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Research Article

Menstrual Abnormalities in Women with Tubal Sterilization

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Abstract

Some researchers reported no menstrual abnormalities, others have reported menstrual abnormalities after tubal sterilization. Because there has been no consensus regarding definition of this so called post–tubal-ligation syndrome, these problems have been difficult to study.

Objectives: Pilot study was done to look into issue of menstrual dysfunction among women who had undergone tubal sterilization.

Material and Methods: Present study was carried out in obstetrics gynecology outpatient of rural medical institute in central India. One, after, another around 6 women, who had undergone sterilization, who were willing to provide information, were interviewed every day, for 8 months making a total of 1000 (Study subjects, A). Women were asked about menstruation before and after sterilization in general. Another group of 500 women who had not undergone sterilization were also interviewed (Study subjects B), for additional support to the hypothesis.

Results: Duration of menstrual flow was 2 days or less presterilization in 388 (38.8%) women, 394 (39.4%) post sterilization and in SSB, menstrual flow was 2 days of less in 145 (29%) women. Over all 328 (32.8%) women had less than 21 days cycle pre sterilization, 269 (26.9%) post sterilization and of SSB 151 (30.2%) had less than 21 days cycle. Among SSA. 451 (45.1%) had irregular cycles (interval abnormal) pre sterilization and 565 (56.5%) post sterilization. Bleeding was heavy in 373 (37.3%) pre sterilization and 242 (24.2%) women post sterilization. In SSB 155 (31%) had heavy bleeding, In SSA 469 (46.9%) had no pain pre sterilization 187 (18.7%) post sterilization.

Conclusions: Women who had undergone tubal sterilization were not found to have major menstrual abnormalities except more women had irregularity in cycles after sterilization. In addition more women complained of pain during menstruation. Whether this has something to do pelvic congestion needs evaluation.

Keywords: *Menstrual Dysfunction; Tubal Sterilization*

Background

Years back Williams., *et al.* [1] hypothesized that sterilization might increase a woman's risk of menstrual abnormalities but still the post-tubal ligation menstrual dysfunction continues to be debated. Tubal sterilization is the most popular method of permanent female contraception. Yet there is considerable debate concerning the influence of this procedure on the woman's health and menstrual function. The debate about the so called post–tubal-ligation syndrome has persisted, not only because the syndrome has been ill defined, but also because, although some women have been found to have menstrual abnormalities after sterilization, menstrual abnormalities as well

as tubal sterilization are common and are therefore likely to occur coincidentally [2,3]. In their study Peterson., *et al*. [3] reported that women who had undergone sterilization did not report changes in intermenstrual bleeding or in the length of the menstrual cycles. Actually they were more likely to have decrease in the duration and amount of bleeding. However menstrual pain was more often and increase in cycle irregularity also. Infect among women who had heavy bleeding prior to undergoing sterilization were more likely to report decreased bleeding than women who had not undergone the procedure. Other researchers have also reported that women who underwent tubal sterilization were no more likely than other women to have menstrual abnormalities [4-6].

Objectives

Pilot study was done to look into issue of menstrual dysfunction among women who had undergone tubal sterilization.

Material and Methods

Present study was carried out in the obstetrics gynecology outpatient of a rural medical institute in central India. One, after, another, around 6 women, who had undergone sterilization, who were willing to provide information, were interviewed every day for over 8 months making a total of 1000 (Study subjects, A). Women were asked about their menstruation before and after sterilization. Another 500 women who had not undergone sterilization were also interviewed (Study subjects B), for more information in addition to findings from SSA. Actually for study pre sterilization was the base and post sterilization was the study information. Women with recorded obvious disorders which could lead to menstrual abnormalities were excluded from SSA, SSB. Also analysis was restricted to women with bilateral tubal sterilization by minilap. These women were of 25 to 49 years of age. Some women did not know their exact age and might have been one or more years older or younger. All of them had 2 - 3 children and had not attended menopause.

From each woman, interviewer obtained detailed menstrual history with the help of pretested questionnaire. SSA were asked about duration of menstrual flow, amount of bleeding during menstruation, interval between menstruation and pain during menstruation prior to and after tubal sterilization. SSB were also asked similar questions. Nobody was given the questionnaire to fill. Interviewer asked the questions and recorded the information on the tool developed to get the desired information. The details were analyzed as per the objectives. Out of 1000 women who had undergone sterilization (SSA), 370 (37.0%) were of 25 - 34 years, 350 (35.0%) of 35 - 44 years and 280 (28.0%) were 45 years onwards. Of 500 who had not undergone tubal sterilization (SSB), 225 (45%) were of 25 - 34 year, 194 (19.4%) of 35 - 44 years and 81 (18.2%) were 45 years onwards. Since the age ranged between 25 - 49, there was some bias of memory during interviews as the interval from sterilization was 3 years onwards. And for other disorders only records were checked, limitations of the study.

Results

In SSA duration of menstrual flow was more than 5 days pre sterilization in 256 (25.6%) and 216 (21.6%) post sterilization and In SSB 106 (21.2%) had 5 days or more duration of flow (Table 1). Cycle interval in 54 (5.4%) women was more than 28 days pre as well as post sterilization, no difference in interval. In SSB 151 (30.2%) had less than 21 days interval and 262 (52.4%), had 21 to 28 days and 87 (17.4%) more than 28 days. Among SSA. 328 (32.8%) had regular menstruation before tubal sterilization and 269 (26.9%) after sterilization and 451 (45.1%) had irregular cycles (interval abnormal) before and 565 (56.5%) after tubal sterilization (Table 2). Over all 221 (22.1%) and 116 (11.6%) had occasional bleeding between menstruation before and after sterilization respectively. In unsterilized cases (SSB), 151 (30.2%) women had regular cycles and 262 (26.2%) women did not have regular cycles and 87 (17.4%) had inter menstrual bleeding (Table 3). Amount of bleeding was average in 369 (36.9%) pre and 407 (40.7%) post sterilization also, there was heavy bleeding in 373 (37.3%) before sterilization and 242 (24.2%) women after sterilization and 258 (25.8%) had scanty menstruation pre and 351 (35.1%) after sterilization. In SSB, over all 193 (38.6%) women had average bleeding, 155 (31%) had heavy bleeding, and 152 (30.%) had scanty menstruation (Table 4). SSA, 469 (46.9%) had no pain pre sterilization and 187 (18.7%) post sterilization. Over all 440 (44.0%) and 602 (60.2%) had pain pre as well as after sterilization respectively which did not require medication and 91 (91.%) and 211 (21.1%) had severe pain pre and post sterilization respectively needing medications. SSB, 133 (26.6%) had no pain, 74 (14.8%) had severe pain

requiring medication and 293 (58.6%) had pain but did not require medication. The time interval between sterilization and interviews was 3 years or less in 254 (25.4%), > 3 to < 7 years in 241 (24.1%), 7 years to 10 years, 245 (24.5%) and beyond 10 years in 260 (26.0%). Interval had no relation to whatever problems occurred or did not occur.

	Age	Pre Sterilization					Post Sterilization					Without Sterilization		
		P1	P2	P3	P4	Total	P1	P2	P3	>= P4	Total	P1 and P2	P3 and > P4	Total
< 2 days	25 - 34		34	63	09	106	-	34	66	44	144	28	13	41
	35 - 44		36	58	50	144	-	58	60	47	165	36	06	42
	> 44		38	43	57	138	-	43	42		85	58	04	62
	Total	-	108	164	116	388	-	135	168	91	394	122	23	145
3 - 5 days	25 -34	13	106	55	20	199	13	100	45	40	198	93	19	112
	35 - 44		63	25	21	104	-	40	40	10	90	46	17	63
	45-55		24	03	26	53	-	35	62	5	102	58	16	74
	Total	13	193	83	67	356	13	175	147	55	390	197	52	249
> 5 days	25 - 34	-	-	70	15	85	-	25	50	25	100	65	13	78
	35 - 44			50	50	100	-	11	40	30	81	-	-	-
	> 45	-	-	30	41	71	-	12	11	12	35	13	15	28
	Total	-	-	150	106	256	-	48	101	67	216	78	28	106
Total		13	301	397	289	1000	13	309	125	83	1000	397	103	500

Table 1: *Pre + post sterilization duration of menstrual flow.*

Menstrual cycle	Age	Pre Sterilization					Post Sterilization					Without Sterilization		
		P1	P2	P3	P4	Total	P1	P2	P3	P4	Total	P1 and P2	P3 and P4	Total
Regular	25 - 34	50	96	35	30	211	9	82	11	4	106	29	21	50
	35 - 44	40	16	9	30	95	-28	40	16	32	116	78	14	92
	45 - 49	-	11	8	3	22	12	10	3	22	52	09	-	9
	Total	90	123	52	63	328	49	132	30	58	269	116	35	151
Frequent	25 - 34	-	138	54	39	231	5	88	51	57	201	63	30	93
	35 - 44	-	50	50	30	130	40	65	61	19	185	56	21	77
	45 - 49	-	50	22	18	90	55	43	53	28	179	78	14	92
	Total	-	238	126	87	451	100	196	165	104	565	197	197	262
Infrequent	25 - 34	-	-	39	42	81		20	30	32	82	54	12	66
	35 - 44	-	-	70	70	140		30	22	32	84	11	10	21
	Total	-	-	89	99	221		50	62	64	166	65	-22	87
	G. Total	90	361	267	249	1000	14	295	137	96	1000	378	122	500

Table 2: *Pre+post sterilization regularity of menstrual cycle.*

Menstrual flows	Age	Pre Sterilization					Post Sterilization					Without Sterilization		
		P1	P2	P3	P4	Total	P1	P2	P3	>= P4	Total	P1 and P2	P3 and > P4	Total
Average	25 - 34	13	157	31	28	229	10	18	121	-30	179	32	33	65
	35 - 44		37	22	31	90	38	31	15	50	134	10	30	40
	45 - 55		20	17	13	50		36	33	25	94	32	56	88
	Total	13	214	70	72	369	48	85	169	105	407	74	119	193
Scanty	25 - 34		57	42	53	152	40	30	35	57	1 62	43	40	83
	35 - 44			37	47	84	30	20	57	19	126	10	25	35
	45 - 49			15	7	22	-	17	29	17	63	19	15	34
	Total	0	57	94	107	258	70	67	121	93	351	72	80	152
Heavy	25 - 34		101	67	59	227	-	50	47	50	147	30	33	63
	35 - 44		37	35	55	127	-	20	30	45	95	50	42	92
	45 - 49			10	9	19								
	Total		138	112	123	373	-	70	77	95	242	80	73	155
	GT Total	13	409	276	302	1000	118	222	367	293	1000	226	272	500

Table 3: *Pre+poststerlisation amount of bleeding.*

Pain during menses	Age	Pre Sterilization				Total	Post Sterilization				Total	Without Sterilization		
		P1	P2	P3	>= P4		P1	P2	P3	>= P4		P1 and P2	P3 and > P4	Total
No pain	25 - 34		44	47	53	144	30	29	40	-	99	29	24	53
	35 - 44	50	51	54	40	195	26	8	16	-	50	26	26	52
	45 - 49	13	40	30	47	130	-	-	27	11	38	12	16	28
	Total	63	135	131	140	469	56	37	83	11	187	67	66	133
Pain NRM	25 - 34	5	107	50	20	182	5	150	132	75	362	111	14	125
	35 - 44	-	57	56	50	163	4	111	18	29	162	110	15	125
	45-49		24	56	15	95	-	21	23	34	78	32	11	43
	Total	5	188	162	85	440	9	282	173	138	602	253	40	293
Severe Pain RM	25 - 34	11	29	12	18	70	4	-	28	30	62	25	25	50
	35 - 44	2	2	-	5	9	-	23	41	40	104	24	-	33
	45 - 49	-	12	-	-	12	-	-	21	24	45	-	-	
	Total	13	43	12	23	91	4	23	90	94	211	49	25	74
GT		81	366	305	248	1000	69	342	345	243	1000	369	131	500

Table 4: *Pre+post sterlisation pain during menstruation.*

NRM: Not requiring medication; RM: Requiring medication

Discussion

Sterilization has been hypothesized to cause menstrual abnormalities by adversely affecting ovarian function, probably by disrupting the ovarian blood supply. However, laboratory studies comparing women before and after sterilization have found no consistent abnor-

malities in ovarian function [7]. Although the tubal branch of the uterine artery, is often occluded during sterilization and it has connection with the ovarian branch of the uterine artery but blood supplied by ovarian artery is not affected in the procedure of tubal sterilization, because it is remote from the occlusion site. Alternatively it is believed that tubal occlusion might cause an acute increase in pressure in the utero-ovarian arterial loop, damaging the ovarian supply [8]. Wilcox., *et al*. [4] found no changes in circulation at five years. So it was unlikely that acute change to the ovarian supply would either alter hormonal status or lead to symptoms in some years [4,7,9]. Parsanezed., *et al*. [10] reported that sterilization methods which destroy the vascular communications along and immediately adjacent to the tube and that also disturb the countercurrent exchange of biologically active factors between the uterus and ovaries, are more likely to cause menstrual abnormalities.

McHutchison., *et al*. [11] have reported that women who underwent tubal sterilization were four to five times more likely to have hysterectomy compared to women whose partners had undergone vasectomy. Later a study revealed that 41 percent of women undergoing hysterectomy had undergone tubal sterilization [12]. This may not be significant as sterilization is common and so also hysterectomy.

Wilcox., *et al*. [4] and Herbert., *et al*. [13] reported that menstrual dysfunction was more likely during the fifth year than during the second year, but the analysis had no comparison. The changes could be due to aging. In another study authors have been able to account for age and other factors by evaluating menstrual function before and after sterilization and comparison of women whose partners underwent vasectomy [13]. Some women who underwent sterilization might have menstrual changes during some years and the opposite changes in other years.. Five years after sterilization 35% of the CREST (Collaborative review of sterilization) participants reported high level of menstrual pain 49% reported heavy or very heavy menstrual flow, and 10% reported spotting between periods. In contrast to the fifth year, the first year of follow-up was similar to presterilization menstrual function. Finding may be affected by aging of the cohort study limitation, but researchers suggested that if tubal sterilization lead to changes in menstrual function, such changes may take some time to occur [4]. In the present study also interval did not affect the findings. Shoberi., *et al*. [14] did a case control study of 112 women with the history of Pomeroy type of tubal ligation achieved by minilaparatomy and reported tubal sterilization did not cause menstrual irregularities in the present study also interval did not affect the findings.

The information about various characteristics of menstruation was collected in the present study. It was revealed that there was little difference in menstrual habit and type pre and post sterilization menstruation, with occurrence of pain and change in regularity of menstruation in some women. Women were asked to report over all change. There was exclusion of women with obvious other causes. However investigations like hysteroscopy, histopathology of endometrial were not done. Though before sterilization was the base additional five hundred were asked to know about menstrual type and habit of women to have additional information.

Conclusions

Women who had undergone tubal sterilization were not found to have major changes in menstrual habit and type, except menstrual irregularly more often than before sterilization. Also more women complained of severe pain during menstruation. Whether this has something to do with pelvic congestion needs evaluation.

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