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Coping with molar pregnancy: Incidence, clinical profile, management, and outcomes at a tertiary care centre

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Abstract
Background: Hydatidiform mole (HM) is a benign form of gestational trophoblastic disease (GTD) caused by abnormal trophoblastic proliferation. Early diagnosis and appropriate β-hCG surveillance are essential to prevent complications and progression to gestational trophoblastic neoplasia.
Objectives: To determine the incidence, clinical presentation, risk factors, management, and outcomes of molar pregnancies at a tertiary care centre (Gandhi Medical College, Hyderabad).
Methods: A retrospective observational study was conducted from 1 April 2017 to 30 September 2018. All women diagnosed with molar pregnancy by ultrasound were included. Clinical data, laboratory findings, management approach, and follow-up outcomes were analyzed.
Results: Among 14,760 deliveries, 34 cases of molar pregnancy were identified (incidence: 2.3 per 1,000 deliveries). The distribution included complete mole (76%), partial mole (21%), and invasive mole (3%). Most women belonged to a low socioeconomic group (89%) and were multigravida (68%). The most common symptoms were amenorrhea (97%), vaginal bleeding (91%), and abdominal pain (67%). Theca lutein cysts occurred in 21%, while preeclampsia and hyperemesis were seen in 12% and 14%, respectively. Suction evacuation was the primary management for all cases except one requiring hysterectomy. One patient with persistent β-hCG levels was diagnosed with invasive mole and treated successfully with hysterectomy and methotrexate. Most patients normalized β-hCG levels within 7-9 weeks post-evacuation.
Conclusion: Complete moles were the most common form of molar pregnancy. Early detection through ultrasound and β-hCG monitoring resulted in reduced morbidity and effective management. Single-agent chemotherapy was adequate for the invasive mole case. Regular long-term β-hCG follow-up remains essential to prevent malignant progression.

Keywords: β-hCG, Hydatidiform mole, gestational trophoblastic disease, suction evacuation, invasive mole, molar pregnancy incidence, trophoblastic neoplasia

Introduction
Gestational Trophoblastic Disease (GTD) represents a diverse group of disorders arising from abnormal proliferation of trophoblastic tissue, the cells that normally form the placenta. Among these conditions, the hydatidiform mole is the most common benign form and is characterized by abnormal trophoblastic hyperplasia and hydropic swelling of chorionic villi. Hydatidiform moles are classically categorized into complete and partial moles, each with distinct genetic origins, pathological features, clinical behavior, and risk of malignant progression. Despite being considered a benign entity, hydatidiform mole is clinically significant due to its potential to evolve into gestational trophoblastic neoplasia (GTN) if inadequately treated or monitored.
GTD also includes malignant conditions such as invasive mole, choriocarcinoma, Placental Site Trophoblastic Tumor (PSTT), and Epithelioid Trophoblastic Tumor (ETT). These malignant forms may demonstrate aggressive local invasion or distant metastasis, but fortunately they are among the few highly chemotherapy-sensitive malignancies in gynecology, with excellent cure rates when detected early.
The global incidence of hydatidiform mole demonstrates striking regional disparities. While the incidence in Western countries such as the United States is approximately 1 in 1500 pregnancies, considerably higher rates have been reported in Southeast Asian populations, such as 1 in 77 pregnancies in Indonesia [1]. These variations are believed to be influenced by genetic susceptibility, nutritional deficiencies (particularly vitamin A and carotene), socioeconomic factors, maternal reproductive patterns, and environmental influences.
In India, the incidence is estimated to be approximately 1 in 160 pregnancies, placing it among regions with a moderately elevated burden of molar gestations [2].

This highlights the importance of continuous data generation, particularly in rural and semi-urban populations where early antenatal registration and access to specialized care may be limited [3]. Several risk factors have been associated with the development of hydatidiform mole, including extremes of maternal age (below 20 years and above 35 years), prior history of molar pregnancy, consanguinity, and certain nutritional deficiencies. Early identification of these risk factors can aid in timely diagnosis and prompt management [3, 4].

Clinically, molar pregnancy may present with symptoms such as abnormal vaginal bleeding, excessive uterine enlargement, hyperemesis gravidarum, early-onset pre-eclampsia, elevated serum β-hCG levels, and rarely hyperthyroidism. However, with increasing availability of early pregnancy ultrasonography, many cases can now be detected before the onset of overt clinical features. Transvaginal ultrasonography combined with serial β-hCG monitoring remains the cornerstone for diagnosis and follow-up.

Management primarily involves evacuation of the uterine contents, followed by meticulous post-evacuation surveillance with serial β-hCG measurements to detect persistent disease. The potential for malignant transformation, particularly in complete moles, makes structured follow-up essential to prevent progression to GTN, which may require chemotherapy. Timely diagnosis, appropriate evacuation, and adherence to follow-up protocols significantly improve maternal outcomes [5].

Tertiary care centers, especially teaching hospitals, serve as referral hubs for complicated pregnancies and often manage a substantial number of trophoblastic diseases. Evaluating the incidence, clinical features, management strategies, and outcomes in such centers provides crucial insight into disease patterns and identifies gaps in healthcare delivery.

This study aims to determine the incidence, clinical patterns, and management outcomes of hydatidiform mole in a tertiary teaching hospital. Understanding these aspects will contribute to improved regional data, assist in strengthening clinical guidelines, and enhance early detection and comprehensive management of GTD.

Materials and Methods

All women diagnosed with molar pregnancy on ultrasound between 1 April 2017 and 30 September 2018 at Gandhi Hospital were included. A total of 14,760 deliveries occurred during this time, among which 34 were HM cases (0.23%).

This was a retrospective descriptive study conducted to determine the incidence, clinical profile, and management outcomes of hydatidiform mole (HM).

- **Study Setting:** The study was carried out in the Department of Obstetrics and Gynecology, Gandhi Hospital, a tertiary care teaching hospital that caters to a large obstetric population and serves as a referral center in Telangana.
- **Study Period:** The study included all cases diagnosed between 1 April 2017 and 30 September 2018.
- **Study Population:** All women diagnosed with molar pregnancy during the study period were included.
- **Inclusion Criteria:** Women diagnosed with hydatidiform mole on ultrasonography during the study period, Women who underwent evaluation and management at Gandhi Hospital, Cases with complete medical records, including clinical presentation and treatment details.
- **Exclusion Criteria:** Cases with incomplete or missing records, Women referred after uterine evacuation for follow-up only, Patients in whom diagnosis could not be confirmed by histopathology

Diagnosis of molar pregnancy was established based on:

- Ultrasound findings consistent with complete or partial mole.
- Clinical features, such as abnormal uterine bleeding, excessive uterine size, or hyperemesis.
- Serum β-hCG levels, when available.
- Histopathological confirmation following uterine evacuation, considered the gold standard.

Data Collection

Data were extracted from hospital records using a structured proforma. The following variables were recorded:

Demographic and Baseline Characteristics

- Maternal age
- Parity
- Socioeconomic and nutritional background (if documented)
- Previous obstetric history

Clinical Presentation

- Presenting symptoms
- Duration of symptoms
- Uterine size and general condition at presentation
- Complications at admission (anemia, hypertension, hyperthyroidism)

Investigations

- Serum β-hCG levels
- Ultrasound findings (complete vs partial mole)
- Laboratory parameters (CBC, thyroid profile, liver and renal function tests)

Management

- Method of evacuation (suction evacuation/dilatation and evacuation)
- Intra-operative and immediate post-operative complications
- Need for blood transfusion
- Administration of anti-D (for Rh-negative women)

Follow-up

- Serial β-hCG monitoring
- Time to return to normal β-hCG levels
- Diagnosis of persistent gestational trophoblastic disease (if any)
- Requirement for chemotherapy and treatment response

Outcome Measures

Primary Outcome

Incidence of hydatidiform mole among total deliveries

Incidence calculated using your data:

- Total deliveries = 14,760
- HM cases = 34
- Incidence = 0.23%

Secondary Outcomes

- Clinical presentation patterns
- Complications associated with molar pregnancy
- Rate of persistent GTD requiring chemotherapy
- Duration and pattern of follow-up

Data Analysis: Data were entered into a secured database and analyzed using appropriate statistical software (SPSS).

Descriptive statistics were used to summarize variables. Quantitative data were presented as mean ± SD or median (IQR). Categorical variables were expressed as frequencies and percentages. Approval was obtained from the Institutional Ethics Committee prior to data collection. Patient confidentiality was strictly maintained throughout the study.

Results

As noted above, 34 patients (0.23%) were diagnosed with a molar pregnancy from a total of 14760 deliveries. an incidence of 2.3 per 1,000 deliveries.

Table 1: Types of molar pregnancy

Parameter	Value	Percentage
Complete Mole	26	76%
Partial/Incomplete Mole	7	21%
Invasive Mole	1	3%

This table shows that complete mole was the most common type, accounting for 76% of all hydatidiform mole cases. Partial/incomplete mole constituted 21%, while 3% were diagnosed as invasive mole. The predominance of complete mole aligns with global data, where complete mole typically represents the majority of cases. The single case of invasive mole highlights the importance of strict follow-up to detect early progression to gestational trophoblastic neoplasia (GTN).

Table 2: Socioeconomic Status

Parameter	Value	Percentage
Low Socioeconomic	89	89%
High Socioeconomic	11	11%

A striking 89% of patients belonged to the low socioeconomic group, while only 11% were from the higher socioeconomic group. This trend is consistent with literature suggesting higher incidence of molar pregnancy in women from lower socioeconomic backgrounds, often linked to nutritional deficiencies, delayed healthcare access, and poor antenatal care utilization.

Table 3: Parity distribution in present study

Parameter	Value	Percentage
Primigravida	32	32%
Multigravida	68	68%

In this study, 68% of molar pregnancy cases occurred in multigravida women, and 32% in primigravidas. This contrasts slightly with global trends, which typically report higher prevalence among primigravidas. This deviation may reflect local population characteristics, healthcare-seeking behavior, or referral patterns.

Table 4: Clinical Presentation in present study

Parameter	Value	Percentage
Amenorrhea	33	97%
Vaginal Bleeding	31	91%
Hyperemesis	5	14%
Excessive Uterine Size	9	26%
Pain Abdomen	23	67%
Preeclampsia	4	12%
Theca Lutein Cysts	7	21%
Thyrotoxicosis	1	3%
Anemia	29	86%

Amenorrhea (97%) was the most consistent feature, reflecting the early pregnancy stage at presentation. Vaginal bleeding (91%) was the next most common complaint, characteristic of molar pregnancy. Pain abdomen (67%) suggests uterine overdistension or associated hemorrhage. Anemia (86%) indicates significant blood loss at presentation.

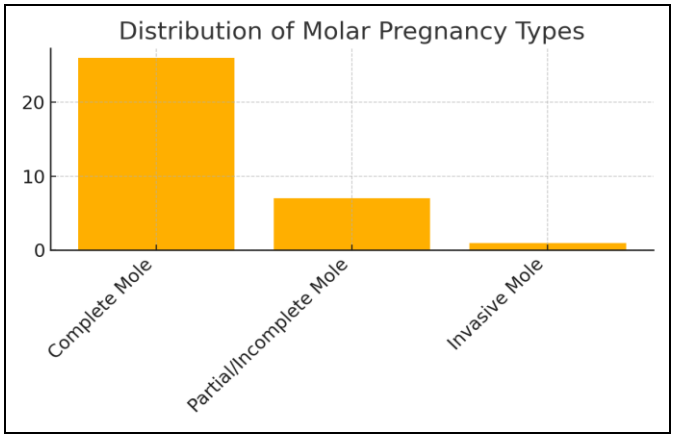

Fig 1: Distribution of molar pregnancy types

This bar chart visually represents the higher burden of complete mole compared to partial mole and invasive mole. The graphical representation reinforces the numerical findings and makes the pattern clearly discernible.

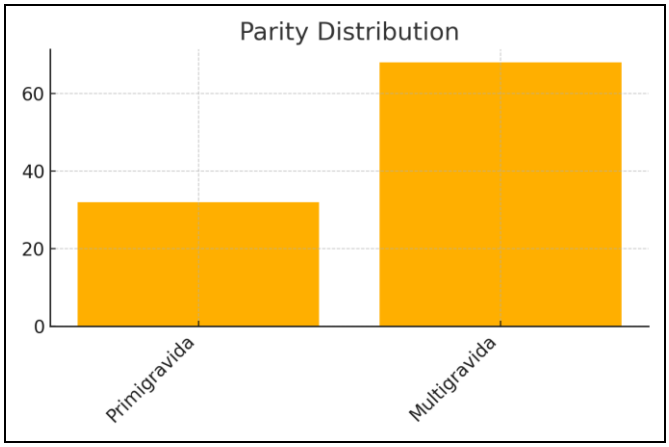

Fig 2: Parity Distribution

The bar graph emphasizes the overwhelming predominance of low socioeconomic background among patients with molar pregnancy, visually supporting table data.

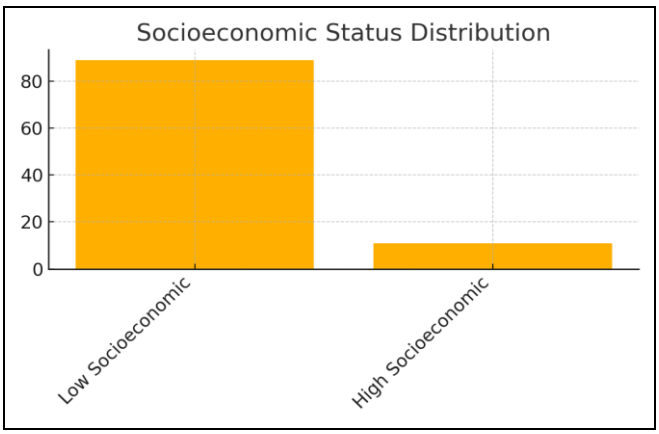

Fig 3: Socioeconomic Status Distribution

The figure visually highlights that multigravidas constituted more than two-thirds of the affected population, reinforcing the numerical findings.

Discussion

In the present study, the incidence of hydatidiform mole was found to be 0.23%, corresponding to 2.3 per 1,000 deliveries. This incidence is slightly higher than that reported in Western countries such as the United States (1-2 per 1,000 pregnancies) but comparable to other Asian and Indian data, where incidences between 2 and 9 per 1,000 pregnancies have been reported [6, 7]. The higher prevalence in Southeast Asia has long been attributed to nutritional, socioeconomic, and genetic factors. Our findings are consistent with earlier Indian studies showing similar incidence patterns.

The classical clinical presentation observed in this study included amenorrhea followed by vaginal bleeding, reported in 97% and 91%, respectively. This aligns with the findings of Goldstein *et al*. [8], who also noted vaginal bleeding as the most common presenting symptom in 97% of their cases. The predominance of abnormal bleeding continues to be a hallmark of hydatidiform mole diagnosis across populations. Other studies, including those from the New England Trophoblastic Center, similarly emphasize that bleeding is the single most frequent presenting complaint [9].

The frequency of excessive uterine size in our study was 26%, which is similar to that reported by the New England Trophoblastic Center, where it was documented in 28% of cases. Excessive uterine enlargement correlates strongly with markedly elevated β-hCG levels due to trophoblastic overgrowth. This is consistent with our observation that 86% of patients had β-hCG levels exceeding 50,000 mIU/mL at presentation [10].

The incidence of theca lutein cysts in our study was 21%, with 12% of patients having cysts larger than 6 cm. This is comparable with international literature, which reports their incidence between 20% and 46% in cases of hydatidiform mole [11]. Consistent with the natural history described in multiple studies, none of the cysts in our cohort required surgical intervention, and most regressed spontaneously within 6-8 weeks, highlighting the benign and self-limiting nature of these ovarian changes when appropriately monitored.

A noteworthy observation in our study was the predominance of the disease in multigravida women (68%), whereas several global studies report a higher frequency in primigravidas. For instance, some Western studies have documented that hydatidiform mole is more commonly seen in first pregnancies. However, certain Asian and Indian studies have also shown increased frequency among multigravidas, possibly due to sociocultural determinants, delayed healthcare seeking, and differing population profiles.

The prevalence of hyperemesis (14%) and preeclampsia (12%) in our study is within the range described in published literature. Studies have shown hyperemesis in 20-26% and early-onset preeclampsia in 12-27% of patients, particularly in those with markedly elevated β-hCG levels and excessive uterine size. The single case of thyrotoxicosis (3%) in our cohort is consistent with the known but relatively rare association between extremely high β-hCG levels and thyroid stimulation

In our study, Suction Evacuation (D & C) was the preferred method of management for all patients, reflecting current international guidelines that recommend suction evacuation as the treatment of choice for molar pregnancies. One patient underwent elective hysterectomy with BSO, which is consistent with recommendations for older women, those with completed families, or those with complications or suspected invasive disease. This parallels findings from large centers such as the Charing Cross GTD Center, where hysterectomy is reserved for selected high-risk cases or invasive mole.

The follow-up protocol in our study, involving weekly β-hCG monitoring until normalization followed by monthly assessments for six months, is aligned with the guidelines from the FIGO and the Royal College of Obstetricians and Gynaecologists (RCOG). [12, 13]. The average time for β-hCG levels to normalize in our study was 7-8 weeks, which is consistent with global data showing normalization typically within 6-12 weeks after evacuation.

We encountered one case of invasive mole, characterized by persistent plateauing β-hCG levels beyond 9 weeks. The patient underwent hysterectomy followed by single-dose methotrexate, with good response. The incidence of post-molar gestational trophoblastic neoplasia in our study (≈3%) aligns with the generally reported risk of 2-4% for complete mole in international studies [14, 15].

Complications were frequent, particularly persistent bleeding and anemia, noted in 86% of cases, and all patients required blood transfusion with packed RBCs. Historically, molar pregnancy was associated with high morbidity due to late presentation; however, recent improvements in early diagnosis, ultrasound availability, and standardized treatment protocols have significantly reduced major complications. Our findings similarly highlight that although anemia and bleeding were common, more severe complications such as thyroid storm, trophoblastic embolization, or hemorrhagic shock were not observed [16].

Overall, the findings of the present study are in agreement with much of the global literature, with slight differences in parity distribution and socioeconomic patterns that reflect regional characteristics. The study reinforces the importance of early recognition, prompt evacuation, and rigorous β-hCG follow-up to reduce morbidity and detect persistent disease early.

Conclusions

In our study, thus we have identified not only the incidence of molar pregnancies at our institution but also highlighted the significant morbidity, management strategies, and associated complications. Limitation of our study includes limited follow-up for some of these patients. Single-agent chemotherapy is well tolerated in a patient with invasive mole.

There is a wide variation in incidence reported worldwide contributed by genetic, environmental and host-related factors. Laboratory measurement of the serum hCG level and early diagnosis by ultrasound scan can be lifesaving. For better results they should be follow up with Beta HCG.

Conflicts of interest

Not available

Financial Support

Not available

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