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Original Research Article

A study on effectiveness of female sterilization by the modified pomeroy technique in a secondary hospital

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ABSTRACT

Background: Sterilization is a highly effective method of contraception with nearly a 100% success rate. After sterilization, however, a woman may become pregnant within the first 1-2 years, or several years later. Pang Khon Hospital, Sakon Nakhon, is a secondary hospital where mothers have been found to conceive three years after sterilization by the Modified Pomeroy Technique in 1999. This research was aimed at studying the effectiveness of female sterilization by the Modified Pomeroy Technique and tying the fallopian tubes on the side adjacent to the uterus with silk along with following-up on patients one year after sterilization.
Methods: This study is a retrospective study. The study was conducted in the Department of Obstetrics and Gynecology, Pang Khon Hospital, Sakon Nakhon. Data were collected retrospectively from 4,553 mothers who were sterilized in 2002-2020 (19 years). Inclusion criteria of the study participants a total 4,201 mothers were sterilized by using the Modified Pomeroy Technique and tying fallopian tubes on the side adjacent to the uterus with silk thread and exclusion criteria of the study participants were mothers who were not sterilized by using the Modified Pomeroy Technique and tying fallopian tubes on the side adjacent to the uterus with silk thread. Data was collected from patient medical records. Demographic data regarding age of patient and various parameters like parity, method of sterilization, time interval between sterilization and failure, mode of presentation were analysed with SPSS software and results tabulated.
Results: No pregnancies were found among 4,201 mothers sterilized by using the Modified Pomeroy Technique and tying the fallopian tubes on the side adjacent to the uterus with silk thread.
Conclusions: Female sterilization by using the Modified Pomeroy Technique and tying the fallopian tubes on the side adjacent to the uterus with silk thread is an effective method. Therefore, the aforementioned method should be a good method and option for female sterilization.

Keywords: Female sterilization, Modified pomeroy technique, Female sterilization failure

INTRODUCTION

Female sterilization is the most popular method of contraception in millions of people. According to family planning data in Thailand in 2019, married women aged 15-49 years were found to have used contraception by female sterilization as around 24.35%.[1] Female sterilization is a permanent method of contraception by occluding fallopian tubes to prevent sperm from fertilizing eggs. This can be done by many methods. Female sterilization can be performed at the same time as a caesarean section or after a natural birth.[2] The preferred time is mostly 12-24 hours after childbirth.[3] In addition, female sterilization may be done at other times than the

postpartum period, which is called a "dry sterilization". Sterilization is a method of contraception with a success rate of nearly 100%. After sterilization, however, there is likelihood of pregnancy. According to reports on studies in Thailand, failure of sterilization by making an abdominal incision was found to be only 0.2 of 1,000 patients.[4] Concerning factors with influence over sterilization failure rates such as the age of women at the time of sterilization, women sterilized at under 30 years of age are more likely to conceive in the first years after sterilization than women aged over 30 years.5 In addition, regarding time after sterilization, most pregnancies occur in the first 1-2 years after sterilization, although pregnancies may occur even 10 more years afterward.[5,6] Pathologies of the pelvis such as pathology of the fallopian tubes, history of abdominal or pelvic surgery, history of salpingitis, uterine fibroids and obesity make sterilization more difficult.[7] Concerning conception after sterilization at Pang Khon Hospital, Sakon Nakhon, one mother was found to conceive three years after sterilization by the Pomeroy technique in 1999. After the aforementioned incident, the obstetrician applied a new female sterilization method by the Modified Pomeroy Technique along with tying the fallopian tubes on the side adjacent to the uterus with silk thread.

METHODS

This study is a retrospective study. The study was conducted in the Department of Obstetrics and Gynecology, Pang Khon Hospital, Sakon Nakhon. Data were collected retrospectively from 4,553 mothers who were sterilized in 2002-2020 (19 years). Inclusion criteria of the study participants a total 4,201 mothers were sterilized by using the Modified Pomeroy Technique and tying fallopian tubes on the side adjacent to the uterus with silk thread and exclusion criteria of the study participants were mothers who were not sterilized by using the Modified Pomeroy Technique and tying fallopian tubes on the side adjacent to the uterus with silk thread. Data was collected from patient medical records. Demographic data regarding age of patient and various parameters like parity, method of sterilization, time interval between sterilization and failure, mode of presentation were analysed with SPSS software and results tabulated.

RESULTS

A total of 4,201 mothers were sterilized by using the Modified Pomeroy Technique and tying fallopian tubes on the side adjacent to the uterus with silk thread in 2012-2020 (19 years). This was an average of 221 mothers per year. Of the mothers, 1,765 were younger than 30 years (42.01%) and 2,436 mothers were older than 30 years (57.99%).

A total of 352 mothers were sterilized by using the Pomeroy Technique in 2012-2020 (19 years). This was an average of 18 - 19 mothers per year. Of the mothers, 133 were younger than 30 years (37.78%) and 219 mothers were older than 30 years (62.22%).

In 2002-2020 (19 years), 352 mothers were sterilized by using the Pomeroy technique and one mother conceived (0.28%). The mother had been sterilized after giving birth to a third child and conceived within 1 year and 7 months after sterilization. At the time, the mother was aged 40 years and the pregnancy was her fourth. (Table 1)

Table 1: Parameters studied.

Demographic data	Modified Pomeroy technique	Pomeroy Technique
Mothers age		
20-29	1,765 (42.01%)	133 (37.78%)
≥30	2,436 (57.99%)	219 (62.22%)
Total	4,201	352
Gravida		
1	41 (0.98%)	17 (4.83%)
2	1,915 (45.58%)	149 (42.33%)
3	1,662 (39.56%)	98 (27.84%)
4	405 (9.65%)	59 (16.76%)
≥5	178 (4.23%)	29 (8.24%)
Time interval between sterilization and failure		
<2 years	-	1 (0.28%)
2-5 years	-	-
5-10 years	-	-
>10 years	-	-

Comparison of 4,201 mothers who were sterilized using the Modified Pomeroy Technique and by tying fallopian tubes on the side adjacent to the uterus with silk thread (Figure 2) in 2002-2020 (19 years) did not report pregnancies. Of 352 mothers who had been sterilized by the Pomeroy technique (Figure 1) in 2002-2020 (19 years), one mother became pregnant (0.28%).

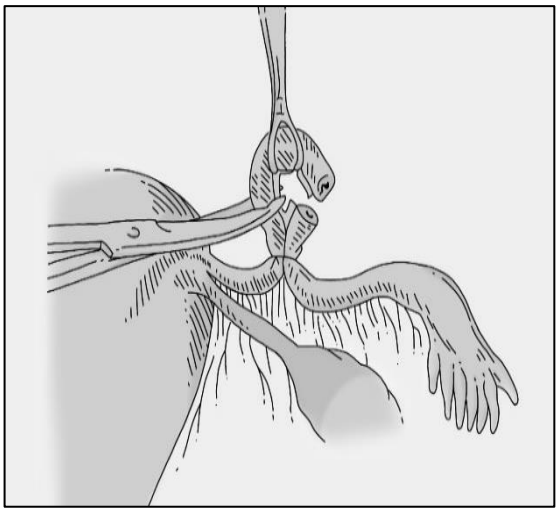

Figure 1: Pomeroy technique.

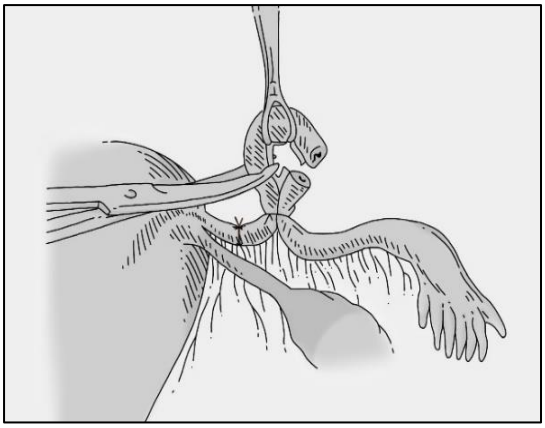

Figure 2: Modified Pomeroy technique.

DISCUSSION

Female sterilization occludes the fallopian tubes. Many techniques were used such as tying various positions of the fallopian tubes and prevent future reconnections with various methods. According to the findings, failure of sterilization by the Pomeroy technique was found in 1 of 352 mothers, who conceived within in 1 year and 7 months. This was consistent with the findings of Varma et al. who found pregnancies within 1-2 years after female sterilization.[7,5] Sterilization by the Modified Pomeroy Technique is highly popular and use of the technique began in 1930. In this technique, after finding the fallopian tube, the obstetrician uses atraumatic clamps such as a Babcock to hold the center of the fallopian tube before lifting the tube to form a loop and tying it with plain catgut No. 1 for 1-2 rounds at the base of the loop by leaving 2-3 centimeters of the proximal end of the isthmus portion. The base should not be tied too tightly, because this may cause necrosis and fistulas at the proximal and distal ends of the fallopian tubes in the future, which may cause sterilization failure or likelihood of pregnancy. The surgeon then uses scissors to cut 2-3 centimeters of the fallopian tube loop. In addition, the mesosalpinx should be cut to prevent incomplete separation of the fallopian tubes.[2,7,8] Furthermore, silk thread dissolves faster when plain catgut is used in sterilization by the Modified Pomeroy Technique. This allows both ends of the fallopian tubes to separate faster after surgery and prevents the fallopian tubes from subsequently reconnecting. However, according to a study conducted by Vanitha et al on female sterilization failure in tertiary care hospitals in 55 cases of sterilization failure, 87% of the cases failed following the Modified Pomeroy Technique.[9] In the study, the researcher performed female sterilization by the Modified Pomeroy Technique and tying the fallopian tubes on the side adjacent to the uterus with silk (Figure 3), thereby occluding the fallopian tubes at another level. If the fallopian tubes in the cut area reconnect in the future, the egg could not be fertilized, because the fallopian tubes were tied and occluded with silk. Sterilization by the Modified Pomeroy Technique and tying the fallopian tubes on the side adjacent to the uterus is an effective method. Therefore, the method should be considered a good current option for female sterilization.

Limitations

The limitation of the present study was the large number of cases and years of study make it quite difficult to gather information.

CONCLUSION

Female sterilization is a basic obstetrical procedure that can be performed by every obstetrician. Therefore, obstetricians should be trained to achieve expertise, make surgical procedures run smoothly and prevent complications. Although sterilization is a permanent contraceptive method, contraception failure may occur and result in pregnancy. However, the method remains popular. Female sterilization failure can be prevented by following sterilization guidelines and standards. Sterilization by the Modified Pomeroy Technique and by tying silk at the fallopian tubes on the side adjacent to the uterus is an effective method and should be a current option for female sterilization.

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