Mirena – A Miracle Therapy For Heavy Menstrual Bleeding

Dr Jitendra V Shukla[1], Dr Ritu Gandhi[2], Dr Savan Shah[3], Dr Deepa Kirar[4*]

[1]Associate professor, Dept of Obstetrics & Gynaecology, SBKS medical institute and research centre, Sumandeep Vidyapeeth deemed to be university, Pipariya. Vadodara. 391760.

[2]year resident doctor, Dept of Obstetrics & Gynaecology. SBKS medical institute & research centre. Sumandeep Vidyapeeth deemed to be university, Pipariya. Vadodara 391760

[3]year resident year resident, Dept of Obstetrics & Gynaecology. SBKS medical institute & research centre. Sumandeep Vidyapeeth deemed to be university, Pipariya. Vadodara 391760

[4*]Associate professor, Dept of Obstetrics & Gynaecology SBKS, SBKS medical institute & research centre. Pipariya. Sumandeep Vidyapeeth deemed to be university

***Corresponding Author:** Dr Deepa kirar
*Associate professor, Dept of Obstetrics & gynaecology SBKS, SBKS medical institute & research centre. Pipariya. Sumandeep vidyapeeth deemed to be university

Abstract
Reproductive tract problems are major cause for concern in a woman's health. for a woman to attend hospital. White discharge per vaginum, painful periods and excessive blood loss due to heavy menstrual periods constitute main complaints by the woman of reproductive age. Recent use of hormone impregnated intra uterine devices has revolutionized the management of heavy menstrual bleeding in the woman not fit for or willing for surgical management, medically unfit woman and in young age women. Dhiraj hospital affiliated to a rural medical college located in rural area of Baroda district draws plenty of gynaecology patients from the peripheral areas as well as neighbouring states. This study was conducted in our hospital to determine the efficiency and, usefulness and acceptance of progesterone releasing intra uterine devices in management of patients suffering from heavy menstrual bleeding. It proved usefulness of Mirena (LNG IUS) in medical management of HMB patients. Not only it helped in reducing the menstrual blood loss, it had wide acceptance with minimal adverse effects.

Keywords Heavy menstrual bleeding, Mirena, LNG-IUS, levonorgestrel, blood loss estimation.

INTRODUCTION

Onset of menstruation in a young girl marks maturation and normal functioning of the HPO axis. Pubertal changes establish her as a woman capable of reproductive function. Normal menstrual cycle comprises of menstrual blood flow for three to five days, coming every 28 days and blood loss not exceeding 50 ml. Mild menstrual discomfort and spontaneous reduction and cessation of the menstruation are the features of normal menstrual cycle. Normal menstrual cycle may get altered due to abnormal functioning of HPO axis , ovarian pathology or uterine pathology. HPO axis is very sensitive to various psychological ailments as well as emotional disturbances. Hormonal imbalance with resultant anovulatory cycle accounts for majority of the patients reporting with heavy menstrual bleeding in absence of detectable ovarian or uterine pathology. Unopposed oestrogen action on endometrium results in excessive endometrial proliferation. In adequate progesterone secretion in anovulatory cycles leads to irregular ripening and irregular shedding of the hyperplastic endometrium with resultant irregularly irregular menstrual cycles with blood loss exceeding normal limits. Excessive blood loss during menses adversely affects woman's health. Iron deficiency anaemia resulting from blood loss presents as generalized weakness, fatigue and breathlessness. During a normal menstrual cycle woman loses about 50 ml of blood. Heavy menstrual bleeding is considered when the woman has to change the pad before two hours or when she requires to double up the pad. Getting up to change the pad or tampoon during night or passage of clots of the size larger than a quarter are other criteria to define heavy menstrual bleeding. Usually heavy periods exceed the normal duration and may last beyond seven days and bring easy fatiguability and tiredness to the woman incapacitating her from the routine life.

Aetiology of heavy menstrual bleeding can be
(a) Uterine conditions e. g. leomyoma, adenomyosis or endometrial polyp
(b) Malignancy of uterine corpus or cervix
(c) Birth control measures like combined hormonal pills or intra uterine contraceptive devices
(d) Certain medications like aspirin or anticoagulant drugs like clopidrogel, warfarin or heparin
(e) Hormone producing ovarian tumors
(b) Bleeding disorders like von willebrande's disease or platelet dysfunction.

(c) Liver disease, renal disease or thyroid dysfunction
(d) Pelvic inflammatory disease.

REVIEW OF LITERATURE

Levonorgestrel is a progestogen having action similar to progesterone hormone. It is agonist of progesterone receptor. It widely used in combined oral contraceptive pills[8]along with ethinyl oestradiol. with oestrogen. Its endometrial transformation dose is 150 to 200 micrograms per day. It is effective by orally, as intradermal patch, intrauterine device as well as subdermal implants. It is not only effective as combined oral pills, it is highly effective emergency contraception, If taken within 72 hours of unprotected sex [3][7]9 It is ·It can prevent ovulation as well as fertilization but not effective after implantation of the fertilized ovum. It makes cervical mucus thick and closes the cervical canal to prevent the entry of sperms[7] as well as pathogens. It is impregnated in MIRENA which is effective long term contraceptive device. Mirena releases levonorgestrel in the uterine cavity which has progestogenic effect. It is used for long term birth control and also as therapeutic tool for HMB. It makes inside of uterus lethal to the sperms and produces thinning of the endometrial lining[84][85].Its effect lasts for 3 to 8 years[3][4] ·Its side effects are irregular menstrual cycles, benign cysts of ovary, cramping pain in hypogastrium and occasional expulsion. Rarely it may perforate the uterus.

AIMS AND OBJECTIVES

To test the efficiency of LNG -IUS in controlling heavy menstrual bleeding
To establish LNG-IUS as alternative management plan to hysterectomy in young age patients as well as patients not fit/desirous for surgical management
The study may improve the acceptance rate of IUCD by removing the taboo as well as fear for IUCD.

MATERIAL AND METHODS

STUDY DESIGN Prospective study

PLACE OF STUDY: Gynaecology department , DHIRAJ Hospital
SOURCE OF DATA patients coming to gynaec OPD with heavy menstrual bleeding
TIME SCALE OF STUDY 12 months from the date of approval
SELECTION CRITERIA
INCLUSION CRITERIA
All patients with HMB BETWEEN 20 TO45 YEARS OF AGE
All the patients willing to participate
All the patients available for follow up

EXCLUSION CRITERIA

Patients having endocrine disorders like DM, Thyroid dysfunction,
Patients with uterine pathology like large fibroid. and cervical stenosis and endometrial malignancy
Patients with uterine anomaly.
Patients having active PID
Patients with acutely retroverted uterus
Nulliparous women
Patients not willing to participate or not available for follow up.

METHODOLOGY

The patients reporting in the gynaecoloy department with heavy menstrual bleeding and fulfilling the inclusion criteria and willing to participate in the study were enrolled for the study after taking informed consent. All the suffering patients were included in the study irrespective of their parity and BMI. They were grouped separately to observe any significant variation on the beneficiary effect in different groups. Participating women had to collect the menstrual products for two screening cycles for estimating the blood loss by alkaline hematin method. Only the women having heavy menstrual bleeding as per the criteria were included in the study. During the first two months their menstrual blood loss was estimated by alkaline hematin method from the sanitary pads they used during their first two menstrual cycles. After ruling out the contra indications for the insertion of mirena, they were subjected to D &C to rule out intra uterine pathology and the material was subjected to HPE. Then mirena insertion was carried out after reviewing the pathology report. The participants were kept under observation for any untoward effect for at least 24 hours before letting them home. They were be report immediately to the hospital in case of any untoward incident. They were instructed to attend gynaec OPD every month on initiation of the menstrual cycle. They were provided pack of sterile sanitary napkins. They will have to come to the hospital with the pads used on previous day. Blood loss estimation of the patients was carried after the 3 rd and 6 th menstrual cycle. Blood loss of <80 ml or reduction in blood loss by 50 %from the pre LNG-IUS insertion was set as criteria for the success of the treatment. Wilcoxon rank sum test was applied to assess differences in blood loss ascribed to high by BMI and parity.

OBSERVATION

During the stipulated time of study 276 patients with heavy menstrual bleeding reported to the gynaec dept of our hospital, out of which 238 women fulfilling the criteria were included in the study. 83 women were obese (BMI MORE THAN 30). 48 women were primiparous

TABLE 1
BMI WISE DISTRIBUTION OF PATIENTS

Total no of patients	238	
Obese patients(BMI>30)	83	34.87 %
Pt with normal BMI	155	65.13 %

TABLE 2
PARITY WISE DISTRIBUTION

Total no	238		
Primiparous	48	20.17 %	
Parity 2 to 4	171	71.84 %	
Parity >4	19	07.98 %	

Baseline median blood loss as estimated prior to MIRENA insertion ranged from 87 ml per cycle to 416 ml per cycle, the group wise blood loss was as under.

Blood loss per cycle was little more in obese women compared to women with normal BMI

TABLE 3
BMI WISE BLOOD LOSS

	NO OF PT	Average blood loss	RANGE
BMI >30	83	243 ml	187 TO 270
Normal BMI	155	208ml	166 TO 231

TABLE4
PARITY WISE BLOOD LOSS

PARITY	No of patients	Average blood loss	Range	
Primipara	48	175ml	85 to 209	
2 to 4	171	226ml	177 to 248	
>4	19	270ml	221 to 309	

Average blood loss for the entire study group was 220.20 ml. Median blood loss for the group was 239ml.

Th blood loss measurement after the 3rd cycle was as under. Out of 238 patients 195 patients reported drastic reduction in cyclical blood loss

TABLE 4 BLOOD LOSS ESTIMATION AFTER THREE MONTHS OF MIRENA INSERTION

		CURED GROP			BENIFITED GROUP			
	no Of pt	% of pt	Blood loss	% reduction in blood loss	No of pt	%of pt	Blood loss	% Red in blood loss
BMI >30	68	81.92 %	38ml	84.37 %	15	18.07	131ml	46.09
BMI<3o	132	85.16	21ml	89.1%	23	14.83	115ml	44.71

The patients continued follow up regularly. Blood loss estimations were recorded as under

TABLE 5 BLOOD LOSS ESTIMATION AFTER THREE MONTHS OF MIRENA INSERTION

	Cured patients				Benifited patients			
PARITY	No	% OF PATIENTS	BLOOD LOSS	% REDUCTION	NO. OF PATIENTS	% OF PATIENTS	Blood loss	% REDUCTION
PRIMI	41	85.41	03 ml	98.29	07	14.69	95ml	45.71
2 TO 4	148	86.54	05 ml	97	23	13.45	122ml	46.02
>4	16	84.21	08ml	97.04	03	15.79	145ml	46.30

The patients continued follow up regularly. Blood loss estimations were recorded as under after 6 th cycle

TABLE 5
BLOOD LOSS ESTIMATION AFTER 6TH CYCLE

		CURED GROP			BENIFITED GROUP			
	No of pt	% of pt	Blood loss	% reduction in blood loss	No of pt	% of pt	Blood loss	% red in blood loss
BMI >30	69	83.13 % %	36ml	85.18%	12	14.45	129ml	46.91
BMI<3o	134	86.45	20ml	90.38%	19	12.25	109ml	47.59

Table 6
BLOOD LOSS ESTIMATION AFTER 6TH CYCLE

	Cured patients				Benifited patients			
PARITY	No	%	BLOOD LOSS	RED %	NO	%	Blood loss	%
PRIMI	42	83.33	03 ml	98.29	05	6.02	90ml	48.58
2 TO 4	148	85.96	04 ml	98.23	21	12.28	118ml	47.78
>4	16	73.68	07ml	97.40	02	10.52	140ml	48.14

4 patients were dropped out of the study. one migrated to native state. Two patients got removed for pelvic discomfort and IUS was expelled out spontaneously in one patient.

DISCUSSON
Looking at the observation table it is clearly evident that 225 out of 238 patents ((94.73%) patients got cured as per our criteria. Rest of the patients were also benifited to a great extent. At the end of 3 months almost 80 to 85 % of patients were relieved of heavy menstrual bleeding and there was marked reduction in the amount of blood loss almost to the extent of 85 to 90. In patients with normal BMI the benefits were remarkable .The beneficial effect was not related to parity also .At the the end of 6 th cycle the percentage of patients benifited were same in number but the reduction in blood loss was more marked.

RESULTS.
This study clearly indicates the usefulness of LNG-IUS in treatment of heavy menstrual bleeding in all patients with comparable benefit without any variation due to variation in BMI or parity. In our set up where socioeconomical status is low, anaemia is very prevalent and in patients of young age where radical therapy would be deferred, this modality of treatment will be very useful.

REFERENCES

1. *Meikle AW (1 June 1999). Hormone Replacement Therapy. Springer Science & Business Media. pp. 383–. ISBN 978-1-59259-700-0. Archived from the original on 1 August 2020. Retrieved 15 April 2018. The gonanes share the structural modifications found in the estranes and also possess [an ethyl] group at the position 13 and a keto group at position 3. Norgestrel was synthesized in 1963 and is a racemic mixture of dextro and levorotatory forms. The levorotatory form, levonorgestrel, provides the biological activity.*
2. *^ Szejtli J, Szente L (6 December 2012). Proceedings of the Eighth International Symposium on Cyclodextrins: Budapest, Hungary, March 31–April 2, 1996. Springer Science & Business Media. pp. 317–. ISBN 978-94-011-5448-2. Archived from the original on 28 August 2021. Retrieved 15 April 2018. [Norgestrel] was discovered by Hughes et al. (1963).*
3. ^ Jump up to:*[a] [b] [c] Filshie M, Guillebaud J (22 October 2013). Contraception: Science and Practice. Elsevier Science. pp. 12–. ISBN 978-1-4831-6366-6. Norgestrel, developed by Wyeth and patented in 1964, was the first progestogen to be manufactured by total chemical synthesis. It was subsequently licensed to Schering AG, who separated the racemic mixture into an inactive structural isomer l-norgestrel and the active d-norgestrel -- more usually known as dextronorgestrel and levonorgestrel respectively, because of the optical isomerism that each displays.*
4. ^ Jump up to:*[a] [b] [c] [d] Marks L (2010). Sexual Chemistry: A History of the Contraceptive Pill. Yale University Press. pp. 73, 76. ISBN 978-0-300-16791-7. In 1964 the pharmaceutical company Wyeth developed norgestrel, the first progestogen to be made from a total chemical synthesis. Subsequently licensed to Schering AG, norgestrel was used to develop levonorgestrel, another active progestogen later used for oral contraception.*
5. *"Now Is the Time to Change Label on Emergency Contraceptives". Relias Media | Online Continuing Medical Education | Relias Media - Continuing Medical Education Publishing. Retrieved 2022-08-16.*
6. ESHRE Capri Workshop Group. Intrauterine devices and intrauterine systems. *Hum Reprod Update.* 2008;**14**:197–208. [PubMed] [Google Scholar] [Ref list]
7. "Progestins (Etonogestrel, Levonorgestrel, Norethindrone)". The American Society of Health-System Pharmacists. Archived from the original on 2015-09-07. Retrieved Aug 21, 2015.

8. Jensen JT (September 2005). "Contraceptive and therapeutic effects of the levonorgestrel intrauterine system: an overview". *Obstetrical & Gynecological Survey*. **60** (9): 604–12. doi:10.1097/01.ogx.0000175805.90122.af. PMID 16121115. S2CID 43177026.