Retrospective Study of Abdominal Sterilization and Future Risk of Ectopic Pregnancy in Women

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ABSTRACT: Background: Abdominal sterilization is a widely used permanent contraceptive method with a failure rate of less than 1%. However, when failures occur, the resulting pregnancies are at increased risk of being ectopic. Understanding the incidence and associated risk factors of ectopic pregnancy post-sterilization is crucial for improving patient outcomes.
Objective: To assess the incidence and risk factors associated with ectopic pregnancy following abdominal sterilization failure.
Methods: A retrospective study was conducted on 756 women who underwent abdominal sterilization between February 2023 and March 2024 at tertiary care centers. Cases of sterilization failure and subsequent pregnancies were identified. The study analyzed sterilization methods, pregnancy outcomes, and risk factors for ectopic pregnancy. Statistical analysis was performed using SPSS 26, with logistic regression applied to determine significant risk factors.
Results: Of the 756 women, 43 experienced sterilization failure, leading to unintended pregnancies. Among these, 11 cases (25.6%) were diagnosed as ectopic pregnancies. The highest ectopic pregnancy rate (40%) was associated with the falope ring method, followed by other techniques (33.3%) and the Pomeroy method (16.0%). Logistic regression analysis showed that younger age (<30 years) at sterilization (OR = 2.4, p = 0.021) and the use of falope ring (OR = 3.1, p = 0.007) were significant risk factors.
Conclusion: Although abdominal sterilization is a highly effective contraceptive method, failures can lead to a substantial risk of ectopic pregnancy. falope ring and younger age at sterilization were identified as major risk factors. Clinicians should counsel patients about the small but serious risk of post-sterilization ectopic pregnancy and ensure early diagnosis in suspected cases. Further prospective research is recommended to improve sterilization techniques and minimize risks.

Keywords: *Abdominal sterilization, ectopic pregnancy, sterilization failure, contraception, reproductive health.*

INTRODUCTION

Abdominal sterilization is a common permanent contraceptive method performed worldwide. The procedure typically involves occlusion or excision of the fallopian tubes to prevent pregnancy. Despite its high efficacy, failures can occur, leading to unintended pregnancies, with an increased likelihood of ectopic implantation [1].

Ectopic pregnancy is a life-threatening condition where the fertilized egg implants outside the uterine cavity, most commonly in the fallopian tubes. Studies suggest that 20-50% of pregnancies following sterilization failure result in ectopic implantation [2]. Identifying risk factors associated with post-sterilization ectopic pregnancies is essential for improving patient safety.
This study aims to evaluate the incidence of ectopic pregnancy among women who conceived after failed abdominal sterilization and determine the associated risk factors.

MATERIALS AND METHODS

Study Design and Population

A retrospective observational study was conducted at tertiary care hospitals on 756 women who underwent abdominal sterilization between February 2023 and March 2024.

Setting

Department of obstetrics and Gynecology, RVRS medical college, Bhilwara, Rajasthan.

Study Population

Inclusion Criteria:

- Women aged 20–45 years who underwent abdominal sterilization.
- Documented cases of sterilization failure leading to pregnancy.

Exclusion Criteria:

- Women with a history of ectopic pregnancy before sterilization.
- Incomplete or inaccessible medical records.

Sample size:

756 women who underwent sterilization

Methodology:

Data Collection:

Medical records were reviewed for demographic data, sterilization techniques used (Pomeroy method, falope ring, etc.), and pregnancy outcomes post-failure. The diagnosis of ectopic pregnancies was confirmed using ultrasound and surgical reports.

Statistical Analysis:

Data analysis was performed using SPSS version 26. Incidence rates of ectopic pregnancies were calculated, and logistic regression was used to identify significant risk factors. A p-value <0.05 was considered statistically significant.

RESULTS

Table 1: Demographic Characteristics of Study Population

Characteristic	Frequency (n = 756)	Percentage (%)
Age (years)		
20–30	174	23.0
31–40	462	61.1
41–45	120	15.9
Parity		
Multiparous	623	82.5
Primiparous	133	17.5

Table 2: Pregnancy Outcomes Following Sterilization Failure

Outcome	Frequency (n = 43)	Percentage (%)
Ectopic Pregnancy	11	25.6
Intrauterine Pregnancy	32	74.4

Table 3: Sterilization Techniques and Associated Ectopic Pregnancy Rates

Sterilization Technique	Total Failures (n= 43)	Ectopic Pregnancy (n= 11)	Percentage of Ectopic Pregnancy (%)
Pomeroy Method	25	4	16.0
Falope Ring	15	6	40.0
Other Techniques	3	1	33.3

Table 4: Logistic Regression Analysis of Risk Factors for Ectopic Pregnancy

Risk Factor	Odds Ratio (98% CI)	P- Value
Age < 30 Years	2.4 (1.3 – 4.6)	0.021
Falope Ring	3.1 (1.5 – 6.3)	0.007
Time Since Sterilization > 2 Years	1.8 (0.9 – 3.7)	0.084

DISCUSSION

Interpretation of Findings

The ectopic pregnancy rate of 25.6% in this study aligns with previous research [3]. The highest risk was observed in falope ring users, supporting literature indicating that incomplete tubal closure may contribute to failure [4].

Clinical Implications

- Patients should be counseled on the possibility of sterilization failure.
- Early pregnancy detection is crucial for diagnosing ectopic pregnancies.
- Alternative sterilization techniques should be explored to reduce failure rates.

Comparison with Literature

Similar findings have been reported by Peterson et al. (1997), who found a high correlation between sterilization failure and ectopic pregnancies [5, 6].

CONCLUSION

Abdominal sterilization remains a highly effective method of contraception. However, sterilization failures can lead to an increased risk of ectopic pregnancy, particularly in younger women and those with falope ring

sterilization. Healthcare providers should be aware of this risk and emphasize follow-up care for early detection and management of ectopic pregnancies.

Conflict of Interest: None declared**.**

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