

## Original Research Article

# Incidence of Hysterectomy for Dysfunctional Uterine Bleeding with Post Tubal Ligation

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## Abstract

**Background:** Post tubal ligation syndrome has been a topic of debate and the association of Dysfunctional uterine bleeding (DUB) has been identified as a long-term complication. In refractory cases, hysterectomy can be considered a treatment option for managing the post-ligation syndrome due to prolonged menstrual complaints. But very few studies summarize the fact in our country's context. Considering of epidemiological data, the study was designed to assess the incidence of hysterectomy for DUB with post-tubal ligation. **Methods:** The hospital-based cross-sectional type of descriptive study was conducted in the inpatient Department of Gynae & Obst in Rajshahi Medical College Hospital (RMCH), From January 2019 to July 2019. Women suffering from DUB and having a history of post tubal ligation were included in the study. After selecting the patients, informed written consent was taken from the subjects. All patients were subjected to a detailed history, clinical examination, and relevant investigation. In necessary cases, hysterectomy was done as a treatment option. Data were collected using a semi-structured questionnaire designed for the study by the researcher. Data analysis and presentation were made by statistical software SPSS 23. **Results:** Total 100 patients with DUB were included in this study. The mean age was 40.9±6.28 SD (years), range: 25-54 years. The majority of patients (52%) belonged to the age group (41 – 50 years). About 59% came from rural areas. The mean parity was 3.43±1.34. The incidence of hysterectomy among DUB patients with a previous history of tubal ligation was 25%. The mean duration of tubal ligation was 13.4±6.3 years. The usual presentation per vaginal bleeding pattern at presentation was menorrhagia (47%), followed in second and third by metrorrhagia (20%) and postmenopausal bleeding (17%). Besides, 78% of patients also complained of tiredness, and 12% complained of pelvic pain. And Mean duration of symptoms was 13.44 months. **Conclusion:** About one-fourth of the tubal ligation patients underwent a hysterectomy in their subsequent life, and usually presented with menorrhagia. However, further studies are needed to finalize the incidence rate.

**Keywords:** Hysterectomy, Dysfunctional uterine bleeding, Tubal sterilization, Post tubal ligation syndrome.**Copyright © 2022 The Author(s):** This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

## INTRODUCTION

Abnormal menstrual bleeding is one of the most common complaints that gynecologists and primary care physicians confront daily. The term 'Dysfunctional uterine bleeding (DUB) refers to a disorder of excessive uterine bleeding affecting women that is not due to pregnancy or any recognizable uterine or systemic diseases [1]. The underlying pathophysiology is believed to be secondary to anovulation or oligoovulation and is often referred to as anovulatory bleeding [2]. Exclusion of anatomic pathology and medical illness is important before

applying this classification. It reflects a disruption in the normal cyclic pattern of ovulatory hormonal stimulation to the endometrial lining. Still, the exact mechanism of DUB remains unknown. The bleeding is unpredictable in many ways. It may be excessively heavy or light and may be prolonged, frequent, or random. Although numerous studies have addressed DUB management, little attention has been given to the subjectively reported to epidemiological data and economic burden [3]. However, few studies suggested that this disorder affects 10-30% of women of reproductive age and creates a problem such as fatigue,

pain, depression, and limitation in performing activities of women. These complaints may significantly affect the quality of life, result in time off work, lead to surgical intervention, including hysterectomy, and ultimately significantly impact the health care system [4].

Several factors affect DUB, including the type of delivery, age, diabetes mellitus, nulliparity, hormone therapy, and obesity [5]. Besides this, contraceptive use, particularly tubal ligation, is one of the important preventable causes of DUB in adults. In developed countries, about 30% of women with completed family planning choose tubal ligation as a method of contraception [6]. On the other hand, in developing countries where increasing trends in the population is a burning issue, tubal sterilization, a permanent method of family planning, is one of the most popular contraceptive choices [7, 16]. In India, there has been a steady increase in the percentage of women adopting tubal sterilization as a method of family planning. In 2005-2006, the country's contraceptive prevalence was 56%, and 66% of users reported female sterilization as their method [8]. The increasing acceptance of tubal sterilization warrants evaluation of the safety and long-term consequences of this procedure. But like any other surgical procedure, it has variable outcomes. The complications any woman has to face post-ligation are termed Post-tubal ligation syndrome, which includes an increased incidence of irregular and heavy menstrual bleeding [9]. Data suggest that this post tubal ligation syndrome increased the relative risk of hysterectomy because of bleeding disorders subsequent to tubal sterilization [10]. Considering this scientific data, the study was planned to assess the incidence of hysterectomy for dysfunctional uterine bleeding in women with post tubal ligation admitted to a tertiary care hospital.

## Objectives

### General Objectives

- To find out the incidence of hysterectomy in DUB patients admitted in RMCH with Post Tubal Ligation.

### Specific Objectives

- To find out the clinical characteristics of DUB patients.
- To estimate the incidence of hysterectomy among the DUB patients with a history of post tubal ligation.
- To determine the socio-demographic characteristics of the study population.

## LITERATURE REVIEW

Population explosion, especially in developing countries, is a burning issue. Family planning methods are a boon to tackling this issue. Tubal sterilization, which is a permanent method of family planning, is one

of the most popular contraceptive choices in the majority of developing countries and even in developed countries like the USA as well [11]. In India, there has been a steady increase in the percentage of women adopting tubal sterilization as a method of family planning. In 2005-2006, the country's contraceptive prevalence was 56%, and 66% of users reported female sterilization as their method. The increasing acceptance of tubal sterilization warrants evaluation of this procedure's safety and long-term consequences. Post tubal ligation syndrome is one such concern. Menstrual dysfunction associated with this syndrome, ultimately leading to hysterectomy, could be a possibility. The present study evaluated the indication of hysterectomy for complaints of dysfunctional uterine bleeding in patients with prior tubal sterilization.

Abnormal Menstrual Bleeding is a significant clinical entity, and its sub-group, heavy menstrual bleeding (HMB), is a common condition affecting 14-25% of women of reproductive age. They may significantly impact their physical, social, emotional, and material quality of life [12]. In the UK, over 8,00,000 women seek help for Abnormal menstrual bleeding annually. Along with the direct impact on the woman and her family, there are high costs to the economy and the health service. A US study reported financial losses of >\$2000 per patient per annum due to work absence and home management costs. Abnormal Urinary Bleeding is the 4th most common reason for referral to UK gynecological services [13]. A recent national audit in England and Wales (RCOG HMB audit) reported that at 1-year post referral, only a third of women (including those managed with surgery) were 'satisfied' (or better) at the prospect of current menstrual symptoms continuing, as currently experienced, for the next 5 years. While there may be relief from HMB during pregnancy and lactation and an end to the problem at menopause, women affected will tend to suffer the adverse impacts of Abnormal menstrual bleeding over the prime years of their lives.

Dysfunctional Uterine Bleeding (DUB) represents the most common form of Abnormal Uterine Bleeding [14]. "Dysfunctional uterine bleeding" is the term applied to the abnormal bleeding patterns that occur in women secondary to anovulation or oligoovulation and is often referred to as anovulatory bleeding. Variations in menstrual flow and timing often occur at the extremes of reproductive age because of the prevalence of anovulatory cycles. Menarche is typically followed by longer cycles that eventually decrease in length and become more regular as the hypothalamic-pituitary-gonadal axis matures [2]. As menopause approaches, however, ovulation occurs less often, which leads to increased variability of the cycle length. Underlying this occurrence is a steady trend toward mean cycle lengths longer than 35 days [15]. In general, variations in cycle length reflect differences in the length of the cycle's follicular phase, because the luteal

phase is generally consistent. Although it is the most reported intermenstrual interval, only approximately 15% of cycles in women of reproductive age are actually 28 days in length. Less than 1% of women have a regular cycle of less than 21 days or more than 35 days [16].

The usual flow duration is 4 to 6 days, with an average volume of blood loss of 30 mL, with more than 80 mL being abnormal. Abnormal patterns that have flow heavier than 80 mL, last for 7 or more days, or have intervals less than 21 days can result in anemia. Because the volume of flow is difficult to determine, most practitioners refer to the number of pads or tampons used or soaked throughout per day as a quantifying measure. Bleeding that interferes with daily activities or causes anxiety warrants evaluation and treatment.

## MATERIALS AND METHODS

**Study Design:** Hospital-based cross-sectional type of descriptive study.

**Place of Study:** Inpatients Department of Gynae & Obs in Rajshahi Medical College Hospital.

**Study Period:** From January 2019 to July 2019.

**Study population:** Patient suffering from DUB with history of tubal ligation and admitted inpatient department of RMCH.

**Sampling Method:** Purposive convenient sampling.

### Sample size

In Bangladesh, no such relevant study is available. Considering 50 % prevalence (as prevalence is not known), sample size estimation was done by using the following statistical formula.

For this study, I have calculated the sample size with 95 % confidence interval and 5% error.

For 50 % prevalence  $P=0.5$ , for 95% confidence level  $Z = 1.96$  and for 5% error = .05

$$\rightarrow n = P(1-P)Z^2/(\text{error})^2$$

$$\rightarrow n = 0.5(1-0.5)1.96^2/(.05)^2$$

$$n = 384$$

However, due to time and resource constraints, a total of 100-study populations were included in the study.

### Inclusion criteria

- Age >18 years
- Features consistent with DUB with a history of tubal ligation.

- Willing to participate in the study.

### Exclusion criteria

- Not willing to participate in the study.
- Patient had bleeding other than DUB like fibroid, cervix carcinoma, adenomyosis, endometrial polyp, etc.
- Hypothyroidism.

### Study procedure

This descriptive cross-sectional study was conducted at the Department of Obstetrics and Gynaecology, Rajshahi Medical College and Hospital, Rajshahi, over a period of six months. All female patients undergoing hysterectomy due to abnormal uterine bleeding were included in the study. Exclusion criteria included: patients with a history of abnormal uterine bleeding due to fibroid uterus, adenomyosis, endometrial polyp, patients with the bleeding disorder, patients with medical disorders, and those receiving hormonal therapy. All the patients were worked up for the underlying cause of abnormal uterine bleeding, and those undergoing hysterectomy only due to bleeding of the endometrial origin or dysfunctional uterine bleeding were included. A semi-structured questionnaire containing items to elicit socio-demographic information (e.g., age, resident, marital status, occupation, monthly income, level of education, etc.) and relevant information about co-occurring physical illnesses. Moreover, relevant information on DUB and tubal ligation was also collected and recorded into the case record form. Written informed consent was obtained from the patients and or guardians. Following data collection, data compilation and analysis were done.

### Informed consent

Written informed consent was taken from every patient.

### Ethical issues

- The study protocol complied with the ethical principles of the Declaration of Helsinki and was approved by the local research ethics committee.
- Clinical variables of all individuals included in the study were collected in an interview and confirmed in medical records. Laboratory parameters were extracted from medical records
- Patients (subjects) and key relatives were informed about the scope and limitations of the study.
- Informed Written consent was obtained from the patients (subjects).
- Confidentiality of the patients (subjects) about personal information was maintained strictly.
- This was not an interventional study.
- The study had no threat or hazard to the environment.

### Data Processing and Analysis

For statistical analysis, a statistical software named Statistical Package for Social Science (SPSS 23.0 version) was used. After collecting the data, it was checked and rechecked for omission, inconsistencies and improbabilities. After cleaning the data, all were coded and entered into the computer. The result was presented in tables, figures, and diagrams. The confidence interval was set as 95% level. The qualitative variables were expressed as frequency and

percentage, and the quantitative variables were expressed as mean  $\pm$  standard deviation. In all cases, p-value  $<.05$  was considered statistically significant.

## RESULTS

Total 100 patients with DUB were included in this study. The mean age was  $40.9 \pm 6.28$  years, ranging from 25 to 54 years. The majority of patients (52%) belonged to the age group (41 – 50 years).

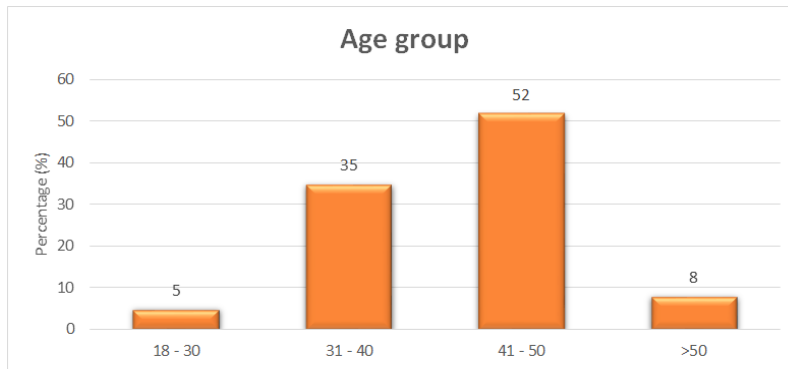


Figure-1: Age distribution of participants (n=100)

Maximum patients had 4 pregnancies (30%), 20% had  $\geq 5$  pregnancies, 28% had 3 pregnancies, 11% had 2 pregnancies, and another 11% were primipara.

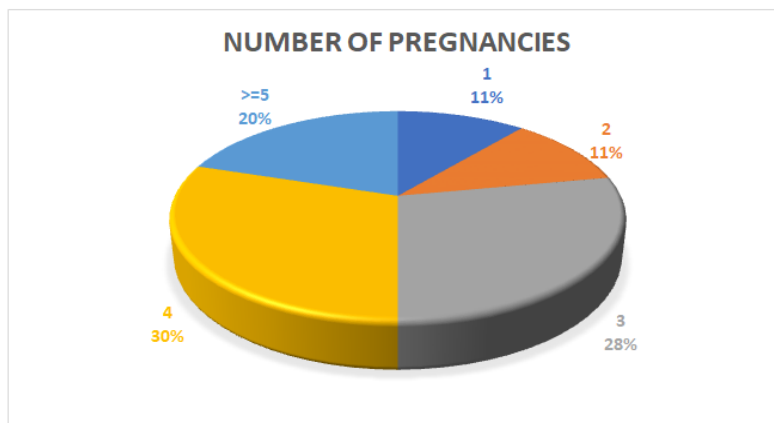
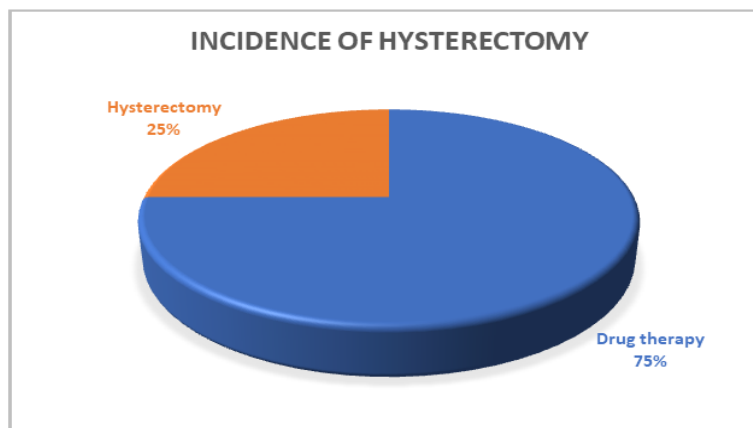


Figure-2: Distribution of participants according to number of pregnancies (n=100)

The incidence of hysterectomy among DUB patients with a previous history of tubal ligation was

25%. The rest of the patients were in drug therapy (75%). The mean parity was  $3.43 \pm 1.34$ .



**Figure-3: Incidence of hysterectomy (n=100)**

The most common per vaginal bleeding pattern at presentation was menorrhagia (47%), followed in second and third by metrorrhagia (20%) and postmenopausal bleeding (17%). Besides, 78% of

patients also complained of tiredness, and 12% complained of pelvic pain (including 2 cases of dysmenorrhea).

**Table-1: Clinical presentation of DUB patients (n=100)**

Clinical presentation	Percentage (%)
Pattern of bleeding	
Menorrhagia	47
Metrorrhagia	20
Postmenopausal bleeding	17
Menometrorrhagia	7
Polymenorrhoea	6
Amenorrhea followed by bleeding	1
Dysmenorrhea	2
Pelvic pain	12
Tiredness	78

All patients had a history of tubal ligation. The mean duration of tubal ligation was 13.4±6.3 years. The mean duration of symptoms was 13.44 months.

**Table-2: Duration of symptoms and duration of tubal ligation of patients (n=100)**

Duration	Mean±SD	Minimum	Maximum
Symptom (months)	28.7±22.6	2	102
Tubal ligation (years)	13.4±6.3	2	29

Sixty-five percent of patients had a bulky uterus, 23% had thickened endometrium, and 5% had

thinned endometrium, and 15% had cystic ovary on ultrasonography of the lower abdomen.

**Table-3: Sonographic findings of uterus, endometrium, and ovary in DUB patients (n=100)**

Ultrasonographic findings	Percentage (%)	
Size of Uterus	Normal	35
	Bulky	65
Endometrium	Normal	72
	Thickening	23
	Thinning	5
Ovary	Normal	85
	Cystic	15

100 patients, 34% had diabetes mellitus, and 27% had DUB.

**Table-4: Comorbid diseases of DUB patients (n=100)**

Comorbid disease	Percentage (%)
DM	34
HTN	27

## DISCUSSION

Total 100 patients with DUB who had a previous history of tubal ligation were included. The mean age of the patients was 40.9±6.28 years. The majority of patients belonged to the age group 41 – 50 years. This finding corresponds with the studied 50 patients with DUB in different tertiary care centers and found that 58% of patients were aged more than 40 years [17]. Also, patients >40 years constituted 43.83% of the study population. Although in their study, the most common age group was 31 – 40 years (40.35%).

The majority of patients came from a rural areas in this study (59%). Rest 41% came from urban areas. This represents the rural-urban distribution of population in the country. According to the World Bank estimates, 64.1% of patients lived in a rural areas 2017 in Bangladesh. Among all patients, the majority studied up to SSC (30%), followed in second by 28% studying below SSC. Therefore, total of 58% of patients completed SSC and below. UNICEF estimated that in 2012 secondary school participation rate among females was 50.6%. Hence, the findings of this study



correspond with that of UNICEF. The majority of patients came from the lower middle-income category having a monthly income between 10000 to 20000 taka (51%).

In this study, 89% of patients were Muslim, and 11% were Hindu. This corresponds to the finding that 88 percent of the country's inhabitants are Muslim.

Among 100 patients, maximum of patients had 4 pregnancies (30%), followed by 20% who had  $\geq 5$  pregnancies, 28% patients had 3 pregnancies, 11% had 2 pregnancies, and 11% patients were primipara. In comparison [18], found majority of patients had  $\geq 5$  pregnancies (40%) in their study, followed by 28% having 3 pregnancies, 24% having 4 pregnancies, 4% having 2 pregnancies, and 4% having one pregnancy. They suggested that there is a possible link between multiparity and dysfunctional uterine bleeding. The highest incidence of DUB (87%) among multipara patients. That perimenopausal women with abnormal uterine bleeding had a higher frequency of multiparity. A mean parity of  $2.69 \pm 0.93$  among DUB patients is lower than this study's findings ( $3.43 \pm 1.34$ ). But, found that among DUB patients with a history of tubal ligation, the mean parity was  $43.08 \pm 5.26$ , which is higher than the findings of this study.

In their study, 30.2% of DUB patients underwent a hysterectomy [19] included 213 patients who underwent a hysterectomy; among them, 89 had a hysterectomy for purely bleeding of endometrial origin. Among 89 patients, 28 patients (31.46%) had a history of bilateral tubal ligation, which concordant with this study's findings.

The most common per vaginal bleeding pattern at presentation was menorrhagia (47%), followed in second and third by metrorrhagia (20%) and postmenopausal bleeding (17%). In comparison, their clinicopathological study of DUB patients found that the majority of patients presented with menorrhagia (56.15%), followed in second and third by metrorrhagia (14.05%) and postmenopausal bleeding (8.77%). Also, heavy menstrual bleeding (menorrhagia) was the major complaint (83.7%) [20] also found menorrhagia (34%) to be the most common presentation in DUB patients. Also, metrorrhagia and menometrorrhagia were found in 23% and 18% of cases, respectively.

The mean duration of tubal ligation was  $13.4 \pm 6.3$  years. This is lower than that found [21]. They found a mean duration between tubal ligation and hysterectomy of  $19.31 \pm 5.35$  years.

Sonographic findings of uterus, endometrium, and ovary in DUB patients reveal that 65% had a bulky uterus, 23% had thickened endometrium, 5% had thinned endometrium, and 15% had cystic ovary. In comparison, Sultana *et al.* found 72% cases of the bulky

uterus, 20% thickened endometrium, 4% thinned endometrium, and 18% cystic ovary among DUB patients in their study.

Diabetes was found in 34% of patients, and hypertension was found in 27% of patients in this study [22] found 5.26% cases of diabetes and 26.31% cases of hypertension in their study.

DUB is a diagnosis of exclusion. The pathophysiology of DUB is not fully understood, and it is complex. Uterine and systemic causes must be excluded before the diagnosis is made. Ovulation occurs in about 80% of women with DUB. DUB also occurs at the extremes of the reproductive years.

## CONCLUSION

In this study, women in the fourth decade of age were frequently affected by DUB with a previous history of ligation. Common presentation at admission was menorrhagia, although other presentations are also found. However, the overall incidence rate is about 25% of the cases. But the study findings have several limitations as the study design is not case-control, and there is a small sample size. Therefore, a further larger cohort study is needed to finalize the findings.

### Limitation of the study

- This was a single-center study.
- Sample size was not representative.
- Study design cross-sectional in nature.

## RECOMMENDATIONS

Depending upon the study findings, the following recommendations are suggested:

1. Further larger cohort study is required to get the exact prevalence.
2. Further larger studies with a larger sample size are recommended.

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