

## Research Article

# Heavy Menstrual Bleeding: Can a scoring system predict the likelihood of hysterectomy?

Shamma Al-Inizi<sup>1\*</sup>, Sandeep Kaur<sup>2</sup>, and AMR Mohammed<sup>2</sup>

<sup>1</sup>Consultant Obstetrician and Gynaecologist, South Tyneside and Sunderland NHS Foundation Trust, UK

<sup>2</sup>Specialty trainee in Obstetrics and Gynaecology, South Tyneside and Sunderland NHS Foundation Trust, UK

**\*Corresponding author**

Shamma Al-Inizi FRCOG, Consultant Obstetrician and Gynaecologist, South Tyneside & Sunderland NHS Foundation Trust, Kayll Road, Sunderland, SR4 7TP, UK; Tel: 441914041000 Ext 4020

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**Abstract**

Heavy menstrual bleeding (HMB), a common gynaecological condition which affects many women in their reproductive age, described as excessive menstrual blood loss which can affect the woman's physical, social, and emotional quality of life.

Different medical and surgical interventions are usually offered prior to hysterectomy. The commonest are the intrauterine system (IUS) and endometrial ablation (EA). These interventions might temporarily relieve some of the symptoms, however; several women continue to suffer with HMB & other related symptoms for years before definitive management for HMB is offered.

We aim to reduce the time spent by women with HMB prior to hysterectomy to reduce their suffering. We studied several factors that women with HMB present with, including associated chronic pelvic pain (CCP), dysmenorrhoea, dyspareunia, endometriosis, symptomatic anaemia, women's desire for definitive treatment, large uterine cavity, ultrasound evidence of uterine fibroid  $\geq 3$ cm and/or adenomyosis. We correlated these factors to histology of the removed uterus at hysterectomy. We reviewed 300 women who underwent hysterectomy for HMB over 5 years at South Tyneside & Sunderland hospitals. We identified that most of those women had received medical and surgical uterine sparing modalities prior to hysterectomy. We propose to introduce a scoring system based on the mentioned factors (score 1-6) which can triage women referred with HMB into hysterectomy or uterine sparing medical and surgical modalities. We suggest if the score is  $\geq 3$ , this could indicate that the woman will more likely benefit from hysterectomy rather than uterine sparing interventions which most likely would fail in relieving the patients' symptoms.

**INTRODUCTION**

One of the commonest gynaecological referrals to secondary care hospitals from general practitioners (GPs) in the UK is HMB which has a significant impact on women's day to day activity, physical, social, and working life.

The international Federation of Gynecology and Obstetrics (FIGO) defines HMB as 'the woman's perspective of increased menstrual volume regardless of regularity, frequency and duration' [1].

The two most widely used uterine sparing medical and surgical interventions in modern gynecological practice for HMB are the Levonorgestrel IUS (Mirena IUS Bayer Healthcare pharmaceutical) and EA. They both proved to be very effective in managing these symptoms and controlling women's suffering [2-5].

These procedures represent a lower cost with a shorter recovery time compared to hysterectomy. However, on a longer term follow up as highlighted by the ECLIPSE Trial; 1:5 women needed hysterectomy after 5 years of having the Levonorgestrel IUS [3]. The same applies to EA, where longer term follow up

showed reduced treatment efficacy and women's satisfaction with a post ablation hysterectomy rate reaching 21% in some series [6].

Utilising these uterine sparing modalities prior to hysterectomy for women with HMB and certain factors can cause increased women's suffering by prolonging the treatment journey with an additional procedure related cost. Women who continue to suffer with these symptoms, their quality of life and wellbeing can be further affected especially when suffering is prolonged.

Certain gynaecological pathologies can predispose to hysterectomy in women with HMB including fibroids, adenomyosis and endometriosis.

In this study we tried to identify if there was any correlation between symptoms at presentation, investigations and histological findings at hysterectomy and the likelihood of needing hysterectomy for HMB. We think if this correlation is identified, it can aid the clinician in identifying the reasons which led to hysterectomy. This can support the counselling process in the future towards hysterectomy or uterine sparing modalities in women with heavy menstrual bleeding.

This can be achieved by introducing a scoring system based on different parameters retrieved from the woman's history at presentation, examination findings, results of investigations including ultrasound scan and blood test and finally, the histology of the removed uterus. The aim of this scoring system is to triage women presenting with HMB into hysterectomy and uterine sparing medical and surgical interventions. This would reduce women's suffering and spent cost by shortening the treatment journey towards hysterectomy.

## MATERIALS & METHODS

A retrospective review of electronic records of all women referred to South Tyneside and Sunderland NHS Foundation Trust between January 2016 and December 2020 with HMB who ended in having hysterectomy, was conducted. 1246 hysterectomies during the period of the study were reviewed and only 300 women had hysterectomy for HMB were included in the study. Hysterectomy for other reasons such as uterovaginal prolapse, premalignant or malignant conditions, large ovarian masses, and chronic pelvic pain without HMB and post-menopausal bleeding were excluded. A detailed data collection proforma was used where women's clinical details were documented. This included associated symptoms such as chronic pelvic pain, dysmenorrhoea, dyspareunia or known endometriosis, examination findings of uterine cavity length, symptomatic anaemia necessitating blood or iron transfusion and ultrasound scan suggesting leiomyoma >3 cm or adenomyosis and woman's desire for definitive surgery. Information on previous medical or surgical interventions performed prior to hysterectomy was obtained. Histology of the removed uterus was reviewed and was linked to the pre-hysterectomy symptoms and scan findings. The electronic proforma was completed on Excel spread sheets. A simple statistical tool was used to analyse the data. Ethical approval, and patients' consent were not required as the study is a retrospective electronic record review study.

## RESULTS

300 women had hysterectomy for HMB during the period of the study & were included. Age ranged between 31-56 with a mean of 45. Parity ranged between 0-4 with a mean of 2. Duration of HMB ranged between 1-15 years with a mean of 3 years. 110 women (36.6%) had history of CPP, dysmenorrhoea, dyspareunia or were known to have endometriosis. 142 women (47%) expressed their desire for definitive treatment (hysterectomy) during their consultation aiming for complete amenorrhoea, however; most of them were offered uterine sparing modalities first (Tables 1 & 2). 140 women (44.7%) had an ultrasound scan (USS) finding of a fibroid(s) >3 cm whereas, 25 women (8%) had an USS finding of adenomyosis. 88 women (29.3%) had a large endometrial cavity >10 cm on examination measured by the pipelle endometrial biopsy aspirator (Table 1). 64 women (21.6%) were found to be anaemic but only 32 women (10.6%) their symptomatic anaemia needed blood/ iron transfusions (Table 1). 118 women (39%) had the Levonorgestrel IUS (Mirena IUS, Bayer Healthcare pharmaceuticals) whereas, 116 women (38.6%) had EA. The commonest performed EA was found to be the NovaSure EA (NovSure, Hologic INC, Bedford MA) which was performed in 90 women (30%). 41 women (13.5%) had both EA

& the IUS (Table 2). Different varieties of medical treatment such as Tranexmic acid, Mefenamic acid, the contraceptive pill, Depo provera injections, the Implanon, Esmya and Gonadotrophin releasing hormone analogue (GNRHA) were also offered (Table 2). 183 (61%) had laparoscopic hysterectomy, 75 women (25%) had abdominal hysterectomy and 42 women (14%) had vaginal hysterectomy. Upon reviewing histology of the removed uterus, 254 women (85%) had a pathology at histology (Table 3). The commonest identified pathology was benign fibroid followed by adenomyosis or both. Associated fibroid >3 cm and women's desire for complete amenorrhoea were identified to be the commonest associated factors leading to hysterectomy (Table 1). A scoring system of 1-6 was introduced based on these identified parameters (Table 1). Histological examination identified a much higher number of fibroids and adenomyosis to what was identified by US scan (65% had benign fibroids and 42% had adenomyosis on histology VS 44.7% had fibroids on USS & 8% had adenomyosis) (Tables 1 & 3). Improvement in gynaecological scanning is suggested in women with HMB.

75% of women who had hysterectomy for HMB in this study had scored  $\geq 3$  (Table 1). We suggest that if a woman with HMB scores  $\geq 3$ , the counselling process should be directed towards hysterectomy avoiding other uterine medical and surgical

**Table 1:** Associated factors leading to hysterectomy with their suggested score.

No. of patients (300)	%	Factor	Score
110	36.6	CPP, dysmenorrhoea, dyspareunia or known endometriosis	1
140	44.7	USS indicating fibroid >3 cm	1
25	8	USS indicating adenomyosis	1
32	10.6	Symptomatic anaemia needing blood or iron transfusion	1
88	29.3	Large uterine cavity >10 cm	2
142	47	Women's desire for hysterectomy	1

CPP: Chronic pelvic pain, USS: Ultrasound scan

**Table 2:** Medical and surgical uterine sparing interventions prior to hysterectomy.

	No. of patients	%
Levonorgestrel IUS	159	52.5
EA	157	52
IUS & EA	41	13.5
Combined oral contraceptive pill/ Progesterone only pill	63	21
Depo provera injection	28	9.3
Esmya	5	1.6
GNRHA	11	3.6
Tranexamic/mefenamic acid	42	14
Oral progestogens	87	29
Implanon	4	1.3

IUS: Intrauterine system, EA: Endometrial ablation, GNRHA: Gonadotrophin releasing hormone analogue.

**Table 3:** Histological examination of the removed uterus at hysterectomy.

No. of patients	%	Pathology
117	39	Benign fibroid
48	16	Adenomyosis
78	26	Both (fibroid & adenomyosis)
7	2.3	Endometriosis
3	1	Benign endometrial polyp (s)
1	0.3	Leiomyosarcoma
46	15	Normal histology

sparing modalities which would most probably fail. This would reduce the woman's suffering by shortening her journey towards definitive treatment with significant cost saving.

## DISCUSSION

Heavy menstrual bleeding is a common condition affecting 1:4 women during their reproductive life [6]. Around 50000 women are referred annually to the National Health Service (NHS) at secondary care hospitals with HMB in England and Wales [7]. Around 28000 of those women undergo surgical management of HMB, the commonest of which is EA [7]. HMB has several implications on quality of life by affecting the physical and mental health of women as well as their emotional and social wellbeing [7]. It can also be associated with severe pain symptoms, anaemia and fatigue [8,9].

Different pathologies can be associated with HMB including uterine fibroids, adenomyosis and endometriosis which can predispose to additional symptoms including pelvic pain, dysmenorrhoea, dyspareunia and pressure symptoms. Identifying these symptoms during the gynaecological consultation for HMB is important which can highlight the possibility of these pathologies with HMB.

Stevens et al in 2019 published a retrospective review predicting the likelihood of failed EA used to treat HMB. This was based on woman's age, parity, duration of HMB, associated dysmenorrhoea and previous caesarean section [2]. It suggested that this prediction could aid clinicians in the counselling process for EA in women with HMB by predicting the likelihood of a failed procedure needing further intervention in the following two years post EA [2]. In our study, we identified different factors associated with HMB leading to hysterectomy. These factors were retrieved from symptoms at presentation, uterine cavity length at examination, investigations including USS & haemoglobin level, women's desire for definitive treatment and histology of the removed uterus.

Associated chronic pelvic pain, dysmenorrhoea, dyspareunia or known endometriosis & adenomyosis were identified as risk factors for failed medical & surgical uterine sparing modalities for HMB in this study, especially these modalities might not improve the pain symptoms completely. EA was reported to be associated with post ablation pelvic pain in 20.8% of women in one series especially in women with pre ablation dysmenorrhoea and endometriosis with a recommendation of properly counselling women regarding the expected surgical outcome post EA in this

group [10]. Late-Onset Endometrial Ablation Failure (LOEAF) was lately identified to be associated with hysterectomy in 25% of women undergoing EA regardless of the type of EA used and an unknown number of women who had EA had less than satisfactory results in that series [11]. It has been suggested that understanding factors which lead to LOEAF with good patient selection for the procedure would reduce LOEAF and improve patient's satisfaction [11]. The commonest cause of post ablation hysterectomy in some series was found to be recurrence of HMB due to inadequate destruction of the endometrium or its regrowth following ablation, chronic pelvic pain, leiomyomas and adenomyosis [11-13]. On the other hand, the Levonorgestrel IUS was found to be associated with failure to control HMB in women with a uterine fibroid  $\geq 2.5$  cm or a uterine size of  $>12$  cm [14].

In this study, we found that 36.6% of the identified patients had chronic pelvic pain, dysmenorrhoea, dyspareunia or known endometriosis, in addition to 8% had an USS finding of preoperative adenomyosis and 44.6% of uterine fibroid of  $\geq 3$  cm size. The failure rate of EA in this study was 38.6%, failed Levonorgestrel IUS rate was 39%, whereas both failed in 13.5%. Considering histology, we recognised that several women had fibroids and adenomyosis which were not picked up on USS and were confirmed by histology (Tables 1 & 3). We appreciate that adenomyosis is more difficult to be picked up on USS compared to uterine fibroids. We recommend further training in gynaecological USS to improve diagnosis. It has been suggested that further training in 3D USS can further pick up adenomyosis [15]. Hanafi M suggested that USS is a valuable non-invasive method to diagnose leiomyoma with or without adenomyosis which can be sensitive but not specific in the diagnosis of adenomyosis [16].

Large uterine cavity  $>10.5$  cm was identified as a risk factor for failed EA and LOEAF and it can also be associated with a failed Levonorgestrel IUS [11,17]. In this study 29.3% of women had a large endometrial cavity  $>10$  cm length which has resulted in failed uterine sparing medical and surgical procedures namely EA and IUS.

Iron deficiency anaemia can result from chronic and excessive heavy menstrual blood loss and can be life-threatening which should be addressed proactively [18]. A consensus guidance covering screening and diagnosis of iron deficiency anaemia in women with HMB has been suggested to improve health outcomes in those women [19]. We identified that 21.6% of the women in this study were anaemic on oral iron therapy but 10.6% had iron infusions with blood transfusion due to their life-threatening anaemia. We considered this group of women as a potential group benefiting from hysterectomy if other scoring factors existed, giving anaemia needing blood/iron transfusion one score (Table 1).

Hysterectomy is the most performed major surgical procedure in gynecology [20]. Despite its invasive nature, it represents the most definitive treatment option for HMB in women where future fertility is not a requirement [20].

Due to its invasive nature with longer recovery time and complications, it was suggested that hysterectomy should only be considered when other treatment options have failed or are contraindicated [20].

Women's desire for definitive treatment was identified as a risk factor leading to hysterectomy in this study. This was especially identified in women aiming for complete amenorrhoea where other uterine sparing modalities such as the Levonorgestrel IUS and EA might not guarantee. Nearly half of the women who had hysterectomy for HMB in this study had a desire for complete amenorrhoea. We recommend that having some additional risk factors to woman's desire for hysterectomy would aid the clinician to offer definitive treatment for HMB.

We recommend introducing a scoring system (Table 1), where women who score  $\geq 3$  would benefit from hysterectomy rather than uterine sparing medical and surgical modalities especially 75% of women in the study group were found to score  $\geq 3$ . This study is limited by not including women who were referred with HMB and did not end up having hysterectomy.

## CONCLUSION

A scoring system based on presentation and investigations of women referred with HMB is beneficial. It would aid to triage women into hysterectomy and uterine sparing medical and surgical modalities, aiming to reduce their gynaecological journey where other modalities would most probably fail. This would reduce women's suffering with a significant cost saving. We suggest conducting a randomised controlled trial using this scoring system for women referred with HMB in the future to aid in patient's selection for different treatment options.

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## Authorship Contribution Statement

Shamma Al-Inizi: Conceptualization, Methodology, Data curation, Writing-Original draft preparation and Editing, statistical analysis. Sandeep Kaur: Methodology, Software, Data curation, Statistical analysis, Reviewing and Editing. Mohammed Amr: Data curation, Reviewing and Editing.

## Author's Disclosure Statement

We confirm that this manuscript has not been published before and is not under consideration for publication elsewhere in the same form or in different form.

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