

## **Analysis of Indication and Outcome of Levonorgestrel Intrauterine System Insertion in Cases of Abnormal Uterine Bleeding**

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### **Abstract**

**Aim and Background:** Abnormal uterine bleeding (AUB) in the form of menorrhagia, polymenorrhea, intermenstrual bleeding significantly impacts quality of life in women of reproductive age. The conventional treatment options for such women for a long period was either hormonal oral medications or surgeries like – hysterectomy. The levonorgestrel intrauterine system (LNG-IUS) is an effective medical management option. It is a minimally invasive procedure. Gives significant symptom relief without the side effects of surgeries like hysterectomy.

**Methods:** This prospective observational study included 39 women with AUB who underwent LNG-IUS insertion and were followed for six months. Data regarding demographic profile, menstrual history, clinical findings, histopathology, bleeding patterns, side

effects, need for adjuvant medication, symptom relief, and continuation rates were analyzed.

**Results:** The majority of patients (74.4%) were aged 36–45 years. Menorrhagia was present in all cases (100%), followed by dysmenorrhea (23.7%) and polymenorrhea (2.6%). The primary indication was AUB alone (69.2%), with associated fibroids in 12.8% of cases. Histopathology revealed benign findings, with proliferative endometrium without atypia (38.46%), disordered proliferative endometrium with simple hyperplasia without atypia (35.89%), and secretory endometrium (25.65%).

At six months, amenorrhea was observed in 10.3% of patients, while 10.3% had regular menstruation with intermenstrual spotting. The most common side effect was spotting (15.4%), followed by amenorrhea (12.8%), whereas 12.8% reported no side effects. The majority of patients (92.3%) did not require adjuvant medication.

Symptom relief was achieved in 94.9% of patients, and 94.9% continued LNG-IUS use.

**Conclusion:** LNG-IUS is a safe, effective, and well-tolerated treatment for AUB, with high rates of symptom relief and continuation, making it a valuable first-line non-surgical option.

**Keywords:** Abnormal Uterine Bleeding, Levonorgestrel Intrauterine System, Endometrial Thickness, Hemoglobin Improvement, Histopathology Report, Quality of Life, Medical Management

### Introduction

Abnormal uterine bleeding (AUB) is a common gynecological condition affecting women's quality of life and often leading to anemia, blood transfusions, repeated hospital visits. Conventional treatments include medical therapy and surgical procedures like hysterectomy, which carry risks and may compromise fertility. The levonorgestrel intrauterine system (LNG-IUS) has emerged as an effective alternative. It is minimally invasive long term therapy that reduces menstrual blood loss through local endometrial suppression. This study aims to evaluate the effectiveness of LNG-IUS in AUB, assess improvement in menstrual blood loss and hemoglobin levels, and analyze patient satisfaction, side effects, acceptability, and its potential role as a safe alternative to surgical management.

### Methods

A hospital based prospective observational study was conducted with 39 patients who had LNG IUS insertion for AUB, done in the department of Obstetrics and Gynaecology, in Nowrosjee wadia maternity hospital, GSMC and KEM.

### Results

#### Age Distribution

The majority of patients (74.4%) were in the 36–45 years age group, followed by 25–35 years (17.9%) and 46–55 years (7.7%).

The study was conducted over a 1-year period, from January 2023 to January 2024 after permission from the Institutional Ethics Committee and Review Board and after taking written informed consent from the patients.

The study duration allowed for comprehensive assessments and follow-up evaluations at multiple intervals, specifically at admission, 1 month, 3 months, and 6 months post-LNG-IUS insertion

#### Inclusion criteria

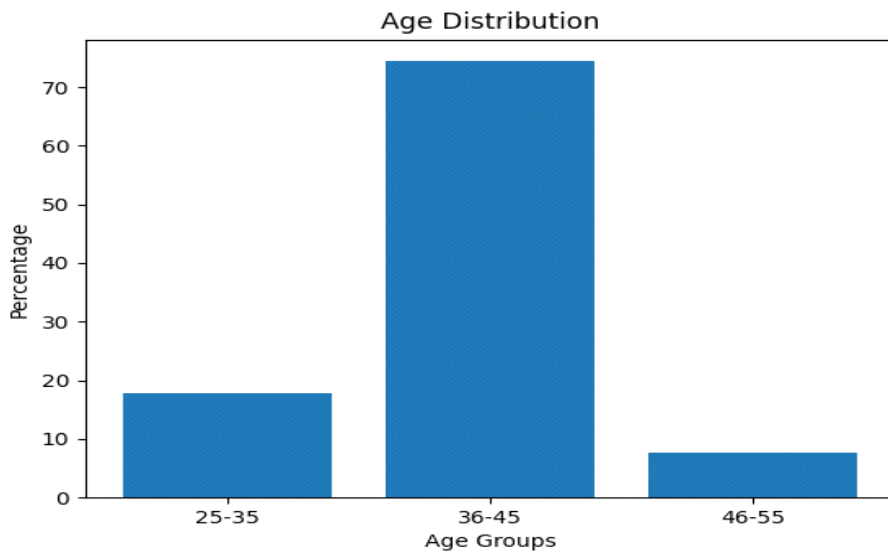
- All patients in the age group 18-50 years who have LNG IUS insertion in hospital for AUB.
- Premalignant conditions of endometrium like endometrial hyperplasia that are amenable to management by LNG-IUS and willing to accept the treatment.
- All OPD, IPD, LNG IUS insertion cases.

#### Exclusion Criteria

- Patients with uterine size more than 12 weeks, with uterine anomalies, submucous fibroid(s) distorting the uterine cavity.
- Patients who have not done a histopathology examination.
- Patients with endometrial cancer on histopathology reports.
- Patients not willing for follow up or unwilling to be part of the study.
- Bleeding per vagina with an unknown etiology.

Table 1: Age group distribution among study participants

Age Groups		Frequency	Percentage
Valid	25-35	7	17.9
	36-45	29	74.4
	46-55	3	7.7
	Total	39	100.0



**Primary Indication**

Abnormal uterine bleeding was the most common indication for LNG-IUS insertion (69.2%), followed by abnormal uterine bleeding with fibroid (12.8%). Other indications were less common and included dysmenorrhea, endometrial hyperplasia, endometrial polyp, and adenomyosis.

Table 2: Primary indication among study participants

Indication		Frequency	Percentage
Valid	abnormal uterine bleeding	27	69.2
	abnormal uterine bleeding with endometrial hyperplasia without atypia	1	2.6
	abnormal uterine bleeding with 2 endometrial polyp	3	2.6
	abnormal uterine bleeding with dysmenorrhea	2	5.1
	abnormal uterine bleeding with fibroid	6	12.8
	abnormal uterine bleeding with fibroid and adenomyosis	1	2.6
	Total	39	100.0

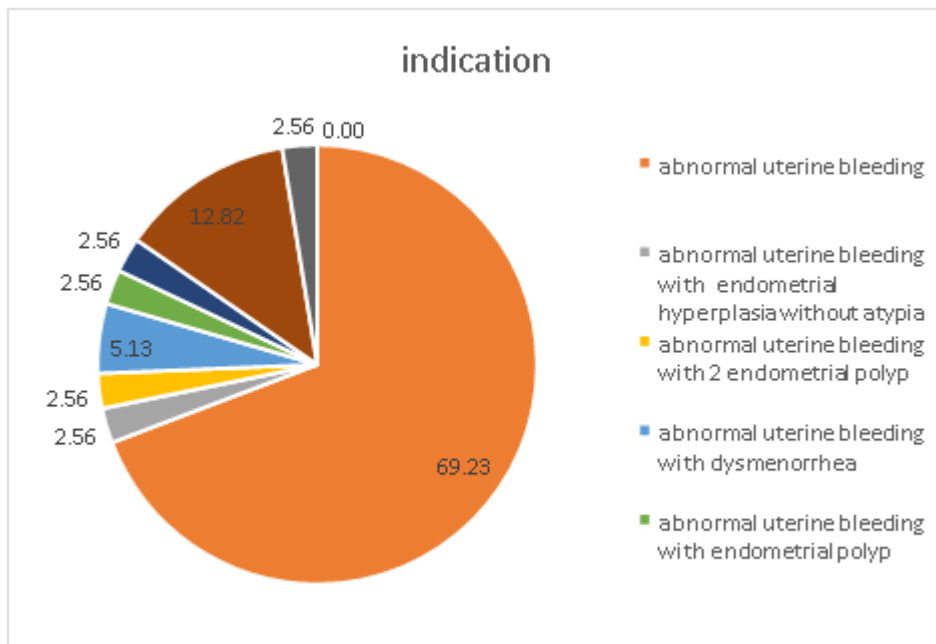


Figure 2: Primary indication among study participants

Histopathology-Proliferative endometrium (38.46%), hyperplasia without atypia (35.89%), and secretory endometrium (25.65%). No malignancy detected.

Table 3: Histopathology reports among study participants

Results	Frequency		Percentage
	Count	Percentage	
Secretory phase endometrium	10	25.65	25.65
Proliferative endometrium with no evidence of atypia	15	38.46	38.46
Disordered Proliferative phase endometrium with simple endometrial Hyperplasia without atypia.	14	35.89	35.89
Total	39	100	100

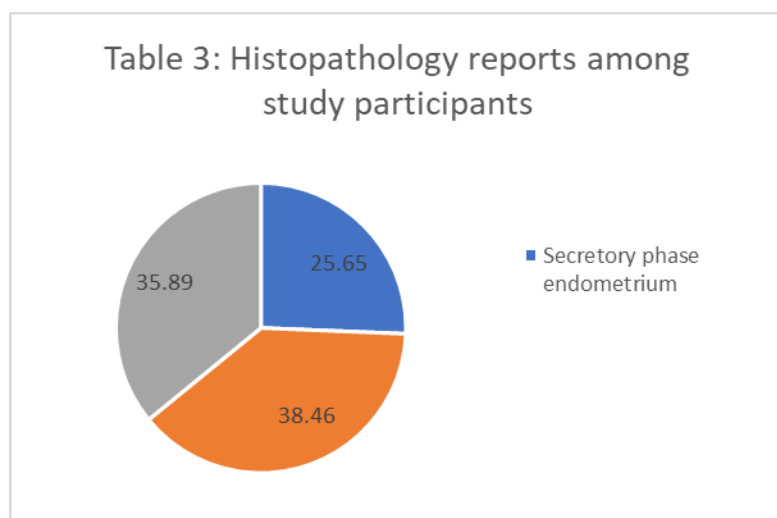


Figure 3: Histopathology reports among study participants

Symptom Relief 94.9% of patients experienced symptom relief while 5.1% did not.

Table 4: Relief of symptoms

Relief of symptoms		Frequency	Percentage
Valid	No	2	5.1
	Yes	37	94.9
	Total	39	100.0

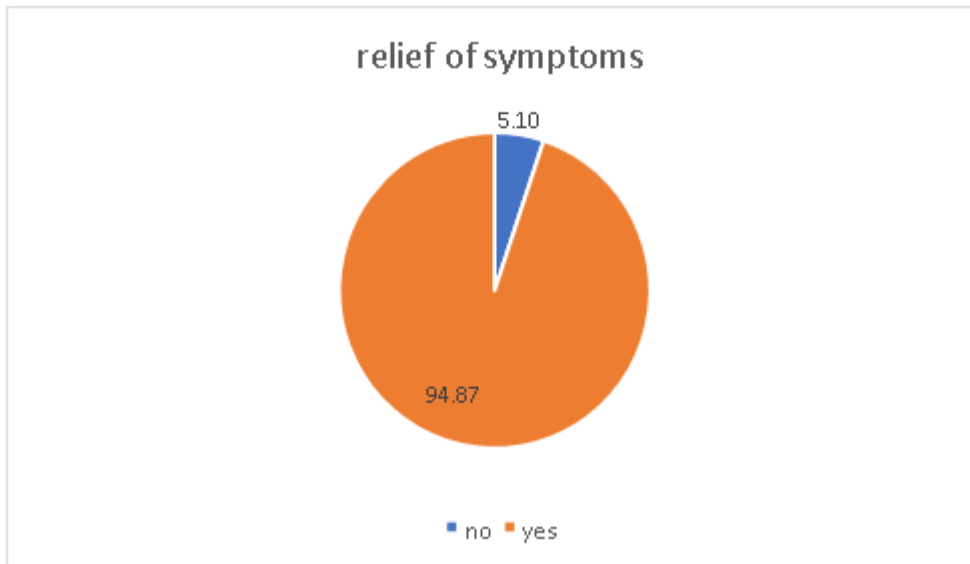


Figure 4: Relief of symptoms after Levonorgestrel intrauterine system (LNG-IUS) insertion

Adjuvant Medication- 92.3% required no medication; 5.1% used ormeloxifene and 2.6% used tranexamic acid

Table 5: Adjuvant medications used by patients following Levonorgestrel intrauterine system (LNG-IUS) insertion

Adjuvant medications		Frequency	Percentage
Valid	Tab tranexemic acid 500 mg twice a day for 3 days, for first 3 days of menses in case of heavy flow	1	2.6
	Tab Ormeloxifene 60 mg twice a week for 1 month followed by once a week for 2 months	2	5.1
	None	36	92.3
	Total	39	100.0
	None	36	92.3076923

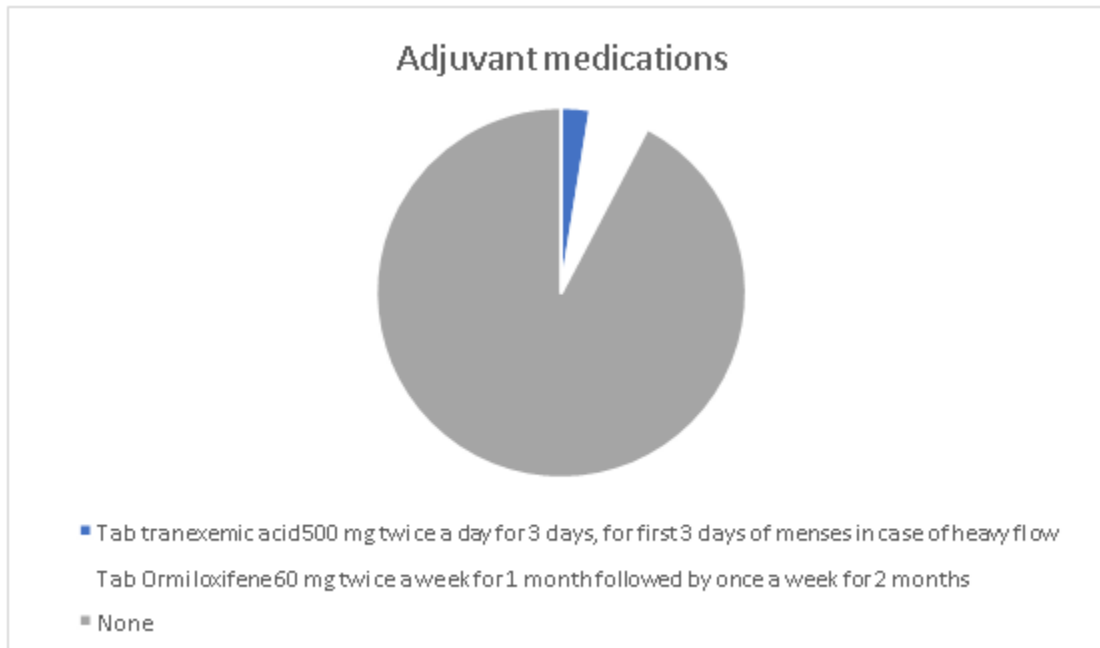


Figure 5: Adjuvant medications used by patients following LNG- IUS insertion.

Side effects- spotting per vaginum (15.4%) was the most common side effect, followed by amenorrhea (12.8%). Hypomenorrhea and spotting followed by amenorrhea (7.7%) were seen.

Table 6: Side effects experienced by patients after Levonorgestrel intrauterine system (LNG-IUS) insertion

	Side Effects Experienced	Frequency	Percentage
Valid	2 Months Spotting Per Vaginum, Amenorrhea	1	2.6
	6 Months No Menstruation Then Regular Menstruation	1	2.6
	Amenorrhea	5	12.8
	Amenorrhea For 3 Months	1	2.6
	Dysmenorrhea Not Relieved	1	2.6
	Hypomenorrhea	3	7.7
	Irregular Menstruation And Hypomenorrhea	1	2.6
	Irregular Spotting Per Vagina For 2 Months	2	5.1
	Irregular Spotting Per Vagina For 2-3 Months, Amennorhea	1	2.6
	Irregular Spotting Per Vagina For 4 Months	2	5.1
	Menorrhagia Continued	1	2.6
	Spotting Per Vaginum	6	15.4
	Spotting Per Vaginum , White Discharge	1	2.6
	Spotting Per Vaginum For 1 Month	2	5.1
	Spotting Per Vaginum Irregularly	1	2.6

	Spotting Per Vaginum, Amenorrhea	3	7.7
	Spotting Per Vaginum, Hypomenorrhea	2	5.1
	None	5	12.8
	Total	39	100.0
	None	5	12.8205128

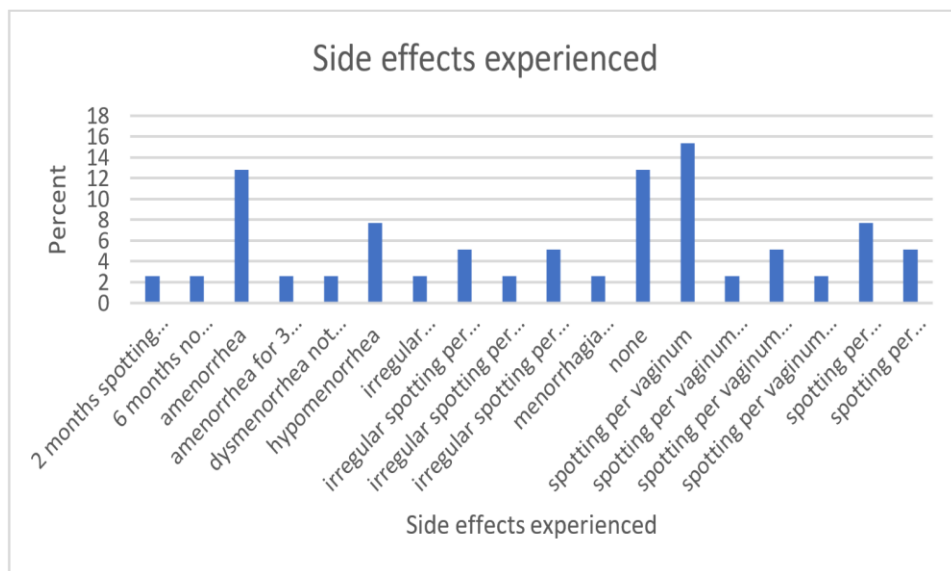


Figure 6: Side effects experienced by patients after Levonorgestrel

Continuation and Outcome- At 6 months follow-up, 94.9% continued LNG-IUS use, 2.6% had device removal, and 2.6% underwent hysterectomy.

Table 7: Continuation of Levonorgestrel intrauterine system use after six months

continuation of use after 6 months		Frequency	Percentage
Valid	No, device removed	1	2.6
	No, hysterectomy done	1	2.6
	Yes	37	94.9
	Total	39	100.0

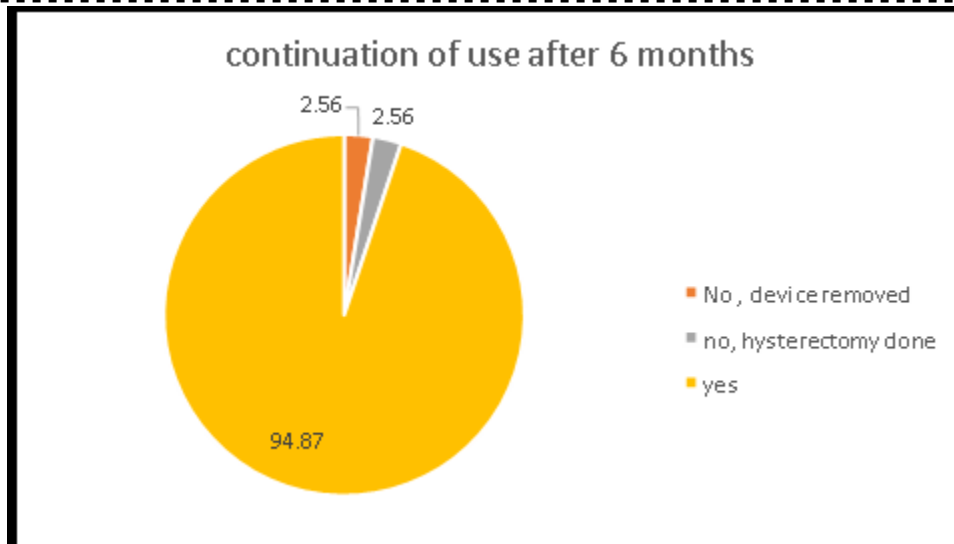


Figure 7: Continuation of Levonorgestrel intrauterine system (LNG-IUS) use after six months.

### Discussion

A hospital-based observational study was conducted among 39 patients to evaluate the role of LNG-IUS in the management of abnormal uterine bleeding. The majority of patients belonged to the 36–45 years age group, indicating higher prevalence in perimenopausal women. Menorrhagia was the most common presenting complaint (100%), followed by dysmenorrhea.

LNG-IUS effectively reduced menstrual blood loss and associated symptoms. AUB was the primary indication (69.2%), followed by fibroids and endometrial hyperplasia. Most patients had normal or mildly enlarged uterus.

Post-insertion bleeding patterns varied, with amenorrhea and spotting observed. Spotting was the most common side effect. Pre-insertion counselling played a vital role in the acceptance of the mode of treatment and its side effects as well. As intermenstrual spotting could be a nuisance in the Indian society and amenorrhea could be a scare if not already well explained.

Most patients did not require additional medication. Symptom relief and continuation rates were high (94.9%), with minimal need for surgical intervention.

Overall, LNG-IUS is a safe, effective, and minimally invasive treatment for AUB.

### Conclusion

Abnormal uterine bleeding (AUB) is a significant gynecological problem affecting women's quality of life and often requiring long-term management. In the present study, the levonorgestrel intrauterine system (LNG-IUS) demonstrated high efficacy in reducing menstrual blood loss and improving associated symptoms, with a symptom relief rate of 94.9% and a continuation rate of 94.9%. These findings are comparable to studies by Mansukhani et al. and Gopimohan et al., which also reported high patient satisfaction and effectiveness of LNG-IUS in the management of AUB.

Similarly, Kaunitz et al. showed that LNG-IUS is a reliable alternative to surgical interventions like endometrial ablation and hysterectomy. The observed side effects, predominantly spotting and amenorrhea, were consistent with studies by Maldonado et al. and Mejia et al., where such effects were common but well tolerated.

The high continuation rate in this study further supports findings by Gemzell-Danielsson et al., emphasizing good

patient acceptability with LNG-IUS. With minimal need for additional medication and low rates of surgical intervention, LNG-IUS proves to be an effective and safe non-surgical treatment option.

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