

Comparison of the frequency of menorrhagia in post-tubal ligation women versus normal (non-tubal ligation) women

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Objective: To find out the frequency of menorrhagia after tubal ligation in Bahawalpur, Pakistan.

Methodology: We included 60 women with ligated and non-ligated fallopian tubes aged between 20 and 40 years in this study. Those with hypertension, diabetes, kidney failure, heart failure, and pelvic disease were excluded. The ligated group included women who were ligated for ≥ 1 year, while the non-ligated group included women who used condoms. Outcome variable was menorrhagia (presence/absence).

Results: The average age of the women in the tubal ligation group was 29.77 ± 5.16 years, while the average age of the women in the non-tubal ligation group was 28.87 ± 4.94 years. The average parity in the tubal ligation group was 3.30 ± 0.70 ,

and that in the non-tubal ligation group was 3.33 ± 0.66 . The average BMI of the tubal ligation group was 29.33 ± 2.19 kg/m², and in non-tubal ligation group was 28.97 ± 2.41 kg/m². The incidence of menorrhagia in women with tubal ligation was 20 (66.67%), while in women without tubal ligation was 07 (23.33%), ($p=0.001$ and the relative risk was 2.86), which were significant. There was a positive correlation between tubal ligation and menorrhagia.

Conclusion: Menorrhagia occurred more frequently in women with tubal ligation than in women without tubal ligation. (Rawal Med J 202;45:822-825).

Keywords: Tubal ligation, menstruation, menorrhagia.

INTRODUCTION

Tubal ligation (TL) syndrome is the first reported in the early 1950s based when it was shown higher frequency menstrual bleeding and it was more prolonged and heavier in woman who had TL even 10 years ago.¹ Ligation can reduce blood flow to the ovaries lead to delayed follicle growth, and deterioration in production of ovarian hormones and gonadotropins. Restlessness leads to menstrual dysfunction. However, the function is inconsistent, and there is controversy.² Recently, Common U.S. sterilization checks Working group followed up for 5 years observation time, concluding that women with TL were more likely to have shortened menstruation, reduced increased menstrual flow, menstrual pain and irregular increase in cycles.³

Some women who have completed family have choose TL for family planning. Menstrual disorders are one of the problems after TL, although the results of studies are inconsistent and inconclusive. Williams et al first reported abnormal

bleeding after TL, and ligation was thought to increase the incidence of menstrual disorders in women receiving TL.⁴ Some studies on the side effects of TL on menstrual function have been performed.⁵

Menorrhagia is regular menstrual cycle, but the flow and duration are prolonged. It is one of the most common gynecological disorders today. Clinically, menorrhagia is defined as menstruation periods with excessive flow which may last more than 7 days. It can cause menstrual bleeding of more than 80 mL in each cycle.⁶ Premenstrual syndrome, menorrhagia and dysmenorrhea are some menstrual disorders that are likely to increase after oophorectomy.⁷ Many complex factors, such as age, socio-demographic characteristics, obesity, parity or co-occurrence of medical illnesses may also be the cause of this condition. Many studies to assess the effects of tubal ligation on menstrual function have been performed.⁷⁻⁹ In this study, we compared the frequency of menorrhagia in women with and without TL.

METHODOLOGY

This comparative study was done at the Department of Obstetrics and Gynecology, Civil Hospital, Bahawalpur from January to July 2017. It was approved by the ethical committee of the hospital. The calculated sample size is 60, that is, 30 in each group, with a confidence level of 95% and accounting for 80% of the test results. We included according to the surgical definition, all women with TL and non-tubal ligation those with ages 20 to 40. We excluded women with hypertension, systolic blood pressure ≥ 130 mmHg and diastolic blood pressure ≥ 80 mmHg, diabetics, kidney patients, pelvic disease like pelvic tumors, congenital uterine anomalies, ovarian cysts and women with deranged bleeding profile (INR > 1.2).

After obtaining written consent, all women were divided into TL and non-tubal ligation groups. The ligated group included women whose tubes were ligated for ≥ 1 year, while the non-ligated group included women who used condoms. Outcome variable menorrhagia (presence/absence) was observed in each female in both groups. All these data are recorded in a specially designed form.

Statistical Analysis: Statistical analysis was performed using SPSS version 20. Results were expressed as the mean and standard deviation of quantitative variables of age, body mass index (BMI), and duration of TL. Calculated parity, education level (illiterate/primary/secondary/secondary/ foundation/diploma), socioeconomic status (poor / medium / higher), place of residence (rural / urban), and menorrhagia (current/not available)). The chi-square test was used to compare the incidence of menorrhagia between the two groups. Calculated relative risk and evaluate >1 as positive. The correction factors such as age, parity, BMI, education level (illiterate / primary / secondary / secondary / diploma), socioeconomic status (poverty/average/higher) and place of residence (in rural / urban) were determined by stratification after the change. $p \leq 0.05$ was considered significant.

RESULTS

We included 60 women in the study. The age range

was 20 to 40 years (mean 29.32 ± 5.03). The average age of women in the TL group was 29.77 ± 5.16 years, and in the non-tubal ligation group was 28.87 ± 4.94 years (Table 1). The average parity in the TL group was 3.30 ± 0.70 , and in the non-tubal ligation group was 3.33 ± 0.66 (Table 2).

Table 1. Age distribution for both groups (n=60).

Age (years)	Tubal ligation (n=30)		Non-tubal ligation (n=30)		Total (n=60)	
	Number	%	Number	%	Number	%
20-30	16	53.33	18	60.0	34	56.67
31-40	14	46.67	12	40.0	26	43.33
Mean \pm SD	29.77 ± 5.16		28.87 ± 4.94		29.32 ± 5.03	

Table 2. Parity for both groups (n=60).

Parity	Tubal ligation (n=30)		Non-tubal ligation (n=30)		Total (n=60)	
	Number	%	Number	%	Number	%
2	04	13.34	03	10.0	07	11.67
3	13	43.33	14	46.67	27	45.0
4-5	13	43.33	13	43.33	26	43.33
Mean \pm SD	3.30 ± 0.70		3.33 ± 0.66		3.32 ± 0.68	

Table 3. BMI for both groups (n=60).

BMI	Tubal ligation (n=30)		Non-tubal ligation (n=30)		Total (n=60)	
	Number	%	Number	%	Number	%
≤ 27	06	20.0	09	30.0	15	25.0
> 27	24	80.0	21	70.0	45	75.0
Mean \pm SD	29.33 ± 2.19		28.97 ± 2.41		29.15 ± 2.29	

Table 4. Comparison of frequency of menorrhagia in two groups.

	Tubal ligation (n=30)		Non-tubal ligation (n=30)	
	Number	%	Number	%
Yes	20	66.67	07	23.33
No	10	33.33	23	76.67

P-value is 0.001, which is statistically significant. Relative risk is 2.86, which is significant.

The average BMI of TL group was 29.33 ± 2.19 kg/m², and in the non-tubal ligation group were 28.97 ± 2.41 kg/m², (Table 3). The average ligation time of the fallopian tubes was 2.09 ± 1.13 years. As shown in Table 4, 20 (66.67%) in women with TL had bleeding and in 07 (23.33%) women without tubal ligation had bleeding, with a p-value of 0.001

and relative risk 2.86, indicating a positive correlation between TL and menorrhagia.

DISCUSSION

Our study results confirmed that the patient who had TL had higher frequency of menorrhagia compared with the non-tubal ligation women. Several studies have been conducted to study the impact of TL on menorrhagia.¹⁰⁻¹³ Some studies stated a significant increase in the menstrual disorder after TL when compared to the normal group.¹²⁻¹⁴ Shain et al reported an increase in menorrhagia after TL.¹⁵ Our results also confirm the increase in menorrhagia after tubal ligation.

The cause of menorrhagia after TL was considered to be the damage of ovarian function due to TL.¹⁶ Sadatmahalleh et al stated that the incidence of menorrhagia in women with fallopian tube ligation was higher than that in women without fallopian tube ligation, that is, 62.9% to 22.1%, which is similar with our study.⁴ One study reported the menstrual problems observed after TL is as follows: heavy menstrual bleeding (47%), irregular menstrual cycle (28%), polymenorrhagia (13%), dysmenorrhea (5%) and oligomenorrhea (73%).¹⁷

Our results also confirm that women with TL have more tendency for menorrhagia than women without TL. Shy et al believe that the effect of sterilization on menstrual changes depends on the age at the time of sterilization. Women sterilized between 20 and 29 years old had more menstrual problems than women operated after 30 years.^{18,19}

Our results also showed that women of older age group who had TL, had higher tendency for menorrhagia. Some studies have also shown that age can be taken as a sign of menstrual bleeding and the risk of irregular menstrual bleeding.

Our results also confirmed that women undergoing TL experienced a shortened interval between menses and a decrease in volume of menstrual flow and in bleeding days as compared with related values in non-sterilized women.

CONCLUSION

The women with tubal-ligation had a higher incidence of menorrhagia than normal women without tubal-ligation.

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Conflict of Interest: None declared
Rec. Date: Apr 5, 2020 Revision Rec. Date: Sep 2, 2020 Accept Date: Sept 12, 2020

REFERENCES

1. Williams EL, Jones HE, Merrill RE. The subsequent course of patients sterilized by tubal ligation: a consideration of hysterectomy for sterilization. *Am J Obstet Gynecol.* 1951;61:423-6.
2. Gentile GP, Kaufman SC, Helbig DW. Is there any evidence for a post-tubal sterilization syndrome? *Fertil Steril.* 1998;69:179-84.
3. Peterson H, Jeng G, Folger S, Hillis S, Marchbanks P, Wilcox L. US Collaborative Review of Sterilization Working Group The risk of menstrual abnormalities after tubal sterilization. *N Engl J Med.* 2000;343:1681-7.
4. Sadatmahalleh SJ, Ziaei S, Kazemnejad A, Mohamadi E. Menstrual pattern following tubal ligation: a historical cohort study. *Int J Fertil Steril.* 2016;9:47-52.
5. Hellier S, Berkoudt K. A case of postablation tubal sterilization syndrome. *Adv Emerg Nurs J.* 2012;34:204-8.
6. Gokyildiz S, Aslan E, Beji NK, Mecdi M. The effects of menorrhagia on women's quality of life: a case-control study. *Obstet Gynecol.* 2013;2013:4-7.
7. Sadatmahalleh SJ, Ziaei S, Kazemnejad A, Mohamadi E. Menstrual Pattern following Tubal Ligation: A Historical Cohort Study. *Int J Fertil Steril.* 2016;9:477-2.
8. 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;4:1251-5.
9. Munawar I. Is Incidence of Hysterectomy Increased in Post Tubal Ligated Patients due to Dysfunctional Uterine Bleeding? *J Rawal Med Uni.* 2015;19:165-7.
10. Moradan S, Gorbani R. Is previous tubal ligation a risk factor for hysterectomy because of abnormal uterine bleeding? *Oman Med J.* 2012;27:32-6.
11. Harlow BL, Missmer SA, Cramer DW, Barbieri RL. Does tubal sterilization influence the subsequent risk of menorrhagia or dysmenorrhea? *Fertil Steril.* 2002;77:754-6.
12. Ozerkan K, Aydın G, Koc I, Uncu Y, Uncu G. Menstrual pattern following tubal sterilization. *Med Sci Monit.* 2010;16:197-1.
13. Wilcox LS, Martinez-Schnell B, Peterson HB, Ware JH, Hughes JM. Menstrual function after tubal sterilization. *Am J Epidemiol.* 1992;135:1368-1.

14. Williams EL, Jones HE, Merrill RE. The subsequent course of patients sterilized by tubal ligation: a consideration of hysterectomy for sterilization. *Am J Obstet Gynecol.* 1951;61:423-6.
15. Shain RN, Miller WB, Mitchell GW, Holden AE, Rosenthal M. Menstrual pattern change 1 year after sterilization: results of a controlled, prospective study. *Fertil Steril.* 1989;52(2):192-3.
16. Radwanska E, Headley S, Dmowski P. Evaluation of ovarian function after tubal sterilization. *J Reprod Med.* 1982;27:376-4.
17. Batool Naqvi SS, Akthar S, Mubeen A, Noor A. Spectrum of menstrual problems after tubal ligation. *Pak Armed Forces Med J.* 2014;64:14-9.
18. Shy KK, Stergachis A, Grothaus LG, Wagner EH, Hecht J, Anderson G. Tubal sterilization and risk of subsequent hospital admission for menstrual disorders. *Am J Obstet Gynecol.* 1992;166:1698-6.
19. Uppal T, Lanzarone V, Mongelli M. Sonographically detected caesarean section scar defects and menstrual irregularity. *J Obstet Gynaecol Res.* 2011;31:413-6.