

## ORIGINAL RESEARCH

# Endometrial pattern among female patients with dysfunctional uterine bleeding

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## ABSTRACT

**Background:** As dysfunctional uterine bleeding (DUB) produces significant morbidity and interferes with everyday activities, it is one of the most prevalent problems in females that can arise at any point throughout the reproductive cycle and about 20% of affected patients seek consultation. For proper treatment, endometrial histology must be evaluated in patients with DUB, so the present study was carried with the aim to assess the endometrial pattern among female patients with dysfunctional uterine bleeding (DUB). **Methods:** The present cross-sectional study was carried out among 264 female patients with dysfunctional uterine bleeding of at least six months under the Department of Pathology, GSVM Medical College, Agra for a period of 1 year. The endometrial biopsy sample was taken from diagnostic dilatation and curettage (DNC) or hysterectomy and biopsy sample was received in our department. The pretested proforma was used to collect the patients details such as age, BMI, parity, presenting complaints and endometrial pattern of biopsies. The collected data was entered in the MS excel spreadsheet and analysed using the same. **Results:** In our study, 62.1% of patients were >40 years of age, and 12.8% of patients were having age >50 years. The mean age of the patients was  $42.86 \pm 12.73$  years. The mean BMI of the patients was  $24.81 \pm 5.34 \text{ kg/m}^2$ . Biopsy of patients showed most common endometrial pattern were Proliferative endometrium (22.0%), Irregular maturation (19.7%), simple hyperplasia (23.5%) and Endometritis (11.7%). In perimenopausal group simple hyperplasia (30.3%) was the most common endometrial pattern followed by proliferative endometrium (21.2%) and irregular maturation (16.7%). Among postmenopausal group atrophic endometrium (26.6%) was the most common endometrial pattern followed by simple hyperplasia (23.5%); complex hyperplasia without atypia (23.5%) and malignancy (17.6%). **Conclusion:** Histopathological examination of D& C tissue in patients of abnormal uterine bleeding shows a wide spectrum of changes ranging from normal endometrium to malignancy, however, frequency of cause varies with age.

**Keywords:** Endometrium, Biopsy, Dilatation and curettage, postmenopausal, complex hyperplasia

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## INTRODUCTION

As dysfunctional uterine bleeding (DUB) produces significant morbidity and interferes with everyday activities, it is one of the most prevalent problems in females that can arise at any point throughout the reproductive cycle and about 20% of affected patients seek consultation [1]. One of the most typical gynaecological complaints is excessive blood loss during a single menstrual month, which is defined as more than 80 ml. Abnormal bleeding is defined as having a prolonged, excessive amount, or excessive frequency [2]. Longer intervals between breastfeeding, fewer pregnancies per woman, more permanent sterilizations, and late conception ages are

all potential contributing factors to the magnitude of menstrual disorders [3].

A few of the causes of dysfunctional uterine bleeding include endometrial hyperplasia, uterine neoplasms (polyps, leiomyomas, polyps, and malignant tumours), endometriosis, psychological distress, bleeding disorders, endocrine problems, early pregnancy states, and abnormal uterine development [4]. DUB is characterised as increased abnormal endometrial bleeding that is unrelated to any genital tract physical abnormalities, systemic illnesses, or pregnancy-related problems. To rule out any organic uterine illnesses, a comprehensive clinical examination of the abdomen, pelvis, and, if necessary, hysteroscopy is needed [5].

Because dilatation and curettage (D&C) for endometrial biopsy is an easy, safe, and reliable examination and provides direct access to the target organ, it is used when systemic or local pelvic reasons have been ruled out [5]. Patients with DUB exhibit a wide range of endometrial changes upon histopathological evaluation, from normal endometrium to hyperplasia with atypia, a premalignant disease. The type of endometrium that is revealed histopathologically determines how DUB should be treated [6,7]. For proper treatment, endometrial histology must be evaluated in patients with DUB, so the present study was carried with the aim to assess the endometrial pattern among female patients with dysfunctional uterine bleeding (DUB).

## MATERIALS and METHODS

The present cross-sectional study was carried out among female patients (age between 25 years to 60 years) with dysfunctional uterine bleeding of at least six months under the Department of Pathology, GSVM Medical College, Agra for a period of 1 year during June 2021 to May 2022 after getting obtaining the ethical approval from institutional review board. A total of 264 patients (pre- and post-menopausal age groups) with DUB were included in the study and they underwent diagnostic dilatation and curettage (DNC) or hysterectomy for DUB were enrolled. The patients with history of chemotherapy or radiotherapy and unfixed samples were excluded from the study.

## PROCEDURE

The endometrial biopsy sample was taken from diagnostic dilatation and curettage (DNC) or hysterectomy and biopsy sample was received in our department. The biopsies received in our department

was fixed with formalin. The tissues were processed and cut following which the slides were prepared. The prepared slides were stained with haematoxylin and eosin (H&E). Under the light microscope, the histopathological examination was done by consultant histopathologist and endometrial biopsy samples were classified into Proliferative endometrium, Irregular maturation, Simple hyperplasia, Endometritis, Complex hyperplasia without atypia, Progesterone effect, Complex hyperplasia with atypia, Malignancy, and Atrophic endometrium.

## DATA COLLECTION AND ANALYSIS

The pretested proforma was used to collect the patients details such as age, BMI, parity, presenting complaints and endometrial pattern of biopsies. The collected data was entered in the MS excel spreadsheet and analysed using the same. The categorical variables were presented as frequency and percentage whereas the continuous variables were presented as mean and standard deviation.

## RESULTS

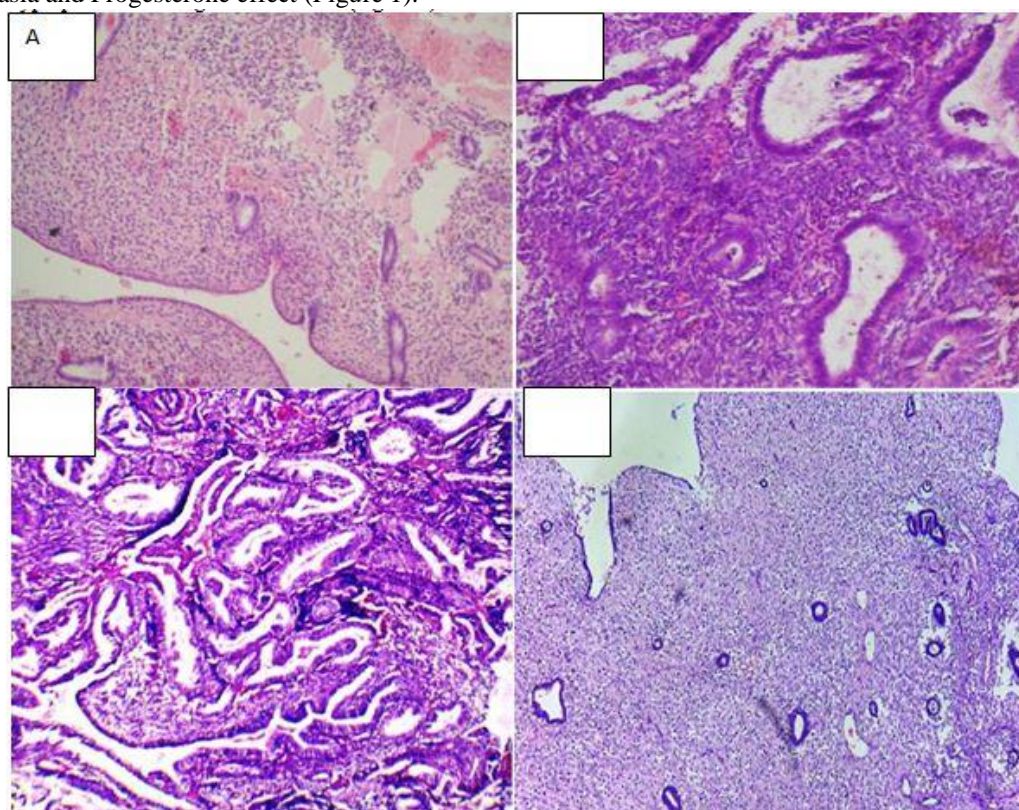
In our study, 62.1% of patients were >40 years of age, and 12.8% of patients were having age >50 years. The mean age of the patients was  $42.86 \pm 12.73$  years. The mean BMI of the patients was  $24.81 \pm 5.34 \text{ kg/m}^2$ . Only 3.9% of patients were nulliparous and 15.5% of patients were grand multiparous. Most of patients were multiparous (71.8%). Most common presenting complaints among patients was Menorrhagia (37.5%) and Polymenorrhoea (21.7%). Biopsy of patients showed most common endometrial pattern were Proliferative endometrium (22.0%), Irregular maturation (19.7%), simple hyperplasia (23.5%) and Endometritis (11.7%) (Table 1).

**Table 1: Baseline characteristics of the patients with DUB**

Variables	Frequency	%
<b>Age group</b>		
Reproductive (<40 years)	164	62.1
Perimenopausal (40-50 years)	66	25.1
Postmenopausal (>50 years)	34	12.8
<b>Mean age (in years)</b>	42.86±12.73	
<b>Mean BMI (kg/m<sup>2</sup>)</b>	24.81±5.34	
<b>Parity</b>		
Nullipara	10	3.9
Primipara	23	8.8
Multipara	190	71.8
Grand Multipara	41	15.5
<b>Presenting complaints</b>		
Menorrhagia	99	37.5
Polymenorrhoea	57	21.7
Menometrorrhagia	12	4.5
Metrorrhagia	49	18.6
Oligomenorrhoea	47	17.7
<b>Endometrial pattern</b>		
Proliferative endometrium	58	22.0
Irregular maturation	52	19.7
Simple hyperplasia	62	23.5

Endometritis	31	11.7
Complex hyperplasiawithout atypia	18	6.8
Progesterone effect	13	4.9
Complex hyperplasia withatypia	5	1.9
Malignancy	10	3.8
Atrophic endometrium	9	3.4
No interpretation (Scantymaterial)	6	2.3

Endometrium pattern among H&E-stained biopsy at 100x of patient with dysfunctional uterine bleeding showed Atrophic endometrium with small tubular glands; Simple hyperplasia with dilatation of glands; Complex hyperplasia and Progesterone effect (Figure 1).



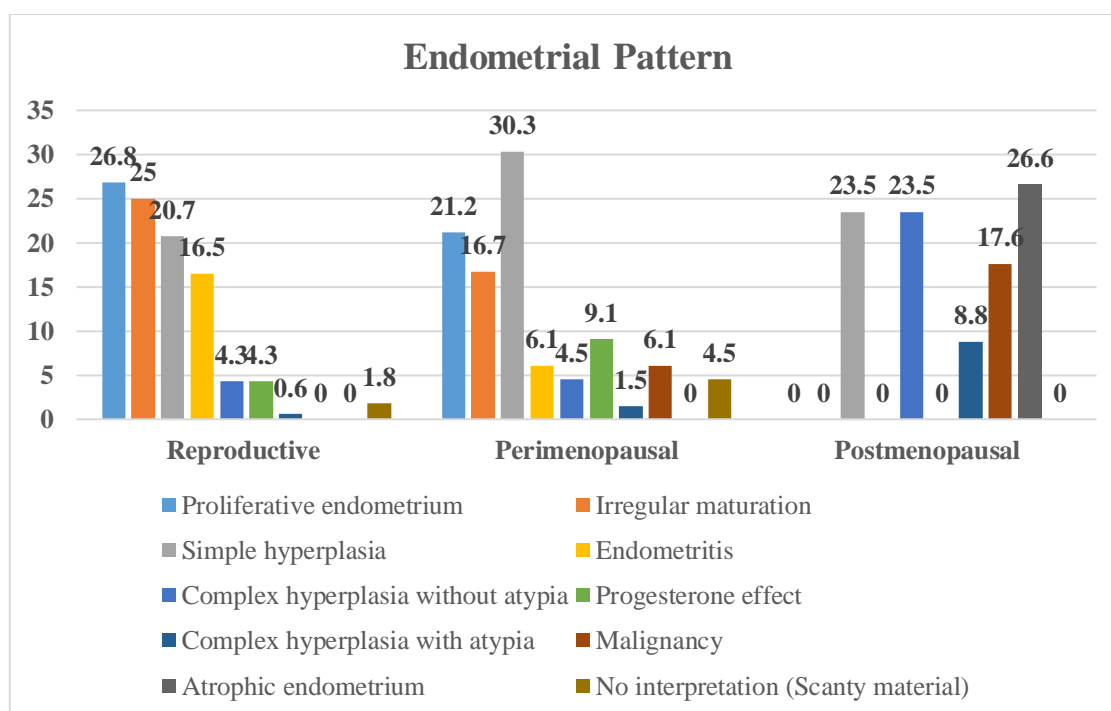
**Figure 1: Endometrium pattern among patient with DUB. A: Atrophic endometrium showing small tubular glands (H&E stain, 100X). B: Simple hyperplasia showing dilatation of glands (H&E stain, 100X). C:Complex hyperplasia (H&E stain, 100X). D: Progesterone effect (H&E stain, 100X).**

The comparison was done for endometrial pattern among Reproductive, Perimenopausal and Postmenopausal group of patients and it found 26.8% of patients in reproductive group were having Proliferative endometrium, followed by irregular maturation (25.0%), and simple hyperplasia (20.7%). In perimenopausal group simple hyperplasia (30.3%) was the most common endometrial pattern followed by proliferative endometrium (21.2%) and irregular maturation (16.7%). Among postmenopausal group atrophic endometrium (26.6%) was the most common endometrial pattern followed by simple hyperplasia (23.5%); complex hyperplasia without atypia (23.5%) and malignancy (17.6%) (Table 2 and Figure 2).

**Table 2: Comparison of Endometrial pattern among different age group patients with DUB.**

Endometrial pattern	Reproductive	Perimenopausal	Postmenopausal
	Number (%)		
Proliferative endometrium	44	14	0
Irregular maturation	41	11	0
Simple hyperplasia	34	20	8
Endometritis	27	4	0
Complex hyperplasiawithout atypia	7	3	8
Progesterone effect	7	6	0

Complex hyperplasia with atypia	1	1	3
Malignancy	0	4	6
Atrophic endometrium	0	0	9
No interpretation (Scanty material)	3	3	0



**Figure 2: Comparison of Endometrial pattern among different age group patients with DUB.**

## DISCUSSION

Hormonal imbalance or intrauterine disease are frequently linked to dysfunctional uterine bleeding. The most frequent aetiologies are anovulation, hemostasis disorders, and neoplasia, as well as structural uterine disease (such as fibroids, adenomyosis, and endometrial polyps) [8,9]. The present study showed that common cause for biopsy in our institute was Menorrhagia (37.5%), followed by Polymenorrhoea (21.7%), Metrorrhagia (18.6%), Oligomenorrhoea (17.7%) and Menometrorrhagia (4.5%). Studies by Juhi et al., and Mohamed et al., showed that menorrhagia was the most prominent presenting symptom among 57.4% and 47% of cases with DUB respectively, followed by postmenopausal bleeding among 17.9% and 27.9% of cases with DUB respectively [10,11]. Study by Abid et al., showed that among 30% of patients with DUB, polymenorrhea was the most common presenting complaints [12]. But in study by Moghalet al., metrorrhagia (48%) and menorrhagia (41%) were the presenting complaints in more than four fifth of the patients. presentation (48%)[13].

In our study, the biopsy of patients showed most common endometrial pattern as Proliferative endometrium (22.0%), Irregular maturation (19.7%), simple hyperplasia (23.5%) and Endometritis (11.7%). High amounts of oestrogen titre in the blood might have induced such an appearance, but hormonal imbalance can also cause an altogether different

appearance. The study by Mirza et al., showed that among patients with DUB, the endometrial biopsy showed 35% proliferative endometrium, 30% secretory endometrium, and 30% hyperplastic endometrium [14]. The studies by Moghal et al., Doraiswami et al., and Padhye et al., showed that among patients with DUB, the most common endometrial patterns were proliferative and secretory phases which is also comparable to our study [13,15,16].

In our study, it was found that 26.8% of patients in reproductive group were having Proliferative endometrium, followed by irregular maturation (25.0%), and simple hyperplasia (20.7%), whereas in perimenopausal group simple hyperplasia (30.3%) was the most common endometrial pattern followed by proliferative endometrium (21.2%) and irregular maturation (16.7%). Similarly in the study by Juhi et al., among patients in the perimenopausal age group the proliferative endometrium was more prevalent whereas among patients in the reproductive age group secretory type endometrium was more prevalent [10]. But in the study by Jetley et al., the incidence of secretory phase endometrium was slightly higher among perimenopausal women with DUB [17].

In perimenopausal women, endometrial hyperplasia is rather typical, and the majority of patients present with symptoms of irregular or prolonged bleeding caused on by anovulatory cycles. As mentioned before, a persistent oestrogen level leads to heavy

bleeding. Glands and stroma are affected by the epithelial overgrowth, and there is abnormal vascularization as well. Because there is a significant amount of hyperplastic tissue that might bleed and because tissue breaks down randomly, exposing vascular channels, bleeding is prolonged and extensive. Changes in the hormonal environment can be caused by abnormalities in the hypothalamic-pituitary-ovarian axis, which can cause disturbances in follicular maturation, ovulation, or corpus luteum development. Atypical uterine haemorrhage could result from these changes in the regular hormonal cycles [8].

In our study, among postmenopausal group atrophic endometrium (26.6%) was the most common endometrial pattern followed by simple hyperplasia (23.5%); complex hyperplasia without atypia (23.5%) and malignancy (17.6%). The studies by Abidet al., and Anuradha et al., showed that among patients with DUB in postmenopausal age group the atrophic endometrium was present in 33% and 20% of patients respectively [12,18]. As a result of anovulation-induced endometrial thinning and easy bleeding under trauma, the perimenopausal age group finally leads in a permanent loss of ovarian function.

The studies by Mirza et al., and Padhye et al., showed that among patients with DUB in postmenopausal age group the complex hyperplasia endometrium was present in 27% and 30% of patients respectively [14,16]. But study by Dangal et al., showed a lower incidence of complex hyperplasia in postmenopausal age group [19]. Due to ovulation failure, endometrial hyperplasia is frequently observed in perimenopausal women. Unripe follicles that continue to exist subject the endometrium to excessive and protracted estrogenic activity. The studies by Padhye et al., and Abid et al., also showed that malignancy was seen in more than one tenth of patients in the postmenopausal age group [12,16].

## CONCLUSION

Histopathological examination of D& C tissue in patients of abnormal uterine bleeding shows a wide spectrum of changes ranging from normal endometrium to malignancy, however, frequency of cause varies with age. In the present study, the most frequent finding seen in patients with DUB in reproductive age group was proliferative endometrium. In perimenopausal age group simple hyperplasia was most frequently noted, while in the postmenopausal age group atrophic endometrium was the predominant finding.

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