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RESEARCH ARTICLE

Efficiency of levonorgestrel intrauterine device in the management of abnormal uterine bleeding

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ABSTRACT

Background: Abnormal uterine bleeding (AUB) is one of the common gynecological problems in women and this interferes with women's emotional, physical, and quality of life. Nowadays, the levonorgestrel releasing intrauterine system (LNG-IUS) a hormone releasing intrauterine device (IUD) is used to treat AUB. **Aim and objectives:** To determine the efficacy of LNG-IUS/Mirena in women with AUB in our study population. **Materials and methods:** This study was conducted at our tertiary care hospital. We recruited 50 patients between the age group 30–50 years who visited the gynaecology and obstetrics outpatient department due to abnormal uterine bleeding. Levonorgestrel-IUD was inserted post-menstrual in the operation room under IV sedation. These women were called for a follow-up at 1 month, 3 months, 6 months, and 1 year, and asked regarding relief from abnormal menstrual bleeding. **Results:** In our study, the mean age of cases was found to be 41.36 ± 4.38 years. During a visit to our hospital, 82.2% of cases had HMB complications along with dysmenorrhea, PMB, and IMB. After the insertion of the IUD, the bleeding complication reduced after 1, 3, and 6 months. After the one year majority of cases were free from bleeding complications and few only had acute bleeding complications. The rate of hysterectomy was observed in 6.7% of the cases. **Conclusion**: LNG-IUS is the first choice of treatment due to its highly effective, safe, and low cost. It is the best alternative therapy to reduce blood loss and improve the quality of women's life with AUB compared to a hysterectomy.

Keywords: Abnormal menstrual bleeding, levonorgestrel-releasing intrauterine system, quality of life.

Abnormal uterine bleeding (AUB) is a gynecological condition in which a woman presented with prolonged or excessive blood loss during her menstrual period. It will affect the quality of women's life physically, emotionally, socially, and mentally[1].

The actual cause of abnormal menstrual bleeding is unknown, but conditions such as hormone imbalance, dysfunction of the ovaries, uterine fibroids, polyps, adenomyosis, pregnancy complications, cancer, inherited bleeding disorders, coagulopathy, iatrogenic, and medications may cause menorrhagia [2]. Nearly 10%-30% of women in the reproductive age group and 50% of peri-menopausal women were suffering from abnormal uterine bleeding. The prevalence of AMB varies from one region to the other, in India according to National Health Portal (NPH) the prevalence of AUB was around 17.9% [3]. If it is not treated at the earliest, complication such as menstrual cramps (dysmenorrhea), anemia, infertility, endometrial cancer hypotension, shock, and even death occur due to heavy blood loss [4].

In the early 2000s, there was a global push to move away from traditional terminology, toward a more standardized nomenclature. The differential diagnoses for AUB are comprehensively encapsulated in the acronym PALM-

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COEIN. This system classifies the causes of AUB as structural/PALM (Polyp, Adenomyosis, Leiomyoma fibroid, Malignancy or hyperplasia) and non-structural/ functional/ COEIN (Coagulopathy, ovulatory dysfunction, endometrial, iatrogenic, and not-yet-classified) [5].

After proper diagnosis, the AUB condition will be treated on multiple factors such as etiology, fertility desire, patient clinical stability, and co-morbidities. To manage AUB, hormone treatment with nonsteroidal anti-inflammatory drugs was the first line treatment and followed by intrauterine device (IUD) insertion, surgical resection, and hysterectomy based on the complication of AUB in individuals [4].

AUB case with medical oral treatment shows poor compliance or missed doses, which will impact the efficiency of medical treatment. Therefore nowadays, intrauterine devices (IUD) have been used to treat AMB, which will decrease the need for operative gynecological surgery. The levonorgestrel -releasing intrauterine device (LNG-IUS) is one such IUD that is a nonsurgical, long-performing, and alternative to the surgical and traditional medical treatments for AUB [6].

Levonorgestrel-releasing intrauterine device (LNG-IUD) contains levonorgestrel female hormone. It is placed in the womb where it slowly releases the hormone at a rate of 20 mcg/24 h and declines to a rate of 14 µg after 5 years. The glands of the endometrium become atrophic and the epithelium becomes inactive due to the suppression of endometrium growth by levonorgestrel [7].

Studies have reported that LNG-IUD has shown benefits and improvement of symptoms of abnormal menstrual bleeding and improved the quality of a woman's life [8-9]. So in this study, we are evaluating the efficiency of levonorgestrel intrauterine devices in the management of abnormal uterine bleeding in our study population.

Materials and methods

It is a prospective analytical study conducted from June 2021 to July 2022 in the tertiary health care center. After obtaining ethical clearance from the institution, a total of 45 women between the age of 30 to 50 years were recruited for study with abnormal uterine bleeding and cases with uterine size >12 weeks, endometrial or cervical carcinoma, acute Pelvic inflammatory disease, liver disease, atypical endometrial hyperplasia and not willing to participate were excluded from the study.

A detailed history and examination (general, systemic, pelvic) were done. Pathologies like fibroids, adenomyosis, endometriosis, endometrial polyps, ovarian cysts, or any other adnexal pathology were diagnosed.

Data such as case history with haemogram, and transvaginal with trans-abdominal sonographic reports were collected. Levonorgestrel-releasing intrauterine device was inserted post-menstrual in the operation room under intravenous sedation. These women were called for follow-up after one month; 3 months, 6 months, and 1 year. For every follow-up visit ultrasound was performed to check the LNG- IUD location and asked regarding relief from abnormal menstrual bleeding, symptoms along with the improvement in quality of life were noted. All data were recorded in an excel sheet, and descriptive and inferential statistics were done using SPSS software.

Results

In our study, the age of women varies from 33 to 49 years, and the percentage of 40-50 years women is more than 30-40 years. In terms of parity, 91% of cases are multiparous and 9% nulliparous (table 1). In multiparous cases, the majority of parity was found to be P2L2 (35.6) followed by P3L3 (17.8%), P1L1 (17.8%), P2L1 (6.7%), P2L3 (4.4%), P3L2 (94.4%), P2L0 (2.2%) and P4L2 (2.2%) respectively.

Table 1: Demographic and clinical parameters of study subjects

Categories	N	%
Age		
30-40 Years	21	46.7
40-50 years	24	53.3
Parity		
Multi	41	91.1
Nulli	4	8.9
Heavy menstural bleeding (HMB)	37	82.2
Prolonged menstrual bleeding (PMB)	8	17.8
Intermenstrual bleeding (IMB)	9	20
Dysmenorrhoea	12	26.7
Case type		
Adenomyosis	11	24.4
Leiomyoma	6	13.3
Ovulatory dysfunction	4	9
Simple endometrial hyperplasia (without atypia)	24	53.3
Comorbidities		
Hypertension	4	8.9
Hypothyroidism	12	26.7
Type 2 diabetic mellitus(T2DM)	2	4.4
Obesity	9	20
Hypertension + T2DM	1	2.2
Obesity + Hypothyroidism	1	2.2

Endometrial hyperplasia (53.3%) is major type of case type and followed by adenomyosis (24.4%), leiomyoma (13.3%) and ovulatory dysfunction (8.95) in our study population. During visits to our hospital 82.2% of cases had heavy menstrual bleeding (HMB) complications along with dysmenorrhea (26.7%), prolonged menstrual bleeding (17.8%) and inter-menstrual bleeding (20%)

Table 2: Association between case type and co-morbidities

Case type	Adenomyosis N (%)	Leiomyoma N (%)	Ovulatory dysfunction N (%)	Simple Endometrial hyperplasia N (%)	Chi-square and (p-value at 5%)
Hypertension	0	1(2.2)	0	3(6.7)	29.142 (0.047*)
Hypothyroidism	6(13.3)	0	1(2.2)	5 (11.1)	
Type 2 diabetic mellitus(T2DM)	1(2.2)	1(2.2)	0	0	
Obesity	2(4.4)	2(4.4)	3(6.7)	2(4.4)	
Hypertension + T2DM	1(2.2)	0	0	0	
Obesity + Hypothyroidism	0	0	0	1(2.2)	

In our study, 64.4% of cases had co-morbidities such as hypertension, hypothyroidism, type 2 diabetic mellitus, and obesity (table 1). Majority of case had hypothyroidism (26.7%) and it was associated with adenomyosis and endometrial hyperplasia case types. In all case type obesity is one the risk associated with abnormal menstrual bleeding. Case type and co-morbidities association were statistically significant at 5% (table 2).

Table:3 Distribution of bleeding complications after use of LNG-IUD in different follow-up

Parameters	1 Month (%)	3 Months (%)	6 Months (%)	12 Months (%)
Irregular bleeding	57.8	20	0	0
Irregular bleeding + Inter-menstrual bleeding	6.7	0	0	0
Irregular bleeding + Low back ache	6.7	6.7	0	0
Irregular spotting	20	44.4	46.7	22.2
Irregular spotting + Inter-menstrual bleeding	2.2	0	2.2	0
Low back ache + Dyspareunia + Irregular bleeding	2.2	0	0	0
Low back ache + Irregular bleeding	2.2	0	0	0
Low back ache + Irregular spotting	2.2	8.9	0	0
Inter-menstrual bleeding	0	2.2	0	0
Irregular bleeding + Dyspareunia	0	4.4	0	0
Irregular spotting + Dyspareunia	0	4.4	0	0
Low back ache	0	8.9	15.6	0

Table 4: Outcome of LNG-IUD insertion

Categories	N	%
Amount of bleeding type		
Mild	4	8.9
Moderate	3	6.7
Spotting	3	6.7
Satisfaction	33	73.3
Hysterectomy		
Yes	3	6.7
No	42	93.3

After the insertion of LNG-IUD, the bleeding, spotting, and other complication was reduced after 1, 3, and 6 months. After one year 77.8% of cases were normal. The irregular bleeding percentage was reduced from 57.8% to 20 % in 3 months and within 6 months irregular bleeding complication was arrested completely. Only 22.2% had acute bleeding complications after 1 year of LNG-IUD insertion (table 3). Out of 22.2% mild, moderate, and spotting-type bleeding were noted. Hysterectomy was done for 3 patients; all 3 patients had irregular bleeding at 6 months of amenorrhea and underwent hysterectomy and the rest of the cases became normal after 1year of treatment. Around 73.3% of cases express their satisfaction with LNG-IUD treatment in our study population (table 4).

Discussion

The prevalence of abnormal uterine bleeding is increasing worldwide. It leads to severe anemia if not treated at the earliest. Generally, oral contraceptives and oral progesterones were being used to treat AUB, but now intrauterine devices were used to treat and manage the complications. In our study, 40-50 years of women are higher compared to the 30-40 years age group are most of them are multiparous and perimenopausal stage which is similar to other studies [10-11].

Compared to the other studies [3, 12, 13], the percentage of endometrial hyperplasia without atypia etiology is more than adenomyosis, leiomyomas, and ovulatory dysfunction etiology of AUB. Hence it should be treated conservatively to reduce the further complications which will affect the quality of women's life.

During visits to our hospital cases presented with a different bleeding pattern such as HMB (82.2%), dysmenorrhea (26.7%), prolonged menstrual bleeding (17.8%), and inter-menstrual bleeding (20%). Studies reported that HMB frequency was found to be more in AUB cases which were noticed in our study [3, 10].

Generally, co-morbidities such as hypertension, hypothyroidism, type 2 diabetic mellitus, and obesity are associated with AUB condition and most of the study reported that the percentage of hypertension is more associated with AUB[14-16] but in our study. The percentage of hypothyroidism (26.7%) is associated with AUB cases. These co-morbidities are positively associated with case type and show statistically significant at 5%. Along with AUB treatment, co-morbidities should be treated consequently for a better outcome.

After the insertion of LNG-IUD, the bleeding, spotting, and other complication significantly reduced after 1, 3, and 6

months. After one year 77.8% of cases and gradually irregular bleeding complication was arrested completely. The rate of hysterectomy was observed in 6.7% of cases. The majority of cases express their satisfaction with LNG-IUD treatment.

Numerous studies reported the efficacy and safety of LNG-IUD to treat AUB[1, 16-19]. Even though it had effective therapeutic benefits, its usage and acceptance rate are limited in society due to a lack of awareness.

Limitations: The sample size is small and hemogram values are not mentioned.

Conclusion

The LNG-IUS is a potential therapeutic tool for treating AUB in women compared with a hysterectomy and oral pills. It is cost-effective and less incidence of surgery, and morbidity associated with surgery. It improves the quality of life by reducing complications such as loss of fertility, negative psychological impact, post-surgical morbidity, mortality, and urinary incontinence.

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