

## Study of endometrial pathology in abnormal uterine bleeding

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### Abstract

**Objectives:** To evaluate histopathology of endometrium in patients presenting with abnormal uterine bleeding and to find out the prevalence of various pathological conditions in endometrium in different age groups.

**Method:** Total number of 300 cases clinically presenting with AUB were studied from October 2014 to September 2015. The study included endometrial curettage, biopsy and hysterectomy specimens.

**Results:** Most common histopathological finding was proliferative phase and the most common abnormality detected was retained products of conception in 21- 40 years age group. Most common histopathological finding in 41- 50 years age group was also proliferative phase and the most common abnormality detected was endometrial hyperplasia. In 51- 60 years and >60years age groups, endometrial carcinoma constituted the most common pathology followed by endometrial hyperplasia.

**Conclusion:** Histological examination of the submitted endometrial tissue remains the standard diagnostic procedure for the assessment of AUB. Establishing a cause of AUB is important, as medical therapy is effective in managing abnormal bleeding in most cases and should be attempted before surgical management. Histopathological evaluation of endometrium is especially indicated in women over the age of 35 years to rule out preneoplastic lesions and malignancies.

**Keywords:** Abnormal uterine bleeding (AUB), Histopathology, Endometrial Hyperplasia, Endometrial Carcinoma and Endometrium.

### 1. Introduction

AUB is a symptom and not a disease. It occurs in various forms [1]. It is defined as change in frequency of menstruation, duration of flow or amount of blood loss [2]. The main duration of menses is 4.7 days; 89% of cycles last 7 days or longer. The average blood loss per cycle is 35ml [3].

AUB may be due to an underlying organic cause or may be dysfunctional in nature with no specific underlying pathology [1].

Below the age of 20 years the disturbance is most likely to be a functional one. In active reproductive life an organic cause for bleeding is more likely, pregnancy-related conditions being the most common. After the age of

40 years, functional disorders are common but the possibility of a growth, benign or malignant, must be excluded. After the menopause, a local organic cause (the most common being cancer) is often present [1].

Endometrial sampling should be performed to evaluate abnormal bleeding in women who are at risk for endometrial polyps, hyperplasia, or carcinoma. It is mandatory in the evaluation of anovulatory bleeding in women older than 35 to 40 years of age, in younger women who are obese, and in those with a history of prolonged anovulation [4].

## 2. Material and Methods

Total number of 300 cases was studied from October 2014 to September 2015. Study was performed on admitted and OPD patients clinically presenting with AUB.

### 2.1 Inclusion criteria

Samples (endometrial curettage/ biopsy/ hysterectomy specimens) from the patients clinically presenting with AUB.

### 2.2 Exclusion criteria

Patients with AUB pertaining to uterine fibroid, bleeding diathesis (Von Willebrand disease), hypothyroidism, liver diseases, systemic lupus erythematous and other endocrinopathies such as diabetes, cushing syndrome and cervical lesion.

Specimens were fixed in 10% formalin, processed, embedded in paraffin and 3- 4 micron thick sections were cut and stained with H&E. Histological evaluation was done.

## 3. Results

During the study, 300 endometrial samples presenting with AUB were obtained. Majority of the cases fall in 5th decade comprising of 133 (44.33%) cases. Most common bleeding pattern was menorrhagia seen in 45% of cases. Majority of menorrhagic cases belonged to 41- 50 years age group [Table 1] and the most common histopathological finding was proliferative phase (34.07% cases).

**Table 1: Pattern of bleeding in patients with AUB according to age group**

Pattern of Bleeding	≤20 Yrs	21-30 Yrs	31-40 Yrs	41-50 Yrs	51-60 Yrs	>60 Yrs	Total
Menorrhagia	1	22	45	62	5	-	135
Metrorrhagia	-	1	29	16	6	-	52
Menometrorrhagia	-	3	9	20	-	-	32
Polymenorrhagia	1	3	11	8	-	-	23
Post menopausal bleeding	-	-	-	20	7	2	29
Continuous bleeding	-	3	7	4	-	-	14
Polymenorrhea	-	2	3	2	-	-	7
Oligomenorrhea	-	1	3	1	-	-	5
Hypomenorrhea	-	1	2	-	-	-	3
<b>TOTAL</b>	<b>2</b>	<b>36</b>	<b>109</b>	<b>133</b>	<b>18</b>	<b>2</b>	<b>300</b>

Most common histopathological finding was proliferative phase [Figure 1] in 27.67% cases, followed by secretory phase [Figure 2] (22.67%), and endometrial hyperplasia [Figure 3a, b, c] (11.66%). 17 (12.87%) cases revealed proliferative endometrium during the secretory phase and were diagnosed as anovulatory endometrium.

Histopathology of endometrium in the age group 21- 40 years showed proliferative phase in 26.21%, secretory phase in 25.52%, RPOC in 10.34% and endometrial hyperplasia in 8.97% cases [Table 2].

**Table 2: Pattern of distribution of histopathological findings in patients between 21-40 years age group**

Histopathological Findings	Number	Percentage
Proliferative Phase	38	26.21
Secretory Phase	37	25.52
Menstruating phase	8	5.52
Endometrial hyperplasia	13	8.97
Disordered proliferative phase	11	7.59
RPOC	15	10.34
Irregular shedding	4	2.76
Atrophic endometrium	2	1.38
Endometritis	2	1.38
Endometrial polyp	2	1.38
Pill pattern	9	6.21
Endometrial Carcinoma	1	0.68
Gestational endometrium	1	0.68
Gestational Trophoblastic tumour	2	1.38
<b>Total</b>	<b>145</b>	<b>100</b>

Histopathology of endometrium in the age group 41- 50 years showed proliferative phase in 33.10%, secretory phase in 21.05% and endometrial hyperplasia in 13.53% cases [Table 3].

**Table 3: Pattern of distribution of histopathological findings in patients between 41-50 years age group**

Histopathological Findings	Number	Percentage
Proliferative Phase	44	33.10
Secretory Phase	28	21.05
Menstruating phase	1	0.75
Endometrial hyperplasia	18	13.53
Disordered proliferative phase	9	6.76
Irregular shedding	7	5.26
Atrophic endometrium	8	6.02
Endometritis	4	3.01
Endometrial polyp	2	1.50
Pill pattern	11	8.27
Gestational endometrium	1	0.75
<b>Total</b>	<b>133</b>	<b>100</b>

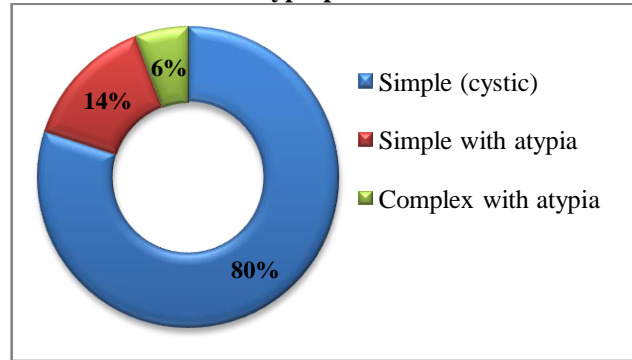
Histopathology of endometrium in the age group >50 years showed endometrial carcinoma in 30% and endometrial hyperplasia in 20% cases [Table 4].

**Table 4: Pattern of distribution of histopathological findings in patient’s above 50 years age group**

Histopathological Findings	Number	Percentage
Proliferative Phase	1	5
Secretory Phase	3	15
Menstruating phase	1	5
Endometrial hyperplasia	4	20
Irregular shedding	2	10
Atrophic endometrium	2	10
Pill pattern	1	5
Endometrial Carcinoma	6	30
<b>Total</b>	<b>20</b>	<b>100</b>

Post menopausal bleeding was seen in 9.66% cases. Endometrial hyperplasia accounts for 11.66% cases and simple (cystic) type was most common seen in 80% cases [Figure I].

**Figure I: Frequency of different histological types of hyperplasia**



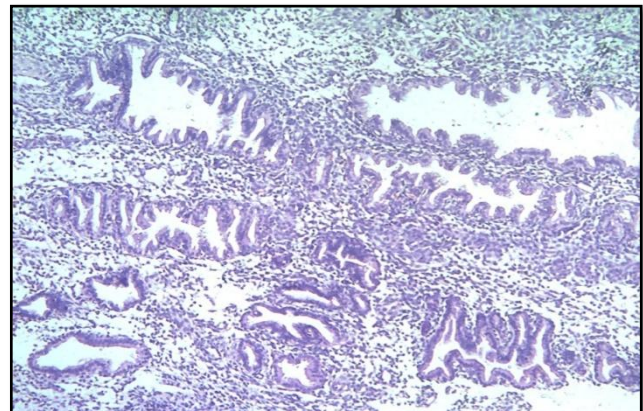
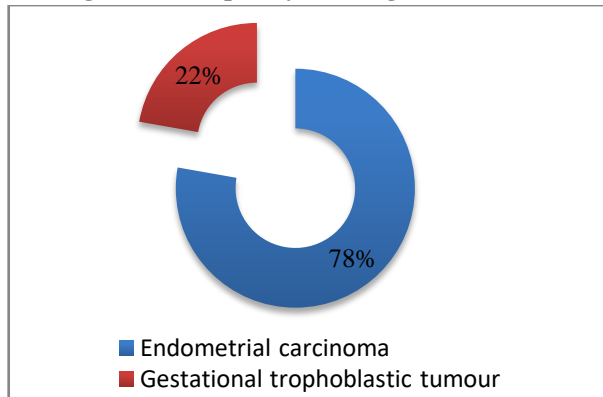
Majority of endometrial hyperplasia cases fall in 5th decade [Table 5].

**Table 5: Type of endometrial hyperplasia according to age group**

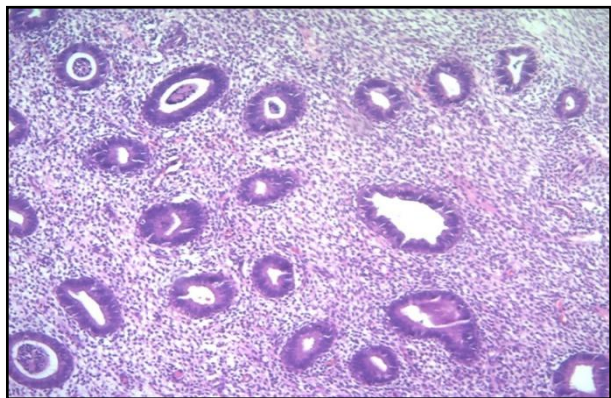
Type of endometrial hyperplasia	≤ 20 yrs	21- 30 yrs	31- 40 yrs	41- 50 yrs	51- 60 yrs	> 60 yrs	Total
	-	-	11	14	3	-	28
Simple with atypia	-	-	1	3	1	-	5
Complex with atypia	-	-	1	1	-	-	2
<b>Total</b>	-	-	<b>13</b>	<b>18</b>	<b>4</b>	-	<b>35</b>

Out of 9 malignant tumours, majority of cases were of endometrial carcinoma seen in 7 (77.78%)[Figure II] cases. Most common subtype of endometrial carcinoma was classical endometrioid adenocarcinoma [Figure 4] seen in 5 cases.

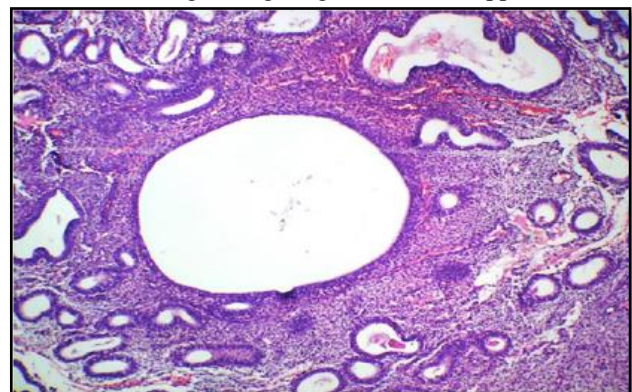
**Figure II: Frequency of malignant tumours**



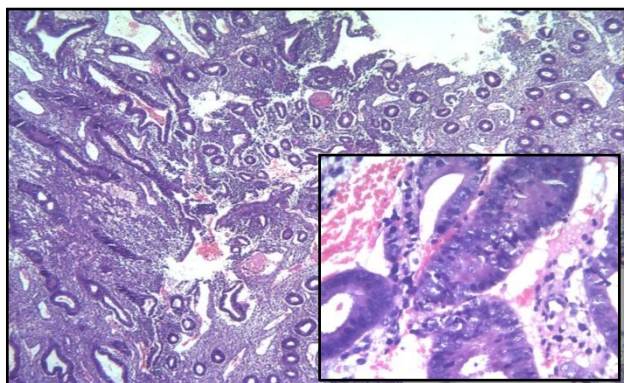
**Figure 2: Secretory phase (H&E: 100X):** tightly coiled endometrial glands giving a saw- tooth appearance



**Figure 1: Proliferative phase (H&E: 100X):** widely spaced tubular endometrial glands

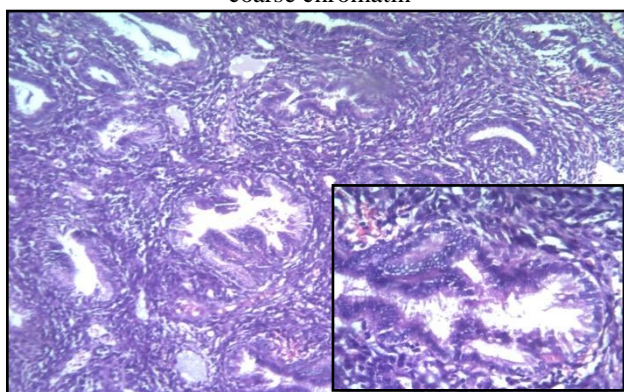


**Figure 3a: Simple Hyperplasia without atypia (H&E: 100X):** glands are minimally crowded but are dilated and have outpouchings



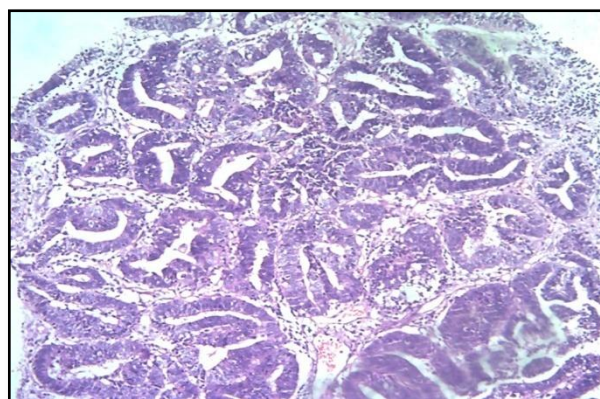
**Figure 3b: Simple Hyperplasia with atypia (H&E: 100X):** glands are closely packed and show cytologic atypia.

**Inset (H&E: 400X):** nuclei are elongated, oriented perpendicular to basement membrane and have even to coarse chromatin



**Figure 3c: Complex Hyperplasia with atypia (H&E: 100X):** glands with complex profile and papillary infoldings are crowded, compressing intervening stroma.

**Inset (H&E: 400X):** nuclei are rounded, have vesicular chromatin, display stratification and loss of polarity



**Figure 4: Endometrioid Adenocarcinoma (H&E: 100X):** glands display confluent glandular pattern

#### 4. Discussion

Endometrium is a dynamic, hormonally sensitive and responsive tissue, which constantly and rhythmically undergoes changes in the active reproductive life. It is a sensitive bioassay for estrogen and progesterone, whose actions are mediated on specific receptors.[5]

Excessive and irregular uterine bleeding (abnormal uterine bleeding) continues to be one of the most frequently encountered complaints in Gynecology. The frequency of various causes of AUB varies with the age of the patient. Dysfunctional uterine bleeding is the diagnosis of exclusion in which no specific organic cause can be attributed to as the reason for the bleeding.[6]

**Table VI: Comparative study of age incidence**

Authors	No	<20		21-30		31-40		41-50		51 & above	
		Total	%	Total	%	Total	%	Total	%	Total	%
Sutherland[7](1950)	1000	36	3.6	242	24.2	343	34.3	362	36.2	17	1.7
Anusuya Das[8](1964)	117	17	14.5	24	20.5	33	28.2	38	32.5	5	4.3
Wagh and Swamy[9] (1964)	552	97	17.6	215	39	143	25.9	94	17	3	0.5
Mehrotra[10](1972)	150	15	10	72	48	35	23.3	25	16.7	3	2
Muzaffar[11] (2005)	260	0	0	33	12.7	102	39.2	125	48.1	-	-
Saraswathi[12](2011)	409	6	1.5	85	20.8	116	28.4	137	33.4	65	15.8
<b>Present study (2016)</b>	<b>300</b>	<b>2</b>	<b>0.6</b>	<b>36</b>	<b>12</b>	<b>116</b>	<b>38.6</b>	<b>125</b>	<b>41.6</b>	<b>21</b>	<b>7</b>

The highest incidence of AUB was noted in 41- 50 years age group in the present study which is in concordance with the results of the study by Sutherland [9], Anusuya Das[8], Muhammed Muzaffar[11] and Doraiswami Saraswathi[14], whereas Wagh and Swamy[9] and Mehrotra *et al.*[10] reported maximum incidence in 21-30 years age group.

Considering these discrepant observations, one may conclude that, any age after menarche is not exempt IJBAR (2017) 08 (02)

from AUB. In present study, incidence of AUB in 21- 40 years age group (52%), is in concordance with the result of the studies by Sutherland[7] (58.5%) and Mehrotra *et al.*[10] (71.3%).

In this study, our patients presented with different types of AUB; the commonest presenting feature was menorrhagia (45%). Menorrhagia as a common complaint has often been reported in literature, it varied between 51.9% [11] and 53.3%.[13,14] Nayak *et al.*,[15] found

menorrhagia in 49.1% of cases similar to our study. Similarly Moghal *et al* [16] reported in their study that 41% of cases of menorrhagia. Similar finding were shown by Ara and Roohi [17] (49.06%) in 2011 and Zeeba *et al.*[18] (41%) in 2013. The frequency of cases with menorrhagia was less as compared to studies conducted by Yusuf *et al.*[19] (69.65%), Archana *et al.*[13] (53.3%) and Muzaffar *et al.*[11] (51.9%). Frequency of cases with menorrhagia were more when compared with studies conducted by Wahda *et al.*[20] (34%), Bhatta *et al.*[21] (30.32%) and Parveen *et al.*[22] (18%). The second common pattern of bleeding is metrorrhagia, which accounts for 17.33% of cases. Saera Afghan *et al* reported 20.6% cases of metrorrhagia, which is almost similar to our study. Sulhyan *et al* reported 23% cases of metrorrhagia in concordance with our study. Muzaffar *et al* reported 35.4% of metrorrhagia cases, which is high.[23]

Our study significantly revealed that the occurrence of menstrual disorders increases with advancing age. The commonest age group presenting with excessive bleeding in our study was 41- 50 years, accounting for 129 (43%) cases in concordance with study conducted by Muzaffar *et al.*[11] (48.1%) and Yusuf *et al.*[19] (38.06%). However, our results were more as compared to Saraswathi *et al.*[12] (33.5%), Abdullah *et al.*[24] (32.1%) and Luqman *et al.*[25] (30%) reported in literature.

In present study, the most common histological pattern in 21-40 years age group is proliferative phase (25.50%), which correlates with observations of Muzaffar *et al.*[11] (25.8%). Whereas, the incidence was higher in studies of Veena *et al* [26] (30.8%) and lower in studies of Dangal G.[27] (17.8%).

In our study, the common histological pattern in age group between 41-50 years is proliferative endometrium, which is observed in 34.10% of cases. Similar to studies conducted by Damle *et al.*[28] (35.09%), Dangal.[27] (38.5%). But the incidence was lower in studies conducted by Bhatt and Sinha [21] (29.16%) and Khare *et al.*[29] (21.2%).

In the present study, incidence of endometrial carcinoma (30%) was more common in 51- 60 and >60 years age group. The result of this study was almost similar to data mentioned by Yusuf *et al.*[19] and Escoffery *et al.*[30] in their study. This is also similar to that reported by Baral *et al.*[31] with an incidence of 21%. The second most common incidence is of endometrial hyperplasia, which is similar, to study conducted by Asim *et al.*[32] The present study shows that the detection rate of endometrial carcinoma increases with increasing age, 0.67% in 21- 40 years age group and 30% in >50 years age group. This finding is similar to studies conducted by Dangal G.[27] and Gredmark *et al.*[33]

The present study shows the detection of endometrial cancer increases with age. In this study endometrial carcinoma was seen in 7 (2.33%) cases which was similar to that reported by Sarwar *et al.*[34] (2%). Lower incidence of 0.4% [35] and 0.47%[29] has also been reported in literature. Likewise, higher incidences of 3.33% and 4.4% have been reported by Mencalgia[36] and Doraiswami *et al*[12] respectively.

In present study, hyperplasia was seen in 35 (11.66%) of cases. Similar observations were made by Dangal *et al.*[27] (10.7%), and Gredmark *et al.*[37] (10%) and Abdullah *et al.*[24] (9.1%). However, its incidence was lower in a study by Jairajpuri *et al.*[18] (5.79%) and higher in studies by Baral *et al.*[31] (18.3%) and Muzaffer *et al.*[11] (24.7%). Simple hyperplasia without atypia was the most common type in the present study which is similar to studies conducted by Muzaffar *et al.*,[11] Pilli *et al.*[38] and Vakiani *et al.*[39] Endometrial hyperplasia is a common diagnosis especially in 41- 50 age group women often causing symptoms of irregular or prolonged bleeding due to anovulatory cycles in majority of cases.[14] Majority of the studies have observed an increased incidence similar to our findings in 41- 50 years age group.[11,12,24]

Most common histopathological finding was proliferative phase and the most common abnormality detected was retained products of conception in 21- 40 years age group. Most common histopathological finding in 41- 50 years age group was also proliferative phase and the most common abnormality detected was endometrial hyperplasia. In 51- 60 years and >60years age groups, endometrial carcinoma constituted the most common pathology followed by endometrial hyperplasia.

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