



Original Article

Clinico-Demographic Profile of Molar Pregnancy: A Four-and-a-Half-Year Study at a Tertiary Care Hospital in Goa, India

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ABSTRACT

Background: Gestational trophoblastic disease comprises a spectrum of disorders arising from abnormal trophoblastic proliferation, of which hydatidiform mole is the most common entity. Although advances in early ultrasonography and β -hCG assays have improved diagnosis and outcomes, molar pregnancy poses significant clinical challenges due to its variable presentation and potential progression to malignant GTD. Periodic evaluation of institutional data is essential to understand regional epidemiology, clinical patterns, management practices and outcomes.

Aims: To determine the proportion of molar pregnancies among hospital admissions, study the clinical spectrum, review treatment modalities and evaluate outcomes of patients with molar pregnancy.

Methodology: This descriptive study with retrospective and prospective components included all diagnosed cases of molar pregnancy admitted to Goa Medical College between January 2016 and May 2021. Cases of invasive mole and placental site trophoblastic tumor were excluded. Clinical, laboratory and ultrasonographic data were collected. Primarily suction-evacuation followed by serial β -hCG monitoring done. Data analyzed using descriptive and inferential statistics.

Results: Among 25,268 pregnant admissions, 42 cases of molar pregnancy were analyzed, yielding an incidence of 1.66 per 1,000 pregnancies. Partial moles constituted 52.4% and complete moles 47.6%. The mean age was 25.78 ± 6.1 years. Vaginal bleeding (66.6%), amenorrhea (97.6%) were the most common presenting features, while 30.9% were asymptomatic. Suction-evacuation was performed in 98% cases with significant decline in β -hCG levels post-evacuation ($p < 0.0001$), with normalization occurring over a mean duration of 9.1 ± 1.3 weeks. All patients achieved complete remission.

Conclusion: Early diagnosis, prompt evacuation and meticulous β -hCG surveillance ensure excellent outcomes.

Keywords: Molar pregnancy, Gestational trophoblastic disease, Hydatidiform Mole, Suction Evacuation, Human chorionic gonadotropin (hCG).

INTRODUCTION:

A class of tumours known as gestational trophoblastic disease (GTD) is characterised by abnormal trophoblastic growth. Human chorionic gonadotropin (hCG) is produced by trophoblasts. Hydatidiform moles (HM), commonly referred to as molar pregnancy, which include villi, and other trophoblastic neoplasms, which lack villi, are the two types of GTD. Gestational trophoblastic neoplasia (GTN) refers to the nonmolar or malignant variants of GTD, which include invasive mole, choriocarcinoma, placental site trophoblastic tumour (PSTT), and epithelioid trophoblastic tumour (ETT). Although they can develop weeks or even years after any pregnancy, molar pregnancies are the most typical cause of these cancers¹⁻³.

Molar pregnancy is characterized by aberrant fertilization resulting in excessive trophoblastic proliferation and varying degrees of villous edema, leading to distinctive clinical, biochemical, and radiological features^{4,5}. Despite advances in

diagnostic modalities and management protocols, molar pregnancy continues to pose important clinical challenges, particularly in developing countries, due to its variable presentation, potential for serious complications, and risk of progression to malignant GTD.

Additional research is required to fully understand the epidemiology of HM. In Europe and North America, the incidence of hydatidiform mole is 1-2 per 1000 pregnancies, however in India and Indonesia, it is 10 per 1000 pregnancies^{6,7}. Genetic variations within ethnic groups may be the cause of this higher occurrence in Asia as compared to other geographical areas^{8,9}. This disparity has been attributed to differences in socioeconomic status, nutritional deficiencies, maternal age extremes, parity, and access to early antenatal care. Hospital-based data remain a valuable source for estimating the burden of disease and understanding regional trends, especially in tertiary care centers that cater to large referral populations.

Several demographic and clinical factors have been associated with an increased risk of molar pregnancy. Geographical correlation indicates a higher prevalence of molar pregnancies among teenage pregnancies and at the extremes of maternal age, including patients with rising maternal age (older than 35). The risk dramatically increases with age, rising 2.5 times for women over 35 and five times for those over 40. Additionally, people with a history of hydatidiform moles are more likely to develop them^{8,9}.

From asymptomatic cases found on routine ultrasonography to classic manifestations like vaginal bleeding, hyperemesis gravidarum, early-onset preeclampsia, anaemia, and hyperthyroidism, molar pregnancy can manifest clinically in a variety of ways. Due to the widespread use of sensitive β -human chorionic gonadotropin (β -hCG) tests and early prenatal ultrasonography, many instances are now detected at an earlier gestational age, frequently before overt symptoms appear^{10,11}. This change in clinical presentation emphasises how crucial it is to reevaluate conventional presenting patterns in modern clinical practice.

The cornerstone of management of molar pregnancy is prompt uterine evacuation, most commonly by suction and evacuation, followed by meticulous follow-up using serial β -hCG monitoring. The need for chemotherapy is determined by the presence of persistent or malignant GTD, based on established diagnostic criteria^{12,13}.

Given the continued burden of molar pregnancy and its potential complications, periodic evaluation of institutional data is essential to understand disease patterns, treatment practices, and outcomes. Such analyses provide valuable insights into regional epidemiology, help identify gaps in care, and aid in optimizing management strategies. The present study was therefore undertaken at a tertiary care center to determine the proportion of molar pregnancies among hospital admissions, analyze the clinical presentation and associated risk factors, review treatment modalities including the need for chemotherapy, and evaluate patient outcomes over a defined period.

Methodology:

This descriptive study with both retrospective and prospective components included all diagnosed cases of molar pregnancy admitted to Goa Medical College between 1st January 2016 and 31st May 2021. Institutional Ethics Committee approval was obtained prior to commencement of the study, and informed consent was secured from all participants. All reported cases of molar pregnancy were included, while cases of invasive mole and placental site trophoblastic tumor were excluded. Detailed clinical data were collected, including demographic characteristics, presenting complaints, gestational age, obstetric and menstrual history.

All patients underwent comprehensive general and systemic examinations, with uterine size assessed and correlated with gestational age, followed by per speculum and per vaginal examinations. Laboratory investigations included hemoglobin estimation, serum β -human chorionic gonadotropin (β -hCG), urine routine microscopy, and thyroid function tests, along with ultrasonographic evaluation.

Management consisted of suction and evacuation followed by oxytocin infusion, and evacuated tissue was subjected to histopathological examination. Blood transfusions were administered when indicated. Post-evacuation, patients were counseled regarding contraception for a minimum duration of six months and were followed up with weekly serum β -hCG monitoring until normalization.

Retrospective data were obtained from hospital case records for patients admitted between January 2016 and September 2019, while subsequent cases were enrolled prospectively, with uniform parameters applied across both groups.

Statistical analysis:

Data were analyzed using SPSS version 16, employing descriptive statistics for demographic and clinical variables. Categorical variables were expressed as frequencies and percentages and analyzed using the chi-square test, while continuous variables were summarized as mean and standard deviation and compared using Student's t-test. Changes in serum β -hCG levels before and after evacuation were assessed using paired t-test, and a p-value of <0.05 was considered statistically significant.

Results:

During the four-and-a-half-year study period, a total of 25,268 pregnant women were admitted to the facility, resulting in 23,112 deliveries and 2,156 abortions. Of these, 46 patients were admitted with a diagnosis of molar pregnancy. However, two were excluded as they had GTN, which met our exclusion criteria. Among the remaining 44 patients, two subsequently received a revised diagnosis of incomplete abortion and were also excluded. Thus, the study ultimately included 42 patients with molar pregnancy. The incidence of molar pregnancy in our setting during the study period was 1.66 per 1,000 pregnancies (or 1 in 601 pregnancies). When calculated based on the number of deliveries, the incidence was 1.81 per 1,000 deliveries (or 1 in 550 deliveries). A little over half (52.4%) were found to have the partial mole and a close 47.6% were recorded to have been diagnosed with the complete hydatidiform mole.

Table 1 presents the clinico-demographic characteristics of the included patients. The average age of the included patients was 25.78 years with a standard deviation of 6.1 years.

Table 1: Clinico-demographic characteristics of the 42 patients with molar pregnancy.

Clinico-demographic characteristic	Observation	Frequency (N=42)	Percentage
Age distribution	15-20years	10	23.8
	21-25years	10	23.8
	26-30years	17	40.5
	>30years	5	11.9
Parity	Primigravida	16	38.1
	Multiparous	24	57.1
	Grand multiparous (≥ 4)	2	4.8
Antecedent pregnancy among multiparous women	Prior Full-term Delivery	21	50
	Prior Abortion only	5	11.9
Gestational age	≤ 8 weeks	7	16.7
	9-12 weeks	23	54.8
	13-20 weeks	11	26.2
	>20 weeks	1	2.4
Blood group	O positive	24	57.1
	A positive	8	19
	B positive	8	19
	AB positive	2	4.8
Presenting complaints	Amenorrhea	41	97.6
	Bleeding PV	28	66.6
	Passing of vesicles PV	1	2.4
	Headache	1	2.4
	Hypertension	1	2.4
	Pain abdomen	1	2.4
	Vomiting	3	7.1
	Pain abdomen	1	2.4
	Asymptomatic	13	30.9

In the present study, participants were categorized according to uterine size in relation to gestational age, as determined by the last menstrual period. Uterine size was classified as corresponding to gestational age, larger than expected, or smaller than expected. More than half of the participants (57.1%) were found to have a uterine size larger than that expected for their gestational age. Approximately one-third (33.3%) had a uterine size consistent with gestational age, while only 9.5% of women had a uterus smaller than expected for the given gestation. Ultrasonographic evaluation revealed characteristic molar pregnancy features in all participants (100%). The presence of theca lutein cysts was assessed separately and was observed in 11.9% of the study population.

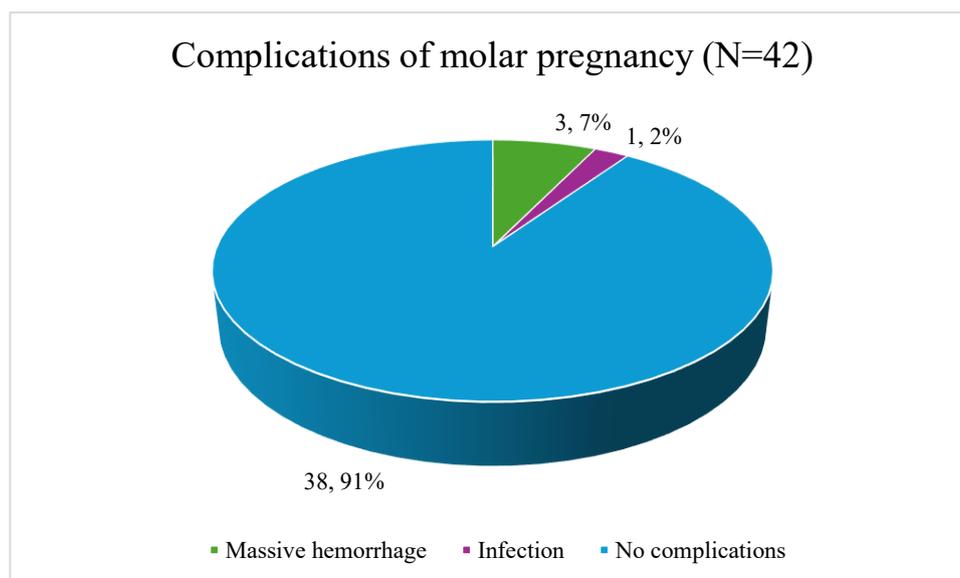
Laboratory investigations was carried out among the patients. Most important investigations included hemoglobin levels and β -hCG levels (**Table 2**).

Table 2: Laboratory investigations conducted at baseline.

Laboratory investigations	Observation	Frequency (N=42)	Percentage
Hemoglobin levels	4-6.9 g%	3	7.1
	7-9.9 g%	30	71.4
	≥10 g%	9	21.4
Baseline β-hCG	10 thousand-1Lakh	15	35.7
	>1lakh-<10lakhs	26	61.9
	>10lakhs	1	2.4
Thyroid function test	Normal	13	31
	Hyperthyroid	28	66.7
	Hypothyroid	1	2.4

The treatment received were suction and evacuation and hysterectomy. It was found that a large majority (98%) were treated with suction and evacuation which is standard modality of treatment for molar pregnancy. Only one patient underwent Hysterectomy as a life saving measure, as she developed torrential bleeding. Twenty (47.6%) of the women required no blood transfusion but 18 (42.9%) women required a single transfusion and only 4 women (9.5%) needed 2 or more number of blood transfusions.

The complications of molar pregnancy have been *figure 1*.

**Figure 1: Complications of molar pregnancy.**

Serum β-hCG levels were recorded prior to evacuation and again at 24 hours post-evacuation, and the two values were compared to assess the statistical significance of the change. The mean pre-evacuation β-hCG level was 324,133.8 IU/L, which declined to 62,131.04 IU/L at 24 hours following evacuation. This reduction was found to be highly statistically significant ($p < 0.0001$), indicating a marked decrease in β-hCG levels following evacuation (*Figure 2*). The mean duration required for serum β-hCG levels to return to normal was 9.1 ± 1.3 weeks, with a minimum of 7 weeks and a maximum of 12 weeks.

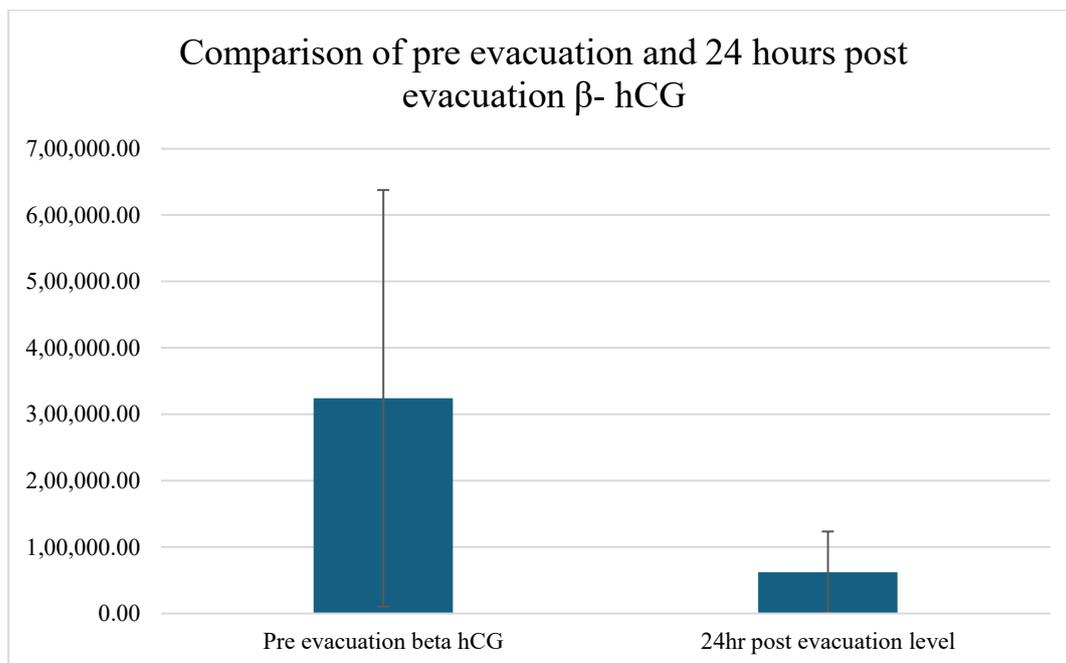


Figure 2: Comparison of pre-evacuation and 24 hours post evacuation beta-hCG

Discussion:

The incidence of molar pregnancy at our tertiary care facility was 1.66 per 1,000 pregnancies, or around 1 in 601 pregnancies, and 1.81 per 1,000 births in this descriptive observational research that was carried out over a four and a half-year period. This incidence is consistent with rates in low- and middle-income nations that have been previously reported. In contrast to high-income locations, where reported rates are closer to 1 per 1,000 births, studies from India and Southeast Asia have shown incidence rates ranging from around 1.0 to 2.5 per 1,000 pregnancies, with a similarly high frequency of molar pregnancies¹⁴.

The slight predominance of partial hydatidiform moles (52.4%) over complete moles (47.6%) in our cohort contrasts with some literature where complete moles are more frequently reported, particularly in regions with higher overall incidence. However, improved diagnostic accuracy through ultrasonography and histopathology in recent decades has led to increased recognition of partial moles globally.

The mean age of patients in our cohort was 25.78 ± 6.1 years, and the majority of patients were in the reproductive age group (15–30 years), mirroring findings from multiple observational studies. A large retrospective series reported by Mungan T et al a mean age of 25.29 ± 7.40 years among 310 hydatidiform mole cases, with a wide age distribution involving both younger and older reproductive women¹⁵. In our series, primigravida accounted for 38.1%, reflecting patterns seen in Indian studies where multiparity is common but not exclusively protective. Hence, these similarities support the established association between molar pregnancy and reproductive age, although extreme age (<20 and >35 years) is often recognized as a risk factor in other settings.

In our study, clinical presentation was largely consistent with classical descriptions of molar pregnancy. Amenorrhea (97.6%) and vaginal bleeding (66.6%) were the dominant symptoms, which concurs with reports from other tertiary hospitals where vaginal bleeding was the most frequent presenting complaint in molar cases. Similar presentations were noted in studies by Kumari N et al¹⁶, Fathima M et al¹⁷ and Swathi J et al¹⁸.

The proportion of asymptomatic patients (30.9%) in our series may reflect increased use of early ultrasonography that facilitates detection before overt symptomatology, a trend also noted in recent clinical practice by Arshad A et al¹⁹. Hence, Ultrasonography demonstrated characteristic molar features in all patients (100%), underscoring its pivotal role and confirming the diagnostic sensitivity in modern early diagnosis, which has reduced the frequency of severe classical presentations such as preeclampsia or marked hyperemesis.

The presence of theca lutein cysts was relatively low (11.9%) compared with some prior series that reported up to 17–21% of theca lutein cysts in molar pregnancies. The lower prevalence in our study likely reflects early detection and evacuation, as classic large cysts are more common when diagnosis is delayed^{15,17}.

Our laboratory profile showed elevated baseline beta-hCG levels in the majority of patients, consistent with trophoblastic proliferation. Anemia was prevalent, with 71.4% having hemoglobin 7–9.9 g/dL, highlighting the need for transfusion

support; 52.4% required at least one unit. Biochemical hyperthyroidism was noted in 66.7% of tested patients, aligning with prior evidence that markedly elevated β -hCG can stimulate thyroid function²⁰.

Suction and evacuation accounted for 98% of the management in our sample, which is in accordance with the widely recognised first-line therapy for molar pregnancy. According to research by Kumari N et al.¹⁶, Agrawal N et al.²¹, and Goldstein et al.²² and Pundir S et al.²³ the most common management techniques used were suction and evacuation. The fact that just one patient needed a hysterectomy because of potentially fatal bleeding shows that conservative surgical treatment is still safe and successful in most situations. The success of suction and evacuation, the standard therapy technique observed in most cohorts worldwide, is demonstrated by the considerable decline in β -hCG levels 24 hours after evacuation and normalisation over a mean duration of nearly 9 weeks²⁴. Since all 42 patients achieved a full recovery, all of our research participants had a 100% remission rate. However, a contrasting result was noted in a study by Laila N et al where 13.5% progressed to persistent mole and 4.5% to choriocarcinoma²⁵.

This study has several limitations that should be considered when interpreting its findings. Being a retrospective, single-center study conducted at a tertiary care hospital in Goa with a relatively small sample size of 42 cases, the results may not be fully generalizable to other regions in India or to broader populations, where variations in socioeconomic, nutritional, and ethnic factors could influence the incidence and presentation of molar pregnancy. Additionally, the lack of advanced diagnostic techniques, such as cytogenetic analysis, p57 immunohistochemistry, or molecular ploidy studies for precise differentiation between complete and partial moles, represents a common constraint in resource-limited settings.

To overcome the identified limitations and advance understanding of molar pregnancy in this region, future research should prioritize prospective, multicenter studies involving multiple hospitals across Goa and other Indian states to achieve larger sample sizes, more reliable incidence estimates, and improved regional comparability. Incorporating standardized long-term follow-up protocols for at least 6–12 months post- β -hCG normalization would enable better evaluation of persistent gestational trophoblastic neoplasia development, contraceptive adherence, and reproductive outcomes in subsequent pregnancies.

Conclusion:

Overall, the clinico-epidemiological profile of molar pregnancy in this study reflects known global patterns, with variations in incidence and presentation likely influenced by regional healthcare access, nutritional and socioeconomic determinants, and routine use of early prenatal ultrasound. The outcomes reinforce the central role of early diagnosis, standard surgical management, and vigilant β -hCG surveillance in optimizing care for women with molar pregnancy.

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