

Prospective Study of Levonorgestrol Containing Intrauterine System in Abnormal Uterine Bleeding

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Abstract:

Background: Abnormal uterine bleeding (AUB) is a common gynecological complaint affecting 10-30% of reproductive-aged women. Abnormal uterine bleeding can result from different causes and can adversely affect the woman's quality of life, necessitating its appropriate and adequate management. Various pharmacological and surgical treatment options are available for the treatment of AUB. Among all the management options of AUB, LNG-IUS is emerging as a safer and effective treatment option of AUB.

Aim : To study the effectiveness of the LNG-IUS in abnormal uterine bleeding.

Material And Methods: This study was conducted in the Department of Obstetrics and Gynecology, MGM Medical College and M.Y. Group of Hospitals, Indore from March 2017- March 2018. 60 women participated in the study. Follow up was done at 1,3,6 months

Results: In our study, majority of the women (90%) had improvement in their abnormal uterine bleeding along with significant increase in mean hemoglobin level from $7.30 \pm 1.29 \text{ gm\%}$ to $8.71 \pm 1.27 \text{ gm\%}$ at the end of six months.

Conclusion: LNG-IUS is an effective device for medical management of AUB and it should be used as the first line therapy for the same. It should always be considered before surgical interventions.

Key words: LNG-IUS, abnormal uterine bleeding

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I. Introduction

Abnormal uterine bleeding (AUB) is a common gynecological complaint that is reported to occur in 10-30% of reproductive-aged women.^[1] Its prevalence varies in each country. In India, the prevalence of AUB is reported to be around 17.9%.^[2,] The abnormal bleeding patterns can adversely affect the woman's quality of life, it thus necessitates urgent appropriate and adequate management.^[1]

Apart from bleeding related to pregnancy, abnormal uterine bleeding can result from different structural (e.g. polyp) as well as systemic (e.g., Von Willebrand's disease) causes or may be iatrogenic.^[3]

Different treatment options are available for the treatment of AUB which includes both pharmacological and surgical methods. The options for pharmacological treatment include non-hormonal-NSAIDs (non-steroidal anti-inflammatory agents), tranexamic acid, hormonal drugs- combined hormonal contraceptives, cyclic progestins, danazol, and levonorgestrel-releasing intrauterine system (LNG-IUS) while the surgical treatment options are endometrial ablation / resection or hysterectomy.^[4]

Hysterectomy, one of the surgical treatments may be the cure for excessive menstrual bleeding, but it has risks associated with a major surgery and is expensive. Endometrial ablation/ resection are procedures with their own complications, hence medical management is usually preferred over surgical treatment.^[4] but medical treatments have their own limitations for use. For example, cost is the limiting factor for tranexamic acid while Non-steroidal anti-inflammatory drugs (NSAIDs) though cheaper are not always effective.^[5]

LNG-IUS has been found to be more effective than usual medical treatment like mefenamic acid, tranexamic acid, combined estrogen-progesterone etc in reducing the effect of heavy menstrual bleeding on quality of life. It has also shown therapeutic effects comparable to endometrial ablation. So now a days, by virtue of its efficacy, ease of use and cost effectiveness, LNG-IUS is considered as the first line medical therapy for the treatment of heavy menstrual bleeding.

II. Aims And Objectives

- To study the incidence and pattern of presentation of abnormal uterine bleeding in women attending MYH gynecology OPD.
- To study the effectiveness of the LNG-IUS in abnormal uterine bleeding.

III. Material And Methods

The present study entitled "**Prospective Study of Levonorgestrel Containing Intrauterine System in Abnormal Uterine Bleeding**" is conducted in the Department of Obstetrics and Gynecology, MGM Medical College and M.Y. Group of Hospitals, Indore from March 2017- March 2018. It is a prospective study comprising 60 women who presented in MYH gynecology outpatient department with the complaint of AUB.

Inclusion Criteria:

- Women in the reproductive age group with abnormal uterine bleeding.
- Women with no cervical, vaginal pathology.
- Women who are married.

Exclusion Criteria:

- Women with congenital or acquired uterine anomaly.
- Women with leiomyoma [Fibroids] distorting the uterine cavity.
- Women with genital bleeding of unknown etiology.
- Women with known or suspected breast and endometrial carcinoma.
- Women with acute pelvic inflammatory disease.
- Women with suspected pregnancy.
- Women with acute liver disease and previous history of deep vein thrombosis.

After selecting the cases according to the inclusion criteria females giving consent for insertion of LNG IUS were subjected to detailed general and gynaecological examination. Complete hemogram was done. Pelvic ultrasound was also done to assess endometrial thickness and to look for any associated pathology. Endometrial biopsy was taken for histopathological reporting to rule out endometrial carcinoma. After all this, LNG-IUS was inserted on the outpatient basis except in few patients where cervix could not be visualised or in those patients who had other comorbid conditions requiring treatment, these patients were admitted to hospital for the insertion of LNG-IUS. Prior to insertion, patients were counselled regarding altered bleeding pattern, spotting and amenorrhoea known to occur with LNG-IUS.

IV. Results

Table 1: Incidence of AUB

Total no. of patients seen in OPD	Total no. of AUB cases	Incidence (%)
20162	3456	17.14%

Table 2: Distribution of cases according to demographic factors

Age Group (Years)	No. of Cases	Percentage (%)
21-30	6	10.0
31-40	24	40.0
41-50	30	50.0
Occupation	No. of Cases	Percentage (%)
House Wife	42	70.0
Laborers	9	15.0
Service	7	11.6
Tailor	1	1.7
Teacher	1	1.7
Socio-economic Status	No. of Cases	Percentage (%)
Lower	22	36.7
Middle	21	35.0
Upper Middle	17	28.3
Educational Status	No. of Cases	Percentage (%)
Literate	34	13.3
Illiterate	26	43.3

Table 3: Distribution of cases according to Parity

Parity	No. of Cases	Percentage (%)
P0	1	1.7
P1	6	10.0
P2	24	40.0
P3	15	25.0
P4 & Above	14	23.3
Total	60	100.0

Table 4: Distribution of cases according to etiology of AUB

Etiological factor	No. of Cases	Percentage (%)
Adenomyosis	11	18.3
Adenomyosis+Fibroid	2	3.3
Fibroid	10	16.7
Idiopathic	37	61.7
Total	60	100.0

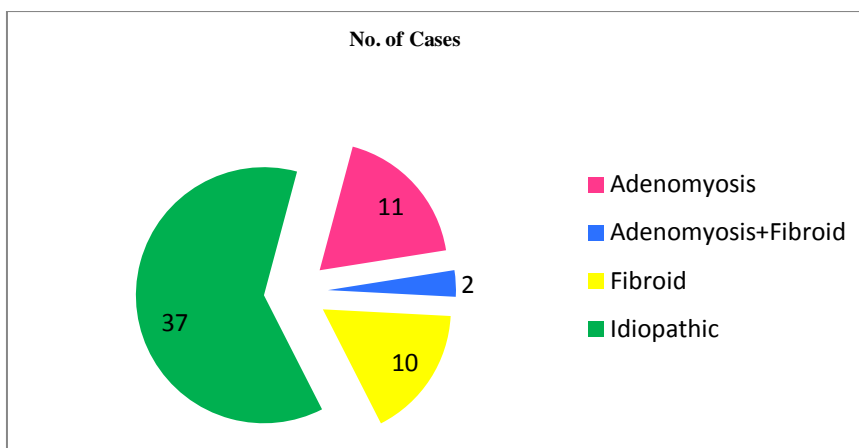


Table 5: Profile of Comorbidities

Comorbidities	No. of Cases	Percentage (%)
Hypertension	5	8.3
Diabetes	2	3.3
Severe Anemia	7	11.7
Hypothyroidism	4	6.7
Others	9	15.0

Table 6: Bleeding Pattern after LNG-IUS insertion

Bleeding Pattern	No. of Cases			P value (1 vs. 6)
	1 month (N=60)	3 months (N=58)	6months (N=58)	
Irregular Heavy Bleeding	22(36.7%)	13(22.4%)	2(3.4%)	0.000*
Spotting	36(60.0%)	39(67.2%)	14(24.2%)	0.008*
Normal Menses	0(0.0%)	4(6.9%)	8(13.8%)	0.006*
Oligomenorrhea/Amenorrhea	0(0.0%)	2(3.4%)	32(53.3%)	0.000*

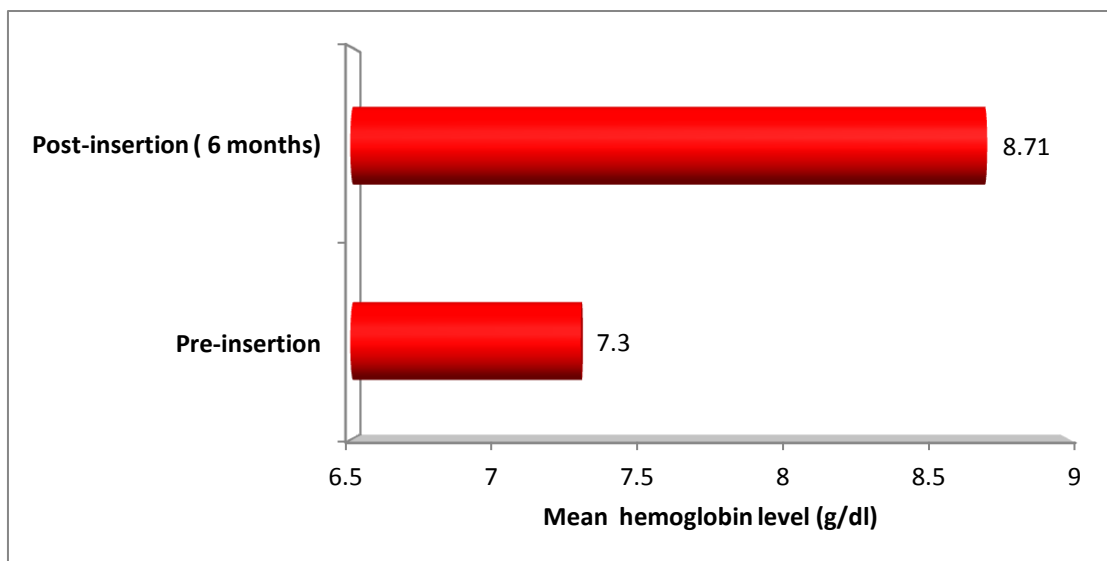
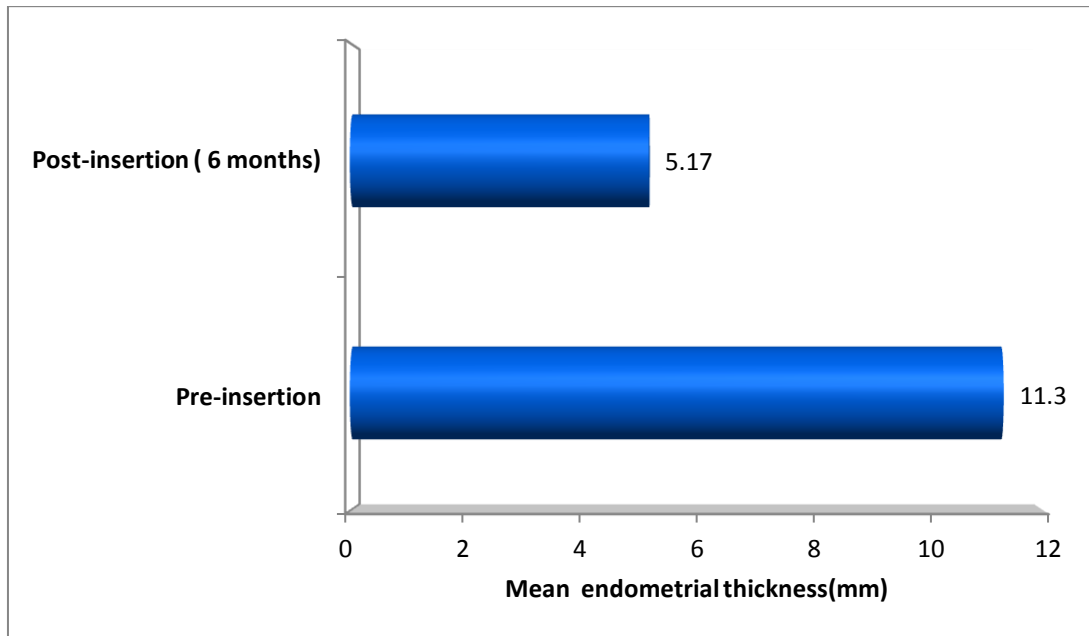
* Statistically significant. Chi square test used.

Table 7: LNG-IUS: Outcome at the end of six months

Outcome	No. of cases	Percentage
Improved(at the end of six month)	54	90%
Expulsion	02	3.33%
Removal	01	1.67%
Hysterectomy	01	1.67%
No improvement	02	3.33%
Total	60	100%

Table 8: LNG-IUS effects on the variables

	Pre-insertion	Post-insertion (6 months)	P value
Mean hemoglobin level (g/dl)	7.30± 1.29gm%	8.71± 1.27gm%	0.000*
Mean endometrial thickness(mm)	11.30± 5.26mm.	5.17± 2.58 mm	0.000*



V. Discussion

AUB is common is a common gynecological complaint^[1],affecting about 10–15% of women at sometimes during the reproductive years of their lives.^[3] In our study, incidence of AUB in patients attending MYH gynecology OPD is nearly 17%. Majority of them (90.0%) belong to the age group of 31-50 years. This is same as a study done by **Singh K et al**^[6], where majority (76.2%) of the women belonged to 30-50 years of age.

In our study, majority of the patients were housewife (70%) and most of them were illiterate (26/60). Majority of the women belong to lower socioeconomic status (36.7%).

In our study majority of women were multiparous(88.3%), this is same as in a study done by **Dhamangaonkar PC et al**^[7] (2015) where 81.4% patients were multiparous.

According to NICE guidelines on management of Heavy menstrual bleeding, LNG-IUS is considered as the first treatment for HMB in women with no identified pathology, fibroids less than 3 cm in diameter, or suspected or diagnosed adenomyosis.^[8] It can be used in submucosal fibroids not distorting the uterine cavity. So, in present study we used LNG-IUS in all these women.In our study, majority of patients 37(61.7%) had normal ultrasound findings followed by adenomyosis in 18.3% patients, fibroid in 16.7%, adenomyosis and fibroid both in 3.3% patients whereas in the study by **Dhamangaonkar PC et al**^[7] (2015),44.3% of the population had normal ultrasound findings followed by 37.1% with adenomyosis,18.6% of the patients had fibroid,3 patients (4.3%) had associated bilateral adnexal endometriotic cyst of 2-2.5 cm and in the study by

Singh K et al^[6] (2017), 69% patients had dysfunctional uterine bleeding (normal ultrasound), 14.3% had fibroid uterus, 9.5% patients had adenomyosis and rest patients had menorrhagia associated with endometriosis.

LNG-IUS is an excellent treatment option for treating AUB in the morbid patients, where other medications are either contraindicated or fitness of surgery (hysterectomy) remains the main issue.

In the present study, severe anemia was present in 11.7% patients, hypertension in 8.3%, hypothyroidism in 6.7% and diabetes in 3.3% patients. Other comorbidities like ascites, hepatomegaly, CVT, GTCS, h/o brain tumour, h/o stroke, psychiatric illness, ITP, MS, MR, piles, polio, h/o surgery for oral cancer, portal HTN, splenomegaly were present in 15% patients.

In study by **Dhamangaonkar PC et al^[7] (2015)**, 21.4% participants had hypertension, 8.6% had diabetes, 7.1% had thyroid, 8.6% had both hypertension and thyroid while 18.6% of the participants had some other comorbidities like bronchial asthma, human immunodeficiency virus (HIV), hepatitis B, ischemic heart disease, valvular heart disease, epilepsy, and triple vessel disease.

LNG-IUS decreases the amount of bleeding by 79-94%^[2]. It acts locally leading to high concentration of levonorgestrel in endometrium responsible for its therapeutic effect of decreasing blood loss during each cycle^[9]. But it takes about six cycles to see the benefits of treatment^[8]. In our study, the most common menstrual pattern at the time of presentation was menorrhagia in 38 (63.3%) followed by irregular heavy bleeding in 14 (23.4%) and polymenorrhoea in 8 (13.3%) women. This was similar to the study by **Dhamangaonkar PC et al^[7] (2015)**, 70% patient came to outpatient department with the complaint of menorrhagia, 21.4% came for polymenorrhoea, 4.2% for menometrorrhagia (irregular heavy bleeding) and 4.2% patient came for dysmenorrhoea.

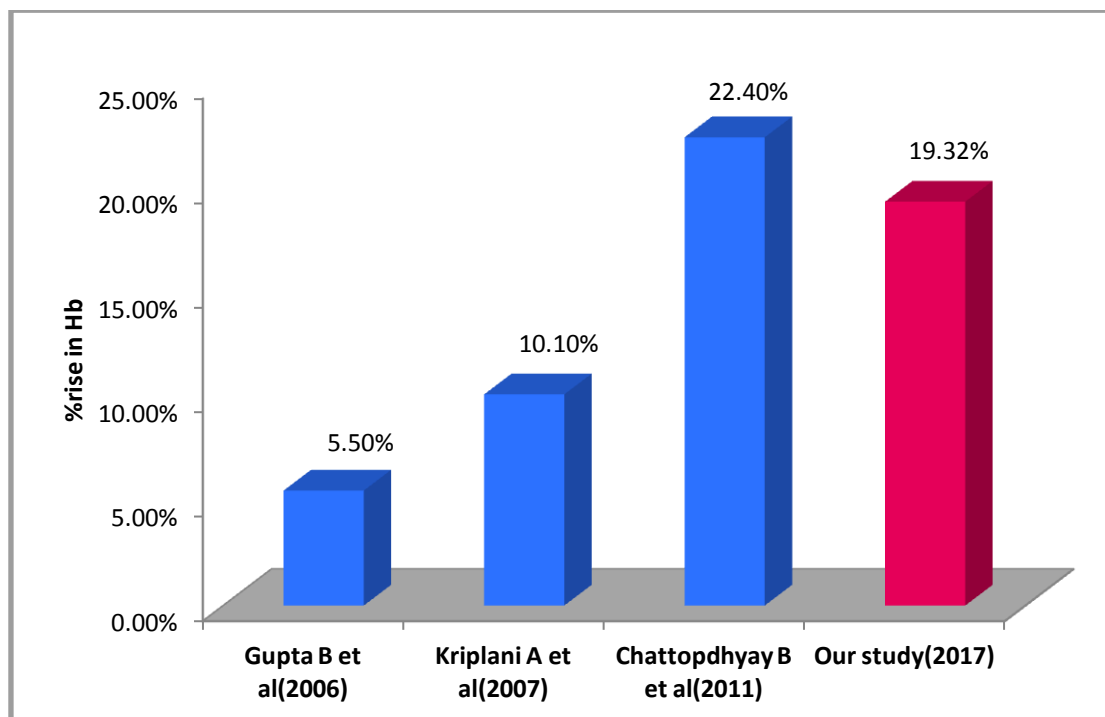
Regarding symptomatic relief, in our study there was a gradual but significant ($p < 0.05$) decrease in number of women with irregular heavy bleeding from 22 (36.7%) at 1 month to 13 (22.4%) at 3rd month to only 2 (3.4%) at the end of six months. Similar decrease was seen in women complaining of spotting, from 36 (60%) at 1 month to 14 (24.2%) at the end of six months ($p < 0.05$) while there is a significant increase ($p < 0.05$) in number of women with normal menstrual period, from none to 8 (13.8%) at the end of 6 months and with oligomenorrhoea/amenorrhoea, which increased from 0 at 1 month to 2 (3.4%) at 3 months and 32 (53.3%) at the end of six months. This is similar to study done by **Numan Cim et al^[9] (2017)**, where in the first 3 months, spotting was the most frequent menstrual finding. Spotting decreased progressively in subsequent months, and seen occasionally in 11 patients at the end of 6 months. At six months after LNG-IUS insertion, amenorrhoea was observed in 14 patients, intermittent abnormal uterine bleeding in 21 patients and in 56 patients' scanty regular cycles was observed. In the other study done by **Singh K et al^[6] (2017)**, in the first 3 months, 20% patients achieved normal menstrual cycle and 5% had scanty menstrual flow. At 6 months, 44.44% had scanty menstrual flow, 16.7% patient had normal menstrual cycle and 13.9% achieved amenorrhoea. In initial 3 months, 37.5% patients had irregular heavy bleeding, which decreased to 13.89% at 6 months. Irregular spotting was seen in 32.5% patients in initial 3 months that persisted in 11.11% patients at the end of 6 months. In another study by **Dhamangaonkar PC et al^[7] (2015)**, reduction in menstrual blood loss (MBL) is seen progressively over a period of 1 month, 4 months, 1 year, and 2 years. In the first follow-up itself, 80% women had only spotting and 73.3% became amenorrhoeic by the end of 1 year.

In our study, majority of the women (90%) had improvement in their symptoms while there was no improvement in 2 women (3.33%) even when LNG-IUS was in situ. In our study only 2 women had expulsion of LNG IUS during 1st menstrual cycle. This was same as in the study by **Dhamangaonkar PC et al^[7] (2015)**, in which 1 patient spontaneously expelled LNG IUS within one month of expulsion while in the study by **Singh K et al^[6] (2017)**, there was spontaneous expulsion of the device in 2 patients in first 3 menstrual cycles.

In our study only 1 woman requested for the removal of LNG-IUS and 1 woman opted for hysterectomy and this was due to persistent heavy menstrual bleeding this is similar to **Singh K et al^[6] (2017)**, 2 patients requested for removal of device and opted for hysterectomy due to continue irregular heavy bleeding while in study by **Dhamangaonkar PC et al^[7] (2015)**, LNG IUS was removed in 1 patient due to leukorrhoea and 4 patients underwent hysterectomy.

LNG-IUS in long-term users causes 70-90% reduction in blood loss. Hemoglobin, hematocrit, and ferritin levels correspondingly increase during the time of treatment.^[10] In our study, significant increase in hemoglobin level is seen. The mean hemoglobin level has increased from $7.30 \pm 1.29 \text{ gm\%}$ to $8.71 \pm 1.27 \text{ gm\%}$ at the end of six months. This was same as study done by **Begum et al^[11] (2013)**, where mean hemoglobin level increased from 9.3 gm\% to 11.1 gm\% in 3 months. Hemoglobin level of $< 9 \text{ gm\%}$ was seen in 38.88% patients before LNG-IUS insertion and after 3 months not a single patient had hemoglobin less than 9 gm%.

Similar results have been seen in various Indian studies. LNG-IUS has shown to raise hemoglobin level from 5.5-22% over one year period in Indian patients (Figure).^[12,13,14] The rise in hemoglobin may be related to prevention of blood loss because of LNG-IUS.^[15]



LNG-IUS acts locally and causes uniform atrophy of the endometrium and thus helps in treating AUB. In present study, the mean endometrial thickness before LNG-IUS insertion was 11.30 ± 5.26 mm and after 6 months of LNG-IUS insertion, there was very significant decrease in endometrial thickness, with mean endometrial thickness after insertion being 5.17 ± 2.58 whereas in a study conducted by **Numan Cim et al^[9] (2017)**, the mean endometrial thickness was >5 mm in women at the beginning of the study and at the final screening done at 24 months after LNG-IUS insertion there was a significant decrease in the mean endometrial thickness to less than 3 mm.

VI. Conclusion

LNG-IUS is a safe, effective and first line treatment for AUB. Due to the local effects of LNG-IUS, most of the women experience change in menstrual pattern. It reduces the menstrual blood loss significantly and at the end of six months 50% of the women had achieved amenorrhea. Hemoglobin levels increase significantly with its use and thus it helps to improve anemia. It is also effective in the patients with fibroid, adenomyosis and can be used safely in patients with other medical comorbidities, in whom surgery can't be done. Counseling plays an important role in continuation of device and adjusting women with the change of bleeding pattern. LNG-IUS improves overall quality of life of the women.

Thus our study concluded that LNG-IUS is an effective device for medical management of AUB and it should be used as the first line therapy for the same. It should always be considered before surgical interventions.

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