International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Rajan N et al. Int J Reprod Contracept Obstet Gynecol. 2026 Mar;15(3):941-945
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20260551

Original Research Article

Is levonorgestrel intra-uterine system in menorrhagia: effective and acceptable? A retrospective study

Niranjana Rajan, Navina Nathan*, Mala Vijayakrishnan, Usha Natarajan

Department of Obstetrics and Gynecology, Obstetrics and Gynaecology, Vijaya hospitals, Chennai, Tamil Nadu, India

Received: 14 December 2025
Revised: 07 February 2026
Accepted: 09 February 2026

***Correspondence:**
Dr. Navina Nathan,
E-mail: navina.nathan84@gmail.com

ABSTRACT

Background: This study aimed to evaluate the effectiveness, acceptability, satisfaction and continuation rates of the levonorgestrel intrauterine system (LNG-IUS) in women with heavy menstrual bleeding (HMB) and to assess associated adverse effects.
Methods: This retrospective study was conducted in the Department of Obstetrics and Gynaecology, Vijaya Hospital, Chennai. Fifty-five women who underwent LNG-IUS insertion for HMB between January 2023 and January 2025 were identified from outpatient records. Demographic details, co-morbidities, menstrual patterns, ultrasound findings, and histopathology reports were reviewed. Follow-up assessments at 3 and 6 months included evaluation of menstrual blood loss, dysmenorrhea, side effects, and satisfaction scores. Continuation and acceptability rates were documented. Patient satisfaction was measured on a 1-5 scale.
Results: The mean age of participants was 42.3 years, and 78% were overweight or obese. A significant reduction in menstrual blood loss was observed, with 90% showing improvement by 6 months. Amenorrhea occurred in 44%, normal bleeding in 26%, and spotting in 20% of women. Dysmenorrhea decreased from 64% at beginning to 4% at 6 months. The continuation rate was 90% and the overall satisfaction score was 74.5%. The LNG-IUS expulsion rate was 10%. The most common adverse effects were spotting (25%) and simple ovarian cysts (20%).
Conclusions: LNG-IUS is an effective, acceptable, and minimally invasive therapeutic option for HMB, offering substantial improvement in symptoms, high continuation rates, and favourable tolerability. It serves as a safe and cost-effective alternative to conventional medical and surgical treatments.

Keywords: Acceptability, Continuation rate, Dysmenorrhea, Heavy menstrual bleeding, Levonorgestrel IUS

INTRODUCTION

Abnormal uterine bleeding is one of the most common symptoms for which women seek gynaecological consultation. Heavy menstrual bleeding (HMB) is a major cause of discomfort, anxiety, anaemia, and reduced quality of life among women of reproductive age. Heavy menstrual bleeding is defined as a blood loss of more than 80 ml per menstrual cycle.

Causes of menorrhagia

The causes of menorrhagia considered in this study included ovulatory disorders, primary endometrial disorders, uterine fibroids, adenomyosis, endometriosis, and genital malignancies.[1] Nearly 30% of all hysterectomies are performed to alleviate HMB resulting from benign conditions.[2]

The levonorgestrel-releasing intrauterine system (LNG-IUS) is a minimally invasive alternative to conventional

medical and surgical treatments for HMB. It is a T-shaped device that releases levonorgestrel directly into the uterine cavity at a rate of 20 µg/day for up to 5 years. The contraceptive and therapeutic benefits of LNG-IUS arise primarily from its local effects.

Mechanism of action

The endometrium becomes atrophic and inactive, with sparse glands and minimal mitotic activity.[3] It also induces a local foreign-body reaction characterized by an increase in inflammatory cells, plasma cells, and macrophages. These changes typically stabilize within 3 months following insertion of the LNG-IUS.[4] In addition, the LNG-IUS provides several non-contraceptive health benefits comparable to those of oral contraceptive pills.[4]

METHODS

This was a retrospective study conducted in the out-patient department of VIJAYA Hospital, Vada Palani, Chennai. Fifty-five women with heavy menstrual bleeding using LNG-IUS were selected from the OPD register between January 2023 and January 2025.

The data regarding demographic profile, obstetric history, co-morbidities along with a detailed menstrual history was noted from records. Trans-vaginal sonographic findings were noted. Histo- pathology of endometrial sampling was noted. After getting our institutional Ethics committee clearance data was collected from OP files or through telephonic conversion and analysed.

Methodology

Patient with heavy menstrual bleeding and LNG-IUS insertion done in the department of OBG in the past 2 years were assessed at 3 months and 6 months.

Inclusion criteria

All women who were diagnosed with heavy menstrual bleeding and LNG – IUS insertion done in the department of OBG in the past 2 years were included.

Exclusion criteria

Premalignant and malignant endometrial histology, fibroid >3 cm size, hypersensitivity to levonorgestrel were excluded from the study.

During follow-up, menstrual history was taken in detail, regarding usage of pads per day, soakage of pads, presence of clots, dysmenorrhea was asked. Questions were asked about the side effects like irregular spotting, abnormal vaginal discharge, weight gain, headache and breast tenderness.

Primary outcome

Reduction in menstrual blood loss, decrease in dysmenorrhea and incidence of side effects were noted.

Secondary outcome

Was to assess patient satisfaction, acceptability and continuation rate of LNG-IUS for heavy menstrual bleeding.

Satisfaction score

Patient satisfaction was recorded on a scale 1-5. Patient satisfaction was assessed using a 5-point scale, where a score of 1 indicated least satisfied, 2 less satisfied, 3 satisfied, 4 more satisfied, and 5 most satisfied. Patient continuing to use LNG-IUCD noted down- as continuation rate (Table 1).

Table 1: Satisfaction score.

	Satisfaction score
Least satisfied	1
Less satisfied	2
Satisfied	3
More satisfied	4
Most satisfied	5

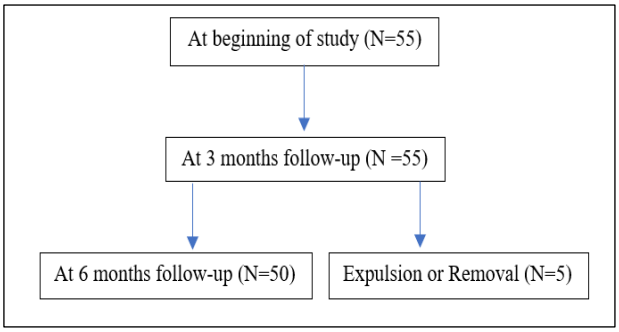

Figure 1: Number of patients and duration of follow-up.

After 3 months, 4 patients had spontaneous expulsion of the device, 1 patient had the LNG-IUS displaced, hence removed.

RESULTS

In our study, fifty-five women in the age range 31 to 55 years, who had LNG-IUS insertion for HMB were selected. Majority of the women were above 40 years. Thirty-three women were in the age group 41-50 years. Two women were above 50 years. The mean age of the cohort was 42.3 years. Patients who were overweight and obese were 78% of the cohort. Twelve patients had normal BMI (Table 2).

Parity

Multiparous women are prone for heavy menstrual bleeding, mostly have bulky uterus.

Table 2: BMI distribution in study group.

BMI	N	%
Normal weight	12	21.82
Overweight	23	41.82
Obese	20	36.36
Total	55	100

Mode of delivery

Thirty-three women (60%) had vaginal delivery. Twenty-two women (40%) patients had caesarean section.

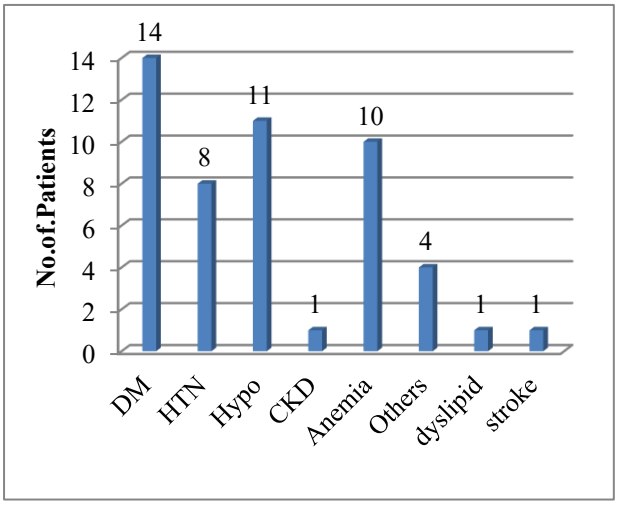

Figure 2: Bar diagram-frequency of co-morbidities.

Co-morbidities like Diabetes (14), hypertension (8), hypothyroidism (11), anaemia (10) were present in 50 patients (90%). The remaining five patients did not have any co-morbidities. Anaemia may be due to effect of heavy menstrual bleeding (Figure 2).

Patients had heavy menstrual bleeding with regular cycles (27), with frequent cycles (6), with prolonged cycles (22) (Table 3).

Table 3: Complaints-type of bleeding.

	N	%
HMB, regular cycles	27	49
HMB, frequent cycles	6	11
HMB +prolonged	22	40
Total	55	100

Dysmenorrhea distribution

Total 64% patients complained of severe dysmenorrhea. 36% did not have dysmenorrhea.

Endometrial thickness (ET)

Almost all patients had thickened endometrium. 31 patients had ET more than 12-14 mm.

Heavy menstrual bleeding reduced to normal bleeding in 37 patients at 3 months. Some patients (22) became amenorrhoeic at 6 months, thirteen patients had normal bleeding.

Bleeding at 6 months

Patients (90%) had reduction in blood flow. They had amenorrhea (44%), normal blood flow (26%) and only spotting during periods (20%). Only 10% had persistent heavy menstrual bleeding. Dysmenorrhea reduced to 11% at 3 months, dysmenorrhea reduced to 4% at 6 months (Table 5).

Table 4: Blood loss at 3 months and 6 months.

Blood loss at 3 months			Blood loss at 6 months		
	N	%		N	%
			Amenorrhea	22	44
Normal bleeding	37	67.27	Normal bleeding	13	26
Persistent heavy menstrual bleeding	13	23.64	Persistent HMB	5	10
Spotting	5	9.09	Spotting	10	20

Table 5: Dysmenorrhea- follow-up.

	Dysmenorrhea at 3 months		Dysmenorrhea at 6 months	
	N	%	N	%
No	49	89	48	96
Yes	6	11	2	4
Total	55	100	50	100

Expulsion

There was no perforation in any patients. LNG-IUS got expelled in 5 patients before 6 months.

Satisfaction score was 74.5 %. Some (14) patients were not satisfied because of the persistent bleeding and irregular spotting (Table 6).

Table 6: Satisfaction score in my study.

Satisfaction	N	%
1-least satisfied	4	7.3
2-less satisfied	10	18.2
3-satisfied	2	3.6
4-more satisfied	23	41.8
5-most satisfied	16	29.1
Total	55	100

The major adverse effect was irregular unpredictable spotting. Abnormal vaginal discharge was present in few patients. Weight gain was present in very few patients. A significant number of women suffered from pre-menstrual breast tenderness. About 11 patients had small sized or tiny simple ovarian cysts in follow-up ultrasound (Figure 3).

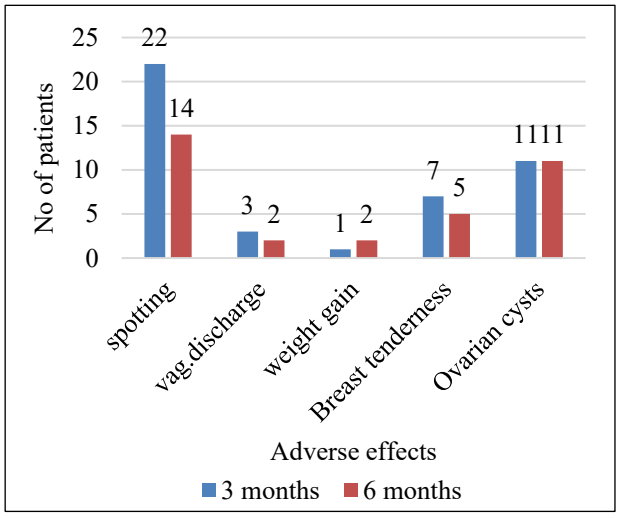

Figure 3: Adverse effect profile.

DISCUSSION

In our study, we demonstrated that the LNG-IUS is an effective, acceptable and minimally invasive therapeutic option for the management of menorrhagia. The study cohort included women with heavy menstrual bleeding (HMB), with fibroids, adenomyosis, and endometrial polyps.

In our study population, patients experienced a notable reduction in menstrual blood loss (Table 4). Furthermore, a substantial proportion reported significant relief from dysmenorrhoea (96%) (Table 5). The LNG-IUS provides high and uniform intra-endometrial concentrations of levonorgestrel while maintaining low systemic levels, thereby minimizing systemic side effects.

Figure 3 explains the adverse effects. Irregular spotting was most common adverse effect. Premature removal of device due to side effects was not seen in our research. With proper counselling, patients continued to use LNG-IUS in spite of the minimal side effects. As the majority of side effects subside with time, proper counselling and information is required for the women who are opting this treatment to reduce the discontinuation rate. As most of the women who opted for insertion of LNG IUS were educated and belonged to higher socioeconomic status, this emphasizes the need for increased literacy and awareness in women for the acceptance of conservative management for the common gynaecological problems in developing countries, like India.

Table 6 outlines satisfaction rates in our study. The aim of our study was to find the continuation rate and satisfaction score while using LNG-IUS. At six-month follow-up, 90% of participants continued LNG-IUS use, with a satisfaction rate of 74.5%. Continuation rate in other studies was between 80 and 96 %. Satisfaction rate varied between 80 and 96 % in other studies [5-11]

In a study conducted in Peshawar, 60 women were studied.[7] The acceptance and continuation rate were 80%. Satisfaction score was 80%. In the university of Florida, a similar study done showed reduction in blood loss and continuation rate of 96% and satisfaction score of 85%.[8] In a study conducted in Lady Hardinge college, Delhi and Kolkatta medical college, 42 women were followed up for 3 years with 88% continuation rate and 96% satisfaction.[9] In a large multicentre Canadian study, 39 women were followed up. The continuation rate was 95 % and satisfaction 85%.[10] In District General Hospital in the United Kingdom, fifty-one women with menorrhagia treated with LNG-IUS were studied. 84% women continued the usage, 82% women were satisfied.[11]

The LNG-IUS significantly improves quality of life within the first six months of use. Our findings also support its effectiveness in obese women with HMB.[12] Additionally, LNG-IUS offers a safe therapeutic option for women with prior surgical histories, including caesarean section. Its clinical benefits extend across multiple aetiologies of HMB, such as fibroids, adenomyosis, and endometrial hyperplasia.[13]

In conclusion, LNG IUS is an effective, patient friendly device with very less side effects and an efficacious and viable alternative to surgery for the management of idiopathic menorrhagia. LNG-IUS placement requires less operator skill and entails no operative hazards.

This study has few limitations. The sample size is less. The use of LNG-IUS in atypical hyperplasia was not explored in this study. The histo-pathology during follow-up could not be included as the data was not available.

CONCLUSION

The LNG-IUS represents a highly effective alternative to conventional medical and surgical treatments for menorrhagia. It produces a marked reduction in menstrual blood loss within a few months of insertion. Given its strong efficacy, favourable tolerability, and high patient satisfaction, the LNG-IUS is well suited as a first-line therapeutic option for women with menorrhagia. Side effects are generally mild and can be successfully managed with appropriate counselling.

Moreover, the LNG-IUS offers a safe, non-surgical, reversible, fertility-sparing, acceptable, and cost-effective option for the management of menorrhagia, making it an important component of contemporary gynaecological care.

ACKNOWLEDGEMENTS

Authors would like to thank statistician Mrs. Gothai Nachiyar, for her his help with the statistical analysis. We thank the Medical Records Department (MRD) for helping in data collection.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Munro MG, Critchley HO, Broder MS, Fraser IS. FIGO Working Group on Menstrual Disorders. FIGO classification system (PALM-COEIN) for causes of abnormal uterine bleeding in nongravid women of reproductive age. Int J Gynaecol Obstet. 2011;113(1):3-13.
2. Wright RC. Hysterectomy: past, present, and future. Obstet Gynecol. 1969;33(4):560-3.
3. Goñi AZ, Lacruz RL, Paricio JJ, Hernández Rivas FJ. The levonorgestrel intrauterine system as an alternative to hysterectomy for the treatment of idiopathic menorrhagia. Gynecol Endocrinol. 2009;25(9):581-6.
4. Hubacher D, Grimes DA. Non- contraceptive health benefits of intrauterine devices: a systematic review. Obstet Gynecol Surv. 2002;57(2):120-8.
5. Bafna BA, Bafna AN. Levonorgestrel intrauterine system in menorrhagia an effective and acceptable alternative. Int J Reprod Contracept Obstet Gynecol. 2021;10(4):1665-70.
6. Taru G, Nupur G, Sangeeta G, Pushpa B, Jyoti J, Sushma K. Levonorgestrel intrauterine system (LNG IUS) in menorrhagia: a follow-up study. Open J Obstet Gynecol. 2014;4:190-6.
7. Utman N, Faheem F. Levonorgestrel intra uterine system (LNG IUS) in menorrhagia: a three years follow-up study. J Postgrad Med Inst. 2011;26(1).
8. Kaunitz AM, Bissonnette F, Monteiro I, Lukkari-Lax E, Muysers C, Jensen JT. Levonorgestrel-releasing intrauterine system or medroxyprogesterone for heavy menstrual bleeding: a randomized controlled trial. Obstet Gynecol. 2010;116(3):625-32.
9. Chattopdhyay B, Nigam A, Goswami S, Chakravarty PS. Clinical outcome of levonorgestrel intra-uterine system in idiopathic menorrhagia. Eur Rev Med Pharmacol Sci. 2011;15(7):764-8.
10. Endrikat J, Shapiro H, Lukkari-Lax E, Kunz M, Schmidt W, Fortier M. A Canadian, multicentre study comparing the efficacy of a levonorgestrel releasing intrauterine system to an oral contraceptive in women with idiopathic menorrhagia. J Obstet Gynaecol Can. 2009;31(4):340-7.
11. Reid PC, Virtanen-Kari S. Randomized comparative trial of the levonorgestrel intrauterine system and mefenamic acid for the treatment of idiopathic menorrhagia: a multiple analysis using total menstrual fluid loss, menstrual blood loss and pictorial blood loss assessment charts. BJOG. 2005;112(8):1121-5.
12. Vilos GA, Tureanu V, Garcia M, Abu-Rafea B. The levonorgestrel intrauterine system is an effective treatment in women with abnormal uterine bleeding and anticoagulant therapy. J Minim Invas Gynecol. 2009;16(4):480-4.
13. Rodriguez MI, Darney PD. Non-contraceptive applications of the levonorgestrel intrauterine system. Int J Wom Health. 2010;2:63-8.

Cite this article as: Rajan N, Nathan N, Vijayakrishnan M, Natarajan U. Is levonorgestrel intra-uterine system in menorrhagia: effective and acceptable? A retrospective study. Int J Reprod Contracept Obstet Gynecol 2026;15:941-5.