



HISTOPATHOLOGICAL ANALYSIS OF ENDOMETRIUM IN ABNORMAL UTERINE BLEEDING: A PROSPECTIVE, SINGLE-CENTER, OBSERVATIONAL ANALYSIS AT A TERTIARY CARE HOSPITAL

Dr. Bhawana¹, Dr. Meenakshi Samariya^{2*}, Dr. Devendra Kumar Benwal³, Dr. Anil Samariya⁴

Abstract

Introduction: Abnormal uterine bleeding (AUB) is the commonest presenting symptom and major gynecological problem responsible for as many as one-third of all out patient gynecologic visit.² AUB is defined as any bleeding pattern that differs in the frequency, duration and amount from a pattern observed during a normal menstrual cycle or menopause. It is a common problem having a long list of causes in different age groups.

Methods: The present study was conducted in the Department of Obstetrics & Gynecology, JLN Medical College, Ajmer over a period 2 years from Dec 2020 to Dec 2022. Subjects included reproductive women of all age groups attending the Department with abnormal uterine bleeding.

Results: distribution pattern of histopathological findings. Proliferative phase was the most common CI finding (35%) followed by secretory phase accounting (26.5%), simple hyperplasia without atypia (24%), and atrophic endometrium (3.5%). Disordered proliferative endometrium and mixed endometrium were observed in 3% women each. Endometrium polyp, complex hyperplasia with atypia, and endometrial adenocarcinoma were observed in 2%, 1.5%, and 1% cases respectively. Figure 2a-f shows H&E images of proliferative phase, secretory phase, and simple hyperplasia without atypia.

Conclusion: Histopathological examination of endometrial biopsies in patients of abnormal uterine bleeding shows a wide spectrum of changes ranging from normal endometrium in various hormonal cycles to malignancy.

Key words: Abnormal uterine bleeding, Histopathology, Proliferative phase

¹PG resident, Department of Obstetrics & Gynecology, JLN Medical College, Ajmer

^{2*} Associate Professor, Department of Obstetrics and Gynecology, JLN Medical, College, Ajmer

³Associate professor department of Obstetrics and Gynecology, SMS Medical College, Jaipur

⁴Senior Professor, Department of Medicine, JLN Medical, College, Ajmer

***Corresponding Author:** Dr. Meenakshi Samariya

*Associate Professor, Department of Obstetrics and Gynecology, JLN Medical, College, Ajmer

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Introduction

One of the most active tissues in the human body and an intriguing tissue for histopathologic investigation is the endometrium that lines the uterine cavity. In response to sex hormones produced in the ovaries, it is characterised by cyclical processes of cell proliferation, differentiation, and death.¹

The most frequent presenting symptom and main gynaecological issue, abnormal uterine bleeding (AUB), accounts for up to one-third of all outpatient gynaecological visits.² Any bleeding pattern that differs from the pattern seen during a typical menstrual cycle or menopause in terms of frequency, length, and amount is referred to as AUB. It is a widespread issue with a vast number of potential causes in various age groups.³

The present study evaluated histopathological analysis of endometrium in abnormal uterine bleeding.

Patients and methods

The present study was conducted in the Department of Obstetrics & Gynecology, JLN Medical College, Ajmer over a period of 2 years from Dec 2020 to Dec 2022. Subjects included reproductive women of all age groups attending the Department with abnormal uterine bleeding. The following women were disqualified from the study: those with leiomyomas, hemostatic disorders, acute pelvic inflammatory disease, abnormal cervical pap smears, previous abnormal endometrial biopsies, pregnancy complications, acute pelvic inflammatory disease, and those taking hormone therapy for abnormal uterine bleeding.

Methodology

The pathology lab examined the endometrial samples (endometrial curettage/biopsy and hysterectomy specimens) it received. The gross morphology of these specimens, which were fixed in 10% formalin, was noted. Representative pieces were collected from hysterectomy specimens and endometrial tissues were completely implanted. These pieces were maintained in fixative and stored in cassettes before being processed in the automatic tissue processor. Using standard haematoxylin and eosin, 3–4 micrometre thick sections of the paraffin tissue blocks were cut. The results of a thorough histological investigation were recorded. Menstrual blood was collected from 20-year-old females to test for HPE.

Data analysis

Data were recorded in a proforma, and entered into Microsoft® Excel workbook 2019, and exported into SPSS v21.0 (IBM, USA) for statistical analysis. Categorical data were expressed as frequency, percentages, and compared using Chi square test. P value <0.05 was considered statistically significant.

Results

Baseline characteristics

The study participants' initial characteristics are shown in Table 1. The subjects were between the ages of 17 and 65. The age range of 20 years saw the fewest cases (2%), while the age range of 31–40 years saw the majority of cases (38%) and the majority of cases (38%) respectively. Among the subjects, 58% were multiparous, and 29.5% were grand multiparous. Heavy menstrual bleeding (60.5% of cases), intermenstrual bleeding (12.5%), and oligomenorrhea (3% of cases) were the most frequent symptoms.

Histopathological findings

The distribution pattern of the histopathological results is shown in Figure 1. The most frequent histological result (35%) was the proliferative phase, which was followed by the secretory phase accounting (26.5%), simple hyperplasia without atypia (24%) and atrophic endometrium (3.5%). 3% of women each had mixed endometrial and disordered proliferative endometrium. In 2%, 1.5%, and 1% of cases, respectively, endometrial polyps, complicated hyperplasia with atypia, and endometrial cancer were found. Figure 2a–f displays H&E pictures of simple hyperplasia without atypia, secretory phase, and proliferative phase.

Histological findings in reproductive age group

Proliferative phase was frequently seen in 41.3% of the 121 women in the reproductive age group, followed by secretory phase (33%) whereas endometrial polyp was only seen in one individual (Figure 3).

Histological findings in heavy and prolonged menstrual bleeding

Patients who reported with heavy and continuous bleeding most frequently had endometrium in the proliferative phase (43.8%), followed by the secretory phase (31.3%), simple hyperplasia without atypia (18.7%), and mixed endometrium (6.2%). Proliferative phase was the most common histological finding in women who had recurrent menstrual bleeding (41.6%), followed by secretory

phase (33.4%) and simple hyperplasia without atypia (25.2%). (Figure 4).

Discussion

Abnormal uterine bleeding continues to be one of the most common and perplexing problems in Gynecological practice. It may be present at any age between puberty and menopause. It may be associated with various kinds of histopathological findings in the endometrium.

The age of patients in the present study ranged from 17 to 65 years. The maximum number of cases were seen in the age group of 31-40 years (38%) and minimum number were seen in the age group of <20 years (2%). In a study by **Doraiswami et al**,⁴ the age of 409 patients studied, were categorized into seven groups. Age of patients with AUB ranged from 17 to 79 years in our study. Abnormal uterine bleeding was commonly seen in the 41 to 50 years age group and the predominant pattern noted was normal cycling endometrium closely followed by disordered proliferative pattern. Except in the 71–80 years age group, a significant statistical association was seen between causes of AUB and age group with P value <0.001. In a study by **Muzaffar et al**,⁵ a total of 260 endometrial curettings were studied. The ages of patients ranged from 21-50 years. They were divided into three age groups. Maximum frequency was observed in 41-50 years, then in 31-40 years and minimum in 20-30 years age group.

In a study by **Alshdaifat**,⁶ among the 536 in the nulliparous group, the predominant pattern noted was the functional endometrium pattern (n=361, 67.4%); among which proliferative phase endometrium was the most common finding (n=201, 55.1%) followed by secretory phase endometrium (n=160, 44.3%). The second most common finding was pregnancy-related patterns (n=441, 30.9%), with products of conception (normal pregnancy) being the only finding among this pattern (n=70, 100%). The least common finding was atrophic endometrium in 3 patients.

Among the 2696 cases in the multiparous group, the predominant pattern noted was the functional endometrium pattern (n=1506, 55.9%) among which proliferative phase endometrium was the most common finding (n=865, 57.4%) followed by secretory phase endometrium (n=641, 42.6%) The second most common finding was pregnancy-related patterns (n=496, 18.4%), with products of conception (normal pregnancy) being the most common finding among the pattern (n=490, 96.8%) followed by partial molar pregnancy (n=3,

0.6%), complete molar pregnancy (n=2, 0.4%) and Arias-Stella reaction in one patient only (n=1, 0.2%). The least common finding was atrophic endometrium in 16 patients.

The proliferative phase was the most common histopathological finding accounting for 35% followed by secretory phase accounting for 26.5% , simple hyperplasia without atypia accounting for 24% and the least commonly seen were endometrial polyp 2% ,complex hyperplasia with atypia 1.5% , endometrial adenocarcinoma 1%. In a study by **Khan et al**,⁷ endometrial lesions according to histopathology reports as: proliferative phase endometrium (46.6%), secretory phase endometrium (38.4%), atrophic endometrium (1%), endometritis (1.4%), polyp (0.6%), hyperplasia (cystic (5.2%), adenomatous (3.8%), and atypical (3.6%), and carcinoma (0.4%).

Conclusion

Histopathological examination of endometrial biopsies in patients of abnormal uterine bleeding shows a wide spectrum of changes ranging from normal endometrium in various hormonal cycles to malignancy. In present study, the most frequent finding seen in patients with AUB was In reproductive age group proliferative phase. In peri and postmenopausal women simple hyperplasia without atypia most frequently noted.

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Table 1: Baseline Characteristics

	Number	Percentage
Age group (years)		
≤20	4	2%
21-30	45	22.5%
31-40	76	38%
41-50	63	31.5%
>50	12	6%
Parity		
Nulliparous	25	12.5%
Multiparous (1-3)	116	58%
Grand-multiparous (>3)	59	29.5%
Bleeding patterns		
Heavy bleeding (Menorrhagia)	121	60.5%
Intermenstrual Bleeding (Metrorrhagia)	25	12.5%
Heavy & prolonged bleeding (Menometrorrhagia)	16	8%
Frequent menstrual bleeding (Polymenorrhagia)	12	6%
Oligomenorrhoea	06	3%
Post-menopausal Bleeding	20	10%

Table 2: Study of histopathological findings in correlation with Frequent menstrual bleeding

Histopathological findings	Number	Percentage
Proliferative phase	05	41.6%
Secretory phase	04	33.4%
Simple hyperplasia without atypia	03	25%
Total	12	100%

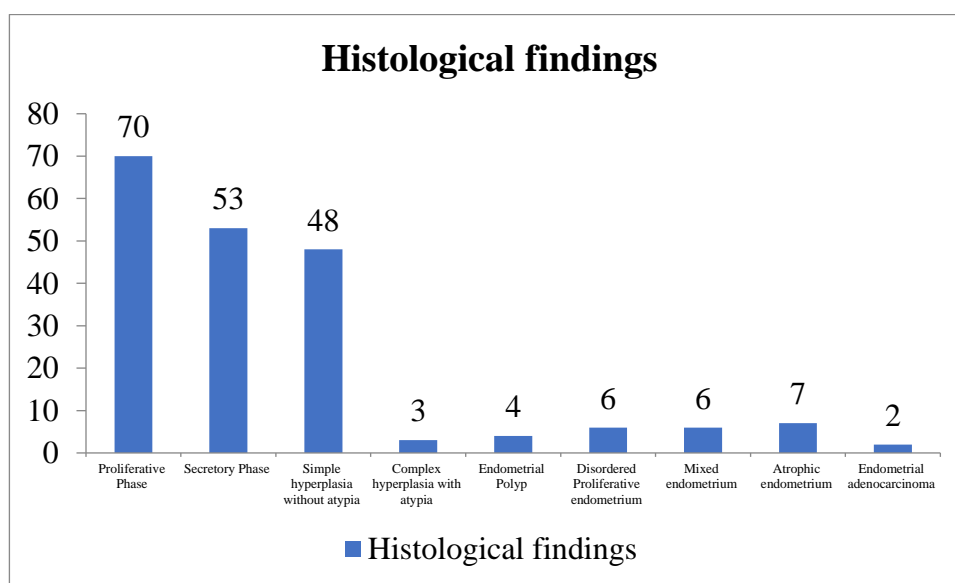


Figure 1: Analysis of Histopathological findings

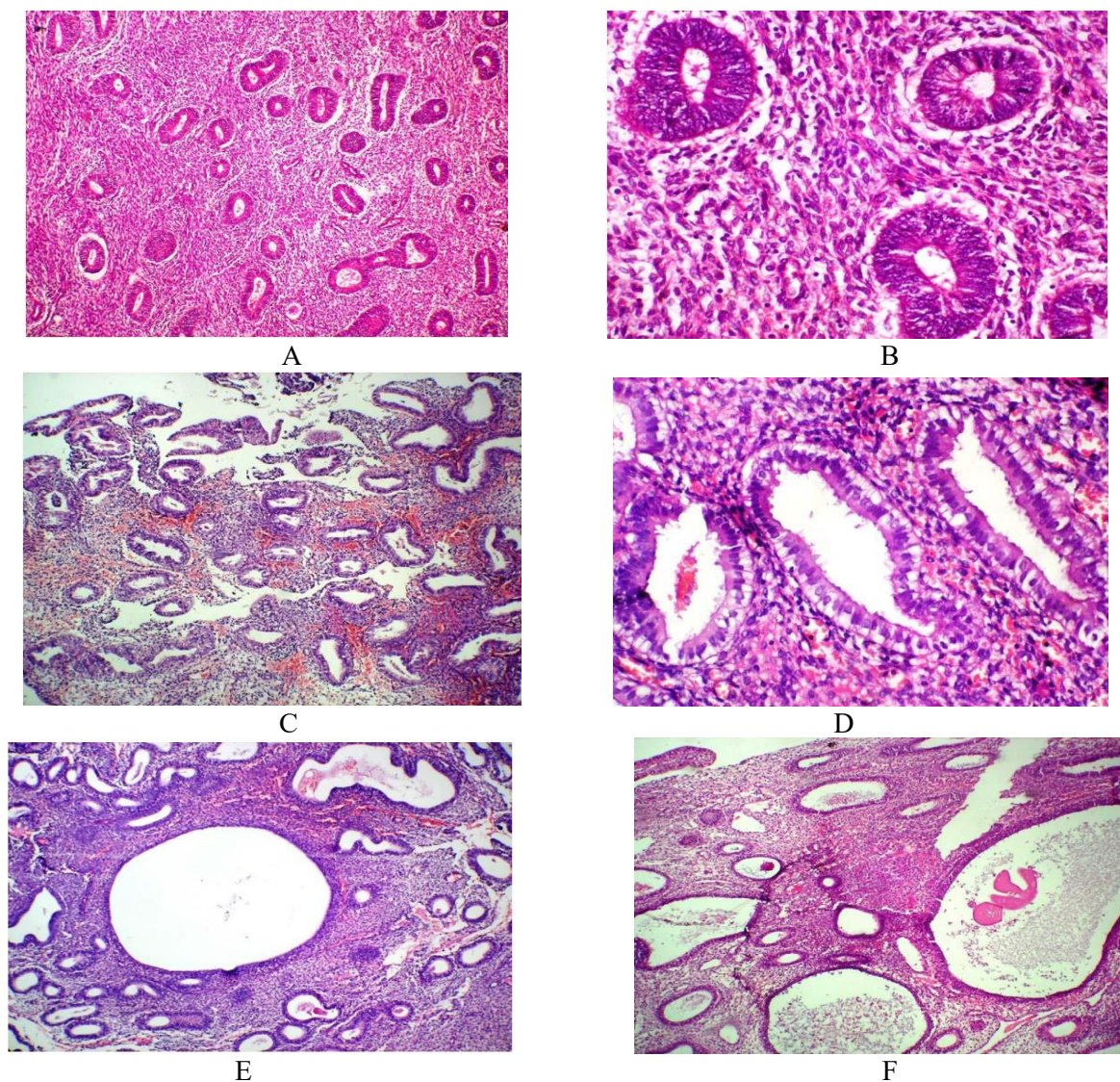


Figure 2: H&E images in 10x (left panel) and 40 x (right panel). A-B: Proliferative phase with round to tubular glands lined by pseudostratified epithelium (s showed by arrow), surrounded by cellular stroma; C-D: Secretory phase with tortuous glands showing subnuclear vacuolation and oedematous stroma (as shown by arrow); E-F: Simple hyperplasia without atypia with large cystically dilated glands (as shown by arrow) against compact stroma.

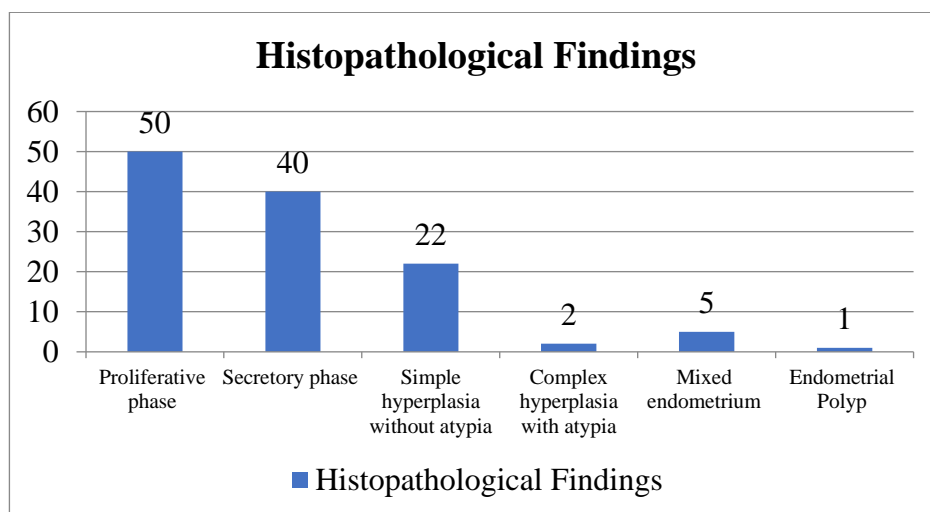


Figure 3: Pattern of distribution of Histopathological findings in patients of the reproductive age group (21-40 years)

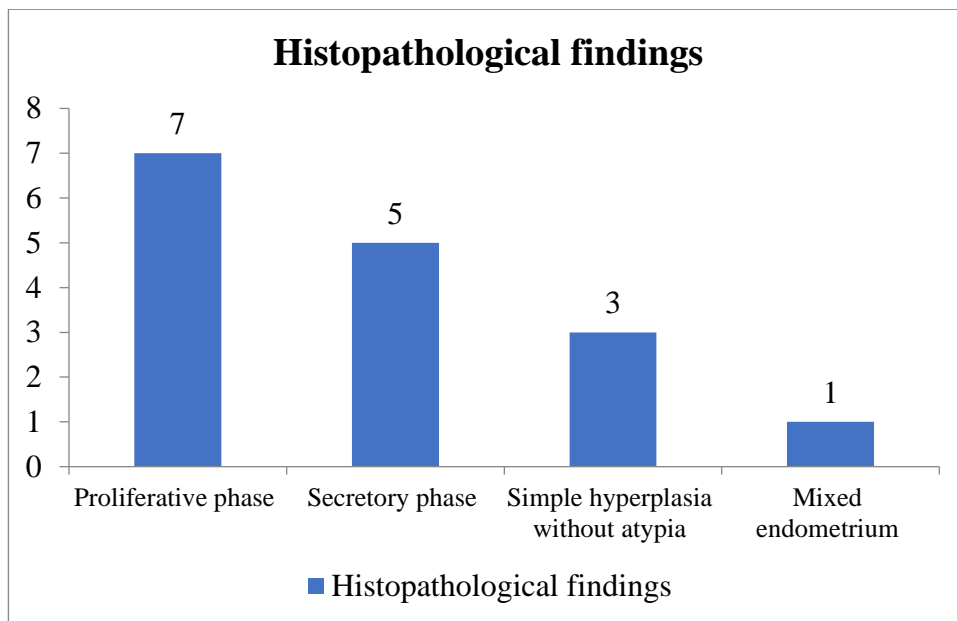


Figure 4: Study of histopathological findings in correlation with heavy & prolonged bleeding