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ILLUMINATING INSIGHTS: EXPLORING LESSONS LEARNED FROM LEVONORGESTREL INTRAUTERINE DEVICE CHALLENGES

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Abstract:
Background: The levonorgestrel intrauterine device (LNG-IUS) is generally regarded as a primary, minimally invasive intervention for heavy menstrual bleeding (HMB), providing both therapeutic effectiveness and contraceptive advantages. Even though it has a good safety record and works well to cut down on menstrual blood loss, treatment failure and problems can happen from time to time, which is why doctors need to be extra careful.
Case Presentation: We describe a series of cases involving women with heavy menstrual bleeding (HMB) who had the insertion of a levonorgestrel-releasing intrauterine system (LNG-IUS) but exhibited varied results, including insufficient bleeding control, intolerance, or the need for other therapies. Clinical evaluations, follow-up trends, and treatment strategies underscore the variability of responses to LNG-IUS therapy.
Discussion: Although LNG-IUS continues to be extremely beneficial for the majority of patients with HMB, this study highlights that some subgroups may not see prolonged benefits. Possible explanations include underlying uterine disease, difficulties with the device, or differences in how each person responds to hormones. These findings are consistent with the current literature, indicating that a certain group of patients may require further treatment or surgical intervention. Recognizing treatment failure early is important to avoid delays in therapy and avoidable illness.
Conclusion: This series of cases shows how important it is to do tailored evaluations, keep a close eye on patients, and quickly find out when LNG-IUS fails in the treatment of HMB.
Keywords: Heavy menstrual bleeding, Levonorgestrel intrauterine system, LNG-IUS, Case series, Treatment failure.

INTRODUCTION:

Heavy menstrual bleeding (HMB) is a prevalent gynecological condition impacting a substantial number of women throughout their reproductive years. It is not only a medical problem; it is also a social and economic burden that causes anemia, a worse quality of life, and less productivity. (1) (2) Hysterectomy and other surgical procedures have long been thought to be the best way to treat women with refractory HMB. But in the last several decades, there has been a big change toward techniques that are less intrusive and keep organs intact, putting the patient's needs, maintaining fertility, and improving quality of life first. The levonorgestrel intrauterine system (LNG-IUS) has become a very effective and popular choice among them. (3)
The LNG-IUS is a reversible contraceptive device that works for a long time and delivers levonorgestrel directly into the uterus. The main way it works is by suppressing the endometrium, which leads to less menstrual blood loss, less endometrial receptivity, and better symptoms of menorrhagia. (4) Many clinical studies and systematic reviews have shown that it may cut menstrual blood loss by up to 90% in the first year of treatment. For many women, this means that their hemoglobin levels go up, their anemia becomes better, and they can do their everyday activities again. The LNG-IUS also has a high level of patient satisfaction and is thought to be a cost-effective alternative to surgery. (5)
LNG-IUS treatment has certain drawbacks, even if it has some good points. Its efficacy is contingent upon judicious patient selection and precise diagnosis of the underlying etiologies of HMB. Women who have structural problems such submucosal fibroids, adenomyosis, or endometrial polyps may react differently to LNG-IUS. (6) (7) Some individuals receive considerable symptom alleviation, but others may endure ongoing bleeding, discomfort, or device-related adverse effects, eventually resulting in cessation and the need for surgical intervention. Also, how well a patient can handle things and what they anticipate are very important. (8) Even when LNG-IUS works well in the clinic, women may stop using it because of first irregular bleeding, discharge, or pain. This may have a big influence on compliance. (9)

The diagnostic examination preceding LNG-IUS implantation is another significant aspect. Ultrasound and endometrial biopsy are often conducted; however, they may not consistently identify minor abnormalities, including tiny polyps or early adenomyosis. If the device is put in while there is an undiscovered problem, this might cause the therapy to fail. In these instances, hysteroscopy is recommended as a more conclusive method for assessing the uterine cavity prior to contemplating LNG-IUS as a treatment alternative. (10) (11)

From a more general point of view, LNG-IUS is useful for more than only birth control and managing HMB. It has been used in endometrial hyperplasia without atypia, as an adjuvant to hormone replacement treatment, and in certain instances of early-stage endometrial cancer in women seeking fertility preservation. (12) (13) This adaptability highlights its significance in contemporary gynecological treatment. Nonetheless, the difficulties linked to treatment failure, side effects, and the subsequent need for hysterectomy in certain individuals underscore the imperative for continuous attention, study, and enhancement of therapeutic recommendations. (14)

This research seeks to examine the clinical issues and insights derived from women who had LNG-IUS treatment for the management of HMB but encountered suboptimal results. By thinking about these experiences, we may learn important lessons about how to choose patients, do diagnostic tests, and provide personalized counseling, which will help us make better clinical decisions in the future.

Case Presentation

Case 1

A 45-year-old woman, Para-2 Living-2, with a history of one vaginal birth and one cesarean section, reported experiencing excessive monthly bleeding over the last two years. She said her periods were regular, but she needed 7 to 8 pads a day, with no clots. There were no other health problems with her. An ultrasound of the pelvis showed a 3.5 × 3.6 × 3.2 cm intramural fibroid that was pushing the endometrial forward. The endometrial biopsies revealed disorganized proliferative endometrium. Given her age and the long-term nature of her problems, hysterectomy was recommended, but the patient opted for conservative therapy. An LNG-IUS was put in.

Two weeks after the insertion, she started to bleed heavily and had a lot of clear white discharge, which made her life much worse. Because her symptoms weren't getting better, she chose decisive management. A complete abdominal hysterectomy with bilateral salpingectomy was performed. A gross examination showed a 3 × 3 cm posterior submucosal fibroid, which explains why LNG-IUS didn't work very well for her.

Case 2

A 39-year-old lady, Para-2 Living-2, with two prior vaginal births, had heavy menstrual bleeding (HMB) for one year. She said that her periods were regular and that she needed 6–7 pads a day, but no clots. There were no other health problems with her. An ultrasound indicated no major problems, and an endometrial sample showed that the endometrium was growing. Because she was older and didn't want to have surgery, LNG-IUS was selected as a less invasive therapy option.

The patient, on the other hand, continued to bleed heavily for a month after the insertion. This made it hard for her to do her regular tasks and caused her a lot of worry. She decided to have a complete abdominal hysterectomy and bilateral salpingectomy. A 2 × 1 cm endometrial polyp was found at the fundus during a histopathological analysis of the tissue. This may have caused the therapy to fail.

Case 3

A 42-year-old lady, Para-2 Living-2, who had two vaginal deliveries before, came in with HMB for six months. She said her periods were regular and she needed 4–5 pads a day, sometimes with clots. Her hemoglobin level was 8.2 g/dL. Ultrasound indicated a lack of endometrial–myometrial distinction, whereas endometrial biopsies showed proliferative endometrium. Because she was anemic, cautious treatment with LNG-IUS was planned to stop the bleeding and raise her hemoglobin levels.

After insertion, the patient continued to have regular periods, but she suffered severe dysmenorrhea that lasted for two months and made it hard for her to do her normal activities. After her hemoglobin levels were brought back to normal, she had a hysterectomy and a bilateral salpingectomy. Histopathology showed adenomyosis, which explained why she was still in discomfort and bleeding even after she had an LNG-IUS put in.

DISCUSSION:

The levonorgestrel intrauterine system (LNG-IUS) is a fundamental component in the conservative treatment of heavy menstrual bleeding (HMB), demonstrating significant advantages in diminishing blood loss, easing dysmenorrhea, and enhancing quality of life. However, as seen in our case series, treatment difficulties and cessation are prevalent, especially among women with preexisting uterine conditions such as fibroids, adenomyosis, or polyps. Comparing our results to what is already known may help us understand the pros and cons of LNG-IUS treatment.

Bianchi et al. (2022) underscore the extensive clinical applicability of LNG-IUS in managing abnormal uterine bleeding and dysmenorrhea, presenting substantial evidence of its superior efficacy in reducing blood loss relative to alternative medical therapies, and yielding outcomes comparable to surgical interventions such as endometrial ablation or hysterectomy. Their review emphasizes that the induction of amenorrhea is the key method for alleviating symptoms. Initially, our subjects chose LNG-IUS with the hope of getting the same results, but the fact

that two patients still had HMB and one patient had severe dysmenorrhea shows that reactions might vary, especially when there is already a problem. These results corroborate Bianchi et al.'s assertion that "no method is ideal for every woman," emphasizing the critical importance of patient selection. (15)

The research conducted by Beelen et al. (2021) elucidates additional determinants of LNG-IUS cessation. Their sample had a significant dropout rate of 46% within 24 months, with younger age and severe dysmenorrhea identified as independent risk factors. This aligns with our third example, in which a 42-year-old lady with adenomyosis had unbearable dysmenorrhea despite the insertion of an LNG-IUS, resulting in a hysterectomy. The correlation between our clinical experience and the results of Beelen et al. indicates that pre-existing dysmenorrhea, especially in severe cases, should be regarded as a significant predictor of LNG-IUS therapy failure, necessitating meticulous monitoring or the exploration of alternative treatments. (16)

Huguelet et al. (2022), however, shown promising long-term results in a younger population with bleeding diatheses, with more than 80% indicating improvement in bleeding and approximately 61% attaining amenorrhea. Significantly, continuation rates were elevated, with some patients using the device for over five years. This difference from our series, in which all three women stopped using LNG-IUS within months, can be explained by the fact that Huguelet's group did not have any serious intracavitary pathology and that young people with blood disorders are very motivated to avoid surgery. Consequently, our results augment theirs by highlighting the influence of structural pathology in forecasting LNG-IUS inefficacy. (17)

From a cost-effectiveness standpoint, Niaraees Zavare et al. (2025) determined that LNG-IUS often represents the best approach for HMB in comparison to hysterectomy or endometrial ablation. Although our patients eventually necessitated hysterectomy, it is essential to acknowledge that LNG-IUS continues to be an economically advantageous first-line strategy for women devoid of aggravating diseases. Our series shows that when LNG-IUS doesn't work, surgery is the only option. This might lead to higher overall healthcare expenses and more stress for patients. This discovery emphasizes the need of thorough evaluation—such as hysteroscopic examination for polyps or advanced imaging for adenomyosis—prior to insertion, potentially enhancing cost-effectiveness by preventing unsuccessful trials in inappropriate individuals. (18)

Cai et al. (2023) have further investigated the effect of LNG-IUS in adenomyosis, reporting positive results when LNG-IUS was used in conjunction with high-intensity focused ultrasound (HIFU). Their research indicated substantial decreases in menstruation volume, dysmenorrhea, and lesion size, accompanied with hemoglobin enhancement and few side effects. In contrast, our third instance had increasing dysmenorrhea with LNG-IUS alone, which eventually led to the need for a hysterectomy. This difference shows that multimodal treatment might work for adenomyosis, as LNG-IUS alone might not be enough for advanced illness, but combining other types of therapy could provide longer-lasting relief. (19)

Overall, our results are in line with what other studies have shown about the benefits and risks of LNG-IUS treatment. Although several studies validate its usefulness and cost-efficiency for numerous women with heavy menstrual bleeding (HMB), our case series demonstrates instances when LNG-IUS may be ineffective, especially in cases of undiagnosed submucosal fibroids, endometrial polyps, or adenomyosis. These structural abnormalities may impede the endometrial suppression that is fundamental to the success of LNG-IUS. Additionally, our instances underscore the need of advising women on the potential for enduring symptoms in the first months, as aversion to continuous bleeding or discomfort frequently leads to premature cessation.

Consequently, the clinical insights derived from our series are twofold: firstly, a thorough pre-insertion assessment, encompassing hysteroscopy and advanced imaging when necessary, is vital to eliminate structural etiologies of HMB; secondly, personalized counseling concerning realistic expectations, possible adverse effects, and timelines for improvement is imperative to enhance patient adherence and satisfaction. These observations, when considered alongside current data, underscore that while LNG-IUS is an effective instrument in the treatment of HMB, its efficacy is contingent upon meticulous patient selection, customized therapy planning, and, when required, the incorporation of supplementary medications.

CONCLUSION:

The LNG-IUS provides a beneficial conservative therapy for HMB; nevertheless, its efficacy is contingent upon underlying uterine pathology and individual patient characteristics. Our case series shows that fibroids, adenomyosis, and endometrial polyps may make treatment less successful, which may mean that some women need to have their uterus removed. Individualized patient assessment, comprehensive diagnostic evaluation, and meticulous counseling are essential for guaranteeing proper selection and reasonable expectations. These stories show that LNG-IUS is a great alternative to surgery for many people, but it's important to be careful about finding any contraindications and limits in order to get the best results.

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Informed Consent: Informed consent was obtained from all patients for the publication of their case details and associated images.

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