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# Hysteroscopy and mirena insertion: An alternative to hysterectomy in abnormal uterine bleeding

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**Abstract**
**Background:** Heavy menstrual bleeding (HMB) is a common complaint in women. It is physically and psychologically disturbing. It causes deterioration of health and quality of life. Causes of HMB are adenomyosis, fibroids, polyps, endometrial hyperplasia etc. Most patients seek for hysterectomy. Hysteroscopy and Mirena insertion can be a definite alternative. Hence this study was conducted with the objectives to evaluate the effectiveness of hysteroscopy followed by Mirena (levonorgestrel intrauterine system) insertion as an alternative to hysterectomy in women presenting with abnormal uterine bleeding (AUB)/heavy menstrual bleeding (HMB).
**Materials and Methods:** A retrospective observational study was conducted on 115 patients from January 2021 to December 2021 at Apollo Hospitals, Hyderabad. Patients underwent Hysteroscopy and Mirena insertion. Few patients (N=66) received Inj. Medroxy Progesterone acetate (MPA) 150mg post-operatively and remaining (N=49) did not receive any medication. All patients were followed up at 1 month, 6 months and 12 months post-operatively. Results were taken based on relief in symptoms and any benefit in giving hormonal injection post operatively.
**Results:** At 1 month, 86.1% (99/115) patients were relieved. 90.9% (60/66) patients who received Inj.MPA post-operatively were relieved. *P* value was 0.083, though not significant but a trend can be established to use this medication post-operatively. The satisfaction rate was similar at 6months in both groups with *P* value of 0.921. At 1 year, 3 patients had no relief in symptoms and underwent Hysterectomy. Over all 97.4% (112/115) patients were symptomatically relieved.
**Conclusion:** Hysteroscopy showed the exact cause of bleeding and Mirena insertion reduced the problem. Most patients had irregular bleeding for 2 to 3 months for which they were reassured. Over all acceptance rate was high. Additional Inj.MPA post-operatively can be considered.

**Keywords:** Mirena, Hysteroscopy, Endometrial Hyperplasia, Polyp, Adenomyosis

## Introduction
Heavy menstrual bleeding (HMB) is one of the common gynaecological problems in women. Every1 in 20 women report with this symptom to Gynaecology OPDworld-wide. In India, the reported prevalence of HMB is 17.9% [1]. Heavy menstrual bleeding is scientifically defined as blood loss greater than 80 ml during each period [2, 3]. Excessive blood loss leads to iron-deficiency anaemia and poor quality of life if symptoms continue over a long period of time [4]. NICE guidelines in 2007 defined HMB as excessive menstrual blood loss that interferes with the woman's physical, emotional, social and material quality of life [5]. The various causes for HMB can be adenomyosis, fibroids, endometrial polyps, endometrial hyperplasia benign pathologies and endometrial or cervical cancers. It may or may not be associated with severe dysmenorrhoea or irregular cycles. Even though medical management is available and effective, the definitive treatment for HMB is hysterectomy [6]. Hysteroscopy can pick up the exact cause of HMB and can be used to treat the underlying pathology in the form of endometrial polypectomy, submucous myoma resection in the same sitting and endometrial biopsy instead of blind curettage [7, 8]. Mirena is a Levonorgestrel (LNG) containing Intrauterine device which is inserted in the uterine cavity [9-14]. It contains 52mg of LNG and releases progesterone in low dose of 20mcg/day which acts locally on the endometrial lining and thus reduces heavy menstrual bleeding and pain associated with it [15-17].
Hence this study was conducted with the objectives to evaluate the effectiveness of hysteroscopy followed by Mirena (levonorgestrel intrauterine system) insertion as an alternative to

hysterectomy in women presenting with abnormal uterine bleeding (AUB)/heavy menstrual bleeding (HMB), to assess the symptomatic relief and satisfaction rate at 1 month, 6 months, and 12 months post-treatment, to compare outcomes between patients who received post-operative medroxyprogesterone acetate (MPA) injection and those who did not, in terms of symptom relief and need for further intervention and to evaluate the proportion of patients requiring hysterectomy despite conservative management with hysteroscopy and Mirena insertion.

## Materials and Methods

A retrospective observational study was conducted over a 12-month period from January 2021 to December 2021 at Apollo Health City, Jubilee Hills, Hyderabad, India. The study was approved by the Institutional Ethics Committee prior to initiation. Women aged 30 to 50 years who presented with heavy menstrual bleeding (HMB), irregular menstrual bleeding, or bleeding associated with severe dysmenorrhoea were enrolled. A total of 115 women meeting the inclusion criteria were included in the analysis.

**Inclusion Criteria:** Consisted of women aged between 30 and 50 years with HMB, a uterine size of less than 12 weeks, or those with submucous myomas classified as FIGO types 0-2 with a diameter less than 3 cm. Additionally, women willing to bear the treatment cost and comply with follow-up schedules were included. Patients with comorbidities such as hypertension, diabetes, chronic kidney disease, or bleeding disorders like Glanzmann thrombasthenia—who were otherwise considered high-risk candidates for major surgery or anaesthesia—were also eligible.

**Exclusion Criteria:** Included women under 30 years of age, postmenopausal women, patients with a confirmed or suspected diagnosis of endometrial, cervical, or breast malignancy, those with a history of adverse reactions to Mirena (levonorgestrel-releasing intrauterine system), and patients with absolute contraindications to Mirena insertion, such as confirmed pregnancy.

All participants underwent thorough pre-operative evaluation including complete blood counts, thyroid function tests, pelvic ultrasonography, and a pre-anaesthetic assessment. Transvaginal ultrasonography (TVUS) was employed to assess pelvic pathology in all patients. Each patient subsequently underwent hysteroscopy and Mirena insertion under anaesthesia.

Hysteroscopy served both diagnostic and therapeutic purposes by directly visualising and managing intrauterine pathology. Intraoperative findings such as endometrial polyps and submucous fibroids were managed with polypectomy or myomectomy as indicated, and targeted endometrial biopsies were obtained. These findings were later correlated with histopathological reports to confirm diagnoses.

Following hysteroscopic evaluation and intervention, Mirena was inserted under sterile conditions. Out of the total cohort, 66 patients were randomly selected to receive an additional intramuscular dose of Medroxyprogesterone Acetate (MPA) 150 mg post-operatively. The remaining 49 patients received no adjunctive hormonal therapy. This grouping was used to evaluate the potential added benefit of postoperative MPA on symptomatic relief.

Data entry was performed using Microsoft Excel, and statistical analysis was conducted using SPSS version 22 and Epi Info version 7.2.1 (CDC, Atlanta). Categorical variables were summarized using frequencies and proportions, and comparisons between groups were performed using the Chi-square test to assess statistical significance. McNamar's test was used for the paired non parametric data. Continuous variables were expressed as means with standard deviations. Normality of distribution for continuous variables was evaluated using both the Kolmogorov-Smirnov test and the Shapiro-Wilk test. A p-value $< 0.05$ was considered statistically significant, with all statistical tests applied according to standard assumptions.

## Results

In the present study among 115 females, majority of subjects were in the age group 41- 45 Years (35.7%). The most common cause for bleeding (33%) in the patients was endometrial polyps, which could have been missed if a blind dilatation and curettage was done. Followed by adenomyosis in 24.3% and endometrial hyperplasia in 20.9% of the population. The other causes of HMB in this study consisted of fibroids and endometriosis with adenomyosis. Few patients who had chronic pelvic pain or ovarian cystson TVUS underwent laparoscopic surgery also in the form cystectomy, adhesiolysis, fulguration of endometriotic lesions etc. Among the total number of patients treated, one woman had bleeding disorder (Glanzmann Thrombasthenia) and another had chronic kidney disease (CKD) who were unfit to withstand prolonged surgery and were benefitted with Mirena insertion. 66/115 (57.4%) patients were additionally given one dose of Inj. Medroxy Progesterone acetate(MPA) 150mg post-operatively.

**Table 1:** Profile of subjects in the study

| | | Count | % |
|---|---|---|---|
| Age | 30 - 35 Years | 10 | 8.7% |
| | 36 - 40 Years | 24 | 20.9% |
| | 41- 45 Years | 41 | 35.7% |
| | 46 - 50 Years | 27 | 23.5% |
| | >50 Years | 13 | 11.3% |
| Diagnosis | Endometrial Polyps | 38 | 33.0% |
| | Adenomyosis | 28 | 24.3% |
| | Fibroid | 14 | 12.2% |
| | Endometrial Hyperplasia | 24 | 20.9% |
| | Adenomyosis And Endometriosis | 5 | 4.3% |
| | Endometriosis | 6 | 5.2% |
| Mode Of Delivery | LSCS | 72 | 62.6% |
| | NVD | 43 | 37.4% |
| Inj Depo Provera Given | Yes | 66 | 57.4% |
| | No | 49 | 42.6% |

**Table 2:** Relief in Symptoms at different periods of follow-up

| | Relief In Symptoms | | | | P value |
|---|---|---|---|---|---|
| | Unsatisfied | | Satisfied | | |
| | Count | % | Count | % | |
| 1 Month | 16 | 13.9% | 99 | 86.1% | |
| 6 Months | 16 | 13.9% | 99 | 86.1% | 1.000 |
| 1 Year | 3 | 2.6% | 112 | 97.4% | <0.001* |
| Overall | 3 | 2.6% | 112 | 97.4% | <0.001* |

## McNemar Test

At the end of 1 month, 86.1% (99/115) patients were satisfied with the procedure and found relief in heavy bleeding and dysmenorrhoea. Overall, 97.4% had satisfied outcome in relief of symptoms [Table 2].

90.9% (60/66) patients who received additional Inj. MPA 150mg were relieved while 79.9% (10/49) patients were relieved who did not receive additional injection*P* value was 0.083 which is

not significant but a trend can be established in using this additional medication for relief in symptoms for the first month post procedure. The relief in symptoms was almost similar at 6-month follow-up in both the groups whether they received additional medication post procedure or not with *P* value of 0.921 which signifies that there is no effect of Inj. Medroxy Progesterone Acetate at 6 months post procedure as Mirena starts releasing progesterone and shows its effect on the endometrial lining [Table 3]. In one patient with adenomyosis, the Mirena was expelled and she underwent re-insertion in 6 months and was asymptomatic thereafter. At 1 year follow-up, only 3 patients out of 115 had no relief in symptoms and underwent Hysterectomy. Among the 3 patients who were not relieved in their symptoms, one had adenomyosis, other had submucous fibroid and one had adenomyosis with endometriosis and they underwent hysterectomy. Over all 97.4% (112/115) of patients were satisfied with the procedure with a *P* value of 0.0001 which is highly significant and signifies that Mirena is effective in reducing the flow of blood and dysmenorrhoea. Thus 97.4% hysterectomies were avoided by this procedure. Most patients had irregular spotting and discharge in the first two to three months for which they were adequately counselled and re-assured in the follow-up visits.

**Table 3:** Relief in Symptoms at the end of 1 month and 6th month with and without additional medication

| | Inj. Depo Provera Given | Relief Of Symptoms | | P Value |
|---|---|---|---|---|
| | | No Of Patients Relieved | Patients With No Relief | |
| 1st Month | Yes | 60 (90.9%) | 06 (9.1%) | 0.083 |
| | No | 39 (79.9%) | 10 (20.4%) | |
| | Total(115) | 99 (86.1%) | 16 (13.9%) | |
| 6 Months | Yes | 63 (60%) | 3 (30%) | 0.921 |
| | No | 42 (40%) | 7 (70%) | |
| | Total | 105 | 10 | |

## Discussion

Heavy Menstrual bleeding is a very distressing problem in women and a common complaint for women seeking medical help [2, 3]. It can cause anaemia, weakness and affects the quality of life [4]. Treatment regimens must address the specific facet of the menstrual cycle (i.e., cycle length and quantity of bleeding) which is abnormal. It can be managed by medical management or surgical management. The various modalities of medical management include anti-fibrionolytic agents, non-steroidal anti-inflammatory drugs for pain, oral contraceptive pills, GnRH analogues or progesterone injections [9, 12]. Many women are not content with medical treatment as they are unwilling for prolonged use of medicines/ hormones and seek permanent solution for bleeding and end up undergoing hysterectomy [6, 7, 10]. Nearly 30% of all hysterectomies are performed to alleviate heavy menstrual bleeding.

Hysteroscopy is a day care procedure done under sedation or General anaesthesia using Normal saline as distension media to visualise the uterine cavity. Any polyps or submucous fibroids can be excised at the same time and directed biopsies can be taken. Mirena (LNG-IUS) is a hormonal intrauterine device. The device contains 52mg of levonorgestrel and releases at a rate of 20µg/day for 5 years. It declines to a rate of 14µg/day after 5 years and is effective even at this low release rate [5, 9].Within a few weeks of insertion, 150-200 pg/ml of plasma concentration is achieved. This slow release of LNG in the uterus suppresses the endometrial regeneration and causes endometrial glandular atrophy. Levonorgestrel is also an effective blocker of oestrogen activity on the endometrial lining and also thickens the cervical mucus [18, 19, 20, 21]. These properties of LNG on the uterine lining and cervix makesit an effective contraceptive agent and an effective modality for long-term treatment of HMB and dysmenorrhoea.

HMB can be due to various benign and malignant causes. The causes of HMB due to benign uterine conditions include endometrial polyps, adenomyosis, fibroids especially submucous and intramural (FIGO 0-2), endometrial hyperplasia, adenomyosis and endometriosis. There are various studies which have shown that Mirena is a better treatment option in comparison to anti-fibrinolytics, oral progesterone and oral contraceptive pills in controlling bleeding and patient compliance [9, 12, 13, 14]. NICE guidelines recommend use of Mirena as first line management in cases of HMB [5].

Various studies have proven the efficacy of Mirena in controlling HMB [8-10, 15-21]. Hysteroscopy to find the exact cause of bleeding and Mirena can be taken as an alternative to hysterectomy for HMB in developing countries like India [7, 13, 14]. Mirena can reduce blood loss by 92.9% (81.1-97.6%) and help to improve anemia [9]. It is also a good alternative for women with HMB and desire contraception [18].It is also beneficial in treating HMB in obese patients [22, 23]. LNG-IUS is safer in those with previous caesarean section or myomectomy.

## Conclusion

Heavy menstrual bleeding and dysmenorrhoea are common gynaecological problems and are often not relieved by medical treatment. Patients usually seek definitive treatment like hysterectomy. The LNG-IUS reduces bleeding in women with HMB due to benign causes and decreases dysmenorrhoea in women with adenomyosis and endometriosis. Additionally, hysteroscopy helps in identifying benign endometrial polyps and submucous fibroids and its treatment in the same sitting and is better than blind dilatation and curettage. Patient acceptance and satisfaction rate is high. Common problem with Mirena is irregular bleeding and spotting and discharge per vagina, especially for the first two to three months after insertion. Additional post-operative administration of Inj. Medroxy Progesterone Acetate 150mg can be considered to alleviate symptoms of bleeding and dysmenorrhoea and improve patient compliance till Mirena starts working. If patients are counselled before insertion and re-assured during the follow-up visits, satisfaction rates are high. It can also be offered to patients who are unfit to withstand long surgery or anaesthesia due to other medical conditions like bleeding disorders.

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**Ethical Approval:** The study was approved by the Institutional Ethics Committee.

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