International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Nair SS et al. Int J Reprod Contracept Obstet Gynecol. 2019 Nov;8(11):4448-4452
www.ijrcog.org

pISSN 2320-1770 | eISSN 2320-1789

DOI: http://dx.doi.org/10.18203/2320-1770.ijrcog20194873

Original Research Article

Levonorgesterel releasing intra uterine system in the control of heavy menstrual bleeding. Is it an alternative to hysterectomy?

Sobha S. Nair, Jayashree Nayar*, Ann John Kurien, Isha Seth

Department of Obstetrics and Gynecology, Amrita Institute of Medical Sciences, Amrita Viswavidyapeetham University, Kochi, Kerala, India

Received: 04 August 2019
Accepted: 10 September 2019

***Correspondence:**
Dr. Jayashree Nayar,
E-mail: jshr2008@gmail.com

ABSTRACT

Background: Heavy menstrual bleeding (HMB) affects 10 to 35% of women. Studies indicate LNG-IUS which releases controlled amounts of levonorgestrel (LNG) is effective in non- surgical treatment for HMB and has fewer side effects when compared to the conventional pharmacological agents. It also improves the quality of life. Levonorgesterel releasing intra uterine system can be an alternative to hysterectomy in the control of HMB.
Methods: Retrospective study of 2 years in a tertiary care centre, Kochi. 170 women with abnormal uterine bleeding were enrolled in the study. Clinical examination, routine investigations and imaging was done. Endometrial sampling done and followed with HPE reports in indicated cases.
Results: Mean age was 41 years. 30.6% had menorrhagia. Adenomyosis in 44% and endometrial hyperplasia in 19. 4%. Lost follow up in 12.9% cases and expulsion in 3.6%. 4.1% were unsatisfied and had hysterectomy. The uterine width in adenomyosis was significantly reduced $p < 0.012$. The mean ET in endometrial hyperplasia cases also significantly reduced with $p < 0.01$. Satisfaction rate was 97%.
Conclusions: LNG-IUS is having a high success rate in controlling menstrual symptoms, thereby improving the quality of life and avoiding hysterectomy in women with abnormal uterine bleeding. It is highly efficient in symptomatic relief of adenomyosis and reduction in the uterine volume (width). Endometrial hyperplasia showed complete regression with LNG-IUS.

Keywords: Abnormal uterine bleeding, Adenomyosis, Endometrial hyperplasia, Heavy menstrual bleeding, Levonorgestrel-intra uterine system, Menorrhagia

INTRODUCTION

Abnormal uterine bleeding (AUB) which includes acute, chronic and intermenstrual types of abnormal uterine bleeding is a common problem among women in the reproductive age group, affecting about 17.9% of the Indian population.[1]

In 2011 FIGO introduced the PALM-COEIN system of nomenclature of AUB. PALM - COEIN stands for polyp, adenomyosis, leiomyoma, malignancy and hyperplasia, coagulopathy, ovulatory disorders, endometrial factors, iatrogenic and not defined (or classified).[2]

The LNG -IUS has increasingly been used not only for contraception but also for treatment of heavy menstrual bleeding, dysmenorrhea, leiomyomata, endometriosis and adenomyosis, due to the main role of LNG-IUS on the endometrium by suppressing the endometrial glands and causing decidualization of the stroma, mucosal thinning and an inactive endometrium.[3] The LNG-IUS Mirena (Bayer Healthcare Pharmaceuticals, Germany) was

approved for the treatment of HMB in Europe; the US Food and Drug Administration approved the system for this indication in 2009.

METHODS

Authors conducted a retrospective study of 2 years between July 2016 and June 2018 at AIMS Kochi. 170 women who had abnormal uterine bleeding were enrolled in the study.

All patients underwent complete general physical, systemic and gynecological examination. CBC, TSH, FBS, LFT, coagulation profile, TVS, Pap smear and endometrial biopsy in selected patients with thickened endometrium to rule out malignancy.

Endometrial thickness was assessed by trans-vaginal ultrasonography. The distance between the echogenic interface between endometrium and myometrium was measured. Premenstrual endometrial biopsy done and followed up with histopathology reports in OPD. Endometrial sampling was done in all cases of endometrial hyperplasia in those managed by LNG-IUS.

Mean blood loss was estimated by using Hb values (before insertion and at 6months) and with regard to menstrual symptoms such as menorrhagia, spotting, scanty flow, amenorrhoea in post insertion phase. The intensity of dysmenorrhoea was based on the visual analogue scale (VAS). VAS consists of a subjective evaluation of the pain on a scale of 10; in which 0 indicated no pain and 10 indicated unbearable pain.[4]

Mirena was inserted in the postmenstrual phase. Patients were counselled regarding altered bleeding pattern for the first 3-6 months including amenorrhea following insertion. Menstrual calendar was maintained for 2 years.

A detailed general, systemic, pelvic examination was done at every visit. Patient was asked regarding relief obtained from symptoms like menorrhagia, dysmenorrhoea.

Follow-up USG was done at 6 months, 1 year and 2 years for Mirena location, changes in the original pelvic pathology or development of new pathology like ovarian cyst. Uterine measurements were taken at 6 months, 12 months, 24 months post insertion of LNG-IUS.

Efficacy of Mirena was measured in the form of subjective symptomatic improvement along with improvement in the quality of life after 2 years of use. Patient satisfaction was recorded on a scale of 0-5 with 0 being least satisfied and 5 being most satisfied. 5 parameters were general well-being, mental health, effect on menstrual blood loss, adverse effects and overall acceptability were assessed and score of 0 or 1 given for problem or no problem respectively.[5]

Inclusion criteria

- 18-50 years of age
- Heavy menstrual bleeding ± dysmenorrhea, chronic pelvic pain
- Adenomyosis
- Endometriosis
- Fibroid uterus not distorting the endometrium
- No contraindication to IUS
- Endometrial hyperplasia
- Presence of medical or surgical high-risk factor and/or unfit for surgery.

Exclusion criteria

- Known/suspected pregnancy
- Active genital tract infection/PID
- Severe anaemia <7 gm/dl Hb.
- Abnormal cervical cytology
- Endometrial carcinoma
- Previous endometrial resection and ablation in preceding 3 months
- Thyroid disorder
- Abnormal uterine morphology like Mullerian anomalies.

Statistical analysis

Statistical analysis was done by IBM SPSS 20 version. All the measurable variables were presented as mean±SD and all categorical variables were presented as in percentage.

Paired sample T test was used to compare the mean parameters such as Hb, endometrial thickness and uterine volume between pre and post Mirena insertion. P value <0.05 was considered as statistically significant difference.

RESULTS

The mean ages of our patients were 41 years in our study. Number of cases included were 170. 134 (after excluding lost follow up, expulsion and hysterectomy cases were followed up in 2 years. Parity wise, 66.7% were P2L2 and 22.4% P1L1 (Figure.1). With regard to menstrual symptoms, authors had menorrhagia in 30.6%, menorrhagia with dysmenorrhea in 24.6%, irregular bleeding in 6% and dysmenorrhea in 19.4% (Table 1).

Ultrasound findings were adenomyosis in 44%, adenomyoma with endometriosis in 6.7%, adenomyosis with PCO in 5.2%, adenomyosis with polyp in 4.5%, adenomyosis with fibroid in 3.9% and fibroid in 3% (Figure 2). 1.5% was unfit for surgery due to medical and surgical risk factors for which LNG-IUS were inserted. Endometrial sampling was done in 50.7% patients in view of endometrial hyperplasia diagnosed by ultrasound findings. Histopathology reported as endometrial

hyperplasia in 19 (14.2%) cases. 12 (9%) were endometrial hyperplasia without atypia and 7 (5.2%) endometrial hyperplasia with atypical changes.

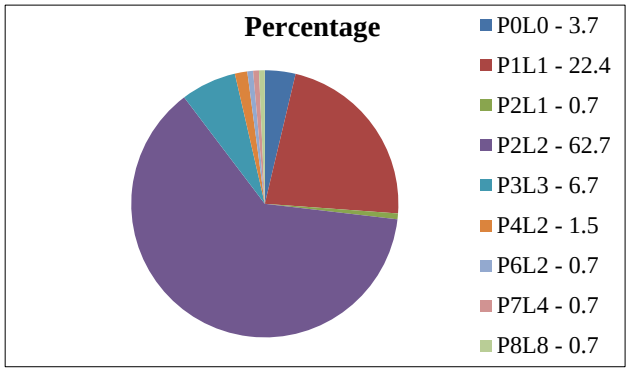

Figure 1: Parity index in percentage.

Table 1: Symptoms prior to mirena.

Symptom	No. of cases	Percentage
Menorrhagia	41	30.6
Menorrhagia + irregular bleeding	8	6
Menorrhagia + dysmenorrhea	33	24.6
Menorrhagia + anemic features	3	2.2
Infertility	3	2.2
Irregular bleeding	10	7.5
Irregular bleeding + dysmenorrhea	4	3
Post-menopausal bleeding	3	2.2
Dysmenorrhea	26	19.4
Asymptomatic	3	2.2

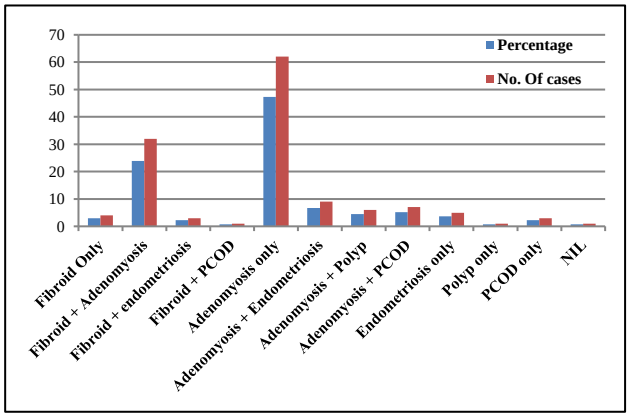

Figure 2: USG findings.

In the follow up period 14.2% had amenorrhea, occasional spotting 16.4%, irregular bleeding 8.2%, heavy bleeding 9.7%, scanty flow with regular cycles in 20.1%, symptom free (dysmenorrhea and menorrhagia) in 29.9% (Table 2). 4.1% were unsatisfied and went for hysterectomy. Expulsion rate was 3.5%. Lost follow up in 12.9%. PID was diagnosed in 0.58% patient and was removed in the second month. The mean Hb rise over 6 months was 1 g/dl. Pre insertion uterine length in adenomyosis were 8.75±1.65, breadth 5.27±1.13, width 6.00±1.33 and post insertion length 8.4±1.6, breadth 5.21±1.18, width 5.36±1.84. p value for length was <0.155, breadth <0.602 and width were 0.012. The mean ET in diagnosed endometrial hyperplasia pre insertion was 11.3±5.53 and post insertion was 4.98±1.81 with p value <0.001. Repeat histopathology in endometrial hyperplasia cases showed regression in all cases during 2 year follow up. Satisfaction rate in our study was 97% in 2 year follow up.

Table 2: Follow up.

Symptoms	1-3 months	6 months	1 year	2 years
Amenorrhea	0	19	29	38
HMB	28	16	3	0
Irregular bleeding	40	22	11	3
Occasional spotting	32	25	22	8
Regular cycle with scanty flow	19	23	29	42
Symptom free	15	29	40	43
Loss to follow up	2	8	6	6
Expulsion	6	0	0	0
Unsatisfied (hysterectomy)	1	4	2	0
PID	1	0	0	0

DISCUSSION

The mean age in our study was 41 years. The mean age was 39.92 years in Pallavi D et al, 39.92 years in Gupta et al and 38.2 years in Kalpana et al studies (Table 3).[6-8]

Parity index 2 was found in 62.7% in our study. 81.4% were multiparous in Pallavi D et al, and 35% were parity 2 in Erali et al.[9] Parity 3 (51.42%) was found in Gupta et al, study.

Among the 170 women, 22 (12.94%) were lost in the follow up period of 2 years. The discontinuation rate was 36% in Erali et al, study. 15 patients were lost in Kalpana et al study.

Adenomyosis was found 37.1%, fibroids in 18.6% and endometriosis in 4.3% in Pallavi D et al study. Gupta et al, study had DUB in 81.42%, fibroids in 18.6%, adenomyosis in 10% and endometrial hyperplasia without atypia in 21.4%. Auhtors had more of adenomyosis in our study (adenomyosis in 44%, adenomyoma with endometriosis in 6.7%, adenomyosis with PCO in 5.2%, adenomyosis with polyp in 4.5%, adenomyosis with fibroid in 23.9% and fibroid in 3%.

Expulsion rate was 3.5% in our study, Gupta et al had 4.28% and 5% in Kalpana et al. The reasons for

expulsion rate and prolonged vaginal spotting was seen more with LNG - IUS situated in the cervical canal than in the uterine cavity.

MBL reduced by 95% in 1 year and 100% by 2 years with Hb rise of 7.8gm%. Amenorrhea was found 100% by 2 year follow up. 5.7% had hysterectomy and the satisfaction rate was 91.42% in Pallavi D et al.

Gupta et al, study had amenorrhea in 33.87%, regular menstrual cycles in 51.61% and 3.07% with irregular cycles. Hysterectomy rate was 4.2% and satisfaction rate was 94.54%.

Erali et al, had 71-95% reduction in objectively measured MBL and around 50% women had amenorrhea. Hysterectomy was needed only for 6 % and satisfaction rates was 91.4%.

Amenorrhea was found in 91.6%, scanty flow in 8.4% and satisfaction rate was 100% in Kalpana D et al study.

Table 3: Comparison with various other studies.

MBL	Pallavi D et al	Gupta et al	Kalpana et al	Our study
Amenorrhoea %	100	33.87	91.6	14.2
Age years	43.39	39.92	38.2	41
Multiparous %	81.4	51.42		62.7
Number	70	62	42	137
USG %				
Fibroid	18.6	8.57	14.3	3
Adenomyosis	37.1	10	9.5	47.3
Endometriosis	4.3		7.2	3
DUB normal	44.3	81.42	69	
Endometrial hyperplasia %				
Atypia	-	21.4	-	9
Without atypia	-		-	5.2
Discontinuation rate %			35.71%	12.94
Satisfaction rate %	91.42	94.54	100	97
Unsatisfied %				4.1
Hysterectomy%	5.7	4.28	5	4.1
Expulsion%	1	4.28	5	3.5
PID - (number)	-	-	-	1
Leucorrhoea- (number)	1		16	

Table 4: Mean blood loss after LNG-IUS insertion.

	1-3 months	6 months	1 year	24 months
Reduction in mean	49.25%	71.6%	89.55%	97.7%
Blood loss/ relief of symptoms	(66/134)	(96/134)	(120/134)	(131/134)

Mean blood loss over period of time showed reduction.

Reduction of mean blood loss was 89.55% in 1 year and 97.7% in 2 year follow up in our study (Table 4). Hb rise over 6 months was 1gm/dl. Auhtors had amenorrhea in 14.2%, occasional spotting in 16.4% and scanty flow with regular cycles in 20.1%. 4.1% underwent hysterectomy and satisfaction rate was 97%.

The most common side effects of LNG-IUS include amenorrhea, spotting and pelvic inflammatory disease.[10,11] Auhtors had 1 (0.58%) case of PID and LNG -IUS was removed in the second month of insertion. The levonorgestrel-releasing IUD has been successfully used in primary and secondary dysmenorrhea by suppressing endometrial prostaglandin synthesis.[12] Garg et al, reported significant reduction in dysmenorrhea associated with adenomyosis after LNG-IUS insertion.[6] In our study also, patients with severe dysmenorrhea and endometriosis were relieved of their symptoms. Auhtors also had significant reduction of uterine volume (width) in adenomyosis with a p value of <0.012.

RCOG-BSGE recommends the LNG-IUS as first-line medical management of endometrial hyperplasia without atypia.[13] In endometrial hyperplasia with atypia in women desirous of fertility preservation, LNG-IUS is the first-line treatment after counselling about the risks of

underlying malignancy or disease progression. Once fertility is no longer required, hysterectomy should be offered.

Regression of hyperplasia was achieved in 94.8% of patients with the LNG-IUS in Gallos ID et al study.[4] Randomized control trials have shown that LNG-IUS is more effective than cyclical oral progestogens.[15,16] In our study of 2 year follow up, there was 100% regression of endometrial hyperplasia treated with LNG-IUS. The mean endometrial thickness was significantly reduced with a p value of <0.001.

CONCLUSION

LNG-IUS is having a high success rate in controlling menstrual symptoms, thereby improving the quality of life and avoiding hysterectomy in women with abnormal uterine bleeding. It is highly efficient in symptomatic relief of adenomyosis and reduction in the uterine volume (width). Endometrial hyperplasia showed complete regression with LNG-IUS.

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

REFERENCES

1. Sharma A, Dogra Y. Trends of AUB in tertiary centre of Shimla hills. J Mid Life Health. 2013;4(1):67-8.
2. Munro MG, Critchley HO, Broder MS. FIGO working group on menstrual disorders. FIGO classification system. (PALM-COEIN) for causes of AUB in non-gravid women of reproductive age. Int J Gynaecol Obstet. 2011;113:3-13.
3. Bednarek PH, Jensen JT. Safety, efficacy and patient acceptability of the contraceptive and non-contraceptive uses of the LNG-IUS. Int J Womens Health. 2010;1:45-58.
4. Kocyigit H, Aydemir O, Fisek G, Olmez N, Memis A. Kisa Form-36 (KF36)'nin Turkce versiyonunun guvenilirligi ve gecerliligi. Ilac ve Tedavi Dergisi. 1999;12:102-10.
5. Garg S, Soni A. A non-surgical lifeline for Abnormal uterine bleeding (AUB)-the LNG IUS. Ind J Obstet Gynecol Res. 2016;3(1):23-7.
6. Dhamangaonkar PC, Anuradha K, Saxena A. Levonorgestrel intra uterine system (Mirena): an emerging tool for conservative treatment of abnormal uterine bleeding. J Midlife Health. 2015;6(1):26-30.
7. Gupta T, Gupta N, Gupta S, Bhatia P, Jain J, Kumar S. Levonorgestrel intrauterine system (LNG IUS) in menorrahgia: a follow-up study. Open J Obstet Gynecol. 2014;4:190-6.
8. Singh K, Bharati G, Prasad D, Kumari S. Role of levonorgestrel releasing intrauterine device in management of heavy menstrual bleeding: a conservative approach. Int J Repro Contra Obstet Gynecol. 2017;6(2):631-63.
9. Eralil GJ. The effectiveness of LNG-releasing IUS in treatment of HMB. JOGI. 2016;66(S1):S505-12.
10. Alappattu MJ, George SZ, Robinson ME, Fillingim RB, Moawad N, et al. Painful intercourse is significantly associated with evoked pain perception and cognitive aspects of pain in women with pelvic pain. Sex Med. 2015;3:14-23.
11. Endrikat J, Vilos G, Muysers C. The levonorgestrel-releasing intrauterine system provides a reliable, long-term treatment option for women with idiopathic menorrhagia. Arch Gynecol Obstet. 2012;285:117-21.
12. Morrow C, Naumburg EH. Dysmenorrhea. Prim Care. 2009;36:19-32.
13. Gallos ID, Birmingham M, Professor TJ, Clark R, Faraj AN, Rosenthal PP. Endometrial hyperplasia, management of (green top guideline no. 67) joint guideline of RCOG/BSGE; 2017.
14. Gallos ID, Krishan P, Shehmar M, Ganesan R, Gupta JK. LNG-IUS versus oral progestogen treatment for endometrial hyperplasia: a long-term comparative cohort study. Human Repro. 2013;28(11):2966-71.
15. Hashim HA, Zayed A, Ghayaty E, El Rakhawy M. LNG-IUS treatment of non-atypical endometrial hyperplasia in perimenopausal women: a randomized controlled trial. J Gynecol Oncol. 2013;24:128-34.
16. Ismail MH, Fahmy DM, Elshmaa NS. Efficacy of levonorgestrel-releasing intrauterine system versus oral progestins in treatment of simple endometrial hyperplasia without atypia. Reprod Sci. 2013;20:45-50.

Cite this article as: Nair SS, Nayar J, Kurien AJ, Seth I. Levonorgesterel releasing intra uterine system in the control of heavy menstrual bleeding. Is it an alternative to hysterectomy?. Int J Reprod Contracept Obstet Gynecol 2019;8:4448-52.