



## Original Article

## Menstrual Irregularities Post Tubal Ligation

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## ABSTRACT

The most popular form of family planning is tubal ligation. Decades-long debates have surrounded the possibility of the post-tubal ligation syndrome of menstrual irregularities. **Objective:** To study the frequency of menstrual irregularities after tubal ligation in women attending gynecological outpatient department of a tertiary care hospital setting. **Methods:** A cross sectional study was conducted on 126 females who had history of post tubal ligation syndrome. Cases were verified and data were collected. Duration and length of menstrual cycle was noted. Laboratory examination was done. Duration of tubal ligation was also noted. Their age, name and hospital registration number were also noted down. A control group of 50 healthy females was made for the comparison of menstrual disturbance. **Result:** The patients mean age was 39.5±3.4 years. Maximum of the patients 71(56.3%) of the patients had age between 37 to 42 years. The duration of tubal ligation observed in 118(93.7%) of the patients more than or equal to 1 year. Type of menstrual disturbance such as polymenorrhea in 76(60.3%), menorrhagia in 51(40.5%) and intermenstrual bleeding in 9(7.1%) of the patients respectively. Final outcome menstrual irregularity was presented in 74 (58.7%) of the patients. Age group with menstrual irregularity was presented in 40(53.5%) patients versus 31 (43.7%) patients who had absent menstrual irregularity. Similarly, duration of tubal ligation was compared with menstrual irregularity and presented in 69(58.5%) of the patient compared with 49(41.5%) patients who had absent menstrual irregularity. **Conclusion:** The older group of patients has high prevalence of menstrual irregularities.

## INTRODUCTION

The main organs of the female reproductive system are the fallopian tubes, ovaries, vagina and uterus. The uterus is located in the pelvic cavity between the bladder and the rectum. It is about 7.5 cm long, 5 cm wide at the top, and about 2.5 cm thick, and weighs between 30 and 40 grams [1-2]. It has a stopper whose body and cervix protrude through an opening into the vaginal fornix where it opens. Each fallopian tube is 10 cm long. Medially, 1 cm is embedded in the uterine wall (intramural part) [3-4]. The part adjacent to the uterus is called the shedding tube. Next to it is an ampulla which is more than half the length of the tube. The lateral end is called the fimbrial end that meets the ovary [5-6]. The ovary is oval in shape. It is about 3 cm

long, 2 cm wide and 1 cm thick. The size and appearance of the ovary depend on both age and the phase of the menstrual cycle. The two main arteries are the uterus, which originates in the lower abdomen, and the ovary, which originates in the abdominal aorta [7-8]. The lining of uterus (endometrial) responds to hormones made in ovary under the control of hypothalamus and pituitary gland [9]. In first half cycle, estrogen predominates, halts menstrual flow and promotes endometrial proliferation [4]. After ovulation at mid-cycle in response to LH surge, progesterone level increases which stops endometrial growth and promotes differentiation of endometrial. If pregnancy does not occur and estrogen production falls,

the endometrial lining sheds and menstrual cycle begins [10]. Each menstrual cycle represents a complex interaction between the pituitary gland, hypothalamus, endometrium and ovaries [9]. Hypothalamus secretes gonadotrophin-releasing hormone (GnRH) which exerts specific effect on the secretion of pituitary gland. GnRH is accountable for the release and synthesis of FSH and LH from anterior pituitary gland. GnRH is released in palatial fashion during the menstrual cycle. Pituitary gland is situated in the base of brain below the hypothalamus [11-12]. Another gland secretes gonadotrophin, FSH and LH, which plays basic part in regulation of menstruation. FSH, (follicle-stimulating hormone), is responsible for the early maturation of the ovarian follicle as the name indicates [13]. It is also responsible for proliferation of granulose cells. LH, (luteinizing hormone), necessary for final follicular growth causes the corpus luteum formation and ovulation from the remains of the follicle [14]. Estrogen facilitates the growth of ovarian follicles and increases the motility of uterine tubes. It causes increase in the thickness of endometrial along with lengthening of endometrial gland. Progesterone is secreted by corpus luteum and placenta. It is an important intermediate in steroids synthesis in all tissues that secret steroid. Progesterone predominates in luteal phase. Endometrium becomes more vascular zed and edematous in response to progesterone and maintains the secretary activity of endometrium. Feedback effects of it are complex and large doses inhibit LH secretion [15]. Pakistan is an underdeveloped country; contraception is not easily accepted by women due to high rates of illiteracy. Although, researchers have tried to increase a variety of contraceptives to improve acceptance but strictly speaking there is no ideal contraceptive which suits every woman. Various barriers for contraceptive acceptance include illiteracy, poor knowledge about contraception, poor communication by health care provider, non-availability of some contraceptive in the Government health care centers and misconception about the contraceptive [16]. Additionally, some medical problems and side effects may add further in the gravity of un-acceptance. Medical contraindication to the contraceptive includes; hypertension, diabetes mellitus, obesity, smoking, scared, valvular heart disease and pelvic infection. Undesired side effects of contraception like nausea, vomiting, menstrual disorders and contraceptive failure are significant barrier to contraceptive acceptance. Tubal ligation is potentially an irreversible method of control of birth in which fallopian tube portion is either tied or cut, cauterized, clipped or removed. It is the method of choice for most of the women [3]. About 30% of all women currently practicing contraception relied on tubal ligation.

Hypermenorrhea is defined as menstrual flow more than 7 days. Menorrhagia is defined as menstrual bleeding more than 7 days and menstrual flow more than 80 ml and it is considered as the most common menstrual disorder. Almost all studies don't confirm menstrual disorder as a consequence of tubal ligation. Theoretically ligation of tubes should not interfere with endocrinological environment, but it has been observed that sooner or later patient undergoing for female sterilization ends up with menstrual disorder. This may be due interference with the utero-ovarian blood supply and subsequent disturbance of ovarian function. However, this was technically rejected because no change in the gonadotrophin level in the blood reaching ovaries was found. This change in menstrual pattern may be co -incidental or may be pre-existing one. patient with history of irregular cycles in their reproductive years are increase risk of post ligation irregularities. However, dysmenorrhea may be due to adhesion following tubal ligation. Researcher closely explore menstrual pattern before and after tubal ligation. They found some sort of menstrual disorder antedating tubal ligation. Some were due to improper use of contraception, pelvic infection following IUCD insertion. Numerous investigations has been evaluated the impact of tubal ligation on menstrual cycle. Although the literature on tubal ligation and its effects on menstrual disorders is extensive, it is inconsistent. Some studies have also found that age is related and can be considered a marker of the risk of menstrual bleeding and irregular bleeding. However, some studies show no increase in menstrual disorders in women who have undergone tubal ligation compared to controls [17-18]. Surgical advances have resulted in the safe and less invasive sterilization of women (tube ligation) as a woman replenishes her family. Half of these tubal ligatures are performed in the postpartum period and half are outpatient interval treatments. Changes in the menstrual cycle after tubal ligation have been reported for over 50 years. Therefore, fallopian tube ligation is suspected to alter menstrual patterns and ovarian reserve by disrupting blood flow in the ovaries. Tubal ligation has been charged with causing a luteal phase defect as a result of disturbed ovarian circulation. Bipolar electrocoagulation (diathermy) of the fallopian tube did not change the reserve and function of the ovaries [16-18]. Cattanach and Milne reported that after tubal ligation, women may experience abnormal uterine bleeding and heavy menstrual bleeding, and psychological problems that can lead to decreased ovarian function and reserve [19]. Concerns about early menopause and more menstrual problems following tubal ligation were further explored. The premenopausal age showed that women who had tubal ligation between the ages of 40 and 45 had a significantly higher risk of

developing menopausal symptoms than women who did not have tubal ligation in the same age group.<sup>3</sup>

## METHODS

A cross sectional study was conducted on 126 females in Baqai Medical University, Fatima Hospital from 1st January 2019 to 30th June 2020. All females who had history of post tubal ligation syndrome for almost one year were included in our study. These females had age between 37-42 years. Laboratory examination was also done to check the any damage which happened to the ovary. The cases were verified and detailed history was taken. Females were asked about duration of menstrual cycle, amount of menstrual bleeding and length of cycle. Length of 20-37 days was noted as normal. 3-7 days was considered normal duration of menstrual cycle. Females were asked about heavy or normal menstrual bleeding. Females were also asked about menstrual cramps. A control group of 50 women was made. They were healthy females and did not undergo tubal ligation. It was made for the comparison of menstrual abnormalities. Women of child bearing age who underwent tubal ligation for sterilization, attending the gynecology out patient department of Baqai Medical University, Fatima Hospital for follow up were included. Patient having menstrual irregularities due to organic disorder prior to tubal ligation as polycystic ovarian syndrome, endometriosis, adenomyosis, fibroid uterus, hemolytic and patient with thyroid dysfunction and chronic liver disease were excluded. A total of 126 women, fulfilling the inclusion criteria were included in the study. Informed consent were signed from each patient for their participation in the study and approval of ethical committee of the hospital was sought. All Patients were enquired about the menstrual interval of their last cycle (polymenorrhea); duration of the menstruation (menorrhagia) and any episodes of inter menstrual bleeding (spotting). Information was taken by fourth year post graduate resident, in the gynaecology OPD of Baqai Medical University, counterchecked by consultant. A Performa was used to document findings and demographic information like patient name and age, hospital registration number, duration of tubal ligation (i.e., less than one and more than year), type of menstrual disturbances (i.e., polymenorrhoea, menorrhagia, and spotting) and final outcome (i.e., menstrual irregularity present or absent) were included. All data were incorporated by a fourth year postgraduate resident.

## RESULT

The mean age of the patients was  $39.5 \pm 3.4$  years. Majority of the patients 71 (56.3%) of the patients had age between 37 to 42 years. The duration of tubal ligation observed in 118 (93.7%) of the patients were more than or equal to 1 year.

Type of menstrual disturbance such as polymenorrhea in 76 (60.3%), menorrhagia in 51 (40.5%) and intermenstrual bleeding in 9 (7.1%) of the patients were observed respectively. Final outcome menstrual irregularity was presented in 74 (58.7%) of the patients. When compared by age group, patients who experienced menstrual irregularities were present in 40 (53.5%) patients against 31 (43.7%) patients who had absent menstrual irregularity, Table 1.

Age Group	Present	Absent	Total
32 - 36	19	15	34
	55.9%	44.1%	100.0%
37 - 42	40	31	71
	56.3%	43.7%	100.0%
43+	15	62	21
	71.4%	8.6%	100.0%
Total	45	52	126
	8.7%	41.3%	100.0%

**Table 1:** Comparison of age group by menstrual irregularity

Similarly, duration of tubal ligation compared with menstrual irregularity was presented in 69 (58.5%) of the patient compared with 49 (41.5%) patients who had absent menstrual irregularity, Table 2.

Duration of tubal Ligation		Present	Absent	Total
< years	1	5	3	8
		62.5%	37.5%	100.0%
>= year	1	69	49	118
		58.5%	41.5%	100.0%
Total		74	52	126
		58.7%	41.3%	100.0%

**Table 2:** Comparison of duration of tubal ligation by menstrual irregularity

## DISCUSSION

As we discussed, tubal ligation is used as a birth control technique. Women also undergo tubal ligation if they are having heavy bleeding. After tubal ligation, amount of bleeding decreases. But tubal ligation affects menstrual cycle of females as well. Some researches stated that due to tubal ligation, blood supply of ovaries got disturbed. When blood supply of ovaries got disturbed, follicles were unable to grow properly and growth of corpus luteum got affected too [20]. This disturbance of blood supply causes a decrease in menstrual bleeding. Also, during tubal ligation, some damage can occur to the ovary. This damage to ovary also disturbs menstrual cycle [21]. Women who underwent tubal ligation also had higher level of menstrual hormones (FSH, LH, Estradiol) as compared to the normal women. Menstrual disturbance also showed in females after 2 to 3 years of tubal ligation [22]. Females who have age between 35-40 years shows more symptoms of post tubal ligation syndrome. Some studies also stated that females who underwent tubal ligation also faced

disturbance in duration of menstrual cycle and disturbance in menstrual pain as well [23]. It is necessary that women should study all the advantages and disadvantages of tubal ligation before undergoing this procedure. Surgeons should do this procedure with proper care so that no harm to ovaries occur.

## CONCLUSION

The patients of older group of had high prevalence of menstrual irregularities.

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