

# MENSTRUAL SYMPTOMS AND OVARIAN FUNCTION AFTER TUBAL STERILIZATION

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## Abstract

Detailed past and present menstrual history and significant changes in menstrual pattern was inquired. Symptoms of anxiety, depression, GIT disturbances, weakness, weight gain were noted. Systemic, local. Per speculum and bimanual examination was done.

Apart from routine investigations serum progesterone and serum oestradiol was done on mid luteal phase in 95 out of 130 cases of study group and 34 cases control group. Menstrual behavior, other symptoms, and serum oestradiol and progesterone were compared in both groups.

Thus, tubal ligation appears to be a cause for the menstrual disorders in women, but serum oestradiol and progesterone levels were almost comparable in study and Control group showing no significant differences in ovarian function in post-tubectomy patients. Apart from Maximum number 46.15% of cases were in the 31-34 years. The maximum number 73.84% of cases were para 4 and above in study, while 64.7% in control group. 3.84% patients of our study group had and 35.29% in control group an education between 9-12 standards. The maximum number of cases belonged to the group where the time since last normal cycle was less than 5 years. The menstrual cycle length was decreased by 4 or more days in 52.30% cases and duration of menstrual bleeding was increased by 3 or more days in 49.23% cases of study group which is statistically significant.

## INTRODUCTION

The tubal sterilization, primarily by tubal ligation is the most commonly used permanent method for the birth control. It is the most prevalent method of birth control in the world, it is very popular surgery and it does worth. This method of birth control is mainly needed for our rural and urban population who because of their illiteracy & ignorance are producing abundantly, irrespective of their per capita income and other facilities available to them. Now the problem which arises in these cases is that being illiterate, these people are very much afraid of the consequences of any sort of surgery, how, so ever minor it may be. This apprehension increases if they see or come to know about any complication. The main objective of this study was to assess the post sterilization disturbances of menstrual cycle and other vague complaints of patients. The main idea was to correlate the symptoms to hormonal levels.

Despite the popularity of female sterilization there is a growing concern that the tubal sterilization may be associated with increased long term risk specially menstrual symptoms leading to hysterectomy. Whether the tubal sterilization increases the risk of menstrual disturbances is still unresolved as the majority of studies were limited to one-two years and it took several months for menstrual symptoms to develop after sterilization.

There is continuing concern that tubal sterilization may be associated with increased long term risks of menstrual symptoms including heavy and irregular bleeding, cramps, anxiety, GIT disturbance, weight gain.

Abnormal menstrual patterns following tubal sterilization may be due to anatomical and hormonal changes following this procedure particularly progesterone and estrogen deficiency.

The prospective study of female female sterilization surgery to Study changes in menstrual function following tubal sterilization, duration of menstrual bleeding, menstrual cycle length, cycle regularity, amount of menstrual bleeding and menstrual pain were examined.

The more tissue destructive methods of tubal occlusion are thought to be the most troublesome and to cause the greatest distraction of ovarian blood flow.

## REVIEW & LITERATURE

When fertility control is considered a prime family objective for social stability and economic advancement, non-surgical techniques of contraception fail are unlikely to succeed in mass acceptance, surgical sterilization of either sex may appear to be a rational alternative. In last about fifty years the concepts regarding application of sterilization have gained considerable popularity.

The Government of India first approved sterilization in 1953. Studies on women having tubal ligation reveal more or less a uniform acceptance. When it is the primary objective, it may be performed for contraceptive socio-economic, therapeutic or ergogenic indication

In India despite intensive family planning measures, only a small fraction i.e. 15.9% of the estimated population in the reproductive age group have been covered by family planning measures and of these nearly 11% have accepted sterilization. This indicates that sterilization forms the sheet-anchor of family planning programme in our country. Timing of sterilization, age of the patient and number of living children would all contribute to the demographic effectiveness of this method of contraception.

It has been postulated that often tubal sterilization are related to disruption of vascular network between ovary and uterus. Result is hormonal imbalance, prolong estrogen stimulation of uterus and subsequent prolonged and heavy shedding of endometrium menstrual symptoms such as menorrhagia and polymenorrhagia have been frequently reputed with wide disparity.

A large number of workers have studied the menstrual symptoms of the tubal sterilization have worked on late complications of sterilization by Laparoscopy and tubal ligation. In a controlled study, they found the frequency of late sequelae in the other patients sterilized by Laparoscopy and diathermy or by abdominal tubal ligation was compared with that in 154 controls whose husband had a vasectomy. Results showed an increase in menstrual loss and pain with menstruation in the sterilized groups, especially if this had been done by diathermy and division under Laproscopic control. **(Neil JR, Hammond GT Noble AD, Rushton L, Letchworth AT 1975)**

An evaluation was made of 268 patients undergoing elective sterilization with respect to the ensuing development of menorrhagia, pelvic pain and the need for gynecological surgery. Preoperative and follow up postoperative questionnaires of patients undergoing laparoscopic sterilization were compared, and additional data were drawn from clinical records and operative reports to substantiate real changes. As study of the cases puts the incidence of menorrhagia at 6%, pelvic pain at 6%, and necessary subsequent gynecologic surgery at 4%. **( 1978, Stock RJ )**.

Studied the effect of laparoscopic sterilization by diathermy or silastic band on post-operative pain, menstrual symptoms and sexuality. A total 530 patients were received six months after laparoscopic sterilization by diathermy (235 patients) or silastic bands (295 patients), In the immediate post-operative period, 5 lower abdomen pain was more common in the patient who had silastic bands. There was no differences in the nature or incidence of menstrual problems. When the two methods were compare. In all

40 percent of patients reported an increase in menstrual blood loss and 26 percent of patients an increase in menstrual pain, and this could not be attributed entirely to stopping oral contraceptive. 42 percent of patients reported improvement in their sex lives after sterilization. While 6.6 percent reported deterioration mainly due to lack of libido. There was some regret about the operation in 5.1% of patients. **(Lawson S, Cole RA, Templeton A.: 1979)**

Studied the endocrine profile of patients with post-tubal ligation syndrome, that endocrine profile of the of the midluteal phase was assessed in 29 patients with the post-tubal ligation syndrome, consisting of pain, bleeding and pre-menstrual tension. Compared to normal controls, the patients had a high serum estuarial and a low serum progesterone levels. This abnormal lacteal function may be responsible successful reversal of tubal ligation. It is recommended that patients seeking sterilization reversal screened for abnormal luteal function pre-operatively. Selection of sterilization procedures that minimize alteration in luteal function should be given high priority. **(Hargrove JT, Abraham G.E. (1981)**

Studied 1,555 cases and compared the three menstrual cycles proceeding the sterilization (control group) three cycles twelve months after the tubal sterilization the incidence of menorrhagia in the study of Fortney et al was 16.7%. **(Fortney et al 1983)**

They studied & found a case of secondary hypergonadotropic amenorrhea following laparoscopic tubal sterilization with unipolar high-frequency current before the operation. There had been no indication of hormonal disturbance in 28 years old women. Endocrinological investigation of the patients and histological examination of the ovaries confirmed the clinical diagnosis of premature menopause. It is assumed that the ovaries had been irreversibly damaged by the coagulation procedure. **(Burmucic R, Pickel H, Kowatsch AW 1985).**

studied oestrogen deficiency aftertubal ligation they found that in 4 of 7 women who had undergonetubal ligaton within the past seven years were found to have oestrogen excretion concentration at ovulation below the tenth percentile. Adisturbance in the oestrogen/progesterone ratio as a consequence of localised hypertension at the ovary, when the utero-Ovarian arterialloop is occluded at tubal ligation, is proposed as a possible cause of oestrogen deficiency syndrome, dysfunctional uterine bleeding, and menorrhagia after tubal ligation. Similar pathophysiology may occur after hysterectomy with ovariam conservation. **(Cattanach J. (1985)**

studied on long-term risk of menstrual disturbances after tubal sterilization and analyzed data from the Walnut Creek contraceptive drug study to compare the menstrual characteristics of 719 women who had tubal sterilization and 1,083 women whose partners hava sectomy. Study participants were enrolled from 1968 to 1972 and followed up through 1976. The tubal sterilization group had slightly increased, though in most instances not statistically significant, risk of moderate to severe menstrual cramp and adverse menstru bleeding. At follow-up intervals longer than 2 years, the tubal sterilization group had significantly increased risks of abnormal menstrual cycle and combination of two or more adverse menstrual outcomes. Tubal sterilization procedures which were performed during the early 1970s possibly carry some increased risk of menstrual disturbances, particularly abnormal cycles, and that it may take more than 2 years for than increased risk to become apparent. **(De Stefano F; Perlman JA, Peterson HB, Diamond EL)**

Studied 30 patients who had been hysterectomized at the Kiel University Clinic of Obstetrics and Gynaecology and 83 patients who hadundergone tubal erilization by monopolar high frequency current onby endocoagulation according to Semm, were investigated with respectto endocrinology and to vaginal cytology. Plasma levels of 17 beta-estradiol, progesterone, 25 H and LH were determined at short intervals for 2-3 menstrual cycle. Biphasic cycles and relatively good oestrogenresponse of the vaginal smears were found in the majority. In contrast, oestrogen levels were slightly diminished when compared to controls of the same age group and progesterone levels were markedly reduced, **in** particular in the middle luteal phase, with a corresponding gonadotrophin increase .These observation were made in women after

hysterectomy and after sterilization by monopolar high frequency current, in particular those who developed climacteric symptoms 2-3 years later. Comparable hormonal changes were not found in patients free of symptoms after radical "endocoagulation" or in any of the patients after the tissue-saving "modified" endocoagulation technique. (Riedel HH, Lehmann-Willenbrock E, Senm K. 1987)

Studied post-tubal sterilization problems correlated with ovarian steroidogenesis and found that mid-luteal phase total urinary oestrogen excretion was found to be significantly reduced in women who had previously undergone tubal sterilization at least two years before assay. Pregnanedial levels at or below 2.0 mg/24 hrs were significantly more frequent for the study group. These findings indicate that reduced ovarian function is associated with that procedure. The major problems declared as having been experienced subsequent to tubal sterilization were classified into three categories, some women declared problems in more than one category:

1. Abnormal uterine bleeding and/or menorrhagia.

2. Physical Problems.

3. Psychological and/or Psychiatric problems. Category 1 associated with a significant fall in total oestrogen excretion and Category 2 with a significant fall in both total oestrogen and pregnanediol excretion on .Analysis of category 3 will be published elsewhere. A negative correlation between total oestrogens and cholesterol was observed (Cattnach J F, Milne BJ (1988)

studied post-sterilization syndrome A follow-up 556 cases, 528 years after tubal sterilization. They found that five to eight years later an answer in 66.3% of 556 patients. Who had a sterilization between January, 1978 and end of December, 1981, in order to find any complication forming the so called Post-Sterilization Syndrome. We traced back 80.6% patients who showed a genital pathology at the time of their surgery. We also could obtain an answer in 64.69% of 494 patients who had found that 12 patients of the first and 25 patients of the second group (10%) had suffered a major gynaecological surgery, since their sterilization, but in studying their records, we found that all their surgery was surgically indicated like for fibroids, prolapse, cervical cancer etc. Three patients of the first and 16 patients of the second group (5%) showed bleeding problems which necessitated a D&C. In all, considering the age of the patients, there was no relationship between the sterilization and the rate of complications. (Desrosiers JA, Ianni F (1989)

studied Menstrual Pattern change 1 year after sterilization. Results of a controlled prospective study. They found that to determine if female sterilization is associated with adverse or no menstrual change, compared prospectively collected menstrual data from women who underwent sterilization via bipolar cauterization, banding and Pomeroy ligation with data from women whose husbands obtained a vasectomy and from women who were not planning sterilization. At first year follow-up sterilization via banding with Falopierings was not associated with adverse change. After excluding initially abnormal cases.-

1. Cauterization women were bleeding more heavily than all other groups excepting Pomeroy.

2. Cauterization and Pomeroy women experienced more dysmenorrhoea than women not planning sterilization and,

3. More cauterization and Pomeroy women (collapsed samples) developed abnormal length cycles than did the two control groups. There were no group differences regarding development of beneficial/neutral change (e.g. decreased dysmenorrhoea). Cauterization and Pomeroy women experienced a average number of adverse changes. (Shain RN, Miller WB, Mitchell GW, Holden AE, Rosenthal M 1989)

The other groups and were at significantly greater risk of developing one or more adverse changes than were women not planning sterilization. The only patients of association among adverse menstrual changes occurred significantly more often in the cauterization and next pomerooy groups.

found that tubal sterilization was significantly associated with postoperative dysmenorrhea. Severe dysmenorrhea was found to be increased by 5.6% and moderate dysmenorrhea by 3.8% . (Rulin et al 1989)

## MATERIAL AND METHODS

The present study was carried out on one hundred thirty (130) cases of sterilization of tubal sterilization with complains of menstrual disorders or other complaints attending the outpatient department of obstetrics and Gynecology of Nehru Chikitsalaya , B.R.D Medical College Gorakhpur. The total duration of study was from September 2000 to February 2002.

A total of 130 cases who had tubal ligation for 6 months and more were included in the study . The age matched ( $\pm 2$  years ) unsterilized patient (34) were taken as control. A detailed history , including full details of present and past menstrual flow with special reference to symptoms like changes in menstrual cycle length , changes in duration of menstrual bleeding and significant changes in menstrual pattern and dysmenorrhea was obtained.

## Results & Discussion

**TABLE 1: DISTRIBUTION OF CASES ACCORDING TO AGE**

Age in year & Group		Study Group N=130		Control Group N=34	
A	22-26	15	11.53	02	5.8%
B	27-30	30	23.06	10	29.41%
C	31-34	60	46.12	16	47.01%
D	>34 years	25	19.23	06	17.60%

Table-I shows that the patients selected are above than age of 22 years. Maximum number 46.12% of the patients belonged to age group (31-34 years ) in study group and 47.01% of the patients belonged to group (31-34 years) in control ,also Next common patients 23.07% came group (27-30years) in study group and 29.41% came from age group (27-30 years )in control group.

Lowest number 11.53% of patients were observed in age group (22-26 years) in study group and 5.8% of patient in group (22-26 years ) in control group. By statistics age wise distribution of the study and control group were similar i.e. comparable.  $\chi^2=0.0441$  at 2d.f. Injury medicate & control group  $P>.05$ .

**TABLE 2 :DISTRIBUTION OF THE PATIENTS ACCORDING TO PARITY**

STUDY GROUP						
PARITY	ABDOMINAL STERILIZATION		LAPAROSCOPIC STERILIZATION		TOTAL	
	N=30	(%)	N=100	(%)	N=130	(%)
0-1	01	3.33%	00	0%	01	0.76%
2-3	7	23.33%	26	26%	33	25.38%
>4	22	73.33%	74	74%	96	73.84%
CONTROL GROUP						
PARITY	N= 34		Percentage			
0-1	0		0.00			
2-3	22		64.70			

>4	12	35.56
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Above table shows the parity of the patients ranging from 2 more than 4. In our stud ,maximum number 73.84% of cases were para 4 and above in study group while 64.7% in control group.

**TABLE3:DISTRIBUTION OF THE PATIENTS ACCORDING TO EDUCATION IN STUDY & CONTRAL GROUP**

STUDY GROUP						
EDUCATION	ABDOMINAL STERILIZATION		LAPAROSCOPIC STERILIZATION		TOTAL	
	N=30	(%)	N=100	(%)	N=130	(%)
Nil	4	13.33%	20	20%	24	18.46%
1-8	6	20%	20	20%	20	20%
9-12	10	33.33%	34	34%	44	33.84%
>12	10	33.33%	26	26%	36	27.69%
CONTROL GROUP						
EDUCATION	NO. 34				%	
Nil	4				11.76%	
1-8	10				29.41%	
9-12	12				35.29%	
>12	8				23.52%	

This table shows that level of educational status of our patients range from illiteracy to standard 12<sup>th</sup> and above.33.84% patients of our study had an education between standard 9-12 and 27.69% had a literacy of 12 and above in study group, while 35.29% and 23.52% respectively in control group.

**TABLE 4:FUNCTIONAL MENSTRUAL DISORDERS AND OTHER SYMPTOMS**

SYMPTOMS	STUDY GROUP		CONTROL GROUP		Z	P VALUE
	N=130	(%)	N=34	(%)		

Normal Menstrual Bleeding	34	26.15	08	15.60	125.49	P<.001
I. Abnormal and /or Excessive Menstruation	48	36.92	18	52.20	161.78	<.001
• Menorrhagia	27	20.17	10	29.41	114.77	<.001
• Polymenorrhoea	10	7.69	05	14.70	126.26	<.001
• Metrohagia	01	0.77	00	00	-	-
• Polymenorrhagia	06	4.61	02	5.8	28.62	<.001
• Menometrorrhagia	04	3.07	01	2.9	05.13	<.01
II Subnormal Mensuration	10	7.69	04	11.70	34.51	<.001
• Hypomenorrhoea	03	2.31	03	8.82	180.03	<.001
• Oligomenorrhoea	07	5.38	01	2.90	59.78	<.001
Dysmenorrhia	10	26.15	03	8.82	215.26	<.001
• Spasmodic	24	7.69	02	5.8	37.68	<.001
• Congestive	04	18.46	01	2.9	224.76	<.001
Pelvic pain syndrome	04	3.07	01	2.9	5.13	<.01
Other symptoms	51	39.23	09	26.10	141.15	<.001
• Anxiety	39	30.00	04	15.7	168.80	<.001
• Irritability	63	48.46	15	44.11	45.23	<.001
• GIT Disturbance	40	30.76	04	11.70	223.35	<.001
• Weight gain	18	13.84	02	5.8	127.56	<.001
• Prolapse						

This table shows various menstrual patterns in study and control group.

The incidence of menorrhagia was 20.17% in study group and 29.41% in control group. The incidence of Polymenorrhoea was 7.69% in study group and 14.70% in control group. The incidence of polymenorrhagia was 4.61% in study group and 5.8% in control group. The incidence of Menometrorrhagia was 3.07% in study group and 2.9% in control group. The incidence of Dysmenorrhea was 26.15% in study and 8.82% in control group. The pelvic pain syndrome was 3.07% in study group and 2.9% in control group. The incidence of other symptoms- Anxiety (39.23%) in study group and 26.10% in control group, irritability was 30.0% in study group and 15.7% in control group, G.I disturbances 48.46% in study group and 44.11% in control group, weight again was 30.76% in study group and 11.70% in control group and incidence of prolapse of uterus was 13.84% in study group and 5.8% in control group. Various abnormal menstrual behavior and other symptoms were more in study population as compared to control group which was statically significant (P=<.001).

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