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*Original Research Article*

# Correlation of thyroid disorders among perimenopausal women with abnormal uterine bleeding in a tertiary care hospital, Bengaluru: A cross sectional study

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## Abstract

**Background:** AUB is a common but complicated clinical presentation and occurs in 15-20% of women between menarche to menopause and significantly affects the women's health. The prevalence of abnormal uterine bleeding is estimated to be in the range of 3% to 30%, with a higher incidence occurring around menarche and perimenopause. Women with thyroid dysfunction often have menstrual irregularities, infertility and increased morbidity during pregnancy. The objective of present study is to find out the prevalence of thyroid disorders among perimenopausal women with AUB attending gynecology OPD.
**Methods:** In the present study, fifty patients with AUB were included and evaluated for the prevalence of thyroid abnormality. Thyroid function tests were done in all patients.
**Results**: Among 50 patients, 18 patients (36%) were diagnosed with hypothyroidism. The mean duration of Hypothyroidism was found to be 3.64 $\pm$ 10.59. The mean T3, T4, TSH of the hypothyroid patients were found to be 2.4400 $\pm$ 0.80, 10.25 $\pm$ 0.86 and 8.76 $\pm$ 1.67 respectively. Among 18 women with thyroid abnormality, menorrhagia was seen in 16(88.9%) women. 72.2% of the hypothyroid women did not have any associated complaints. 50% (n=9) of the hypothyroid women had a parity score of 2. 94.4% (n=17) had a healthy cervix on per speculum examination. 83.3% (n=15) had a bulky uterus on bimanual examination. 33.3% (n=6) had fibroids on USG and 33.3% (n=6) had adenomyosis. The mean endometrial thickness among the hypothyroid patients was found to be 10.11 $\pm$ 4.64. Proliferative endometrium was found in 72.2% (n=13) and secretory endometrium was found in 27.8% (n=5) of hypothyroid women on histo-pathological examination. 66.7% (n=12) of the hypothyroid women were histo-pathologically diagnosed with AUB (L).
**Conclusions:** Thyroid dysfunction should be considered as an important associated factor for menstrual abnormalities even in perimenopausal women. It is important to screen all women for thyroid abnormality. Correction of thyroid abnormalities also relieves AUB. This will avoid unnecessary hormonal treatment and surgery

**Keywords:** Abnormal uterine bleeding, Thyroid abnormality, Perimenopausal, hypothyroidism

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## Introduction

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Normal menstruation is defined as "the bleeding from secretory endometrium associated with an ovulatory cycle, not exceeding a length of five days". Any bleeding not fulfilling these criteria is referred to as abnormal uterine bleeding [1]. Abnormal uterine bleeding is a broad term that describes irregularities in the menstrual cycle involving frequency, regularity, duration, and volume of flow outside of pregnancy. Bleeding is said to be abnormal when the pattern is irregular, abnormal duration (>7days), or menorrhagia or abnormal amount (>80 ml/menses) [2]. The prevalence of abnormal uterine bleeding is estimated to be in the range of 3% to 30%, with a higher incidence occurring around menarche and perimenopause [2, 3]. During perimenopausal period, menstrual cycles become occasionally anovulatory due to a gradual decrease in the recruitment of ovarian follicles with a subsequent decline in the level of oestradiol. This downturn of the hormonal milieu causes increased incidence of prolonged cycles of amenorrhoea alternating with heavy menstrual bleeding [4]. The prevalence of hypothyroidism was found in 22% of menorrhagic women, which is much higher than that found in general population [5]. Both hypothyroidism and hyperthyroidism may result in menstrual disturbances. Menstrual irregularities and bleeding problems, due to thyroid disorders are attributed to multiple mechanisms. They are altered TSH response, TRH induced increased prolactin levels, altered LH response, peripheral conversion of androgens to estrogens, altered SHBG and affect the coagulation factors [4]. It also alters lipid levels in the serum. With hyperthyroidism, hypomenorrhea and amenorrhea are more frequent complaints, and menorrhagia is noted in approximately 5%. With hypothyroidism, women commonly present with menorrhagia, metrorrhagia and anovulatory type of dysfunctional uterine bleeding. Hence this study was planned to estimate the prevalence of thyroid disorders among perimenopausal women with AUB.

## Objective of the study

- To correlate the occurrence of thyroid disorders among perimenopausal women with AUB.

## Methodology

- **Study design:** Cross-sectional study
- **Study duration:** 24 months (September 2020 -August 2022)
- **Study area:** MVJ Medical College and Research Hospital, Bangalore.
- **Study participants:** Perimenopausal age group (45±5 years), presenting with abnormal uterine bleeding, attending the Obstretics and Gynaecology OPD/IPD of MVJ Medical College and Research Hospital, Bangalore.

## Inclusion criteria

1. Patients in Perimenopausal age group (45±5 years) with abnormal uterine bleeding attending the Obstretics and Gynaecology OPD/IPD of MVJ Medical College and Research Hospital, Bangalore.

## Exclusion criteria

1. Patients not willing to give consent.

## Estimation of sample size

On the basis of statistics obtained from Department of Obstretics & Gynaecology, M.V.J.

Medical College and Research Hospital, an average of 2 cases per month fitting the criteria of the study with study duration of 24 months, we can expect to have N=48. Based on this population size, using YAMANE equation, for a known population size, sample size (n) equal to
n =N/1+Ne2.
n=sample size.
N=population size.
e= margin of error (for 95% of confidence level, margin error =0.05).
n=48/1+48*0.05*0.05 = 48/1.12 = 42.85.
Therefore after approximating, the sample size of the study participants was fixed at 50.

**Reference values**

Serum T4 – 60-120 ng/ml.
Serum T3 – 0.8 -16 ng/ml.
Serum TSH – 0.5-5 mU/ml.

**Results**

**Table 1:** Distribution of the study participants according to their age group

| Age | Frequency N | Percentage% |
|---|---|---|
| < 40 years | 12 | 24 |
| 41 - 45 years | 20 | 40 |
| 46 - 50 years | 17 | 34 |
| > 50 years | 1 | 2 |
| Mean ± SD | 44.28 ± 3.58 | |

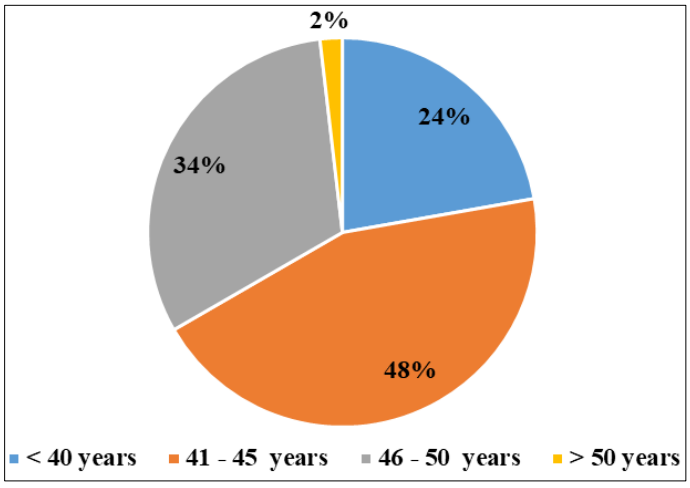


**Fig 1:** Distribution of the study participants according to their age group

Majority of the study participants belonged to the age group between 41-45 years (40%) of age. The mean age of the study participants was found to be 44.28 ± 3.58 years.

**Table 2:** Distribution of the study participants according to the type of comorbidity

| Comorbidities | Frequency N | Percentage% |
|---|---|---|
| Hypothyroidism | 18 | 36 |
| DM | 5 | 10 |

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| | | |
|---|---|---|
| HTN | 1 | 2 |

Majority of the study participants (36%) had hypothyroidism with 10% and 2% of the study participants having Diabetes and Hypertension respectively. The mean duration of Hypothyroidism and Diabetes were found to be 3.64 ± 10.59 and 5.52 ± 25.87 months respectively.

**Table 3:** Menstrual irregularities among Hypothyroid study population (n=18):

| Menstrual irregularities | Frequency N | Percentage% |
|---|---|---|
| Menorrhagia | 16 | 88.9 |
| Polymenorrhea | 1 | 5.6 |
| Postmenopausal bleeding | 1 | 5.6 |

Majority of the hypothyroid study participants had Menorrhagia (88.90%). 5.6% each of the study participants had Polymenorrhea and postmenopausal bleeding respectively.

**Table 4:** Mean Thyroid levels of the study participants: (n=50)

| Thyroid levels | Thyroid disorders (n=18) | Without thyroid disorders (n=32) |
|---|---|---|
| T3 | 2.44 ± 0.80 | 2.15 ± 0.69 |
| T4 | 10.25 ± 0.86 | 10.10 ± 0.76 |
| TSH | 8.76 ± 1.67 | 3.23 ± 0.55 |

The mean T3, T4, TSH of the hypothyroid patients were found to be 2.44 ± 0.80, 10.25 ± 0.86 and 8.76 ± 1.67 respectively. The mean T3, T4 and TSH of the study participants without thyroid disorders were found to be 2.15 ± 0.69, 10.10 ± 0.76 and 3.23 ± 0.55 respectively.

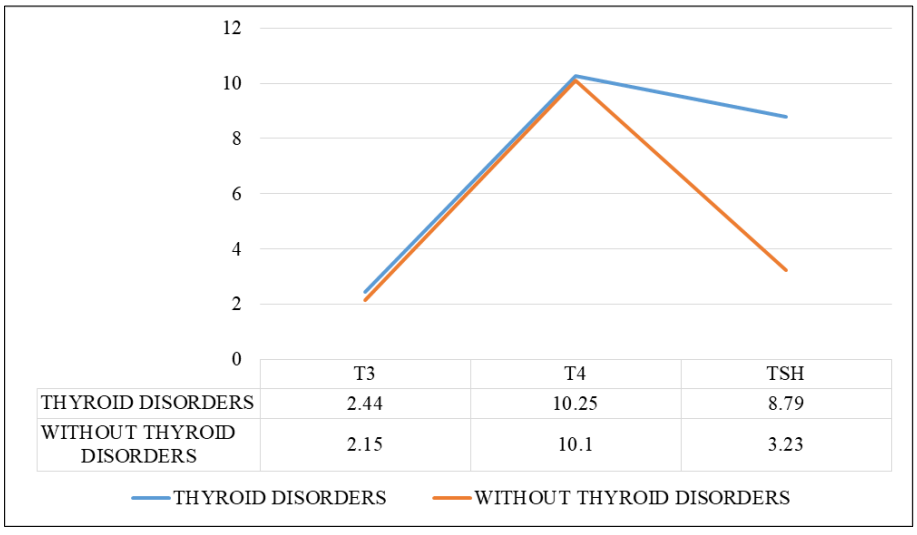


**Fig 2:** Mean Thyroid levels of the study participants: (n=50)

**Table 5:** Per speculum examination findings among hypothyroid study population (n=18)

| Findings – Per speculum | Frequency N | Percentage% |
|---|---|---|
| Healthy cervix | 17 | 94.4 |
| Polyp | 1 | 5.6 |

Majority of the hypothyroid study participants had a healthy cervix (94.4%) on per speculum examination. Only 5.6% of the study population had findings of polyp on per speculum

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examination.

**Table 6:** Bimanual examination findings

| Findings – Bimanual | Frequency N | Percentage% |
|---|---|---|
| Normal | 2 | 4 |
| Not Assessed | 1 | 4 |
| Bulky uterus | 15 | 92 |

Majority of the study participants had a bulky uterus (86%) on bimanual examination. 4% of the study participants had normal findings on bimanual examination.

**Table 7:** Distribution of the study participants according to their ultrasound findings (n=18)

| Findings – USG | Frequency N | Percentage% |
|---|---|---|
| Fibroid | 6 | 33.3 |
| Adenomyosis | 6 | 33.3 |
| Lesions | 6 | 33.3 |

6% of the study participants with hypothyroidism had findings of Fibroid, Adenomyosis and Lesions each on USG.

**Table 8:** Distribution of the study participants according to their endometrial thickness on USG (n=18)

| Endometrial thickness | Frequency N | Percentage% |
|---|---|---|
| 1-5mm | 3 | 16.7 |
| 6-10mm | 10 | 49.9 |
| 11-15mm | 3 | 16.7 |
| 16-20mm | 3 | 16.7 |
| >20mm | 2 | 4 |
| Mean $\pm$ SD | 10.11 $\pm$ 4.64 | |

Majority of the study participants with hypothyroidism had endometrial thickness in the range of 6-10mm (49.9%). The mean endometrial thickness of the study participants was found to be 10.11 $\pm$ 4.64.

**Table 9:** Distribution of the study participants based on histopathological findings (n=18)

| Histopathological findings | Frequency N | Percentage% |
|---|---|---|
| Secretory Endometrium | 5 | 27.8 |
| Proliferative Endometrium | 13 | 72.2 |

Majority of the study participants with hypothyroidism had proliferative endometrium findings on histopathology (70%). 28% of the study participants had secretory endometrium and only 2% of the study participants had hyperplasia without atypia.

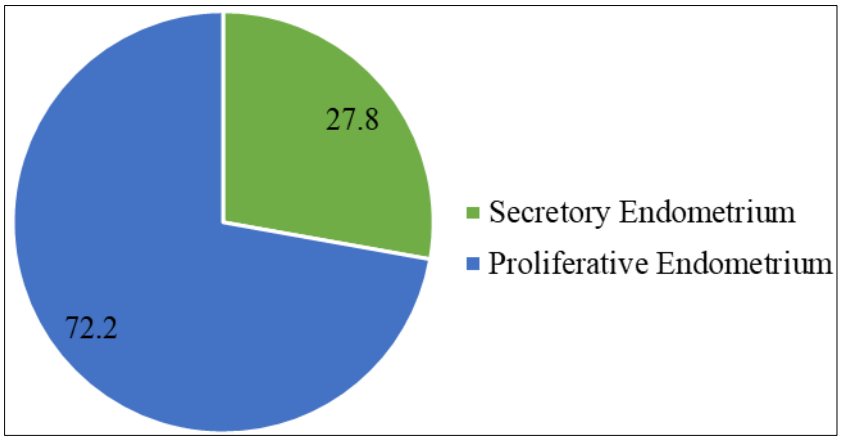


**Fig 12:** Distribution of the study participants based on histopathological findings (n=18)

**Table 19:** Distribution of histo-pathological diagnosis among the study participants

| Histo-pathological diagnosis | Frequency N | Percentage% |
|---|---|---|
| AUB (L) | 12 | 66.7 |
| AUB (A) | 5 | 27.8 |
| AUB (L) (A) | 1 | 5.6 |

In the present study, 66.7% of the study participants with hypothyroidism were diagnosed as AUB (L) based on histopathology followed by AUB (A) [27.8%].

## Discussion

This study included 50 study participants with abnormal uterine bleeding in Perimenopausal age group (45±5 years) attending the Obstretics and Gynaecology OPD/IPD of MVJ Medical College and Research Hospital, Bangalore to the prevalence of thyroid disorders among perimenopausal woman with abnormal uterine bleeding.
In the present study, Majority of the study participants belonged to the age group between 41-45 years (40%) of age. The mean age of the study participants was found to be 44.28 ± 3.58 years. In a study done by Talukdar B *et al*. [6], 69.67% of the study participants were in the age group between 40 and 45 years. In a study done by Sreelakshmi U *et al*. [7], the mean age of the study participants was found to be 46.68 ± 2.03 years, which is similar to the findings of the present study. Perimenopause is a period of natural transition to menopause, marking the end of the reproductive years, thereby presenting with menstrual irregularities. Perimenopause is the menstrual transition, usually begins in the late 40s and may extend to late fifties [8]. AUB accounts for 70% of the complaints among premenopausal women in gynaecology OPD.

## Hypothyroidism - menstrual pattern

The frequent menstrual abnormality in women with hypothyroidism (18 women) was found to be Menorrhagia in 16 (88.90%) women (Table and Figure), which is higher than the study done by Byna P [9], where 41.6% of the hypothyroid women had Menorrhagia. This difference can be attributed to lesser number of hypothyroid women in the comparative study (n=12).

## Thyroid levels among the study participants

In the present study**,** the mean T3, T4 and TSH of the study participants were found to be

2.20 ± 0.67, 10.16 ± 0.81 and 5.24 ± 2.95 respectively. 36% of the study participants were diagnosed with hypothyroidism. In a study done by Byna P [9], they concluded that thyroid abnormalities are common in women with menstrual irregularities and even precede the onset of thyroid abnormalities.
The mean T3, T4, TSH of the hypothyroid patients were found to be 2.44 ± 0.80, 10.25 ± 0.86 and 8.76 ± 1.67 respectively. The mean T3, T4 and TSH of the study participants without thyroid disorders were found to be 2.15 ± 0.69, 10.10 ± 0.76 and 3.23 ± 0.55 respectively.

**Hypothyroidism-Structural abnormality**

Among 18 women with hypothyroidism, 6 (33.33%) had adenomyosis and 6 (33.33%) had fibroid, which is similar to the study done by Byna P [9], where the 9% of hypothyroid participants had Adenomyosis and 5.4% of the hypothyroid participants had Fibroid.

## Conclusion

Thyroid dysfunction should be considered as an important associated factor for menstrual abnormalities even in perimenopausal women. It is important to screen all women for thyroid abnormality who are presenting with AUB especially with non-structural causes of AUB. Correction of thyroid abnormalities also relieves AUB. This will avoid unnecessary hormonal treatment and surgery.

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