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LNG system - Levonorgestrel 52 in dysfunctional uterine bleeding

Kalpana Sukalkar Devane[1,*]

[1] Varad Hospital, Plot no. 3E, Sector 10, Khanda Colony, New Panvel, Navi Mumbai, Maharashtra 410206, India

Abstract

My objective behind this study is to "save uterus" which is falling victim to the surgical treatment for dysfunctional uterine bleeding. In dysfunctional uterine bleeding levonorgestrel is a key drug which is given orally or intra muscularly which has many side effects and because of that patients fade up and demand hysterectomy for this benign condition. This is LNG system or intrauterine device delivering levonorgestrel at uterine endometrium. This study was carried out in the hospital "Varad Hospital". Twenty five patients were included in this study after taking prior consent and after doing diagnostic curettage. Results were very promising. 88% of the patients got relief of the symptoms and happily continued it and even referred more clients for treatment. Conclusion: The Indian version of the "intrauterine LNG system" is cheaper, effective and easy to insert.

Keywords: LNG IUS 52; levonorgestrel; levonorgestrel; DUB; dysfunctional uterine bleeding

***Corresponding author:** Dr. Kalpana Sukalkar Devane, Director, Varad Hospital, Plot No. 3E, Sector 10, Khanda Colony, New Panvel, Navi Mumbai, Maharashtra 410206, India. Tel.: 9833921858; Email: kalpana_devane@yahoo.com

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Introduction

35% to 40% of women experience Dysfunctional uterine bleeding (DUB) in their life. 25% of women experience DUB (dysfunctional uterine bleeding) during perimenopausal period, 10% of women experience it during young reproductive age. 2% of teenage group girls experience it.

Most of the perimenopausal women are advised hysterectomy after a trial of tranexamic acid and progesterone. In rural area even young women, who have completed the family are advised hysterectomy as a method of contraception after the very first bout of DUB. These women accept or sometime demand hysterectomy because, they cannot come for follow up repeatedly.

History

The first intrauterine mode of treatment was discovered by the Arabians when they put small

stones in the uterus of the camels as a contraceptive while going on trades. Afterwards the intra uterine contraceptive device (IUCD) was discovered as a Lippes loop which was just an inert plastic loop. Next was the copper-T, which was the first intrauterine drug delivering system as it was not an inert thing but was delivering the copper in a controlled release manner to enhance the contraceptive effect. This has given a vision about the local delivery of medicines at endometrial level. DUB is treated with oral progesterone, injection progesterone or tranexamic acid. If not responded to medical management, resection of endometrial layer and hysterectomy are the operative procedures commonly done. But all these modalities have their drawbacks and side effects. The levonorgestrel sustained release intra uterine system has revolutionized the management of the DUB. It has made it most convenient, cheap, nonsurgical and effective treatment with very negligible side effects.

Objective

To study the effectiveness of the LNG 52 in DUB.

Material and methods

This is a study carried over an year in 'Varad Hospital' at new panvel, in Raigad district, Maharashtra between February 2015 and August 2016.

Total 25 women were included in this study. Twenty two women with complaints of menorrhagia and three women with additional complaint of dysmenorrhea along with menorrhagia were included in the study. Dysmenorrhea was not their primary complaint.

Before including the patients in the study, proper consent was taken and counseling was done. Before inserting the LNG 52 system diagnostic D&C was done in the premenstrual phase to rule out malignancy and tuberculosis. This was necessary for endometrial typing.

Exclusion: (1) History of thromboembolism, (2) Pelvic inflammatory disease, (3) Signs of malignancy, (4) Malignancy, (5) Uterine malformation and (6) Pregnancy.

Follow up: They were followed up every month for first three months. After that as and when necessary.

At every visit: (1) Menstrual history was taken, (2) Any other complaints about general health asked, (3) Per speculum examination for the presence of the thread of the LNG system. Any signs of infection. Levonorgestrel as a progesterone thickens the cervical mucus and prevents infection to uterine cavity, (4) Per vaginal examination to rule out tenderness in the fornices.

100% response was achieved when patient was having regular menstrual cycle with normal amount of blood flow for first six months because the histological changes to occur in the endometrial lining takes 90 days. Once the changes occurred they remain there as long as the LNG system is delivering the progesterone there [1, 2]. Repeat endometrial biopsy was not taken. Age group for study has been given in table 1.

Table 1: Age group.

S. No	*Age (years)*	*Total*
1	25 - 35	08 (3 - had severe dysmenorrheal bleeding)
2	35 - 45	13
3	45 - 55	04

Results

Results were very encouraging. In overall age group considered, 88% patients got relief from menorrhagia and continued using LNG system beyond one year of insertion. Out of total 25 patients 22 got complete relief after different intervals of zero to three months, some of them needed support of progesterone and tranexamic acid (details about is discussed below along with the age groups). The results were different according to the age group and type of endometrium. Type of endometrium also showed variation according to the age.

In the young patients (25-35 years) total eight in number, 50% were showing 'normal endometrium' (secretary endometrium in premenstrual phase) and 50% were showing 'simple hyper plasia'. Normal endometrium responded in next cycle only. Simple hyperplasia responded after two cycles but didn't need addition of tranexamic acid or progesterone. One patient with severe dysmenorrhea had expulsion of the LNG system after two cycles but she again came for insertion of the LNG system because she

had good relief of dysmenorrheal bleeding (relief from menorrhagia and dysmenorrhea). Thus in this young age group desired result was obtained 87.5% (considering the expulsion in one patient). This group had the additional advantage of contraception also.

The second group (35-45 years) consists of total 13 in number. Out of that three patients (23.1%) had normal endometrium, five patients (38.5%) had simple hyperplasia, three patients (23.1%) had glandular hyperplasia and two patients (15.4%) had cystic glandular hyperplasia. This group had the decreased results because two patients didn't come for follow up and remain untraceable. Total 11 patients out of 13 got relief (84.6%). Four patients needed tranexamic acid in next two cycles.

Third group (45–55 years) containing four patients showed 100% result (Tables 2-5) as all four were available for follow up for six months and opted to continue the LNG system.

Table 2: Results of endometrial biopsies.

No	*Age (Years)*	*Total*	*Normal endo-me-trium*	*Simple hyper-plasia*	*Glan-dular hyper-plasia*	*Cystic hyper-plasia*
1	25 - 35	08	04	04	00	00
2	35 - 45	13	03	05	03	02
3	45 - 55	04	0	01	00	03

Table 3: Result of age groups 25-35.

Age(Years) / Total	*No*	
25 - 35 (Total- 8)	04	Had completely normal cycles
	03	Had 80% reduction after 2 cycles.
	01	Woman had expulsion of the system (dysmenorrhea)

Table 4: Result of age groups 35 - 45

Age (years) / Total	*No*	
35 - 45 (Total- 13)	07	Had normal cycles in very first cycle
	04	Women needed oral tranexamic acid in first two cycles after the insertion.

Table 5: Results of age groups 45-55.

Age (years)/ Total	*No*	
45 - 55 (Total- 04)	01	Had normal amount of bleeding in the next cycle
	02	Needed three cycles to come to normal bleeding. These two needed addition of 5mg progesterone for 20 days in three cycles and after that the cycles came to normal flow.
	01	Had amenorrhea after one cycle but she opted to continue to use it for at least for one year.

Discussion

What is LNG 52 intrauterine system?

This is a mechanical device just like the multiload copper T where instead of copper levonorgestrel 52 mg is loaded in the sheath around the stem of the T. Everyday 20 µg of the levonorgestrel is delivered in the endometrial cavity. This much levonorgestrel is sufficient to create changes in the endometrial lining so as to decrease the bleeding.

The changes seen in the endometrial lining at the end of three months [1-4]: (1) Endometrial atrophy, (2) Stroma decidualization, (3) Leucocyte and lymphocyte invasion of the stroma, (4) Thrombosis of the capillaries, and (5) Apoptosis.

These changes are temporary, start immediately after insertion and fade away after removal within 30 days [5]. Therefore this can be safely used in women who want to continue their fertile status. Initially in India, the only available LNG 52 system was an imported one. It is expensive and a little bit difficult to insert. Indian pharmaceutical companies have come up with this LNG 52 system which is much cheaper and is easier to insert also.

LNG 52 for non-DUB: (1) Dysmenorrhea, (2) Endometriosis, (3) Adenomyosis, (4) Contraception [6-8], (5) HRT-prevention of endometrial proliferation when HRT is given in the form of oral estrogen [9-11], (6) Leiomyoma, and (7) Along with tamoxifen to reduce endometrial hyperplasia in endometrial cancer [12].

Benefits of LNG 52 system: (1) The affects are only local, no effect on metabolism, (2) Long term therapy is cheaper than oral progesterone, (3) No

requirement of daily medication which gives much compliance, and (4) Acts as a potent contraceptive and no need to use other contraceptive methods.

My purpose of this study was to check the effectiveness of the LNG 52 system in DUB. 80% of women in this study had come for second opinion, after having been advised hysterectomy at some other center.

Conclusion

The overall result was very encouraging. It was giving dual relief to many women who wanted simultaneous contraception also. This LNG system can replace oral progesterone and hysterectomy for DUB if consultants counsel the women properly. This is an important mile stone in the treatment of DUB and will save the uterus and ovaries.

Conflicts of interest

The author declares no conflicts of interest.

References

[1] Critchley HO, Wang H, Jones RL, Kelly RW, Drudy TA, et al. Morphological and functional features of endometrial decidualization following long term intrauterine levonorgestrel delivary. Hum Reprod. 1998; 13(5):1218-1224.

[2] Gu Z, Zhu P, Luo H, Zhu X, Zhang G, et al. A morphometric study on the endometrial activity of women before and after one year with LNG-IUD *in situ*. Contraception. 2007; 82(6):57-61.

[3] Jones RL, Crichley HO. Morphological and functional changes in human endometrium following intrauterine levonorgestrel delivery. Hum Reprod. 2000; 15(3):162-172.

[4] Haliloglu B, Celik A, Ilter E, Bozkurt S, Ozekici U. Comparison of uterine artery blood flow with levonorgestrel delivery system and copper intrauterine device. Contraception. 2011; 83(6):578-581.

[5] Sheppard BL. Endometrial morphological changes in IUD users: A review. Contraception. 1987; 36(1):1-10.

[6] Lewis RA, Taylor D, Nanatavio MF, Melamed A, Felix J, et al. Effects of the levonorgestrel releasing intrauterine system on cervical mucus quality and sperm penetrability. Contraception. 2010; 82(6):491-496.

[7] Guttinger A, Critchley HO. Endometrial effects of intrauterine levonorgestrel. Contraception. 2007; 75(6):93-98.

[8] Xu Q, Qiu L, Zhu L, Luo L, Xu C. Levonorgestrel inhibits proliferation and induces apoptosis in uterine leiomyoma cells. Contraception. 2010; 82(3):301-308.

[9] Rodriguez MI, Darney PD. Non-contraceptive applications of the levonorgestrel intrauterine system. Int J Womens Health. 2010; 2:63-68.

[10] Inki P. Long term use of the levonorgestrel- releasing intrauterine system. Contraception. 2007; 75(6):161-166.

[11] Fraser IS. Add health benefits of the levonorgestrel contraceptive intrauterine system and other hormonal contraceptive delivery system and other hormonal contraceptive delivery system. Contraception. 2013; 87(3):273-279.

[12] Kim MK, Seong SJ, Kim YS, Song T, Kim ML, et al. Combined medroxyprogesterone acetate/levonorgestrel-intrauterine system treatment in young women with early stage endometrial cancer. Am J Obstet Gynecol. 2013; 209(4):162-172.