.^[1,5,25]

The majority of clients (29 [79.4%]) in this study had sterilization performed at emergency caesarean section. This may carry an increased risk of regret compared with clients sterilized at the elective caesarean section, which is a planned procedure^[26] and allows enough room for adequate counseling of clients. This notwithstanding, no case of regret was documented in this study despite the reported higher incidence of regret among clients sterilized at emergency caesarean section in other studies.^[15-17] The retrospective nature of this study may explain this finding.

The most common indication for tubal ligation at caesarean section in this study was repeat caesarean sections followed by completed family size. This was in agreement with findings in Jos.^[10] HIV infection was the indication for sterilization at caesarean section in 2.7% of the clients in this study. This may be a reflection of the high incidence of HIV in Makurdi, Nigeria, where 21.7% of all elective caesarean sections are due to HIV infection in pregnancy.^[9]

Most clients in this study were sterilized using the modified Pomeroy technique. This technique, when employed, leads to lower failure rates.^[27] The highest failure rates are seen when tubal ligation is performed at caesarean section or in the immediate postpartum.^[28] No case of pregnancy was documented in clients offered sterilization at caesarean section in this study. Mutihir *et al.*^[10] noted the same in their 533 studied cases over a 16-year period. Female sterilization if performed correctly is one of the most effective contraceptive methods available.^[2] A crude failure rate of 0.75% was recently reported in Ile-Ife, Nigeria.^[29] This was within the reported range of

0.2–0.9%.^[30-32] Other surgical techniques of tubal occlusion, such as the Irving, Uchida and Parkland, carry a lower risk of tuboperitoneal fistulae. However, they carry a greater risk of hemorrhage, are more time consuming and difficult to perform. Where equipment and trained staff are available, the laparoscopic approach to fallopian tubes is quicker and results in less minor morbidity compared with the open surgical approaches.^[27] Mechanical occlusion of the tubes with either Filshie clips or rings should be the method of choice with the laparoscopic tubal occlusion.^[27]

In conclusion, the majority of female sterilization at Federal Medical Centre Makurdi were performed at caesarean section and were found to be safe and effective.

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