

DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20250176>

## Original Research Article

# Various presentations of gestational trophoblastic disease and its outcomes in a tertiary hospital

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**Received:** 18 December 2024

**Accepted:** 15 January 2025

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## ABSTRACT

**Background:** Gestational trophoblastic disease encompasses a heterogeneous group of lesions arising from abnormal placental trophoblast proliferation. While molar pregnancy is the most common form, gestational trophoblastic neoplasia, though rare and often curable even with widespread dissemination, can follow any gestational event, including abortion, ectopic pregnancy, or term pregnancy. The aim of the study was to evaluate the various presentations and outcomes of gestational trophoblastic disease (GTD) in a tertiary hospital setting.

**Methods:** This retrospective study, conducted in the department of gynecological oncology at BSMMU from June 2023 to July 2024, included 173 patients with GTD. Diagnoses were confirmed using ultrasonography, serum beta-hCG, and histopathology. Data were retrospectively collected from medical records, documenting key demographic and clinical information. Ethical approval and informed consent were obtained. Data analysis was performed using SPSS version 22.

**Results:** Most participants were between 25-34 years (91.91%). The majority of GTD cases (54.91%) occurred in the 20-25 years age group, with bleeding per vagina being the most common clinical presentation (91.91%). Histopathology classified 72.83% of cases as complete moles. Treatment resulted in complete resolution for 85.55% of cases. Pre-evacuation beta hCG levels were above 100,000 IU/l in 72.83% of cases.

**Conclusions:** This study highlights the diverse presentations and favorable outcomes of gestational trophoblastic disease (GTD) in a tertiary hospital, emphasizing the importance of tailored management and monitoring strategies.

**Keywords:** Beta-hCG, Gestational trophoblastic disease, Gestational trophoblastic neoplasia, Molar pregnancy

## INTRODUCTION

Gestational trophoblastic disease (GTD) encompasses a group of disorders characterized by the abnormal proliferation of placental trophoblastic cells.<sup>1</sup> These diseases involve the aberrant growth and development of trophoblasts, which may persist even after the pregnancy ends.<sup>2</sup> GTD includes a wide spectrum of conditions with

varying clinical presentations, likelihood of spontaneous resolution, potential for local invasion, metastasis, and prognosis.<sup>3-5</sup> The World Health Organization (WHO) classifies GTD into benign forms (such as hydatidiform mole, complete and partial) and malignant forms (including invasive mole, choriocarcinoma, placental site trophoblastic tumor (PSTT), and epithelioid trophoblastic tumor).<sup>1,3</sup>

The management of GTD has become one of the success stories of modern medicine, as most GTDs are curable with the retention of reproductive function, provided the diagnosis is accurate and treatment is initiated early.<sup>5</sup> Hydatidiform mole (HM) accounts for the majority (80%) of GTDs, while invasive mole (15%) and choriocarcinoma (5%) are less common.<sup>1</sup> Molar pregnancy is of significant clinical and epidemiological importance due to its high prevalence and the fact that most gestational neoplasms follow the outcome of molar pregnancies. The treatment of choice for molar pregnancy is suction evacuation, followed by serial monitoring of serum beta-hCG levels for early detection of gestational trophoblastic neoplasia (GTN), as a decline in beta-hCG levels is a reliable indicator of the declining activity of residual trophoblastic cells.<sup>6</sup>

Treatment for gestational neoplasia (GTN) depends on the WHO prognostic scoring and anatomical staging, which distinguishes between low-risk and high-risk GTN. Low-risk GTN is typically treated with single-agent chemotherapy, while high-risk GTN requires combination chemotherapy.<sup>7</sup> Accurate evaluation and management of GTD require a thorough understanding of its different types to ensure early diagnosis, distinguishing malignant GTN from benign molar pregnancy through careful follow-up after treatment.

There is a dearth of published studies in Bangladesh regarding the epidemiological characteristics, clinical presentation, management practices, and outcomes of GTD, with only a few case reports available.<sup>5</sup> Given the limited clinicopathological data on GTD in Bangladesh and the varying incidence rates reported in Asian countries, there is a pressing need for a well-designed clinicopathological study to determine the incidence of GTD in this region.

This study aimed to fill this gap by analyzing past medical records over the last three years to study the clinicopathological characteristics of GTD, its correlation, and the prevalence of different types of GTD at BSMMU, a tertiary care center in Bangladesh. Molar pregnancies, particularly complete moles, are clinically significant due to their high propensity for persistence of gestational trophoblastic neoplasia (GTN) or progression to choriocarcinoma, requiring clinical intervention.<sup>8</sup> GTN, if left untreated, may grow, metastasize, and lead to death, extending to invasive mole, choriocarcinoma, and PSTT.<sup>9</sup>

Ultrasonography is a simple, non-invasive examination that can accurately identify molar transformations in utero. With the widespread use of first-trimester ultrasound, a significant proportion of molar pregnancies are diagnosed in asymptomatic patients.<sup>5</sup> Laboratory tests for serum beta-hCG are highly sensitive and specific for diagnosing trophoblastic-related conditions, including GTD. GTDs produce beta-hCG with a longer half-life, and an apparent half-life of more than three days suggests the presence of residual tumor tissue.<sup>10</sup> Elevated pre-evacuation beta-hCG

levels (>100,000 mIU/ml) are significantly associated with larger uterine size and persistence of GTD, emphasizing the need for strict monitoring to detect early progression to GTN.<sup>1</sup>

Suction evacuation remains the treatment of choice for molar pregnancy, followed by serial beta-hCG monitoring to detect early progression to GTN. A rise in hCG levels after treatment may indicate local or distant metastatic recurrence.<sup>5,6</sup> This study seeks to contribute to the existing literature on GTD in Bangladesh by analyzing the prevalence and characteristics of different types of GTD at BSMMU.

## Objective

The aim of the study was to evaluate the various presentations and outcomes of gestational trophoblastic disease (GTD) in a tertiary hospital setting.

## METHODS

This retrospective observational study was conducted in the department of gynecological oncology at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, from June 2023 to July 2024. A total of 173 patients with gestational trophoblastic disease (GTD) who attended the gynecological oncology OPD were diagnosed using pelvic ultrasonography, quantitative serum beta-hCG, and histopathological confirmation of the product of conception.

### Inclusion criteria

All cases diagnosed as GTD either histologically or sonologically, including complete mole, partial mole, invasive mole, choriocarcinoma, PSTT, and ETT.

### Exclusion criteria

All other intrauterine pregnancies were excluded.

Data were collected retrospectively from the institution's electronic and manual medical records, including both inpatient and outpatient departments. Patients were diagnosed either sonologically or clinically, with confirmation by histopathology. Demographic information such as age, parity, economic status, first diagnosis, referral date, and consultation dates with the gynecologist and gynecologic oncologist were recorded. A pre-designed, pre-tested pro forma was used to collect data, which included questionnaires, clinical examination details, sonological findings, and serum beta-hCG reports.

Ethical approval was obtained from the institutional review board (IRB) of BSMMU, Dhaka, and written informed consent was obtained from all patients. Data processing and analysis were performed using SPSS (Statistical Package for Social Science) version 22, with statistical significance set at  $p < 0.05$ . Clinicopathological

correlations were assessed by comparing histopathological results with radiological and biological findings. Confidentiality was maintained by assigning a unique ID to each patient and ensuring anonymity in all presentations of data. No experimental drugs were administered, and there was no additional risk to patients beyond standard clinical procedures.

## RESULTS

Among the participants, 9 (5.20%) were under 25 years, 159 (91.91%) were between 25-34 years, and 5 (2.89%) were over 35 years. Regarding parity, 5 (2.89%) were nulliparous, 36 (20.81%) had fewer than two children, and 132 (76.30%) had more than two. In terms of education, 76 (43.93%) had no formal education, 61 (35.26%) completed primary education, 31 (17.92%) completed secondary education, and 5 (2.89%) completed tertiary education. Most participants were married (143, 82.66%), while 30 (17.34%) were single. A majority were

housewives (90, 52.02%), while 83 (47.98%) were service holders. Monthly income was below 10,000 Taka for 100 (57.80%) participants and above 10,000 Taka for 73 (42.20%). Most participants were Muslim (164, 94.80%), with 9 (5.20%) being non-Muslims.

The distribution of gestational trophoblastic disease (GTD) cases by age group showed that the highest number of cases, 95 (54.91%), occurred in the 20-25 years age group, followed by 55 (31.79%) in the 25-30 years group. A total of 16 (9.25%) cases were observed in individuals over 30 years, and 7 (4.05%) cases were reported in patients under 20 years. Hydatidiform mole was the predominant diagnosis across all age groups, with a total of 166 cases. Invasive mole was identified in 5 cases, mainly in the 25-30 years (3 cases) and over 30 years (2 cases) age groups. Choriocarcinoma was noted in 2 cases, exclusively in patients aged over 30 years, while no cases of PSTT were observed.

**Table 1: Sociodemographic characteristics of women with GTD (n=173).**

Variables		Frequency	Percentage
Age (years)	<25	9	5.20
	25-34	159	91.91
	>35	5	2.89
Parity	Nullipara	5	2.89
	<2	36	20.81
	>2	132	76.30
Highest level of education	None	76	43.93
	Primary	61	35.26
	Secondary	31	17.92
	Tertiary	5	2.89
Marital status	Single	30	17.34
	Married	143	82.66
Occupation	Housewife	90	52.02
	Service holder	83	47.98
Monthly income	<10,000 taka	100	57.80
	>10,000 taka	73	42.20
Religion	Muslim	164	94.80
	Non-Muslims	9	5.20

**Table 2: Distribution of GTD cases according to age group (n=173).**

Age group (years)	Hydatidiform mole	Invasive mole	Choriocarcinoma	PSTT	Total	Percentage
<20	7	0	0	0	7	4.05
20-25	95	0	0	0	95	54.91
25-30	52	3	0	0	55	31.79
>30	12	2	2	0	16	9.25
Total	166	5	2	0	173	100.00

The most common clinical presentation among GTD cases was bleeding per vagina, reported in 159 cases (91.91%), including 150 hydatidiform moles, 6 invasive moles, and 3 choriocarcinomas. Amenorrhea was observed in 153

cases (88.44%), predominantly in hydatidiform mole cases (150). Pain was present in 121 cases (69.94%), including 118 hydatidiform moles and 3 choriocarcinomas. Hyperemesis gravidarum was noted in 29 cases (16.76%), with contributions from hydatidiform moles (20), invasive

moles (6), and choriocarcinomas (3). The least frequent presentation was passing grape-like vesicles, documented

in 20 cases (11.56%), all of which were hydatidiform moles.

**Table 3: Distribution of GTD cases by clinical presentation (n=173).**

Clinical presentation	Hydatidiform mole	Invasive mole	Choriocarcinoma	PSTT	Total	Percentage
Bleeding per vagina	150	6	3	0	159	91.91
Amenorrhea	150	3	0	0	153	88.44
Pain	118	0	3	0	121	69.94
Hyperemesis gravidarum	20	6	3	0	29	16.76
Passing grape-like vesicles	20	0	0	0	20	11.56

**Table 4: Diagnostic distribution of GTD cases (n=173).**

Typing of cases		Frequency	Percentage
On histopathology report	Complete mole	126	72.83
	Partial mole	39	22.54
	Invasive mole	8	4.63
On USG report	Complete mole	149	86.13
	Partial mole	24	13.87
	Invasive mole	0	0.00

Histopathology findings classified 126 (72.83%) cases as complete moles, 39 (22.54%) as partial moles, and 8 (4.63%) as invasive moles. In contrast, USG findings identified 149 (86.13%) cases as complete moles, 24 (13.87%) as partial moles.

**Table 5: Outcome of GTD after treatment (n=173).**

Outcome	Frequency	Percentage
Complete resolved	148	85.55
Persistent GTN	25	14.45
Invasive mole	10	5.78
Choriocarcinoma	15	8.67

The outcome of treatment for GTD shows that 148 cases (85.55%) achieved complete resolution, while 25 cases (14.45%) experienced persistent GTN. Among the persistent GTN cases, 10 (5.78%) were diagnosed with invasive mole, and 15 (8.67%) were diagnosed with choriocarcinoma.

**Table 6: Distribution of cases by pre-evacuation beta hCG level (n=173).**

Beta HCG	Frequency	Percentage
<10,000 IU/l	0	0.00
10,000-1,00,000 IU/l	47	27.17
>1,00,000 IU/l	126	72.83

The distribution of beta hCG levels prior to evacuation shows that 47 cases (27.17%) had beta hCG levels ranging from 10,000-100,000 IU/l, while the majority of cases, 126 (72.83%), had beta hCG levels greater than 100,000 IU/l. No cases had beta hCG levels below 10,000 IU/l.

## DISCUSSION

This study explores the diverse presentations and outcomes of gestational trophoblastic disease (GTD) in a tertiary care hospital in Bangladesh. GTD encompasses a range of trophoblastic disorders characterized by abnormal proliferation of placental tissue, posing significant diagnostic and therapeutic challenges. The findings emphasize the predominance of hydatidiform mole as the most common presentation and highlight key risk factors such as younger maternal age and low socioeconomic status. The outcomes, including a high-resolution rate but notable persistence of GTN in some cases, underscore the importance of early diagnosis and rigorous follow-up to optimize patient care and improve prognoses.

In our study, the majority of GTD patients were aged 25-34 years (91.91%), consistent with Lakra et al findings.<sup>11</sup> Most had more than two children (76.30%), reflecting Ifunanya et al data on higher parity and GTD risk.<sup>12</sup> Education levels varied, with a significant portion having no formal education (43.93%), aligning with trends observed by Ifunanya et al and Anuma et al.<sup>12,13</sup> The majority were married (82.66%) and housewives (52.02%), while economic status was predominantly lower-income (57.80%). Most participants were Muslim (94.80%). These patterns underscore the need for patient-specific considerations, such as tailoring healthcare strategies and interventions to meet the specific needs of GTD patients.

In this study, the distribution of gestational trophoblastic disease (GTD) cases by age group revealed that the highest number of cases occurred in the 20-25 years age group (54.91%), followed by the 25-30 years group (31.79%). A



smaller proportion of cases were seen in individuals over 30 years (9.25%) and those under 20 years (4.05%). Hydatidiform mole was the most common diagnosis across all age groups, totalling 166 cases. Invasive mole was identified in 5 cases, primarily in the 25-30 years (3 cases) and over 30 years (2 cases) age groups. Choriocarcinoma was exclusively noted in patients over 30 years (2 cases), and no cases of PSTT were observed. These findings are consistent with the patterns reported by Thakuria et al, highlighting the age-related distribution and the predominance of hydatidiform mole in GTD cases. These patterns underscore the need for age-specific screening and management strategies in patients with GTD.

In this study, the most common clinical presentation among GTD cases was bleeding per vagina, reported in 91.91% of cases. This included 150 hydatidiform moles, 6 invasive moles, and 3 choriocarcinomas, aligning with findings from Thakuria et al.<sup>14</sup> Amenorrhea was observed in 88.44% of cases, predominantly in hydatidiform mole cases. Pain was present in 69.94% of cases, with the majority being hydatidiform moles. Hyperemesis gravidarum occurred in 16.76% of cases, with contributions from hydatidiform moles, invasive moles, and choriocarcinomas. The least frequent presentation was the passing of grape-like vesicles, documented in 11.56% of cases, all of which were hydatidiform moles. These patterns emphasize the need for attentive clinical assessment and management tailored to the common presentations of GTD.

In our study, histopathology findings classified the majority of GTD cases as complete moles (72.83%), followed by partial moles (22.54%) and invasive moles (4.63%). These results are in line with the findings of Mulik et al, highlighting the predominance of complete moles in GTD cases.<sup>4</sup> In contrast, ultrasonography (USG) findings identified a higher percentage of complete moles (86.13%) and a lower percentage of partial moles (13.87%). These discrepancies between histopathology and USG findings underscore the importance of combining both diagnostic methods for accurate classification and management of GTD cases.

The outcome of treatment for gestational trophoblastic disease (GTD) showed that 85.55% of cases achieved complete resolution, which is consistent with the findings of Malovrh et al.<sup>15</sup> However, 14.45% of cases experienced persistent gestational trophoblastic neoplasia (GTN). Among these persistent GTN cases, 5.78% were diagnosed with invasive moles and 8.67% with choriocarcinoma. These findings emphasize the importance of close monitoring and follow-up in GTD patients to promptly identify and manage persistent GTN, ensuring improved patient outcomes.

In this study, the distribution of pre-evacuation  $\beta$ -hCG levels indicated that 27.17% of cases had levels ranging from 10,000 to 100,000 IU/l, while the majority (72.83%)

had levels exceeding 100,000 IU/l. No cases were found with  $\beta$ -hCG levels below 10,000 IU/l. Notably, the average pre-evacuation  $\beta$ -hCG levels were higher in the complete mole group ( $1.92 \pm 1.79$  lakhs IU/l) compared to the partial mole group ( $1.84 \pm 0.76$  lakhs IU/l). Although this difference was not statistically significant ( $p=0.921$ ), likely due to the small sample size, other studies with larger samples have reported significantly higher mean pre-evacuation serum  $\beta$ -hCG levels in complete moles.<sup>16,17</sup>

These findings underscore the importance of considering  $\beta$ -hCG levels in the management and diagnosis of GTD. Furthermore, the patterns observed in this study highlight the critical need for patient-specific considerations, such as tailoring healthcare strategies and interventions to meet the specific needs of GTD patients.

This study had several limitations. The sample size was relatively small. The study was single-centered, limiting the generalizability of the findings. The study's limited geographic scope may introduce sample bias, potentially affecting the broader applicability of the findings.

## CONCLUSION

This study highlights the predominant presentations and outcomes of gestational trophoblastic disease (GTD) in a tertiary hospital. Most cases occurred in women aged 25-34 years, with the majority presenting with bleeding per vagina. Histopathology findings mainly identified complete moles. Treatment outcomes were generally positive, with a high rate of complete resolution. Elevated beta hCG levels were common, indicating the need for ongoing monitoring and tailored management strategies.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Begum M, Khan SJ, Begum SA, Khatun SF, Akter N, Khanom S, et al. Various presentations of gestational trophoblastic disease and its outcomes in a tertiary hospital. *Int J Reprod Contracept Obstet Gynecol* 2025;14:415-20.