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A two-year study on histopathological pattern of endometrial biopsies in patients with abnormal uterine bleeding in a teaching hospital, Devanahalli

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Abstract
Abnormal uterine bleeding (AUB) is the most frequent debilitating complaint in the gynaecology department with varied causes. Hence, endometrial biopsies and curettings are the pillars for diagnosing endometrial pathology. The present study was done to document the histopathological appearances seen in the biopsies and observe the incidence of various endometrial pathology patterns in different age groups in patients with AUB.A prospective study was performed on 230 endometrial samples from patients with AUB. The samples were received in 10% formalin, processed routinely, and the slides were stained in Haematoxylin and Eosin. The predominant endometrial finding was in the normal cyclical pattern 119 cases (52%) followed by disordered proliferative endometrium 28 cases (12.1%). Malignant lesions were seen in 3 cases (1.3%) in patients above 50 years of age. Among the organic causes, polyps were seen in 12 cases (5.2%). Endometrial biopsies and curettings remain the cornerstone for assessing and managing AUB.

Keywords: Endometrial sampling, abnormal uterine bleeding, endometrial biopsies, proliferative phase, secretory phase

1. Introduction
Menstrual problems result for much of the morbidity, involving one in every five women during their life span, with abnormal uterine bleeding (AUB) being one of the most common debilitating menstrual problems [1]. AUB is defined as changes in the frequency of menstruation, duration of flow, and amount of blood loss or intermenstrual bleeding [2].
The FIGO Working Group on Menstrual Disorders has classified the various causes for AUB into structural/organic lesions and non-structural entities [13]. Endometrial sampling and subsequent histopathological evaluation remain the gold standard for diagnosis of various causes of AUB. The incidence of abnormal endometrium findings does not necessarily indicate the true incidence of abnormal endometrial bleeding as it greatly determined by the time when the endometrial biopsy was performed in relation to cycle & bleeding [4].

2. Methods and Materials
A prospective study was carried out on 230 endometrial samples from patients with AUB, irrespective of age, at the Department of Pathology, Akash Institute of Medical Sciences & Research Centre, Devanahalli, from December 2017 to November 2019.

Sampling Methods: Endometrial samples obtained were either by Dilatation and curettage (D and C) or endometrial biopsy from women presenting with AUB.

Inclusion Criteria: Patients with complaints of AUB.

Exclusion criteria
1. Patients with leiomyoma, cervical and vaginal pathology.
2. Patients with systemic diseases like hypothyroidism and hemostatic disorders
3. Unsatisfactory samples: Only blood clots and fibrin; no endometrial glands/stroma

2.1 Data analysis procedure: The collected data were categorized on the basis of varying

Endometrial morphologies and the age pattern was analyzed in each category.

3. Results

Out of 230 endometrial samples studied, 119 cases showed normal cyclical patterns, which included proliferative phase and secretory phase, accounting for 52% of all the cases. [Table1] The next commonest was of disordered proliferative endometrium accounting for 12% (28 cases) which was mainly seen amongst the peri-menopausal age group (40-50 years). [Table2] Also noted predominantly in the peri-menopausal age group were endometrial polyp and endometrial hyperplasia without atypia (accounting to 5.2% & 4.7% of all cases, respectively).

In post-menopausal age group (>50 years), atrophic endometrium (10.8% of all cases) and endometrial adenocarcinoma (1.3% of all cases) were most commonly seen.

9 cases each of pill endometrium and products of conception, were more commonly seen in the reproductive age group (18-39 years).

Other endometrial samples were diagnosed as chronic endometritis in 4 cases (1.7%) and partial mole in 3 cases (1.3%).

The age group with maximum number of patients was in the reproductive age group (18-39 years), followed by peri-menopausal age (40-50 years).

Table 1: Shows different histopathological patterns of endometrium

Sl. No	Histopathological diagnosis	No. of patients	Percentage
1	Proliferative phase	64	27.8%
2	Secretory phase	55	23.9%
3	Disordered proliferative endometrium	28	12.1%
4	Atrophic endometrium	25	10.8%
5	Pill endometrium	14	6%
6	Endometrial polyp	12	5.2%
7	Products of conception	11	4.7%
8	Hyperplasia without atypia	11	4.7%
9	Chronic endometritis	4	1.7%
10	Partial mole	3	1.3%
11	Endometrial carcinoma	3	1.3%
	Total	230	100%

Table 2: Shows the age wise distribution of different endometrial patterns

Endometrial pathology	Reproductive age group (18-39 yrs)	Peri-menopausal age group (40-50 yrs)	Postmenopausal age group (>50 yrs)
Proliferative phase	59	5	-
Secretory phase	47	8	-
Disordered proliferative endometrium	6	22	-
Atrophic endometrium	-	6	19
Pill endometrium	9	5	-
Endometrial polyp	4	8	-
Products of conception	9	2	-
Hyperplasia without atypia	2	6	3
Chronic endometritis	2	2	-
Partial mole	3	-	-
Endometrial carcinoma	-	-	3
Total	141 (61.3%)	64 (27.8%)	25 (10.8%)

4. Figures

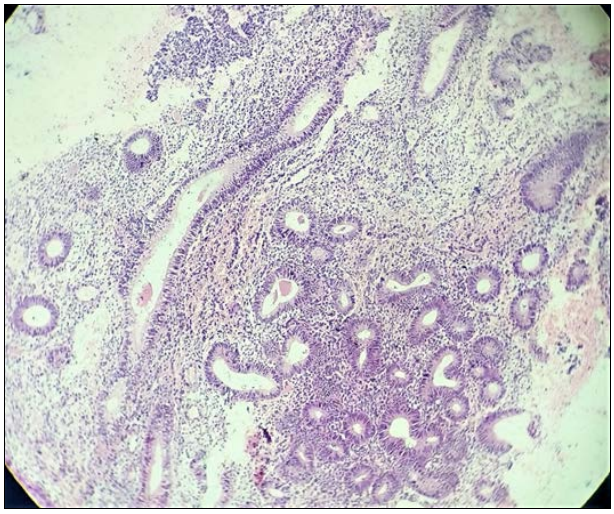

Fig 1: Disordered Proliferative endometrium: Showing endometrial glands that are irregularly and cystically dilated interspersed among proliferative endometrial glands.

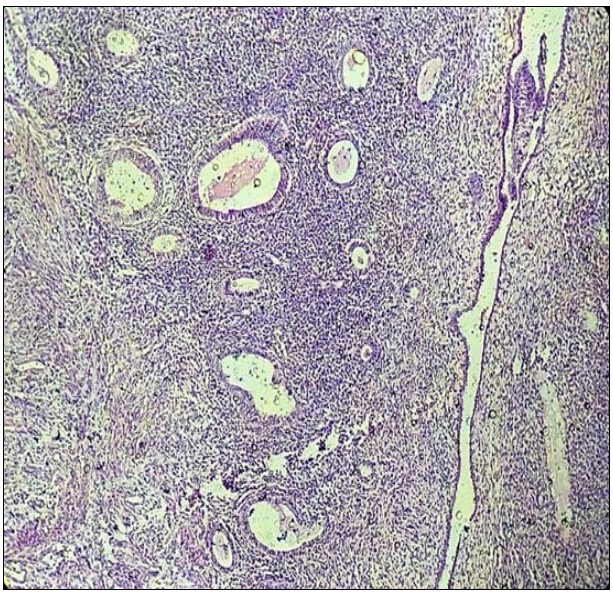

Fig 2: Atrophic endometrium: Showing thinned-out endometrium with some residual glands surrounded by an atrophied stroma.

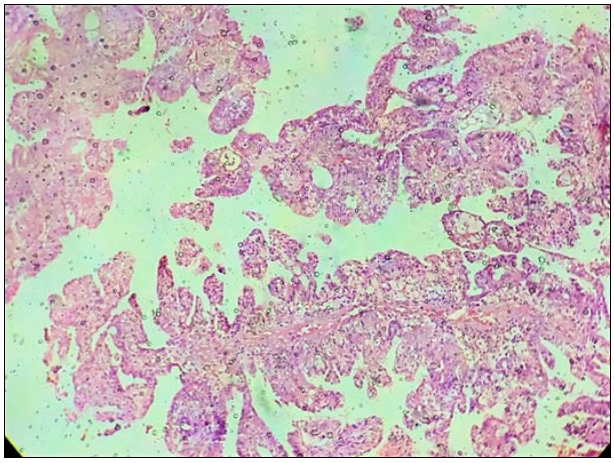

Fig 3: Endometrial Papillary Adenocarcinoma: Showing endometrial glands lined by neoplastic cells arranged in papillary pattern.

5. Discussion

AUB presents as a frequent symptom that arises from varied causes physiological, pathological or pharmacological which leads to social and physical morbidity and dictates an appropriate evaluation and management [4]. Endometrial curettage and biopsy are done to evaluate causes of AUB, infertility, or follow up of a previous diagnosis. Interpretation of endometrial biopsy specimens requires a complete clinical history with menstrual status, along with history of exogenous hormones or drugs [5, 6]. It has been shown that around 6% of women aged 25-44 years consult their physician due to excessive menstrual loss every year [1].

The ages of women in our study ranged from 18 to 70 years. Maximum frequency of AUB was observed in reproductive (18-39 years) age group (141/230, 61.3%) followed by perimeopausal (40-50 years) (64/230, 27.8%) and postmenopausal (above 50 years) age groups (25/230, 10.8%). This is also the commonest age group affected in most of the studies like Abid M *et al.* [1], Khan R *et al.* [4], Tiwari A *et al.* [7] and Sajitha K *et al.* [8]. We noted that age had an important role in governing the histological progression. The aggressive of the lesions were directly linked with age, as more progressive the lesions were found in peri- and postmenopausal age group in comparison to reproductive age group [1].

Since endometrium is the best accessible tissue for histopathological evaluation of uterine bleeding, varied methods are implemented for endometrial sampling among which Dilatation and Curettage is performed more often [9]. Histopathological examination on endometrial samples is helpful to distinguish between structural/organic and non-structural/functional etiologies [10]. In our study, functional etiologies are slightly more common than organic etiologies. In the present study, out of 230 cases, normal physiological changes like proliferative and secretory patterns were noted most commonly. Proliferative pattern was seen in 64 cases (27.8%) and secretory phase endometrium in 55 cases (23.9%). Similar incidence was noted in other studies [11, 12, 13, 14]. The bleeding in the proliferative phase could be due to anovulatory cycles, whereas in the secretory phase the bleeding maybe due to ovulatory dysfunctional uterine bleeding [14, 15]. Also as quoted by Baral -R *et al.* [16] that irregular shedding of the endometrium is apparently caused by slow degeneration of the corpus luteum with prolonged exposure to progesterone and therefore manifests as cyclic prolonged menstruation.

Most common hormonal imbalance pattern noted was disordered proliferative endometrium [Figure1] in 28 cases (12.1%), third most common pattern of all and predominantly in the peri-menopausal age group (40-50 years). Similar incidence was seen in the study conducted by Roopmala M *et al.* [11], Pratibha Singh [17] and Kumari SR [9] with 11.49%, 15.6% and 22.12% of cases showed disordered proliferative endometrium occupying the third position overall. Disordered proliferative endometrium show features similar to proliferative endometrium but differs from proliferative pattern by the presence of dyssynchronized glandular development. Disordered proliferative pattern lies at one end of the spectrum of proliferative lesions of endometrium that includes carcinoma at the other end with intervening stages of hyperplasia [8, 9]. Disordered proliferative endometrium is common in the peri-menopausal years because of anovulatory cycles [15].

The incidence of atrophic endometrium [Figure 2] is 10.8% (25 cases) which is almost similar to other studies [7, 10, 18]. Atrophic endometrium is rarely seen in women of reproductive age group and sometimes in perimenopausal women, but it is a common finding in post-menopausal women due to lack of ovarian estrogen. The thin atrophic endometrium is susceptible to minor injury and therefore could be the cause for postmenopausal bleeding even in the absence of an identifiable lesion. Dilated superficial large venules are situated under a thin endometrium which may rupture to cause excessive uterine bleeding [10, 18].

Pill endometrium was the other cause of AUB and constituted 6% (14 cases) of the total cases, characterized by presence of inactive glands with some of the glands having abortive secretions, decidual reaction and thin walled blood vessels [8, 11].

In present study, the most common pathological cause endometrial polyp (5.2%). The incidence was similar to study done by Sajitha K *et al.* (5.12%) [8].

Endometrial hyperplasia is the precursor of carcinoma and presents with AUB. Identification of endometrial hyperplasia is an important finding as they can be the precursors of endometrial carcinoma [19]. Endometrial hyperplasia is a common diagnosis in perimenopausal women with symptoms of irregular or prolonged bleeding. This is due to increased oestrogen levels. The overgrowth affects both glands and stroma but there is also abnormal vascularisation [9]. We observed endometrial hyperplasia without hyperplasia in 11 patients (4.7%) and predominantly seen in the peri-menopausal age group. The findings of hyperplasia without atypia were similar to the studies done in S Kavita *et al.* [19] with 4.5%. Many studies have showed a similar increased incidence in perimenopausal age group [14, 18, 19].

There were 4 (1.7%) cases of chronic endometritis and the findings were similar to the study done by Kumari SR *et al.* [12] with 1.4%. This was much low when compared to many other studies [4, 20]. The diagnosis of chronic endometritis is made on the basis of the presence of plasma cells and is usually associated with lymphocytes, lymphoid follicles, neutrophils and histiocytes. The stroma is either spindled or fibroblastic often with stromal breakdown and glandular destruction [12, 15].

Malignancy was seen in 3 (1.3%) cases in our study. [Figure 3] Studies by Abid M *et al.* [1], Kumari SR *et al.* [9], Roopmala M *et al.* [11] and Singh P *et al.* [17] showed the

incidence of malignancy to be 2%, 1.8%, 2.87% and 2.6% respectively. Most of the studies found majority of cases of malignancy in the postmenopausal age group [9, 21]. The lower incidence of endometrial carcinoma could be supported by the fact that women are married at early ages in our population, hence early childbearing and multi-party is common among them [11].

6. Conclusion

AUB is one of frequent gynaecolgical complaint seen in and around Devanahalli town, in our study. Though there are numerous causes of AUB, the present study concluded the functional patterns (proliferative and secretory patterns) as the predominant etiologies with a low incidence of endometrial carcinoma. Histopathological examination of endometrial samples is the gold standard procedure in arriving at diagnosis and eventually helpful in decreasing the morbidity by providing appropriate management.

7. Competing interest

The authors declare that they have no competing interests.

8. Acknowledgment

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