

POST STERILISATION ECTOPIC PREGNANCY IN A TERTIARY CARE CENTRE IN NORTH KERALA

Kusumam Vilangot Nhalil¹, Rajani Marol², Nalini Sekharan Menon³, Rohans Joy⁴

¹Additional Professor, Department of Obstetrics and Gynaecology, Government Medical College, Kozhikode.

²Additional Professor, Department of Obstetrics and Gynaecology, Government Medical College, Kozhikode.

³Additional Professor, Department of Obstetrics and Gynaecology, Government Medical College, Kozhikode.

⁴Junior Resident, Department of Obstetrics and Gynaecology, Government Medical College, Kozhikode.

ABSTRACT

BACKGROUND

To study the proportion of ectopic pregnancies with a history of female sterilisation and to assess the risk factors associated with post sterilisation ectopic pregnancy.

MATERIALS AND METHODS

This is a descriptive cross-sectional study. Cases of ectopic pregnancy that were admitted in Department of Obstetrics and Gynaecology, Kozhikode, from February 2014 to July 2015 are included in the study. Details of patient were collected and they were examined in person. Investigations were recorded and clinical findings were noted. Later outcome of cases was also recorded. Data from the study was coded and entered in MS Excel and analysed with SPSS software.

RESULTS

There were 372 cases of ectopic pregnancies, of which 51 had history of female sterilisation. Ectopic tubal pregnancies after tubal sterilisation accounted for 13.7% of all the ectopic pregnancies in this study. 45% cases occurred in patients less than 30 years. More than 75% cases of ectopic pregnancy in the study presented at less than 7 weeks. Abdominal pain was the main symptom with which they presented. Out of the 51 cases, more than 80% patients had undergone sterilisation by modified Pomeroy's technique while 17.6% cases had undergone laparoscopic sterilisation. 98% of the patients had their sterilisation done before 30 years of age. 64.7% cases had undergone sterilisation from a secondary care centre while 35.5% had it from a tertiary care centre. In the present study, more than half of the cases presented (as ectopic pregnancy) within 5 years after sterilisation. 15% cases had history of pelvic inflammatory disease. Bilateral near total salpingectomy was done in all cases.

CONCLUSION

In the present study, it is observed that ectopic pregnancies following female sterilisation are not rare. It constituted 13.7% cases of ectopic pregnancies. There may be a delay in diagnosis as there is a history of sterilisation. Absence of amenorrhoea does not rule out ectopic. Most of the cases occurred in women less than 30 years. Risk factors for post sterilisation ectopic pregnancy include method, time, age at sterilisation, interval between sterilisation and ectopic pregnancy. Pelvic inflammatory disease is found to be a contributory factor.

KEYWORDS

Ectopic Pregnancy, Post Sterilisation, Female Sterilisation.

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BACKGROUND

An ectopic pregnancy is one in which the fertilised ovum implants outside the endometrial lining of uterine cavity. It accounts for 1-2% of the reported pregnancies. There are many risk factors like previous tubal surgery including sterilisation procedures.

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Corresponding Author:

Dr. Kusumam Vilangot Nhalil,

*Additional Professor, Department of Obstetrics and Gynaecology,
Government Medical College,*

'Shree', P.O. Puthiyangadi, Kozhikode - 673021.

E-mail: vnkusumam1234@gmail.com

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Globally, there has been an increase in incidence of ectopic pregnancies and ectopic pregnancy continues to be an important cause of maternal death in the first trimester.¹ Many of these maternal fatalities are preventable as they occur because of failure to consider ectopic gestation as a differential diagnosis, particularly in sterilised women.

Tubal sterilisation is a simple procedure that involves permanently blocking the fallopian tube to prevent fertilisation. Despite numerous variations, female sterilisation consists of two basic steps- (1) Exposing the fallopian tubes, and (2) Partially resecting or occluding the tubes to prevent conception. Tubal sterilisation maybe performed via laparoscopy, hysteroscopy, laparotomy or colpotomy. Depending on the time of sterilisation, it can be classified into concurrent, postpartum or interval sterilisation.²

Although, pregnancy after sterilisation is uncommon, it can occur and maybe ectopic. The greatest risk of pregnancy including ectopic occurs in first two years after sterilisation. The risk of ectopic pregnancy after tubal sterilisation procedure depends on various factors such as woman’s age at the time of sterilisation, time of performing sterilisation and sterilisation technique. Women younger than 28 years at the time of sterilisation are more likely to have a high failure than women over 34 years. Ectopic pregnancy may occur many years after tubal sterilisation. Postpartum partial salpingectomy and unipolar coagulation have low rates of ectopic than other methods.³

The number of ectopic pregnancies particularly post sterilisation ectopic pregnancies admitted in IMCH is on the rise in recent periods. So, an attempt is made to assess the factors associated with ectopic pregnancy in sterilised women and to assess the proportion of ectopic pregnancies admitted in IMCH with a history of female sterilisation.

OBJECTIVES

1. To study the proportion of ectopic pregnancies with a history of female sterilisation.
2. Clinical and demographic profile of ectopic pregnancy with history of female sterilisation.

MATERIALS AND METHODS

This is a descriptive cross-sectional study in the Department of Obstetrics and Gynaecology, IMCH, Government Medical College, Kozhikode, for one and a half years (February 2014-July 2015). Cases of ectopic pregnancy that are admitted in IMCH were selected.

Variables under the Study

1. Sociodemographic factors- Age, religion and socioeconomic status.
2. Age at sterilisation.
3. Parity.
4. Sterilisation technique used.
5. Time of performing sterilisation (concurrent, postpartum or interval sterilisation).
6. Place from where sterilisation has been done.
7. Types of ectopic pregnancy (ruptured or unruptured).
8. Interval between sterilisation and ectopic pregnancy.
9. Site of ectopic pregnancy.
10. Clinical presentation of post sterilisation ectopic pregnancies.

Data were entered in MS-Excel and analysed with SPSS software.

RESULTS

During the study period lasting from February 2014 to July 2015, there were 372 cases of ectopic pregnancies. Of these, 51 had history of female sterilisation, which was studied in detail. Thus, ectopic tubal pregnancies after tubal sterilisation accounted for 13.7% of all the ectopic pregnancies in this study. Out of 51 cases, 45% cases occurred in patients less than 30 years and 18% cases occurred in patients more than 35 years of age. GA of the patients was between 4 weeks to 9 weeks 5 days with

mean GA 6.1 weeks and SD 1.4 weeks. More than 75% cases of ectopic pregnancy in the study presented at less than 7 weeks. Around 12% of cases presented before 5 weeks. 80% cases of ectopic pregnancy were referred from outside as diagnosed ectopic or suspected ectopic.

Out of the 51 cases, more than 80% patients had undergone sterilisation by modified Pomeroy’s technique while 17.6% cases had undergone laparoscopic sterilisation. Out of 51 sterilisation failure ectopic pregnancies, majority (55%) had undergone postpartum sterilisation. Age at sterilisation of the patients was between 22 to 31 years with mean age 25.4 years and SD 2.1 years. In the present study, more than half of the cases presented (as ectopic pregnancy) within 5 years after sterilisation.

Beta-hCG value of the patients was between 169.4 to 31,800 with median 1800 and interquartile range 2200. In 45% cases, the beta-hCG was between 1501-5000. In 37.3% cases, beta-hCG value was below 1500. Ultrasound evaluation showed adnexal mass in 58.8% cases, adnexal mass with foetal pole in 5% cases and free fluid in 5% cases.

Mortality and Morbidity

There was no mortality in the present study. All surgically managed patients had an uneventful postoperative period and they could go home within one week of admission.

Age (Years)	Frequency	Percentage
20-25	3	5.9
26-30	20	39.2
31-35	19	37.3
>35	9	17.6
Total	51	100.0

Table 1. Age Wise Distribution of Post Sterilisation Ectopic Pregnancies

	Frequency	Percentage
<5 weeks	6	11.8
5-6 weeks	18	35.3
6-7 weeks	15	29.4
7-8 weeks	6	11.8
8-9 weeks	4	7.8
>9 weeks	2	3.9
Total	51	100

Table 2. Gestational Age

	Frequency	Percentage
Referred	41	80.4
Not referred	10	19.6
Total	51	100.0

Table 3. Type of Admission

	Frequency	Percentage
Modified Pomeroy's	42	82.4
Laparoscopy	9	17.6
Total	51	100.0

Table 4. Technique of Sterilisation

	Frequency	Percentage
Concurrent	13	25.5
Postpartum	28	54.9
Interval	10	19.6
Total	51	100.0

Table 5. Time of Sterilisation

	Frequency	Percentage
<=5 yrs.	26	51.0
6-10 yrs.	16	31.4
>10 yrs.	9	17.6
Total	51	100.0

Table 6. Interval b/w Sterilisation to Pregnancy

	Frequency	Percentage
<=1000	11	21.6
1001-1500	8	15.7
1501-5000	23	45.1
>5000	9	17.6
Total	51	100.0

Table 7. Beta-hCG

	Frequency	Percentage
Adnexal mass	30	58.8
Adnexal mass, minimal free fluid	12	23.5
Adnexal mass with foetal pole	3	5.9
Adnexal mass with foetal pole, minimal free fluid	1	2.0
Minimal free fluid	2	3.9
Moderate amount of free fluid	1	2.0
Adnexal mass, moderate amount of free fluid	2	3.9

Table 8. USG

DISCUSSION

Usually, patients undergoing tubal sterilisation are considered to have a lower risk of pregnancy. However, tubal sterilisation can fail and in case of failure, the resulting pregnancy could very well be ectopic. Considering all the methods of tubal sterilisation, the 10-year cumulative ectopic pregnancy risk is 7.3 per 1000 procedures.

The incidence of ectopic pregnancy reported from different institution varies. This is because some may express it as a percentage of total number of births and some may express as a percentage of total numbers of live births or total number of pregnancies. It would be best to calculate the incidence of ectopic pregnancies per 1000 total conceptus. But, this can never be calculated accurately because most spontaneous abortions and many elective abortions are not reported.

The present study is done in Institute of Maternal and Child Health, Calicut, which is a referral institution. Hence,

it is purely an institutional data. It may not represent the general population. Most of the ectopic pregnancies are referred to our institute and it may not represent the accurate incidence. During the period from February 2014 to July 2015, there were 372 cases of ectopic pregnancy admitted in IMCH. Out of these, 51 had history of female sterilisation done. So, post sterilisation ectopic pregnancies constitute 13.7% cases of ectopic pregnancies. A study conducted in IMCH, Calicut, by M. Rajani in 2005 identified prior sterilisation as a risk factor in 22.7% cases of ectopic pregnancies.⁴ Wolf and Thompson (1989) reported that 7.4% of all ectopic pregnancies were in women who have been sterilised.⁵ The overall incidence of ectopic pregnancy after elective tubal sterilisation is about 16% according to Tatum and Schmidt (1977).⁶

Age of the patients was between 24 to 42 years with mean age 31.6 years. 45% cases occurred in patients less than 30 years and 18% cases occurred in patients more than 35 years of age. Maximum cases occurred in the age group of 26-30 years. 49% of post sterilisation ectopic pregnancies occur in third gravidas and rest occurred in higher order pregnancies. Kohl et al has reported an increasing incidence of ectopic pregnancies with increase in parity.

Gestational age of the patients was between 4 weeks to 9 weeks 5 days with mean GA 6.1 weeks. More than 75% cases of ectopic pregnancy in the study presented at less than 7 weeks. 11.8% cases presented before 5 weeks. This proves absence of amenorrhoea does not rule out the possibility of ectopic pregnancy.

80% cases of ectopic pregnancy were referred from outside as diagnosed ectopic or suspected ectopic. All of them had a positive urine pregnancy test and most of them had an ultrasound report suggestive of ectopic pregnancy.

Sterilisation Details

Out of the 51 cases, 82% patients had undergone sterilisation by modified Pomeroy's technique while 17.6% cases had undergone laparoscopic sterilisation. Bipolar coagulation had the highest probability of failure (17.1 ectopic pregnancies per 1000 procedures). The failure rate for the Pomeroy's procedure is estimated at 0.25-2%. McCausland reviewed ectopic pregnancy following laparoscopic tubal coagulation failures, noting that 12.3% of pregnancies that occurred after non-laparoscopic tubal ligation were ectopic and compared with 51% after tubal electrocoagulation.⁷ Though Modified Pomeroy's technique is associated with low failure rate, majority of cases of post sterilisation ectopic were following this method. This maybe because it is the widely used technique of tubal sterilisation in our country.

Out of 51 sterilisation failure ectopic pregnancies, majority (55%) had undergone postpartum sterilisation. This is comparable with previous studies. In the study by M. Rajani, most cases of post sterilisation ectopic pregnancy were following postpartum sterilisation. The incidence of ectopic pregnancy is higher when sterilisation is performed during the postpartum period, because the

oedematous, friable and congested fallopian tubes following pregnancy increases the chance of incomplete occlusion of the tubal lumen.

Age at sterilisation of the patients was between 22 to 31 years with mean age 25.4 years. 98% of the patients had their sterilisation done before 30 years of age. Previous studies showed similar results. Women younger than 28 years at the time of sterilisation are more likely to have failure than women over 34 years. In the study by Peterson et al, it was found that women who were under 30 at the time of sterilisation were nearly twice as likely as older women to have a subsequent ectopic pregnancy.

Interval between sterilisation and present pregnancy of the patients was between 1 to 15 years with mean 6.3 years. More than half of the cases presented (as ectopic pregnancy) within 5 years after sterilisation. According to Cheng et al, 53% cases of ectopic pregnancy occurred between 2-5 years of sterilisation. The risk of having ectopic pregnancy is highest in the first two years of sterilisation.⁸

Investigations

Beta-hCG value of the patients was between 169.4 to 31,800. In 45% cases, the beta-hCG was between 1501-5000. In 37.3% cases, beta-hCG value was below 1500, i.e. below the discriminatory zone. So, there was a difficulty in diagnosis in these cases. The clinical presentation and ultrasound features aided in diagnosis in these cases.

Ultrasound evaluation showed adnexal mass in 58.8% cases, adnexal mass with foetal pole in 5% cases and free fluid in 5% cases. Studies show that approximately 60% of ectopic pregnancies are seen as an inhomogeneous mass ("blob sign") adjacent to the ovary and 13% have an obvious gestational sac with a foetal pole with or without foetal cardiac activity.

Intraoperative Findings

Among the 46 cases analysed, all were tubal ectopic pregnancies. 52% cases were ruptured at presentation. Of the surgically managed cases, 33 (68.8%) were right-sided and majority (63%) of cases were in the distal end. The Pomeroy's technique of ligation involves removing part of the fallopian tube and is reported to fail due to recanalisation or tuboperitoneal fistulae formation. In some cases, fistulas existed on the contralateral side to the ectopic pregnancy. Brenner concluded that ectopic pregnancy occurs with greater frequency following sterilisation because of the reduced diameter of the recanalised oviduct postsurgery.⁹ Thus, sperm can traverse this lumen, but subsequent migration of the much larger fertilised ovum is blocked resulting in ectopic pregnancy in distal stump. In all cases, tubes showed evidence of sterilisation. Thus, no cases resulted from technical errors. In a study by Ganesh Tonde et al, technical errors constituted 84%. Bilateral near total salpingectomy was done in all cases. Literature suggests that bilateral salpingectomy should be performed when exploring a patient with ectopic gestation after sterilisation.¹⁰

Since 5 patients were not willing for surgery, they were excluded from further analysis. They were kept under follow up with serial beta-hCG monitoring as their initial beta-hCG was less than 1000.

Mortality and Morbidity

There was no mortality in the present study. All surgically managed patients had an uneventful postoperative period and they could go home within one week of admission.¹¹

CONCLUSION

Ectopic pregnancy causes significant morbidity hence high index of suspicion is needed. In the present study, it is observed that ectopic pregnancies following female sterilisation are not rare. It constituted 13.7% cases of ectopic pregnancies. There may be a delay in diagnosis as there is a history of sterilisation. Absence of amenorrhoea does not rule out the possibility of ectopic. Most of the cases occurred in women less than 35 years. Risk factors for post sterilisation ectopic pregnancy include age at sterilisation, method, time and interval between sterilisation and ectopic pregnancy. Pelvic inflammatory disease is found to be a contributory factor.

Awareness about ectopic after sterilisation is needed. The consequences of delay in diagnosis includes internal bleeding, infections in the abdomen and pelvis and even death. Hence, comprehensive education required.

Physicians should be aware of the risk of ectopic pregnancies in such women to maintain vigilance on this life-threatening complication. They may present with unexplained signs and symptoms of hypovolaemia. The urine pregnancy test is a very important survey study for all female patients in emergency department. In the present study due to prompt diagnosis and management maternal mortality was avoided even in the referred cases.

Sterilisation surgery being one of the methods of national population control programme should be done very carefully. Many such failures can defame the National Family Planning Policy. To make sterilisation surgeries a total success, the failures can be prevented by proper training of surgeons by proper selection of cases in postmenstrual phase. Adequate anaesthesia and adequate incision help visualisation and proper identification of both the tubes for ligation in minilaparotomy. In laparoscopic method, failures can be minimised by preventing the leakage of gases and arranging proper intensity of light in laparoscopic equipment and by achieving proper mobility of uterus and adnexa for proper visualisation of tubes during laparoscopic procedures.

Ligatures and bands should be applied at proper sites of the tube. Teaching programmes for doctors should be provided.

It has been found that 15.7% of patients had previous genital infections. Reproductive tract infections should be detected early and prompt treatment should be given. Men are more symptomatic than women and partners can be included in the treatment to treat asymptomatic infection in

women. In RTI/STI programme, which is a component of RCH programme, men's participation is encouraged.

Finally, we can think of a better method of contraception with least chance of ectopic. One method is by promoting male sterilisation and another is by using Intrauterine Devices (IUDs) with least ectopic rates in women. Two such devices are available now- Levonorgestrel IUD and CuT 380A, but they have their own limitations. In a seven year prospective study, not a single ectopic pregnancy was encountered with LNG-IUD.¹²

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REFERENCES

- [1] Hudson CN, Setchell ME. Textbook of Shaw's gynaecology. India: Elsevier 2011:239-243.
- [2] Williams JW, Hoffman BL. William's gynaecology. 2nd edn. New York, NY: McGraw-Hill 2012:p.198.
- [3] Berek JS. Berek Novak's gynaecology. 15th edn. Lippincott Williams & Wilkins 2012:622-630.
- [4] Rajani M, Jayasree S, Sreenivas SK. A study on the epidemiology of ectopic pregnancy in a tertiary care centre in north Kerala. J of Evidence Based Med & Hlthcare 2014;1(6):435-445.
- [5] Wolf GC, Thompson NJ. Female sterilization and subsequent ectopic pregnancy. Obstetrics & Gynecology 1980;55(1):17-19.
- [6] Tatum HJ, Schmidt FH. Contraceptive and sterilization practices and extrauterine pregnancy: a realistic perspective. Fertil Steril 1977;28(4):407-421.
- [7] McCausland A. High rate of ectopic pregnancy following laparoscopic tubal coagulation failures: incidence and etiology. American Journal of Obstetrics And Gynecology 1980;136(1):97-101.
- [8] Cheng MC, Wong YM, Rochat RW, et al. Sterilization failures in Singapore: an examination of ligation techniques and failure rates. Studies in Family Planning 1977;8(4):109-115.
- [9] Brenner PF, Benedetti T, Mishell JR DR. Ectopic pregnancy following tubal sterilization surgery. Obstetrics & Gynecology 1977;49(3):323-324.
- [10] Tondge G, Nilange U. Study of failure of female sterilisation. Journal of Health Research 2015;1(2):32-35.
- [11] Centers for Control of Disease (CDC). Ectopic pregnancy mortality-Florida, 2009-2010. MMWR Morbid Mortal Wkly Rep 2012;61(6):106-109.
- [12] Sivim I, Stern J. International Committee for contraception research, health during prolonged use of LNG 20 microgram/day. Cu T 380 Ag- a multicentric study. Fertil Steril 1994;61(1):70-77.