Research Article

Is the risk of menstrual abnormalities higher among women after tubectomy? A case—control study

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Received April 8, 2015. Accepted April 14, 2015

Abstract

Background: Tubal ligation is the most common method of family planning in India. However, the increased risk of menstrual abnormalities after tubectomy has been a matter of debate since the last few years.

Objective: To compare the incidence and type of menstrual abnormalities in tubectomized and nontubectomized women.

Materials and Methods: A total of 870 women of the age group 20–40 years attending outpatient departmentin General Hospital, Gohana, Haryana, India, were included in this study; 380 women were tubectomized and 490 women nontubectomized.

Result: Of 380 women, 175 (46.05%) tubectomized women (175) showed menstrual abnormalities. While, out of 490 nontubectomized women, 236 (48.16%) women showed menstrual abnormalities. The type of menstrual abnormality in these two groups was also studied.

Conclusion: Tubal ligation does not increase the risk of menstrual irregularities among women.

KEY WORDS: Menstrual abnormalities, tubal ligation, women

Introduction

With a population of about 1.23 billion, India is forecast to become the world's most populous country by 2030.[1] Owing to lack of proper medical facilities, lower literacy levels, and lower acceptance of barrier methods among the rural population permanent methods such as tubal ligation became an important aspect of family planning in India. For this reason, women sterilization constitutes the most widely accepted method of contraception in India. About 4.6 million Indian women were sterilized in 2011 and 2012, according to the government.[1] In fact, India has one of the world's highest rates of women sterilizations with about 37% of women undergoing tubectomy, compared with 29% in China according to the UN.[1]

Occurrence of menstrual abnormalities after tubectomy has been a matter of debate since the last few decades. Premenstrual distress syndrome, menorrhagia, and dysmenorrhea are some of the menstrual abnormalities, whose risk is supposed to increase after tubectomy.[2] However, many compounding factors such as age, sociodemographic features, obesity, parity, or coexistence of medical disorders may also be responsible for this. Numerous studies have been done by many authors in the past to assess the effect of tubal ligation on menstrual function.[2–6] This study was done to compare the incidence of menstrual abnormalities in women who have undergone tubal ligation in the past and those without it to find out if there is a relationship between tubectomy and an increased incidence of menstrual abnormalities. The aim of this study, however, was not to discourage tubal ligation as a method of contraception, owing to small risks if there are any side effects, but women who adopt this

Access this article online	
Website: http://www.ijmsph.com	Quick Response Code:
DOI: 10.5455/ijmsph.2015.08042015268	

method should be fully aware of the risks and the benefits of the procedure and, thus, can make an informed choice.

Materials and Methods

This case—control study was conducted in General Hospital, Gohana, Sonipat, from October 2014 to December 2014 (i.e., a period of 3 months). A total of 1000 women from the age group 20–40 years attending the outpatient gynecology clinic were randomly selected after taking an informed consent. After a brief history regarding sociodemographic factors, parity, age at marriage, use of oral contraceptive pills or intrauterine contraceptive device, etc., a detailed history regarding the presence of menstrual abnormality if any, its type, duration, etc., was taken.

A menstrual cycle of 21–35 days and a duration of menses for 2–7 days were considered to be normal. A patient's self-described history of normal or heavy blood loss was indicative of the amount of blood flow. Various menstrual abnormalities were defined as:

- Polymenorrhea: A menstrual interval shorter than 21 days.
- Oligomenorrhea: A menstrual interval longer than 35 days.
- Menorrhagia: Heavier and increased amount of flow occurring at regular intervals.
- Hypermenorrhea: Duration of flow greater than 7 days.
- Hypomenorrhea: Duration of flow lesser than 2 days.
- Menometrorrhagia: Excessive and prolonged bleeding that occurred irregularly.
- Dysmenorrhea: Pain during menstruation that interferes with daily activities.
- Premenstrual stress syndrome: Emotional symptoms that may or may not be associated with physical symptoms related to a woman's menstrual cycle.

Women on oral contraceptive pills, intrauterine contraceptive device, and the presence of fibroid, any medical or bleeding disorder that could have led to menstrual abnormality were excluded from our study. A total of 130 women were excluded. Remaining 870 womenwere divided into two groups: group A, women who had undergone tubal ligation in the past; and group B, women without tubal ligation.

Both these groups were comparable in terms of age and other sociodemographic factors [Table 1] and were studied independently for the presence of menstrual abnormality. A note was also made of the type of menstrual abnormality in these two groups.

Statistical Tests

Data collected were analyzed using simple statistical tests such as frequency and percentage.

Result

A total of 870 women were enrolled in this study. Of this, 380 women gave a history of tubal ligation done in the past (cases), and 490 women were without tubal ligation (controls). Some menstrual abnormalities occurred in 175 (46.05%) women with tubal ligation and in 236 (48.16%) women without tubal ligation [Figure 2]. So, the frequency of menstrual abnormalities was quite similar in both the groups. However, the most common type of menstrual abnormality was different in the two groups. Polymenorrhea was the most common abnormality in tubectomized subjects (32%), while, in nontubectomized subjects, it was menorrhagia, making a total of 25% of all cases [Table 2, Figure 1]. The second most common abnormality in tubectomized group

Table 1: Sociodemographic profile of subjects included in the study

Sociodemographic factors	Group A, number (%)	Group B, number (%)
Age (years)		
20–25	38 (10)	73 (14.9)
25–30	68 (17.9)	98 (20)
30–35	145 (38.15)	225 (45.9)
35–40	129 (33.9)	94 (19.2)
Literacy status		
Illiterate	57 (15)	83 (17)
Primary	198 (52.1)	235 (47.9)
Secondary	-	-
College and above	125 (32.9)	172 (35.1)
Socioeconomic status		
High	117 (30.8)	162 (33.06)
Middle	144 (37.9)	176 (35.91)
Low	119 (31.3)	152 (31.02)
Age at marriage (years)		
<20	133 (35)	162 (33.06)
>20	247 (65)	328 (66.93)
Area of residence		
Rural	209 (55)	255 (52.04)
Urban	171 (45)	235 (47.95)
Parity		
Nullipara	0 (0)	44 (8.97)
1	2 (0.52)	73 (14.89)
2	201 (52.9)	176 (35.91)
3	123 (32.4)	112 (22.85)
>3	54 (14.2)	85 (17.35)

Table 2: Types of menstrual abnormality in cases and controls

Type of menstrual abnormality	Group A, cases (*N* = 175)		Group B, controls (*N* = 236)	
	Frequency	%	Frequency	%
Oligomenorrhea	9	5.14	7	2.96
Polymenorrhea	56	32	36	15.25
Menorrhagia	38	21.7	59	25
Hypomenorrhea	7	4	14	5.93
Dysmenorrhea	27	15.42	47	19.9
Menometorrhagia	9	5.14	19	8.05
Premenstrual stress	14	8	45	19.06
Intermenstrual spotting	15	8.57	9	3.81

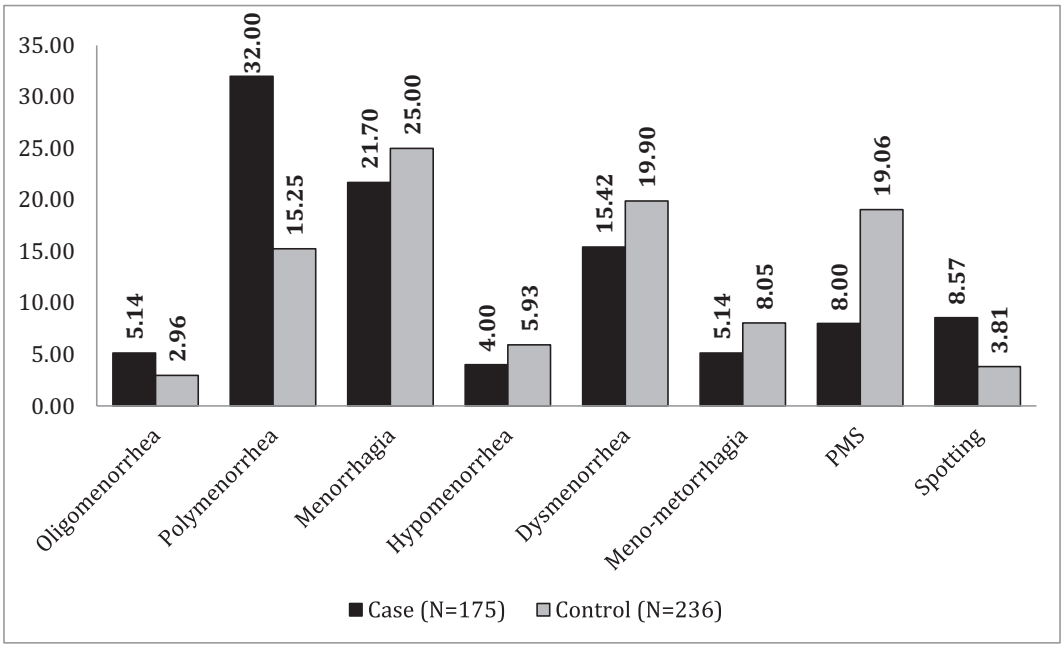

Figure 1: Types of menstrual abnormality in cases and controls.

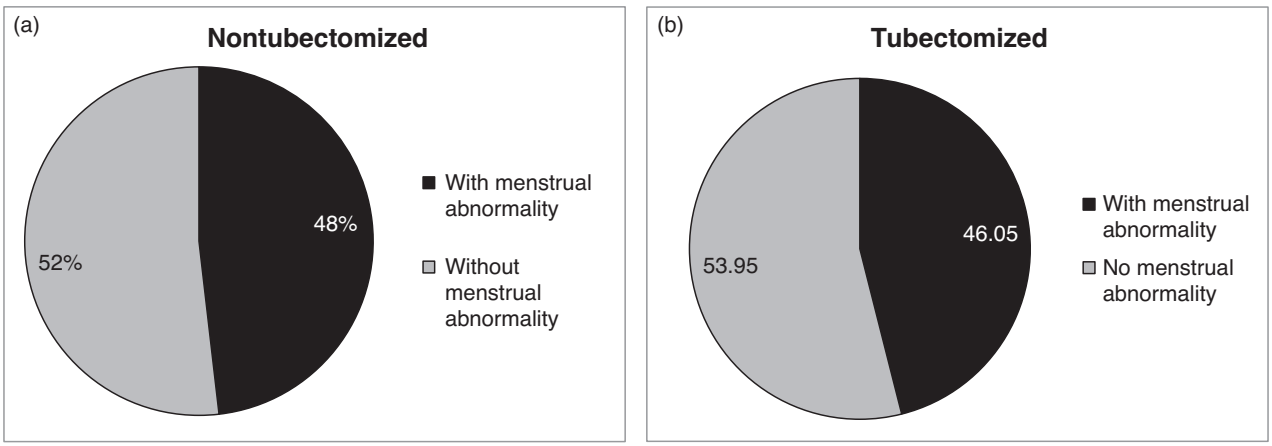

Figure 2: Menstrual abnormality in controls (a) and cases (b).

was dysmenorrhea (15%), while, in nontubectomized subjects, both dysmenorrhea and premenstrual syndrome were equally common, each having an incidence of around 20%.

Discussion

It is not uncommon to see women in gynecology outpatient department who describe disturbances in their menstrual function after tubal ligation. A term called "posttubal ligation syndrome" has been coined to describe various menstrual or psychological symptoms observed after tubal ligation. These may be in the form of abnormal bleeding, lower abdominal pain, and changes in sexual behavior or emotional health.

In this study, we compared the incidence of various menstrual abnormalities in tubectomized and nontubectomized women and found that the incidence was almost similar in the two groups. So, tubal ligation dose not result in the increased incidence of various menstrual abnormalities. These results are quite similar to those of Gentile et al.,[2] Peterson et al.,[3] Harlow et al.,[4] who showed no significant changes in the menstrual cycle characteristics in women with or without tubal ligation. However, there are studies with conflicting results, for example, in a study conducted by Destefano et al.,[6] in 1983, it was found that the cycle length and days of menstrual bleeding significantly decreased in women after tubal ligation. We found that the type of most frequent

menstrual abnormality was different in tubectomized and nontubectomized groups. A similar study done by Shobeiri and Atashkhoii[7] revealed polymenorrhea as the most common menstrual abnormality in tubectomized individuals and menorrhagia in nontubectomized individuals.

The causes for differences in the menstrual pattern in these two groups could be some hormonal changes after tubectomy. This has been a matter of much debate since the last few decades. Numerous studies have been done on this subject with conflicting results. Radwanska et al.,[8] found a significantly lower midluteal-phase progesterone in women who had undergone tubal ligation and revealed menstrual abnormality, while Rojansky and Halbreich[9] in a similar study found no significant change except a lower level of midfollicular-phase estrogen. Meldrum[10], Helm and Sjöberg, [11] and Garza-flores et al.,[12] however, in their studies found no significant change in the hormonal status in women who have undergone tubal ligation.

Our study had certain limitations. First, the method by which women had undergone tubal ligation and, second, the age at ligation were not taken into account. As both these factors may be independently responsible for menstrual abnormalities, further studies with a proper control for these factors are needed to throw more light on this subject.

Conclusion

In our study, we found that incidence of menstrual abnormalities was similar in tubectomized and nontubectomized individuals. Whether or not tubal ligation causes hormonal changes and, thus, menstrual abnormality still remains unclear, and additional studies on this topic are required to clarify the issue further.

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How to cite this article: Mangla M, Singla D. Is the risk of menstrual abnormalities higher among women after tubectomy? A case—control study. Int J Med Sci Public Health 2015;4: 1251-1254

Source of Support: Nil, **Conflict of Interest:** None declared.