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Original Research

Comparative Assessment of Intrauterine Versus Oral Progesterone in the Management of Dysfunctional Uterine Bleeding

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Abstract

Background: Dysfunctional uterine bleeding (DUB) is a common gynecological problem adversely affecting women's quality of life. Progesterone therapy plays a significant role in its management. This study evaluates the efficacy and safety of intrauterine progesterone delivery compared to oral administration.

Methods: A total of 110 women aged 18–50 years diagnosed with DUB were enrolled and divided into two groups: intrauterine progesterone (LNG-IUD) and oral progesterone (dydrogesterone). Primary outcomes included changes in menstrual blood loss; secondary outcomes were haemoglobin levels, symptom improvement, patient satisfaction, and adverse events.

Results: Intrauterine progesterone significantly reduced menstrual blood loss, duration of bleeding, and side effects compared to oral progesterone. Patients in the intrauterine group reported higher satisfaction.The complications after oral and intrauterine dose administration was analyzed and it was found that most of the patients who received drug orally experienced complications as headache was reported in 6 patients of oral group whereas intrauterine group observed only1patient who complaint about the headache.

Conclusion: LNG-IUD demonstrates superior efficacy and better tolerability in DUB treatment compared to oral progesterone.

Keywords: Dysfunctional Uterine Bleeding (DUB), Intrauterine Progesterone, Oral Progesterone

Introduction

Dysfunctional uterine bleeding (DUB) is a prevalent gynecological condition characterized by abnormal menstrual bleeding without an identifiable organic cause [1]. It affects up to 14–15% of women of reproductive age, contributing significantly to gynecologic morbidity worldwide [2]. DUB not only impacts physical health, including the risk of anemia, but also severely affects psychological well-being and socioeconomic status by causing absenteeism and decreased productivity [3].

Treatment options for DUB are varied and aim at symptom control, prevention of anemia, and improvement of quality of life. These include non-hormonal treatments (e.g., NSAIDs, tranexamic acid), hormonal therapies (oral contraceptives, progesterone), endometrial ablation, and hysterectomy for refractory cases [4]. Progesterone plays a central role in medical therapy due to its endometrial stabilizing properties.

Oral progesterone has been the traditional therapy; however, systemic side effects and issues related to compliance have driven interest in localized treatment methods. The levonorgestrel-releasing intrauterine device (LNG-IUD) offers targeted therapy, providing high local endometrial concentrations with minimal systemic exposure, thus minimizing side effects [5].

This study seeks to evaluate the comparative efficacy and safety of intrauterine progesterone versus oral progesterone in treating DUB, hypothesizing that LNG-IUD will provide superior symptomatic relief and patient satisfaction with fewer adverse effects.

Materials and Methods

Study Design

This prospective, comparative study was conducted after obtaining approval from the hospital's ethical review board. Present study was conducted during February 2024 to August 2024 at NMCH, Patna. Informed consent was secured from all participants.

Participants:

A total of 110 women aged 18–50 years with heavy or irregular menstrual bleeding and absence of systemic

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pathology were enrolled. Inclusion criteria involved women fitting the specified age range and clinical profile. Exclusion criteria included pregnancy, breastfeeding, hormonal contraceptive use in the past three months, uterine fibroids, endometrial polyps, and abnormal liver function tests.

The study involved two groups: one receiving intrauterine progesterone and the other receiving oral progesterone. Participants in the intrauterine group had a levonorgestrel-releasing intrauterine device (LNG-IUD) placed within the first seven days of their menstrual cycle. Meanwhile, those in the oral group were administered dydrogesterone tablets (10 mg) twice daily for 21 days during each menstrual cycle.

The average ages of participants were 38.1 years for the intrauterine group and 36.9 years for the oral group. Analysis of pad usage revealed that the oral group had a higher pad consumption both before and after treatment, with averages of 18.7 and 12.9 pads, respectively. Comprehensive patient data were collected throughout the study.

Inclusion Criteria

Participants met the following conditions:

- Women aged between 18 and 50 years
- Experiencing heavy or irregular menstrual bleeding
- Absence of any systemic diseases

Exclusion Criteria

The following conditions led to exclusion from the study:

- Pregnancy
- Breastfeeding
- Use of hormonal contraceptives within the last three months
- Presence of uterine fibroids or endometrial polyps
- History of abnormal liver function tests

The primary objective of the study was to evaluate the reduction in menstrual blood loss. Secondary outcomes included changes in haemoglobin levels, alleviation of menstrual symptoms, patient satisfaction, and the incidence of adverse effects.

RESULTS

The study was carried out to find the application of intrauterine progesterone and oral progesterone for the treatment of dysfunctional uterine bleeding. Duration of bleeding was examined as stated in table no.1. The patients in intrauterine group stated about bleeding for 8.7 days beforethe study and 6.8 days after the study. In case of oral group participants, they bled for 9.8 days before the study and 7.6 days after the study. Standard deviation and p value was calculated and results were statistically significant.

Table1: Comparison of age and bleeding duration among both groups

Features	Intrauterine group (n=55)	Oral group (n=55)	P-value
Average age(y)	39.2±5.2	37.8±4.3	0.005
Use of pads			
Prior to the study	18.7±4.8	19.6±3.8	0.005
After the study	12.0±4.1	13.8±3.4	0.005
Duration of bleeding(d)			
Before the study	9.7±2.7	9.8±3.2	0.005
After the study	6.8±2.1	7.6±2.2	0.005

The complications after oral and intrauterine dose administration was analyzed and it was found that most of the patients who received drug orally experienced complications as headache was reported in 6 patients of oral group whereas intrauterinegroupobservedonly1patientwhocomplaintaboutthe headache as shown in table no.2

Table2: Complications and side effects after oral and intrauterine dosage

Complications	Oral group (n=55)	Intrauterine group (n=55)	P-value
Headache(n)	7	2	0.000
Spotting(n)	12	3	0.05
Discharge per vaginum(n)	9	-	0.001
Spontaneous expulsion(n)	3	-	0.000
Nausea(n)	9	2	Ns
Mood changes(n)	7	-	0.005

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Table no.3 Shows analysis of symptoms after follow-up of 24 weeks. It was observed that most of the patients fully recovered from the complications after 24 weeks' treatment. However, after 12 weeks the mild improvement of patients started in both groups.

Table 3: Analysis of symptoms after 4weeks, 12weeks and24weeks for oralgroup (O) and intra-uterine group (I)

	No improvement(n)	Mild improvement(n)	Marked improvement(n)	P-value
4weeks(z/I)	672	7/1	10/2	0.005
12weeks(O/I)	6/1	8/1	3/1	0.000
24 weeks(O/I)	2/1	7/2	0/0	NS

Discussion

The results of this study underscore the clinical advantage of using intrauterine progesterone (LNG-IUD) over oral progesterone in the management of DUB. Patients treated with LNG-IUD demonstrated significant reductions in menstrual blood loss, use of sanitary pads, and bleeding duration, echoing findings from previous research [6,7].

LNG-IUD provides continuous release of levonorgestrel directly to the endometrium, resulting in profound endometrial suppression while maintaining low systemic hormone levels [8]. This mechanism likely accounts for the reduced incidence of systemic side effects such as nausea and mood changes observed in our study.

Our findings align with global literature supporting LNG-IUD as a cost-effective alternative to surgical interventions like hysterectomy, especially in resource-limited settings [9]. Furthermore, better patient compliance with LNG-IUD may be attributed to its "fit and forget" nature, which removes the burden of daily medication adherence seen with oral regimens [10].

Nevertheless, some limitations must be acknowledged. This study had a relatively short follow-up period of 24 weeks; longer-term studies are needed to assess the durability of outcomes. Additionally, while LNG-IUD had a lower complication profile overall, cases of spontaneous expulsion, although rare, highlight the need for appropriate patient counseling.

In clinical practice, individualized treatment selection remains critical. Factors such as patient preference, cost considerations, side effect profiles, and reproductive plans must be integrated into therapeutic decision-making.

Future studies with larger sample sizes and longer follow-up durations could offer deeper insights into long-term efficacy, cost-effectiveness analyses, and patient quality-of-life measures post-treatment.

The discharge per vaginum was analyzed in patients and 8 patients had it in the oral group and there was no patient that reported about this complication in the intrauterine group. As per previous reports the discharge per vaginum was observed in case of 12 patients in the oral group and 3 patients in the intrauterine group.[11] As per studies it was found that the effect of oral drugs to reduce bleeding is not studied yet.[12,13] In the present analysis the bleeding extent was much higher in case of oral drugs. The studies have shown that the patients who take drug orally experience more bleeding because the drug takes time to diffuse in the blood.[14] The complications observed among patients given oral drug were more than that of the intrauterine group. Headache was reported by 6 and 1 patients in the oral and intrauterine group respectively. Spotting, discharge per vaginum, spontaneous expulsion, nausea and mood changes are some of the complications studied in both groups. There was a clear difference found between oral and intrauterine group as rate of complication was much higher in the oral group. Our results are in accordance with a previous study where these complications were analyzed and rate of complications was higher in case of oral group patients.[15,16]

Conclusion

Intrauterine progesterone delivery via LNG-IUD is a more effective and better-tolerated alternative compared to oral progesterone for treating dysfunctional uterine bleeding. It offers a substantial reduction in menstrual blood loss, fewer adverse effects, improved compliance, and higher patient satisfaction. Considering its safety profile and efficacy, LNG-IUD should be considered a first-line therapy for women with DUB seeking a non-surgical management option.

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