

Original research article

A Clinical Prospective Study of Levonorgestrel releasing Intrauterine System in women with Abnormal Uterine Bleeding

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Abstract

Background: Levonorgestrel (LNG) releasing Intrauterine device (IUD) was first used in the USA in the year 2000. It contains 52 mg LNG mixed with polydimethylsiloxane that controls the rate of hormone release. Initially used for contraception has now been found to be effective in reducing heavy menstrual bleeding. This study tried to evaluate the effect of LNG-IUD on abnormal menstrual bleeding.

Methods: This prospective study was done in the Department of gynecology C.K.M G.M.H Hospital, Warangal. Treatments were performed in an outpatient setting during the first 10 days of the participant's menstrual cycle. Uterine cavity length was measured with a uterine sound before either of the treatment. The LNG-IUS was inserted as per the manufacturer's instructions.

Results: In this study n=54 patients were included with an age range from 30 to 49 years. The mean age was 43.5 years \pm 2.5 years. PBAC (Pictorial blood loss assessment chart) was assessed at pre-treatment scores compared with post-treatment scores. Similarly, the QOL with standard format of (short 36) questionnaire was assessed at pre-treatment and post-treatment. The pre-treatment and post-treatment comparison revealed post-treatment significant improvement in patients treated with LNG-IUS.

Conclusion: The present study shows that the use of LNG-IUS for control of abnormal uterine bleeding results in significantly lowered blood loss over a period of 12 months follow-up. The treatment also results in higher levels of patient satisfaction, significant improvement in anemia, and improvement in overall quality of life scores.

Keywords: Levonorgestrel (LNG), Intrauterine device (IUD), Abnormal Uterine bleeding, Quality of life score.

Introduction

Heavy menstrual bleeding is the commonly reported problem affecting many premenopausal women across the world and is one of the important causes for seeking outpatient care in the Department of gynecology. ^[1, 2] Every year approximately 5% of women between the age of 30 – 49 seek the consultation of a physician with heavy menstrual bleeding. The first choice of treatment includes hormonal treatment with Oral contraceptive pills, levonorgestrel-releasing intrauterine system, and the use of tranexamic acid or non-steroidal anti-inflammatory drugs. However, 77% do not continue with the treatment which often ends up in other unavoidable surgical treatments. ^[3, 4] One of the common surgical treatments for

heavy menstrual bleeding is hysterectomy. ^[5] Some of the surgeons' advocate hysterectomy as the preferred strategy for the treatment of heavy menstrual bleeding. ^[6] Nevertheless because of it is a major surgical procedure that has several physical social and economic costs which must be borne in mind. ^[7] A significant number of women with heavy menstrual bleeding seek medical treatment and are not benefitting from it but wish to preserve their uterus. ^[3, 8] can opt for lesser invasive procedures although the rate of success is varied. ^[1, 9] The two frequently used minimally invasive procedures for the treatment of heavy menstrual bleeding are LNG-IUS and endometrial ablation. IUDs were initially used as contraceptives however, after the addition of progestogen they were effective in reducing menstrual bleeding. The localized release of levonorgestrel in the uterine cavity also suppresses endometrial growth. A systematic review on the effective LNG-IUS in heavy menstrual bleeding found the reduction of menstrual blood loss was decreased by 79-96% in the patients. ^[10-13] Women reporting heavy bleeding to primary care physicians when treated with LNG-IUS found it to be more effective than medical treatment in reducing the effect of heavy menstrual bleeding and quality of life. ^[14] However, some 60% of women tend to discontinue the treatment within 5 years due to unscheduled bleeding, pain, or other systemic effects due to progesterone. ^[15] The Royal College of Obstetricians and Gynecologists (RCOG) guideline on heavy menstrual bleeding suggests the use of LNG-IUS as the first therapeutic option when drug treatment has failed. ^[15] With this background, we in the current study aimed to study the effect of LNG-IUS for AUB and improvement of quality of life and overall patient satisfaction.

Material and Methods

This prospective study was done in the Department of gynecology C.K.M G.M.H Hospital, Warangal. Intuitional ethical approval was obtained for the study. Written consent was obtained from all the participants of the study after explaining the benefits and possible outcomes of the procedures to all the patients.

Inclusion criteria

1. Self-described heavy menstrual bleeding
2. aged 30 years and above

Exclusion criteria

1. Ultrasound abnormalities (sub-mucosal fibroids, intramural fibroids greater than 3 cm in diameter, large sub-serosal fibroids, endometrial polyps)
2. Endocrine abnormalities
3. Adverse endometrial histology
4. Incidental adnexal abnormality on ultrasound
5. Severe intermenstrual bleeding
6. Severe dysmenorrhoea

Treatments were performed in an outpatient setting during the first 10 days of the participant's menstrual cycle. Uterine cavity length was measured with a uterine sound before either of the treatment. The LNG-IUS was inserted as per the manufacturer's instructions. The objective of the study was the efficacy of LNG-IUS for the management of heavy menstrual bleeding. The primary outcomes assessed were menstruation, by pictorial bleeding assessment chart (PBAC), quality of life, as measured by the Short Form-36 (SF-36), and patient satisfaction, by questionnaire at pretreatment, 3, 6, and 12 months. Women had direct access to the research doctor throughout the study, and if necessary, alternative management options were discussed, selected, and arranged. A treatment failure was deemed to have

occurred whenever a major change in treatment was completed or LNG-IUS confirmed expulsion, completed removal, or the initiation of alternative therapy. All the available data was recorded on an MS Excel spreadsheet and analyzed by SPSS version 19 on Windows format for descriptive statistics.

Results

In this study, n=54 patients were included with an age range from 30 to 49 years. The mean age was 43.5 years \pm 2.5 years. N=9(16.7%) of patients were aged below 35 years. Most of the cases were from age group 36 – 44 with n=41(75.9%) and n=4(7.4%) cases were from age group 45 – 49 years. BMI estimations of the cases revealed n=10(18.5%) cases were having BMI < 25 and n=39(72.2%) were having BMI range from 26 – 29. N=5(9.3%) were in the obese category with BMI >30. Most of the cases at pre-treatment in the study had average bleeding days in the range of 8 – 10 days n=28(51.9%) the days-wise distribution of the cases is depicted in table 1.

Table 1: Number of Average days of Bleeding (Pre-Treatment)

| <i>Days of bleeding</i> | <i>Frequency</i> | <i>Percentage</i> |
|-------------------------|------------------|-------------------|
| <7 days | 13 | 24.1 |
| 8-10 days | 28 | 51.9 |
| >11 days | 13 | 24.1 |
| Total | 54 | 100.0 |

There were n=16 cases of amenorrhea in this study after treatment. Out of which n=6 cases were with amenorrhea at 6 months and n=10 cases were with amenorrhea at the end of 12 months. As far as treatment failure is concerned the total number of cases of failure were n=6. There was n=3 cases of failure at the end of 3 months and n=3 at the end of 6 months. The mean hemoglobin levels at pretreatment were 8.72 \pm 0.57 gm/dl and mean levels 12 months post-treatment were 11.31 \pm 1.23 gm/dl the p values were found to be <0.01 which are significant.

In the study, the number of days of heavy bleeding was recorded pre-treatment and 3-months post-treatment, and 12 months post-treatment. At the end of 3 months, there were n=3 treatment failures hence n=51 cases were left and at the end of 12 months n=6 cases of treatment failures and n=16 cases of amenorrhea were present hence n=32 were left for assessment of this parameter. PBAC (Pictorial Blood Loss Assessment Chart) was assessed at pre-treatment scores compared with post-treatment scores. Similarly, the QOL with standard format of (short 36) questionnaire was assessed at pre-treatment and post-treatment given in table 2. All the p values were found to be < 0.05 which were considered significant.

In this study, an assessment of endometrial thickness revealed n=49(90.7%) were having an endometrial thickness of <10mm. N=5(9.3%) were having an endometrial thickness between 11 – 15 mm at pre-treatment stages. After the treatment at the end of 3 months out of n=5 cases, n=3 cases had average thickness < 10mm and at the end of 12 months n=2 cases also showed endometrial thickness < 10mm.

Table 2: Menstrual symptoms, PBAC score, QOL (SF36) at pretreatment, post-treatment 3-months and 12-months

| Parameter | Assessment values at | Number | Mean | SD | T | P-value |
|----------------------------------|--------------------------|--------|-------|-------|-------|---------|
| Number of days of heavy bleeding | Pre-treatment | 54 | 4.61 | 1.35 | 18.12 | 0.012* |
| | 3 months post-treatment | 51 | 2.51 | 0.69 | | |
| | 12 months post-treatment | 32 | 1.17 | 0.38 | | |
| Number of days Confined to home | Pre-treatment | 54 | 2.18 | 1.3 | 12.71 | 0.045* |
| | 3 months post-treatment | 51 | 0.5 | 0.12 | | |
| | 12 months post-treatment | 32 | 0.01 | 0.001 | | |
| PBAC score | Pre-treatment | 54 | 429.2 | 74.4 | 23.09 | 0.001* |
| | 3 months post-treatment | 51 | 142.0 | 43.7 | | |
| | 12 months post-treatment | 32 | 40.59 | 8.3 | | |
| QOL Score | Pre-treatment | 54 | 64.51 | 11.9 | -6.10 | 0.025* |
| | 3 months post-treatment | 51 | 71.67 | 13.1 | | |
| | 12 months post-treatment | 48 | 83.01 | 10.7 | | |

* significant

Discussion

We in this study included n=54 cases who fulfilled the inclusion and exclusion criteria they were followed up till one year. Objectively measured menstrual blood loss assessed by PBAC score was significantly reduced after the treatment compared with pre-treatment scores. At 3 and 12 months. PBAC scores were significantly lower in women treated with the LNG-IUS (Table 2). Subjectively measured menstrual symptoms included the number of days of heavy bleeding and the number of days the women were unable to leave home or the number of nights disturbed by heavy bleeding (Table 2). By 3 months post-treatment, there was a significant reduction in the number of days of heavy bleeding and the proportion of women unable to leave home or experiencing the number of nights disturbed (p-value <0.05) compared with pretreatment. Treatment failures were assessed at 3, 6, and 12 months. N=3 treatment failures included the occurring at 3 months, one LNG-IUS expelled and two removed because of pain. By 6 months, n=3 more treatment failures, one woman with menorrhagia, one LNG-IUS removed because of troublesome, unscheduled bleeding, and one expelled therefore, at the end of 12 months there were n=6 treatment failure cases. Of the 6 treatment failures, four women underwent a hysterectomy, one was placed on continuous high dose progesterone pills (Tab. Medroxy progesterone acetate 10mg BD) and one was prescribed the oral Tranexamic acid. Two patients lost to follow-up after 3 months, one lost follow-up after 6 months. The meta-analysis by Jin Qiu et al., ^[16] concluded that the levonorgestrel-releasing intrauterine system results in a significant reduction in baseline menstrual blood loss in heavy menstrual bleeding compared to medical treatment. In a randomized control trial by J Gupta et al., ^[13] comparing medical treatment versus levonorgestrel-IUS, they concluded that the LNG-IUS was more effective in reducing the effect of heavy bleeding on quality of life as compared to medical therapy. Shaaban MM et al., ^[17] in their study found LNG-IUS is a more effective therapy for idiopathic menorrhagia compared to COC. Endrikat J et al., ^[18] in Canada has reported that both LNG-IUS and combined OCP can effectively decrease menstrual blood loss in women with idiopathic menorrhagia. However, the overall clinical benefit was higher in LNG-IUS treated cases. Garg S et al., ^[19] have shown more than 90% of cases benefit from LNG-IUS in the assessment of blood loss and 76.6% had a significant decrease in pain analyzed on the visual analog score. They concluded that LNG-IUS is a preferred non-surgical approach to AUB due to its cost-effectiveness and psychological and symptomatic relief achieve as compared to hysterectomy. GJ Eralil., ^[20] in his study for evaluation of the effectiveness of LNG-IUS

for treatment of HMB in Indian women showed higher satisfaction rates over the period of 2 years with LNG-IUS. Singh K, et al., ^[21] in a 2-year prospective study on n=42 cases found LNG-IUS was an acceptable and highly efficient method of reducing menstrual blood loss in women with HMB. They advocated LNG-IUS to be used in entire reproductive age groups and it can help in a smooth transition to menopause. All the studies in this field have found the effectiveness of LNG-IUS in reducing menstrual blood loss and improving the quality of life.

Conclusion

The present study shows that the use of LNG-IUS for control of abnormal uterine bleeding results in significantly lowered blood loss over a period of 12 months follow-up. The treatment also results in higher levels of patient satisfaction, significant improvement in anemia, and improvement in overall quality of life scores. The failure rates were low at 11% for which alternative treatments were given. It appears to be a better alternative to hysterectomy for socio-psychological reasons.

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