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Study of histopathological pattern of endometrial biopsy in patients with abnormal uterine bleeding

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Abstract
Introduction: Abnormal Uterine Bleeding (AUB) is one of the most common problems among women of all age groups. Endometrial sampling is a frequently performed procedure by the gynaecologist that offers an opportunity to diagnose pathological conditions in the endometrium to accurately evaluate and diagnose the aetiology. A study of the endometrium will establish the underlying cause and thereafter help the gynaecologist to plan for management.
Aims: To determine the histopathological pattern of endometrial biopsies in patients with AUB across different age and parity groups who have undergone dilation and curettage (D&C).
Material and Methods: The current study that evaluated 98 patients with AUB by dilatation and curettage and/or endometrial biopsy taken from the study period was from January 2023 to January 2024.
Results: The most common endometrial pattern found to be proliferative endometrium (20/98) 20.40% followed by disordered proliferative endometrium (19/98) 19.38% and later by endometrial hyperplasia without atypia (15/98) 15.30%, secretory endometrium (14/98) 14.28%, polyp (8/98) 8.16%, endometrial hyperplasia with atypia (6/98) progesterone related change (6/98) 6.12%,Endometrial carcinoma (5/98) 5.10%, atrophic endometrium (3/98) 3.06% and lastly one cases of each endometritis and granulomatous inflammation.
Conclusion: Endometrial biopsy or curettage could be safe and effective diagnostic step in the evaluation of AUB after ruling out medical causes with a detailed workup of the patient. This could help the clinician to design therapy for successful management.

Keywords: Abnormal uterine bleeding, AUB, Biopsy, Endometrium, Histopathology, endometrial polyp and Endometrial carcinoma

Introduction

The endometrium undergoes physiological and morphologic changes by the complex interplay of endogenous sex steroids and other systemic as well as iatrogenic factors and when this gets disturbed it manifests as Abnormal uterine bleeding (AUB) [1].

The cause of abnormal uterine bleeding differ in different age groups as well as endometrial response to hormones and their variations and other structural lesions. AUB interferes significantly with the quality of life among women.

The aetiology of AUB varies with age; the first step is to exclude pregnancy-related causes by means of a patient history and the presence of the β-HCG by pregnancy test [1].

After excluding pregnancy, a thorough investigation using the PALM-COEIN classification proposed by FIGO focuses on structural pathologies and non-structure pathologies [1, 3].

PALM: Stands for structural causes like polyps, adenomyosis, leiomyoma and malignancy [4].

COEIN: Stands for non-structural causes like coagulopathies, ovulatory dysfunction, endometrial causes, iatrogenic causes and not otherwise classified [4].

Endometrial biopsy is the gold standard method for distinguishing normal endometrium from pathological endometrium [7].

Evaluation of endometrial biopsies helps not only to identify the cause of AUB but also to provide an appropriate treatment thereby reducing the need for complications associated with hysterectomies [6, 7].

AIM: To determine the histopathological pattern of endometrial biopsies in patients with AUB across different age groups who have undergone dilation and curettage (D & C).

Material and Methods

The current study was conducted from archives of the histopathology register, of the department of Pathology, SMIMER, Surat. The study period was from January 2023 to April 2024.

Materials of the study was endometrial tissue of the 94 cases of AUB collected by dilatation and curettage, and sent for histopathological study to the department of pathology. Detailed clinical history, clinical examination findings and different investigations were collected. All endometrial specimen obtained through D & C were fixed in a 10% formalin. The fixed tissue is subjected to processing, stained with H& E stain and examined under light microscope.

Inclusion Criteria: Any patient with AUB from 18 to 75 years was included in this study.

Exclusion Criteria: Patients with gestational cause and autolysed specimens were excluded.

Results

Table 1 show age wise distribution. The present study comprised of 98 study of endometrial biopsy. Age of the patients with AUB ranges from 18 to 70 years, with a mean of 45.5 years. Highest incidence of AUB was found in the age group of 41 to 50 years.

Table 2 show histopathological findings of the endometrial biopsy maximum case was observed is proliferative endometrium (20.40%) followed by disordered proliferative endometrium (19.38%) and least common pattern is endometritis (1%). Table 3 show age wise distribution of histomorphological patterns of endometrium The endometrial sample are divided in to reproductive, perimenopausal and postmenopausal group based on the age of the patient and correlated with endometrial patterns

Table 1: Age wise distribution of endometrial samplings in AUB

Age group	Numbers	Percentage (%)
<20 years	2	2.04
21-30 years	11	11.22
31-40 years	33	33.67
41-50 years	42	42.85
51-60 years	7	7.14
>60 years	3	3.06
Total	98	100

Table 2: Distribution of Histomorphological patterns of Endometrium

Endometrial patterns on Histopathology		
Endometrial patterns	**Number of cases**	**Percentage (%)**
Proliferative endometrium	**20**	**20.40%**
Disordered proliferative Endometrium	19	19.38%
Secretory endometrium	14	14.28%
Endometrial hyperplasia without Atypia	15	15.30%
Polyp	8	8.16%
Endometrial hyperplasia with Atypia	6	6.12%
Progesterone related changes	6	6.12%
Endometrial carcinoma	5	5.10%
Atrophic endometrium	3	3.06%
Endometritis	1	1.03%
Granulomatous inflammation	1	1.03%
Total	98	100%

Table 3: Age wise distribution of Histomorphological patterns of endometrium

Histomorphological Pattern	Total No. of cases	Reproductive (18-40 Years)	Perimenopausal (41-50 years)	Postmenopausal (>50 years)
Proliferative endometrium	20	6 (14.63%)	13 (30.23%)	1(6.66%)
Disordered proliferative endometrium	19	7 (17.07%)	12 (27.90%)	0
Secretory endometrium	14	9 (21.95%)	4 (9.30%)	1(7.14%)
Endometrial hyperplasia without atypia	15	9 (21.95%)	4 (9.30%)	2(14.28%)
Polyp	8	3 (7.31%)	4 (9.30%)	1 (7.14%)
Endometrial hyperplasia with atypia	6	3 (7.31%)	1 (2.32%)	2(14.28%)
Progesterone related changes	6	3 (7.31%)	3 (6.97%)	0
Endometrial carcinoma	5	0	2(4.65%)	3(21.42%)
Atrophic endometrium	3	0	0	3(21.42%)
Endometritis	1	1(2.43%)	0	00
Granulomatous inflammation	1	1(2.43%)	0	0
Total	98	41	43	14

Discussion

AUB is the most common presenting complaints in Gynaecology outpatient department worldwide accounting for almost 20% of total OPD attendance [1]. Prevalence of AUB in developing countries is about 5-15% [2].

AUB is due to varied causes, physiological, pathological or pharmacological and it leads to considerable social and physical morbidities. The evaluation of AUB requires adequate history, physical examination and laboratory investigations including imaging and endometrial sampling [2]. Endometrial evaluation is performed to assess the hormonal influence of the endometrium and also to diagnosis premalignant and malignant conditions [3].

The youngest patient in our study was 18 years of age and oldest was 70 years. In our study of 98 cases, the peak incidence is seen among the age group of 41-50 years (42 cases, 42.85%) followed by 31-40 years (33 cases 33.67%). It is comparable to other studies by Prathipaa R, *et al*., (42.19%), Gitika Hyanki, *et al*., (47 cases, 47%), Zothansangi *et al*., (43.26%), Mamjari SKVSK, *et al*., (36%), Ilyas *et al*., (50%) and Doraiswami, *et al*., (33.5%) [1-6]. An increased number of cases in this age group, which is mostly the perimenopausal age, could be due to fact that as women reach menopause, there is a decrease in the number of ovarian follicles along with increased resistance to gonadotrophic stimulation resulting in a low level of oestrogen which is essential requirement for growth and maintenance of normal endometrium.

Proliferative and secretory phases are part of normal physiological phases of endometrium. These have been the most frequently encountered pattern in our study with proliferative endometrium 20.40% of case followed by

secretory with 19.38%. These findings were in concordance with that of Ilyas AM *et al*., [5] and Zothansangi *et al*. [3].

AUB in proliferative phase may be result of hormonal imbalance leading to intermittent anovulatory cycles. Here, follicles are formed but ovulation does not occur either due to pituitary-hypothalamus dysfunction or lack of signals. As a result there is oestradiol but no progesterone. Follicles are either involute leading to oestrogen withdrawal or sustained oestrogen levels can lead to endometrium stimulation.

AUB in secretory phase occurs when ovulation takes place but corpus luteum does not develop. A disturbance in the rate and amount of progesterone is responsible for the abnormal bleeding.

In our study, cases with disordered proliferative endometrium (DPE) is characterized by absence of uniform glandular development and resembles simple hyperplasia but it is focal in the process rather than diffuse [1]. In our study, 19 cases (19.38%) show DPE and it is comparable to the study by Prathipaa R, *et al*. [1], which shows 8 cases (3.13%) and the incidence is high among postmenopausal age group [1]. However, in our study the incidence is high among perimenopausal age group. Diagnosing the patients at the earliest stage of this spectrum will be definitive help to the practicing gynaecologists to prevent the disease progression [6].

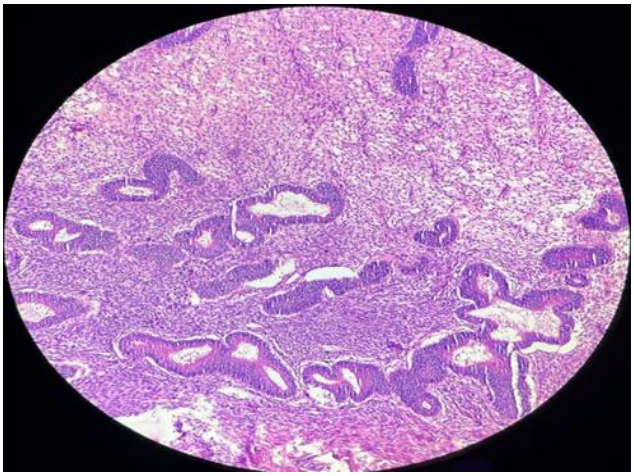

Fig 1: Secretory Endometrium (10x) view

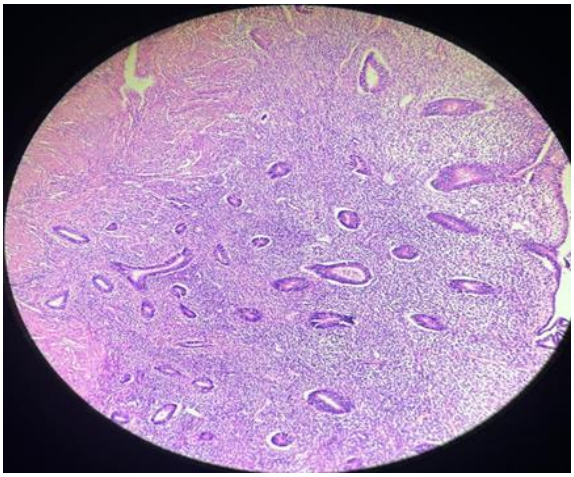

Fig 2: Proliferative Endometrium (10x) view

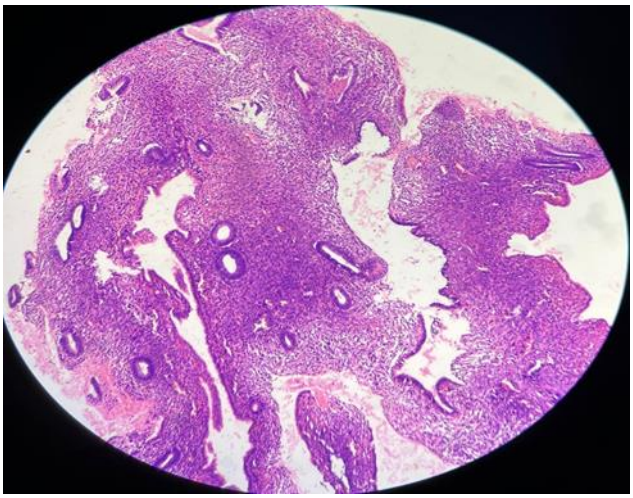

Fig 3: Disordered proliferative endometrium (10x)

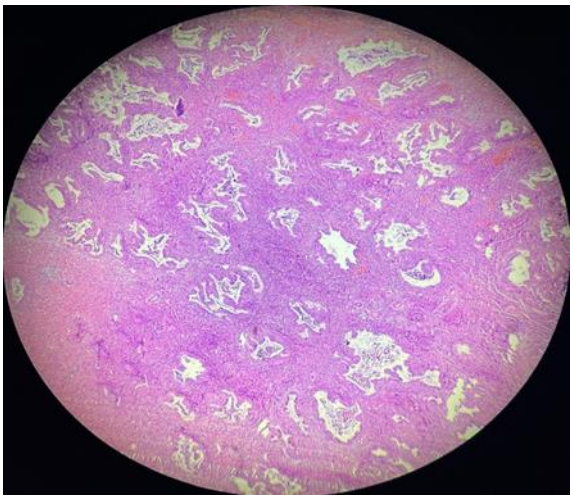

Fig 4: Endometrial Polyp (10x)

It is critical importance for pathologists to diagnose endometrial hyperplasia, the precursors of endometrial carcinoma. The overall risk of progression of endometrial hyperplasia to malignancy is 5-10% [1]. Endometrial hyperplasia cases (15/98,15.30%) is observed predominantly in reproductive age group(9/15 cases) and perimenopausal age group (4/15 cases). 90% of endometrial hyperplasia shows no atypia and 10% shows atypia as observed in Prathipaa R, *et al*., and Ilyas AM, *et al*.

In addition, our study detected 8/98 (8.16%) endometrial polyp (Fig. 2B) cases; all were hyperplastic polyps. Histomorphological features indicated the benign proliferation of glandular component with thick walled blood vessels without atypia. This reflects the increased estrogen secretions that result in hyperplasia of the basal endometrial layer [5]. The incidence of benign endometrial polyp in this study was high in 41-50 years' age group.

Progesterone related change is characterised by atrophic glands, pseudodecidualization along with inflammatory infiltrate due to exogenous hormonal treatment containing progesterone [1]. 6.12% cases reported in our study. In the study by Ilyas *et al*., 10 cases (12.04%) of Progesterone related change have been observed in more in reproductive age group.

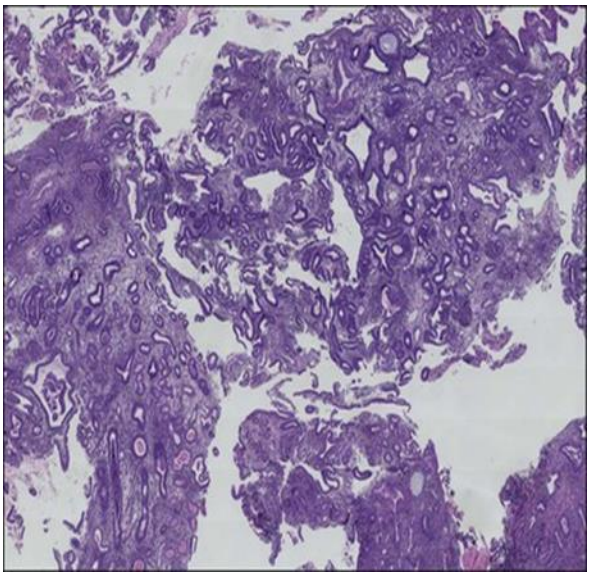

Fig 5: Endometrial Hyperplasia without Atypia (4x) view

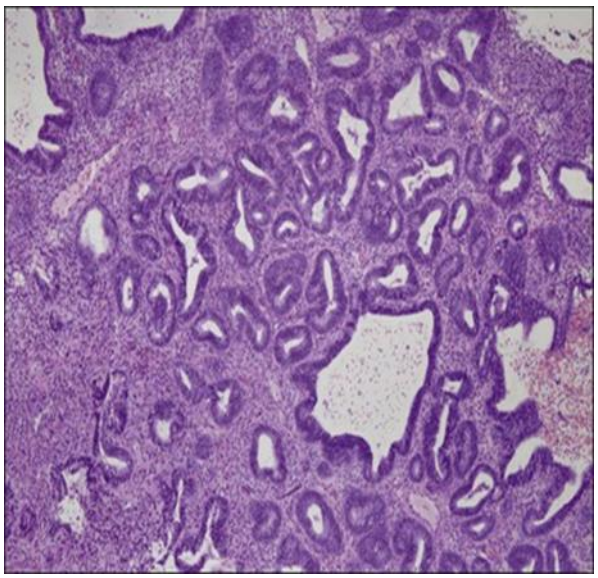

Fig 6: Endometrial Hyperplasia without Atypia (10x) view

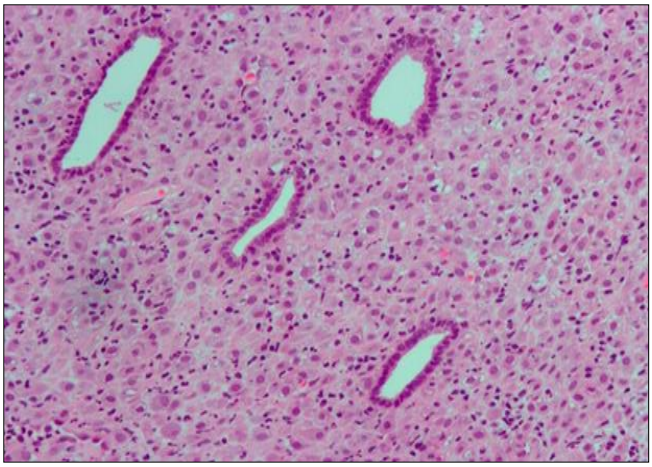

Fig 7: High magnification of endometrium within active glands and decidualization due to exogenous progesterone (OC Pill use).

In our study endometrial carcinoma was found in 5% cases, maximum were in postmenopausal age group. Similar incidence has been reported by Gitika Hyanki, *et al*. (2%) [2], Prathipaa R, *et al*. (5.08%) [1]. The low incidence of carcinoma in our patients could be attributed to early age of first child birth and multiparity.

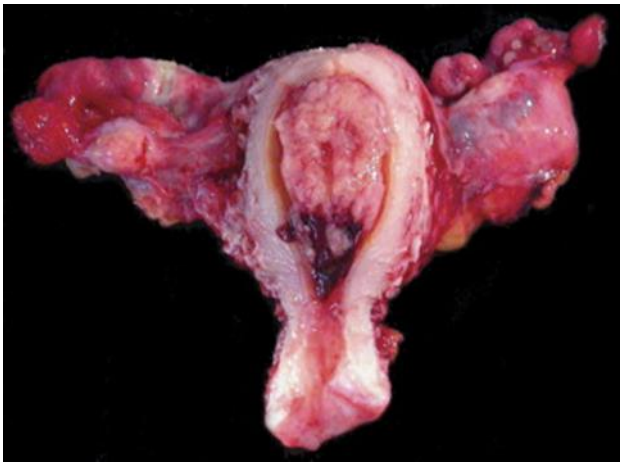

Fig 8: Gross-The uterus may be normal in size, enlarged, or even small. The uterine cavity may be distended by a single irregularly polypoid soft gray–white mass

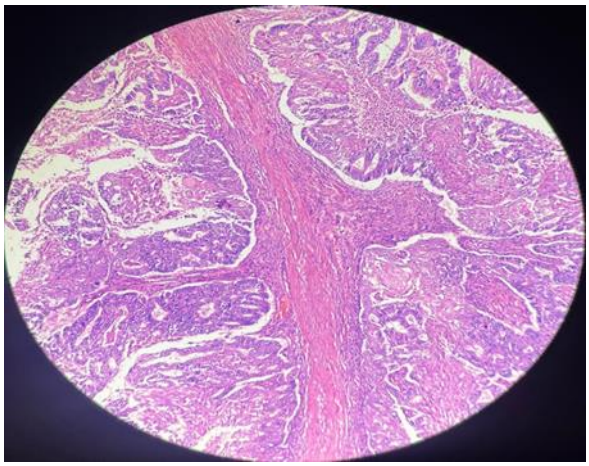

Fig 9: High magnification 40x-It consists of crowded irregularly-shaped glands lined by mildly atypical columnar epithelium. The glands are separated by delicate strands of stroma

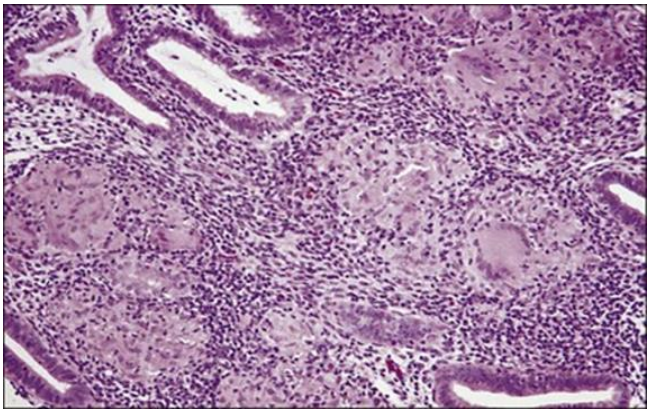

Fig 10: Tuberculous endometritis-40x power-Noncaseating granulomas are distributed throughout the stroma

Atrophic endometrium is due to estrogen deprival in the menopausal period and the rupture of dilated venules beneath thin endometrium leads to abnormal uterine bleeding [1]. In our study 3 cases of atrophic endometrium seen and all are seen in postmenopausal age group. No cases of atrophic pattern have been reported in the reproductive and perimenopausal age group and the same is observed in study by Prathipaa R, *et al*. [6].

Endometritis was found in 1% cases. Studied conducted by Gitika Hyanki *et al*., reported 2% cases [2] and 5% by Prathipaa R *et al*., [1]. Granulomatous endometritis was seen in only 1 cases in our study. Gitika Hyanki *et al*., reported 2% [2] and Ilyas *et al*., reported 1.2% [5]. The significance of diagnosing this condition is that with specific treatment the normal functioning of the endometrium can be regained [6].

Conclusion

AUB at any age can be alarming, and the causes of abnormal uterine bleeding has specified age predilection. This study showed a high percentage of endometrial cancer in postmenopausal age group with AUB and endometrial hyperplasia in the perimenopausal age group. Therefore, it is essential to accurately interpret endometrial patterns in any age group for correct diagnoses and management of AUB in all the age group of women.

We concluded that most cases with AUB belong to the reproductive and perimenopausal age group. Hence highlighting the importance of endometrial biopsy and histopathological evaluation are valuable in early detection of precancerous endometrial lesion as well as malignancy.

Conflict of Interest: Not available

Financial Support: Not available

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