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Patient satisfaction, sexual function and decision regret in use of levonorgestrel releasing intrauterine device

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ABSTRACT

Aim: Abnormal uterine bleeding is a common condition. The etiological cause and treatments are diverse. Levonorgestrel intrauterin device (LNG-IUD) can be used to treat abnormal uterine bleeding. It has been shown to reduce the amount of bleeding in patients with menorrhagia and increase hemoglobin (Hb) and hematocrit (Hct) values. The aim is to investigate the effects of LNG-IUD on Hb, Hct, bleeding pattern, and its effect on sexual function, decision regret, and menorrhagia effects according to the etiologic cause.

Material and Method: Our study included patients who underwent LNG-IUD implantation and had been using it for over six months. Patients with a history of postmenopausal or adolescent bleeding, hematologic or oncologic diseases, and a history of drug use that may cause coagulation disorders were excluded. Patients were grouped according to their indications as polyp (n=26), adenomyosis (n=16), leiomyoma (n=27), hyperplasia (n=18), and non-structural causes (n=81). Hb and Hct values were examined before and after the application, and bleeding patterns were questioned. Participants were administered Menorrhagia Impact Questionnaire (MIQ), Arizona Sexual Experience Scale and Decision Regret Scale.

Results: 168 patients were included in our study. The average duration of LNG-IUD use was 627.0±319 days and the average age was 43.4±6.1 years. The frequency of bleeding (number of bleedings per year) was 18.0±8.0 before LNG-IUD application and 7.8±8.0 after treatment ($p<0.001$), and bleeding duration was 11.5±9.5 days before application and 4.8±6.2 days after application ($p<0.001$). The number of pads used per day was 7.7±3.9 before the application and 1.1±1.4 after the application ($p<0.001$). While the average Hb value was 11.2±2.0 and Hct value was 34.8±5.1 (n=112) before LNG-IUD application, the average hemogram value was 12.9±1.6 and Hct value was 39.3±4.1 (n=66) after application and a statistically significant increase was observed in Hb and Hct values ($p<0.01$). When the groups were compared according to the indication, there was no significant difference in the average number of days of LNG-IUD use, total Arizona score, number of individuals with sexual dysfunction according to the Arizano score and decision regret score.

Conclusion: LNG-IUD in treating patients with abnormal uterine bleeding increases Hb and Hct values and decreases the bleeding frequency, duration, and daily pad use. LNG-IUD use did not make a difference in sexual functions and decision regret according to the etiologic cause.

Keywords: Bleeding pattern, decision regret, levonorgestrel IUD, sexual function

INTRODUCTION

Abnormal uterine bleeding (AUB), defined as deviation from normal menstrual parameters, is one of the most common reasons for hospital admission in women of reproductive age. It is observed with a prevalence of 10-30% in reproductive age (1). With a frequency of 24 to 38 days, lasting less than 8 days, regular (cycle variation: ≤7 to 9 days), without intermenstrual bleeding and bleedings with normal volume of flows are defined as normal menstrual bleeding (2). AUB has been shown to affect women's sexual life, is associated with psychological morbidity, and affects social, professional and family life (1). AUB symptom can be treated surgically or medically according to its etiological cause. Combined oral contraceptives (COC), progestin-only methods, tranexamic acid, NSAIDs are the main medical treatment methods. Levonorgestrel intrauterine device (LNG-IUD)

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is one of the medical treatment options in AUB and can be used in many indications (3). Endometrial ablation treatments, LNG-IUD, and hysterectomy have been found to improve the quality of life in AUB compared to pre-treatment (1). Anemia due to AUB can often occur. Improvement in hematologic parameters is also expected with the treatments used. A 7.5% increase in average hemoglobin (Hb) and 68.8% increase in serum ferritin values were reported in 6 months of LNG-IUD use compared to basal (4). In summary, in addition to symptomatic improvement, an increase in hemogram values and psychosocial improvement is expected in patients treated for AUB. In addition, patients' rates of benefit from treatments may vary according to the indication and according to different treatment modalities in the same indication. We aim to investigate the difference in decision regrets, satisfaction, and sexual function in women using LNG-IUD according to the etiologic cause.

MATERIAL AND METHOD

The study was carried out with the permission of Göztepe Prof. Dr. Süleyman Yalçın City Hospital Clinical Researches Ethics Committee (Date: 30/03/2022, Decision No: 2022/0195). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki.

Patients who applied to our hospital with AUB and underwent LNG-IUD between January 2019 and January 2022 were identified retrospectively. Patients who had been using the LNG-IUD for at least 6 months during the reproductive period were included in our study. We excluded patients who discontinued treatment in less than 6 months, those who planned to become pregnant, patients with postmenopausal bleeding or adolescent age, patients with hematologic or oncologic diseases causing additional bleeding-coagulation problems, thrombolytic drug users, non-native Turkish speakers, and those who refused to participate.

Patients were grouped according to the FIGO (PALM, COEIN) classification system developed to standardize terminology; polyp, adenomyosis, leiomyoma, hyperplasia, and non-structural causes (5). Participants were administered the Menorrhagia Impact Questionnaire (MIQ), the Arizona Sexual Experience Scale, and the Decision Regret Scale. Hemogram, Hematocrit (Hct) values of the patients before LNG-IUD insertion and hemogram, Hct values taken within 6-12 months after the procedure were scanned from the hospital database. The patients were questioned in terms of menstrual parameters before and after the procedure (number of bleeding per year, duration of bleeding, number of pads used daily). In addition, the number of times the patients bleed per year was defined as the annual bleeding frequency. The total number of days with bleeding in a year was calculated by multiplying the bleeding frequencies by the number of days with each bleeding.

Arizona sexual experience scale: It was developed to quantify sexual dysfunction by aiming to evaluate sexual functions by excluding sexual orientation and relationship with a partner (6). The scale consists of 5 questions, and the score of the question is between 1-6. The total score is between 5 and 30. High scores indicate sexual dysfunction. If the total score is 19 or higher, or if the score of an area is 5 or higher, or if the score is 4 or higher in any 3 areas, it is considered sexual dysfunction. There are separate scales for women and men. The scale adapted to the Turkish language was used in the study (7). The scale includes questions that examine sexual drive, psychological arousal, physiological arousal (vaginal lubrication), the capacity to reach orgasm, and the feeling of satisfaction as a result of orgasm. In our study, the cut-off point for sexual dysfunction was taken as 19.

Menorrhagia impact questionnaire (MIQ): It was developed to measure the effect of menstrual blood loss on quality of life. It consists of subjective measurement of blood loss, social and physical activity, and restriction of work life. It consists of 7 items of which 6 of the items are scored. The first item consists of 4 points, and the second and fourth items consist of a 5-point response scale. The fifth item is the open-ended response, in which the person is asked to describe the restriction of a particular activity. In the sixth item, the change in bleeding is asked to be evaluated as the same, better or worse than before. In the seventh item (described as item 6c in the original form), it is questioned whether the change in the amount of bleeding is significant (8).

Decision regret scale: It is a one-dimensional and five-item scale that evaluates patients' regrets after receiving a medical procedure or health service (9). Participants are asked to reflect on specific treatment decisions made and indicate how much they agree or disagree with the statements, ranging from 1 ("strongly agree") to 5 ("strongly disagree"). Scoring consists of averaging the 5 items. From this average, 1 is subtracted and multiplied by 25 to convert to a score ranging from 0-100. High scores show more regret. If the total score is 0, it indicates that there is no regret, and if it is 100, it indicates that there is high regret. In our study, the adapted and validated version of the questionnaire in the Turkish language was used and the scale is shown in the **Appendix** (10).

Appendix-1. Decision Regret Scale - Validated and Adapted to Turkish				
Örnek Araç: Karar Pişmanlık Ölçeği **Karar Pişmanlık Ölçeği** Lütfen [Doktor, Cerrah, Hemşire, Sağlık Personeli, vb.] ile konuştuktan sonra verdiğiniz _____ kararı ile ilgili düşünün. Lütfen nasıl hissettiğinizi 1'den (tamamen katılıyorum) 5'e (tamamen katılmıyorum) kadar bir numarayı çembere alarak gösterin.				
1. Doğru karardı.				
1	2	3	4	5
Tamamen katılıyorum	Katılıyorum	Ne katılıyorum ne katılmıyorum	Katılmıyorum	Tamamen katılmıyorum
2. Aldığım karardan pişmanım.				
1	2	3	4	5
Tamamen katılıyorum	Katılıyorum	Ne katılıyorum ne katılmıyorum	Katılmıyorum	Tamamen katılmıyorum
3. Eğer tekrar yapmak zorunda olsaydım, yine aynı kararı alırdım.				
1	2	3	4	5
Tamamen katılıyorum	Katılıyorum	Ne katılıyorum ne katılmıyorum	Katılmıyorum	Tamamen katılmıyorum
4. Kararım bana çok zarar verdi.				
1	2	3	4	5
Tamamen katılıyorum	Katılıyorum	Ne katılıyorum ne katılmıyorum	Katılmıyorum	Tamamen katılmıyorum
5. Kararım akıllıcaydı.				
1	2	3	4	5
Tamamen katılıyorum	Katılıyorum	Ne katılıyorum ne katılmıyorum	Katılmıyorum	Tamamen katılmıyorum

Statistical Analysis

Statistical analyses were performed in the SPSS 22.0 statistical package program. As statistical analysis, in the descriptive findings section, categorical variables were presented with a number, percentage, and continuous variables with average±standard deviation and median (smallest, largest value). Pearson's Chi-square test was used to compare categorical variables; the Kolmogorov-Smirnov test was used to examine the suitability of the data for normal distribution in the comparison of the variables specified by the measurement, Paired t-test was used to compare two repetitive measurements suitable for normal distribution, Wilcoxon test was used to compare two repetitive measurements suitable for normal distribution, and Kruskal-Wallis test was used to compare more than two independent groups. The statistical significance level was taken as $p<0.05$ in the analysis.

RESULTS

279 patients were reached from the hospital records, the study was explained in clear language by teleconference, and 168 patients who verbally approved participation and were currently undergoing treatment were included in the study, 121 patients could not be included in the study (35 hysterectomized, 31 discontinued treatment, 21 failed to insert, 20 IUDs have resulted with expulsion, 10 patients refused to participate, 4 non-native speakers of Turkish). Based on the examination records and ultrasonography findings, patients were grouped by indication as Group 1 (Polyp) (n=26), Group 2 (Adenomyosis) (n=16), Group 3 (Leiomyoma) (n=27), Group 4 (Hyperplasia) (n=18) and Group 5 (non-structural causes) (n=81).

The demographic data of all participants (n=168) are summarized in **Table 1**. The average duration by LNG-IUD use of the participants was 627.06±319.6 days, and the average age was 43.4±6.1 years. From the hospital records, Hb and Hct values of 112 patients before and 66 patients after treatment with LNG-IUD could be reached among all participants. Hb, Hct values and bleeding parameters before and after LNG-IUD were compared and shown in **Table 2**. It was found that Hb and Hct values were statistically significantly higher after treatment ($p<0.001$ for two variables), while bleeding frequency, bleeding time and the number of pads used were lower ($p<0.001$ for three variables).

The groups were compared in terms of the number of days of LNG-IUD use, the total score of the Arizona Sexual Experience Scale, the number of individuals with sexual dysfunction, and decision regrets, and there was no statistically significant difference between the groups (**Table 3**). It was determined that the groups were not statistically different in terms of the number of days using LNG-IUD, total Arizona Sexual Experience Scale score, and decision regret score (p; 0.350; 0.680; 0.400, respectively). While the decision regret score of 90 people among all participants was 0, only one participant in Group 5 was calculated as 100.

The groups were compared with the Menorrhagia Impact Questionnaire and shown in **Table 4**. No statistical difference was observed in the groups in terms of concepts except MIQ-5 in the table. In the groups, the majority of the participants described the amount of blood loss as "mild", the restriction of work, physical and social activity as "none", and the change in the amount of bleeding was significant. None of the participants stated that the amount of bleeding was higher. To the open-ended response of "List of Behaviors Restricted by MIQ-5 Bleeding Reason", which was not included in the table, 1 patient in Group 2 said that she could not do sports, 1 patient in Group 3 said that she could not go to work, and 1 patient said that she could not walk.

Table 1. Demographic Data of the Participants

	n (%)
Age	
Average±standard deviation	43.4±6.1
Median (min; max)	44 (min:27; 58)
Gravida	
Average±standard deviation	3.0±1.5
Median (min; max)	3.0 (0; 8)
Parity	
Average±standard deviation	2.2±1.1
Median (min; max)	2 (0; 7)
NSD	
Average±standard deviation	1.5±1.4
Median (min; max)	2 (0; 7)
C/S	
Average±standard deviation	0.7±0.9
Median (min; max)	0 (0; 4)
Abortion	
Average±standard deviation	0.2±0.5
Median (min; max)	0 (0; 4)
D&C	
Average±standard deviation	0.3±0.7
Median (min; max)	0 (0; 3)
Ectopic Pregnancy	
0	167 (99.4)
1	1 (0.6)
Chronic Diseases	
No	109 (64.9)
Anemia	3 (1.8)
DM	8 (4.8)
HT	12 (7.1)
Hypothyroidism	16 (9.5)
Other	20 (11.9)
Drug Use	
None	117 (69.6)
Yes	51 (30.4)
Smoking	
No	96 (57.1)
Yes	72 (42.9)
BMI	
<18.5	1 (0.6)
18.5-24.9	57 (33.9)
25-29.9	65 (38.7)
≥30	45 (26.8)
Mean Hemoglobin Level Before LNG-IUD	11.2±2.0
Mean Hemoglobin Level After LNG-IUD	12.9±1.6
Average LNG-IUD Time (Days)	627.06±319.6

(%): percentage of columns

Table 2. Hemoglobin, Hematocrit, Annual Bleeding Frequency, Number of Bleeding Days, Daily Pad Usage Difference Before and After Treatment with LNG-IUD

	Before LNG-IUD	After LNG-IUD	p
Hemoglobin g/dl (n)	11.2±2.0 (n=112)	12.9±1.6 (n=66)	<0.001*
Hematocrit (%) (n)	34.8±5.1 (n=112)	39.3±4.1 (n=66)	<0.001*
Annual bleeding frequency n#	18.0±8.0 (n=168)	7.8±8.0 (n=168)	<0.001**
Bleed duration days (n)	11.5±9.5 (n=168)	4.8±6.2 (n=168)	<0.001**
Number of pads used per day (n)	7.7±3.9 (n=168)	1.1±1.4 (n=168)	<0.001**

*Paired t-test * * Wilcoxon test #Indicates how many times the patient has experienced bleeding in a year

The groups were compared in terms of Hb, Hct changes, bleeding parameters and the total number of bleeding days per year which are shown in **Table 5**. Hb and Hct increases were observed in all groups after the procedure compared to before the procedure. The highest average Hb (12.0±1.0) and Hct (37.1±2.2) values before the procedure were observed in the adenomyosis group, but the increase in Hb (13.6±0.6) and Hct (41.0±1.1) after the procedure was not statistically significant only in this group (p values for Hb and Hct were 0.087 and 0.632, respectively). In all other groups, the increase in Hb and Hct was statistically significant. It was observed that the number of pads used in all groups, the frequency of bleeding, and the total number of bleeding days per year decreased statistically significantly. A decrease in the number of days in each bleeding period was observed in all groups, but the decrease in the adenomyosis group was not statistically significant, while it was statistically significant in other groups.

Table 3. Comparison of Average Treatment Time, Arizona Sexual Experience Scale and Decision Regret Score by Indication Groups

Groups	Mean number of days of lng-iud use	Total arizona sexual experience scale score	Number of people with sexual dysfunction according to the arizona sexual experience scale score n (%)	Decision regret score
Group 1 (Polyp) (n=26)	703.7±316.7	12.9±6.8	4 (20.0)	11.1±17.1
Group 2 (Adenomyosis) (n=16)	653.1±312.6	13.4±5.5	-	12.5±21.1
Group 3 (Leiyomyoma) (n=27)	680.7±297.2	15.2±4.9	3 (15.0)	13.8±17.5
Group 4 (Hyperplasia) (n=18)	509.5±294.0	15.5±2.3	2 (10.0)	9.7±15.1
Group 5 (Non-structural causes) (n=81)	605.5±331.5	14.2±5.4	11 (55.0)	19.5±25.2
p	0.350***	0.680***	0.608****	0.400***

* * * Kruskal Wallis test * * * * Chi-square test (%) column percentage

Table 4. Comparison of Menorrhagia Impact Questionnaire by Indication Groups

	Group 1 (Polyp) (n=26) n (%)	Group 2 (Adenomyosis) (n=16) n (%)	Group 3 (Leiyomyoma) (n=27) n (%)	Group 4 (Hyperplasia) (n=18) n (%)	Group 5 (Non-Structural Causes)(n=81) n (%)	Total (n=168)
MIQ-1 (Detection of amount of blood loss)						
1-Mild	23 (88.4)	14 (87.5)	22 (81.4)	16 (88.8)	74 (91.3)	149 (88,6)
2-Medium	2 (7.6)	2 (12.5)	3 (11.1)	2 (11.1)	7 (8.6)	16 (9.5)
3-High	1 (3.8)	0 (-)	2 (7.4)	0 (-)	0 (-)	3 (1.7)
4-Very high	0	0	0	0	0	
			p= 0.423			
MIQ-2 (Restriction of outdoor and indoor works)						
1-None	24 (92.3)	14 (87.5)	24 (88.8)	18 (100)	78 (96.2)	158 (94.0)
2-Very low	1 (3.8)	0 (-)	0 (-)	0 (-)	2 (2.4)	3 (1.7)
3-Medium	1 (3.8)	2 (12.5)	2 (7.4)	0 (-)	1 (1.2)	6 (3.5)
4-Quite A lot	0 (-)	0 (-)	1 (3.7)	0 (-)	0 (-)	1 (0.5)
5-Extreme	0	0	0	0	0	
			p= 0.301			
MIQ-3 (Restriction of physical activity)						
1-None	24 (92.3)	14 (87.5)	24 (88.8)	18 (100)	78 (96.2)	158 (94.0)
2-Very low	1 (3.8)	0 (-)	0 (-)	0 (-)	2 (2.4)	3 (1.7)
3-Medium	1 (3.8)	2 (12.5)	2 (7.4)	0 (-)	1 (1.2)	6 (3.5)
4-Quite a lot	0 (-)	0 (-)	1 (3.7)	0 (-)	0 (-)	1 (0.5)
5-Extreme	0	0	0	0	0	
			p= 0.301			
MIQ-4 (Restriction of social activity)						
1-None	24 (92.3)	14 (87.5)	24 (88.8)	18 (100)	78 (96.2)	158 (94.0)
2-Very low	1 (3.8)	2 (12.5)	0 (-)	0 (-)	2 (2.4)	5 (2.9)
3-Medium	1 (3.8)	0 (-)	2 (7.4)	0 (-)	1 (1.2)	4 (2.3)
4-Quite a lot	0 (-)	0 (-)	1 (3.7)	0 (-)	0 (-)	1 (0.5)
5-Extreme	0	0	0	0	0	
			p= 0.182			
MIQ-6 (Evaluation of change in bleeding amount)						
0-Pretty much the same	0 (-)	1 (6.2)	3 (11.1)	0 (-)	3 (3.7)	7 (4.1)
1-Almost the same	0 (-)	0 (-)	0 (-)	0 (-)	3 (3.7)	3 (1.7)
2-There is very little decrease	0	0	0	0	0	
3-A little less	0 (-)	1 (6.2)	1 (3.7)	0 (-)	1 (1.2)	3 (1.7)
4-Mediary less	2 (7.6)	0 (-)	0 (-)	0 (-)	0 (-)	2 (1.1)
5-Significantly less	4 (15.3)	3 (18.7)	2 (7.4)	7 (38.8)	19 (23.4)	35 (20.8)
6-Much less	9 (34.6)	6 (37.5)	14 (51.8)	8 (44.4)	38 (46.9)	75 (44.6)
7-So much less	11 (42.3)	5 (31.2)	7 (25.9)	3 (16.6)	17 (20.9)	43 (25.5)
			p= 0.087			
MIQ-7 (Significance of change in bleeding amount)						
0-No	1 (3.8)	1 (6.2)	4 (14.8)	0 (-)	5 (6.1)	11 (6.5)
1-Yes	25 (96.1)	15 (93.7)	23 (85.1)	18 (100)	76 (93.8)	157 (93.4)
			p= 0.329			

(%): percentage of columns

Table 5. Comparison of the Groups with LNG-IUD Before and After Treatment in Terms of Hemogram, Hematocrit, Bleeding Parameters

Groups (column)	Mean Hb before LNG-IUD	Mean Hb after LNG-IUD	Hb difference	Mean Hct before LNG-IUD	Mean Hct after LNG-IUD	Hct difference	Pads before LNG-IUD	Pads after LNG-IUD	Pad number difference
Group 1 (Polyp)	10.9±2.5	12.4±2.0	3.1±1.7	34.0±6.1	38.8±5.0	8.4±3.9	7.8±4.4	1.0±1.5	6.8±4.4
p	0.030*			0.019*			<0.001**		
Group 2 (Adenomyosis)	12.0±1.0	13.6±0.6	2.3±0.5	37.1±2.2	41.0±1.1	5.1±2.3	8.0±3.7	0.8±0.8	7.1±4.2
p	0.087*			0.632*			0.001**		
Group 3 (Leiyomyoma)	10.6±2.2	12.9±2.0	1.5±1.4	33.4±5.1	39.4±5.1	4.3±3.3	9.0±3.5	1.6±2.2	7.3±4.3
p	0.004*			0.003*			<0.001**		
Group 4 (Hyperplasia)	11.5±1.8	12.9±1.2	1.0±0.7	35.7±4.9	39.5±3.3	4.0±2.4	8.3±4.1	1.1±1.4	7.2±3.6
p	0.001*			0.010*			<0.001**		
Group 5 (Non-Structural Causes)	11.3±2.0	12.9±1.6	1.3±2.6	34.9±5.1	39.2±3.9	2.4±3.1	7.0±3.8	1.0±1.0	6.0±3.8
P	<0.001*			<0.001*			<0.001**		

*paired t-Test * * Wilcoxon Test

Table 5. Continued

Groups (column)	Mean frequency before LNG-RIA	Mean frequency after LNG-RIA	Frequency difference	Mean bleeding day before LNG-RIA	Mean bleeding day after LNG-RIA	Bleeding day difference	Mean total number of bleeding days per year before LNG-RIA	Mean Total number of bleeding days per year after LNG-RIA	Mean total number of bleeding days per year difference
Group 1 (Polyp)	17.5±7.3	8.4±7.2	9.0±10.3	11.2±5.2	3.8±5.5	7.4±7.0	157.5±81.2	74.0±98.2	83.5±139.9
p	0.001			<0.001			0.008		
Group 2 (Adenomyosis)	17.1±7.2	6.8±9.4	10.3±12.5	14.2±21.1	6.0±8.5	8.2±22.0	170.8±73.3	53.6±83.2	117.2±128.5
p	0.018			0.086			0.007		
Group 3 (Leiyomyoma)	19.0±8.9	8.9±8.2	9.8±9.8	10.7±4.0	5.2±5.2	5.4±6.5	188.5±96.8	58.4±76.9	130.1±102.0
p	<0.001			0.001			<0.001		
Group 4 (Hyperplasia)	19.0±11.3	7.6±6.6	11.3±13.6	16.3±13.8	7.1±8.4	9.2±12.7	213.0±94.7	51.8±54.9	161.2±111.3
p	0.004			0.010			<0.001		
Group 5 (Non-structural causes)	17.9±7.3	7.5±8.3	10.3±10.2	10.2±6.7	4.2±5.6	5.9±8.8	183.0±83.2	62.8±80.3	120.1±100.3
p	<0.001			<0.001			<0.001		

Wilcoxon Test

DISCUSSION

The use of LNG-IUD in the treatment of patients with abnormal uterine bleeding provided an increase in Hb and Hct values compared to pre-treatment, while bleeding frequency, bleeding time, the number of bleeding days per year and daily pad use decreased. In the treatment of LNG-IUD, there was no difference in sexual functions and decision regret according to etiological cause, and low regret scores were observed.

LNG-IUDs (Mirena® Bayer Healtcare Pharmaceuticals, Pittsburgh, PA, USA) release 20 mcg/day of LNG for 5 years and contain 52 mg in total (11). Apart from the contraceptive effect, it has also been shown to provide effective treatment in clinical conditions such as heavy menstrual bleeding, anemia, dysmenorrhea, endometriosis, pain associated with adenomyosis, premenstrual syndrome, endometrial hyperplasia due to progesterone (12,13). LNG-IUD provides its effect on the endometrium by reducing proliferation and increasing apoptosis. Loss of secretory activities of epithelial glands and inhibition of proliferative activities of the endometrium causes significant impairment in cyclic activity 1 month after insertion (14). As a result, they cause thinning in the functional layer of the endometrium. They show their main effects by creating atrophy in the endometrium and reducing the response to estrogen. LNG-IUD has been shown in many clinical studies to reduce bleeding duration and menstrual blood loss by inhibiting endometrial proliferation. It was found that there was no change in systemic hemostatic and fibrinolytic system parameters in menorrhagic patients before treatment, except for the decrease in urokinase plasminogen activator receptor (u-PAR) in the 1st, 2nd, 3rd, and 6th months of treatment, and there was no change in tissue-type plasminogen activator (t-PA) or urokinase plasminogen activator (u-PA) levels in endometrial samples taken, but a significant increase was observed in u-Par, plasminogen activator inhibitor (PAI)-1 and PAI-2 levels. Thus, it has been shown that bleeding improves only by inhibiting endometrial fibrinolytic activity without systemic (15). In the first year of LNG-IUD use, a decrease in the amount of menstrual bleeding was reported in 90% of women and a decrease in dysmenorrhea symptoms in 30% (16). LNG-IUD has been shown to increase Hb concentration by 8.6 g/L compared to basal at 12 months of use (17). In patients with severe menstrual bleeding, LNG-IUD has been shown to significantly reduce the amount of menstrual bleeding by approximately 105 ml and has been recommended as a first-line treatment (18).

Similar to hysterectomy, treatment with LNG-IUD increased Hb in patients with adenomyosis, while a significant increase was observed in average Hb values at 6 and 12 months compared to pre-treatment (19). Similarly, in our study, it was observed that LNG-IUD significantly increased Hb and Hct values after treatment, and a significant increase was observed in average Hb and Hct values after treatment in all groups except adenomyosis. The average duration of treatment in patients with adenomyosis was 653.1±312.6 days, and no statistical difference was observed in average Hb values compared to pre-treatment. This may be due to the high level of Hb in this group in the pre-treatment period.

Most of the endometrial polyp and LNG-IUD studies were conducted in the patient group using tamoxifen. In these patients, LNG-IUD was shown to be risk-reducing for the development of polyps and endometrial hyperplasia only according to monitoring (endometrial surveillance), and OR was calculated as 0.22 and 0.13, respectively (20). After hysteroscopic polypectomy, 3.47% polyp recurrence was observed in the treatment with LNG-IUD and 15.96% in the group without any treatment (21). Although treatment with LNG-IUD has reduced the risk of polyp and hyperplasia in risky groups, it has also been reported that an asymptomatic patient who has been using LNG-IUD for contraception for 46 months develops endometrial carcinoma based on polyp, which was detected on routine examination (22). In a pilot study in which patients with hysteroscopic evidence of endometrial polyp were followed up until the day of polypectomy without treatment or with LNG-IUD, polyp was 37% in the LNG-IUD group and 80% in the control group, the absolute risk reduction was 43% and RR was 0.46 (23). We cannot comment on polyp recurrence after treatment with LNG-IUD in patients who developed AUB due to polyps because our study was not designed that way. However, in this group, while the sexual life scale and decision regret were similar to other etiological causes, there were significant differences in Hb, Hct, the number of pads used, and the number of bleeding days after treatment. It is clear that more studies are needed on the use of LNG-IUD in the treatment of polyps.

Leiomyomas are the most common uterine tumors, and they come in a wide range of sizes (24). They may be asymptomatic or may cause bleeding, compression symptoms and pain. LNG-IUD is recommended to reduce the amount of bleeding in the symptomatic treatment of leiomyomas (25). In addition, when there is no detectable pathology, LNG-IUD is recommended as the first option in the treatment of heavy menstrual bleeding in myomas below 3 cm and not distorting the cavity and in adenomyosis (3). It was shown that patients with an average pre-treatment myoma volume of 22 mm3 had a significant increase in Hb and Hct values in the sixth month of treatment with LNG-IUD compared to the pre-treatment and third month of treatment, and a significant decrease in the Pictorial Blood Loss Assessment score. The average Hb value before treatment was 10.7±1.2, 11.5±0.9 in the third month and 12.3±0.8 in the sixth month. However, no difference was observed in the uterus and myoma size (27). In our study, while the average treatment duration of the leiomyoma group was 680.7±297.2 days, similarly, a significant increase in Hb, Hct, and a significant decrease in bleeding parameters were observed, and it was shown that LNG-IUD provided benefit in AUB due to leiomyoma. Regret of treatment is also low in this group.

In women with severe menstrual bleeding, more satisfaction and treatment adherence were reported, which was not significant in the use of LNG-IUD compared to other medical treatments (28). Female sexual dysfunction decreased from 87.4% to 47.4% in the sixth month of LNG-IUD treatment with AUB bleeding (29). In a randomized study of 236 patients comparing hysterectomy and LNG-IUD in the treatment of menorrhagia, hysterectomy was found to increase sexual satisfaction and reduce sexual problems at the sixth and twelfth months. In the fifth year, partner satisfaction increased. On the other hand, there was no difference in sexual satisfaction and sexual problems in the LNG-IUD group. At 12 months, partner satisfaction declined significantly and remained low for 5 years. Results in favor of hysterectomy were found in the study (30). In our study, the number of people with sexual functions and sexual dysfunction was similar in the groups with similar treatment duration. The average Arizona sexual experience score was low in the groups, and it was observed that there was no sexual dysfunction. However, since the sexual status of the individuals before the treatment is not known, the benefit of the treatment cannot be commented on. In the study groups, it can be said that the regret rates from the treatment are low and the satisfaction is high. In the phase-3 study conducted on other forms of LNG-IUD releasing 8 and 13 mcg/day, more than 90% treatment satisfaction, satisfaction with more than 70% menstrual patterns and user preference were reported (31). Similar to our study in the literature, we did not find a study in which regret from LNG-IUD treatment was measured. Our study will contribute to the literature in terms of measuring the LNG-IUD treatment decision. It can be inspiring for similar studies.

We did not evaluate cost-effectiveness in our study. However, LNG-IUD is recommended as an alternative to hysterectomy in treatment, especially in abnormal uterine bleeding, which is one of the most common causes of hysterectomy in the perimenopausal period, and it has been shown to be 3 times more cost-effective than hysterectomy (32). LNG-IUD treatment was found to be cost-effective in patients with severe menstrual bleeding (33). In the 10-year follow-up, it was less costly than hysterectomy and the quality of life increased in the first 5 years in both methods (34).

The limitations of the study were that it was retrospective and we could not evaluate the sexual functions and effects of menorrhagia in patients before the procedure. It is the first study to evaluate the decision regarding LNG-IUD.

CONCLUSION

As a result, it was observed that there was no difference in sexual functions, decision regrets and menorrhagia effects in people using LNG-IUD on an indicative basis, and patients were highly satisfied with the treatment.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was carried out with the permission of Göztepe Prof. Dr. Süleyman Yalçın City Hospital Clinical Researches Ethics Committee (Date: 30/03/2022, Decision No: 2022/0195).

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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