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RESEARCH ARTICLE

Reproductive and obstetric outcomes after complete and partial hydatidiform mole: A single-center retrospective cohort study

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ABSTRACT

Aim: To evaluate the reproductive and obstetric outcomes after complete hydatidiform mole (CHM) and partial hydatidiform mole (PHM) in a tertiary referral center.

Materials and Methods: This retrospective cohort included 90 women with histologically confirmed molar pregnancy (65 CHM and 25 PHM) who were managed between 2015 and 2024. Cases with ectopic localization, uncertain diagnosis, missing essential data, or insufficient follow-up were excluded. Women with uterine preservation, no permanent contraception, reproductive age, and adequate follow-up were defined as the subgroup with potential for subsequent pregnancy and were included in the reproductive outcome analysis. Postmolar gestational trophoblastic neoplasia (GTN), occurrence of at least one subsequent pregnancy, outcomes of the first postmolar pregnancy, and obstetric outcomes of the first live birth were compared between CHM and PHM.

Results: Among women with potential for subsequent pregnancy (43 CHM and 14 PHM), at least one subsequent pregnancy occurred in 22 (51.2%) and 8 (57.1%) women, respectively (p=0.697). When only the first subsequent pregnancy was considered, live birth, miscarriage, and recurrent molar pregnancy rates did not differ significantly between CHM and PHM groups (live birth: 63.6% vs 87.5%, p=0.374; miscarriage: 18.2% vs 12.5%, p=1.000; recurrent mole: 18.2% vs 0%, p=0.550). Obstetric outcomes of the first subsequent live birth were also comparable between groups, including gestational age at delivery (p=0.336), birthweight (p=0.924), Apgar scores (all p>0.05), and mode of delivery (p=1.000); all deliveries occurred at term. Fetal growth restriction, preeclampsia, uterine atony, and oligohydramnios did not differ significantly between groups (all p>0.05). No cases of preterm premature rupture of membranes (PPROM), premature rupture of membranes (PROM), placenta previa, placenta accreta spectrum, or placental abruption were observed.

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Conclusion: In this single-center cohort, fertility potential and obstetric outcomes appeared generally favorable after both CHM and PHM. However, subgroup comparisons should be interpreted cautiously, as the limited sample size, particularly in the PHM group, may have reduced the statistical power to detect meaningful between-group differences.

Keywords: gestational trophoblastic disease, hydatidiform mole, postmolar pregnancy, pregnancy outcome, reproductive outcome

INTRODUCTION

Gestational trophoblastic disease (GTD) encompasses a spectrum of disorders arising from placental trophoblastic tissue, ranging from premalignant lesions to invasive neoplasms. Hydatidiform mole is the most common form within this spectrum and is classified into two main subtypes: complete hydatidiform mole (CHM) and partial hydatidiform mole (PHM) (1,2). CHM is most often androgenetic and diploid, whereas PHM is typically diandric and triploid. These differences determine the risk of malignant transformation and guide follow-up strategies. Although hydatidiform mole has a relatively low incidence of 1–3 per 1,000 pregnancies in high-income countries, it remains important as a cause of early pregnancy loss and as a treatable form of gestational trophoblastic neoplasia (GTN) (1,3).

With advances in ultrasonography, sensitive β-human chorionic gonadotropin (β-hCG) assays and expert pathological evaluation, molar pregnancies are now recognized earlier in gestation and with fewer complications. Current guidelines, taking into account the difference in GTN risk between CHM and PHM, recommend subtype-specific durations of hCG surveillance and particularly support shortening the follow-up period after PHM (2). With treatment protocols based on the International Federation of Gynaecology and Obstetrics (FIGO) risk scoring system, cure rates in postmolar GTN have exceeded 95%, and preservation of reproductive potential, in addition to oncologic control, has therefore become a primary therapeutic goal (1,2).

Despite this success, many patients still seek clear information regarding the likelihood of conceiving again after a molar pregnancy, the safe timing of a new pregnancy, the impact of chemotherapy on fertility, the risk of recurrent mole, and potential obstetric complications. Existing studies, including low-risk GTN cases treated with single-agent chemotherapy in most series after conservative management, indicate that successful pregnancy and live birth rates are largely preserved, and that the rates of miscarriage, preterm birth, hypertensive disorders, and congenital anomalies are generally comparable to those in the general population (4-6). Although the risk of recurrent mole is increased after a history of CHM or PHM, it is reported to be around 1% in most series, and the majority of subsequent pregnancies result in healthy outcomes (5). However, many studies are based on selected referral-center populations, do not provide detailed analyses by molar subtype, or are unable to distinguish pregnancy desire and contraceptive status among women who do not conceive. This may cause the true fertility potential to appear lower than it actually is and may contribute to uncertainty in clinical counseling (5-7).

In this study, we aimed to evaluate the postmolar course and subsequent reproductive and obstetric outcomes following complete and partial molar pregnancies managed in a tertiary referral center. In particular, among women with uterine preservation and potential for subsequent pregnancy after postmolar surveillance, we sought to characterize subsequent pregnancy rates and live birth rates. Obstetric outcomes were further assessed among women who achieved a subsequent live birth. In addition, we examined first subsequent pregnancy outcomes, including miscarriage, recurrent molar pregnancy, preterm birth, preeclampsia, fetal growth restriction, and other major obstetric complications, in relation to molar subtype. In this way, we aimed to provide up-to-date, clinically applicable data that can be directly used in counseling after a molar pregnancy.

MATERIALS AND METHODS

This retrospective cohort study included women who were followed after a diagnosis of molar pregnancy at a tertiary referral center between January 2015 and December 2024, and whose pathology reports confirmed complete or partial hydatidiform mole. Cases with ectopic localization, uncertain diagnosis or missing key clinical data, as well as those with insufficient follow-up duration, were excluded. From the medical records, data on maternal age, obstetric history, pathology reports regarding mole type, treatment modality, postmolar follow-up, development of GTN, and pregnancy outcomes after the molar pregnancy were collected.

Definitions and subgroup classification

Molar pregnancy subtypes

The diagnoses of complete and partial hydatidiform mole were based on final histopathological reports prepared according to standard histopathological criteria. Cases explicitly reported as complete hydatidiform mole or partial hydatidiform mole were assigned to the corresponding subgroup. Cases with uncertain, equivocal, or non-classifiable pathological diagnoses were excluded from the analysis.

Subgroup of women with potential for subsequent pregnancy

For the evaluation of postmolar reproductive outcomes, we defined a subgroup of women with potential for subsequent pregnancy within the overall cohort. This subgroup was intended to identify women with a realistic biological and clinical possibility of a subsequent pregnancy during follow-up. The inclusion criteria were preservation of the uterus (no hysterectomy performed), no definitive contraception (e.g. tubal ligation) initiated before completion of hCG surveillance, being of reproductive age during the postmolar period, and adequate follow-up. In women meeting these criteria, pregnancies occurring after the molar gestation and their obstetric outcomes were analyzed. Women were considered to have adequate follow-up if they had documented completion of postmolar hCG surveillance and available follow-up records regarding subsequent reproductive status, or if a subsequent pregnancy was documented during follow-up. However, because of the retrospective design, voluntary postponement of pregnancy could not be reliably distinguished from reduced fertility or unsuccessful attempts to conceive based on the medical records.

Postmolar GTN

Postmolar GTN was diagnosed on the basis of clinical and laboratory findings according to internationally accepted criteria. In the presence of a plateau or rise in serial hCG measurements after a molar pregnancy, the detection of new lesions, or evidence of distant metastasis, a diagnosis of GTN was considered and these cases were classified within the GTN subgroup.

Postmolar reproductive and obstetric outcome assessment

In the subgroup of women with potential for subsequent pregnancy, pregnancies achieved after the molar gestation were evaluated. For statistical analyses, only the first pregnancy occurring after the molar pregnancy was taken into account for each woman (Figure 1). For this first subsequent pregnancy, live birth, miscarriage, and recurrent molar pregnancy were assessed. Obstetric outcomes were evaluated among women who achieved a subsequent live birth and included gestational age at delivery, birthweight, Apgar scores, mode of delivery, fetal growth restriction, preeclampsia, uterine atony, oligohydramnios, and major obstetric complications. The occurrence of preterm premature rupture of membranes (PPROM), premature rupture of membranes (PROM), placenta previa, placenta accreta spectrum, and placental abruption was also recorded.

Statistical analysis

Statistical analyses were performed using IBM SPSS Statistics 22.0 (IBM Corp., Armonk, NY, USA). Continuous variables were presented as mean ± standard deviation or median (interquartile range, IQR), according to their distributional characteristics. For comparisons between two independent groups, parametric tests (independent-samples t-test) were used when appropriate, and non-parametric tests (Mann–Whitney U) were applied otherwise.

Categorical variables were expressed as numbers (percentages) and compared using the Pearson chi-square test or Fisher's exact test when expected cell counts were insufficient. A p-value < 0.05 was considered statistically significant for all analyses. No formal a priori power analysis was performed, as this was a retrospective study and the sample size was determined by the number of eligible cases available during the study period.

Ethical approval

The study was approved by the Necmettin Erbakan University Ethics Committee for Non-Drug and Non-Medical Device Research at its meeting held on January 24, 2025 (Approval No: 2025/5472). Individual informed consent was waived because of the retrospective design and the use of anonymized data. The study was conducted in accordance with the principles of the Declaration of Helsinki.

RESULTS

In our study, 65 of the 90 cases (72.2%) were complete moles and 25 (27.8%) were partial moles. Among women with potential for subsequent pregnancy, 43 had a history of complete mole and 14 had a history of partial mole. At least one subsequent pregnancy occurred in 22 (51.2%) and 8 (57.1%) women, respectively. Reproductive outcomes following molar pregnancy in these patients are summarized in Figure 1. There were no significant differences between the complete and partial mole groups in terms of age, gravidity, parity, or previous miscarriage history. Serum β-hCG levels at diagnosis were markedly higher in complete mole cases (median 212,330 vs 85,000 mIU/mL, p<0.001) (Table 1). None of the patients had a prior history of molar pregnancy.

The primary treatment approach and postmolar course are presented in Table 2. Uterine evacuation was the main treatment modality in both groups and was performed in 59 (90.8%) complete mole cases and 23 (92.0%) partial mole cases, while primary hysterectomy was performed in 6 (9.2%) and 2 (8.0%) cases, respectively, with no significant difference between groups (p=1.000). Postmolar invasive mole/GTN developed in one patient with complete

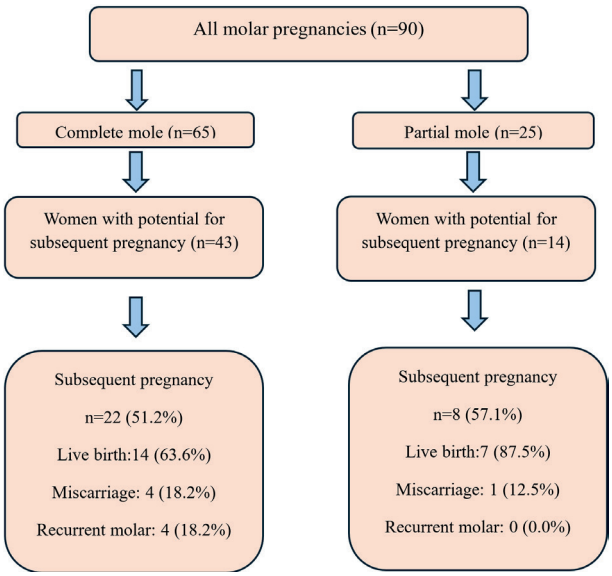

Figure 1. Flow diagram of the study cohort and subsequent pregnancy outcomes after molar pregnancy, overall and stratified by mole type.

mole (1.5%) and in no patients with partial mole (p=1.000). Although the duration of contraception after evacuation appeared longer in the complete mole group than in the partial mole group (4 [1–8] months vs 2 [1–7] months), this difference was not statistically significant (p=0.129).

Reproductive outcomes after molar pregnancy are presented in Table 3. The subgroup of women with potential for subsequent pregnancy comprised 43 complete mole and 14 partial mole cases. The proportion of women achieving at least one subsequent pregnancy was similar after complete and partial mole (51.2% and 57.1%, respectively; p=0.697). When only the first subsequent pregnancy was taken into account, miscarriage, live birth, and recurrent molar pregnancy rates did not differ significantly between the prior complete and partial mole groups (miscarriage: 18.2% vs 12.5%, p=1.000; live birth: 63.6% vs 87.5%, p=0.374; recurrent molar pregnancy: 18.2% vs 0.0%, p=0.550). Recurrent molar pregnancy was observed only in women with a previous complete mole.

Obstetric outcomes of the first subsequent live birth are shown in Table 4. There were 14 live births after complete mole and 7 live births after partial mole.

Table 1. Baseline characteristics according to molar subtype

Variable	Complete mole (n=65)	Partial mole (n=25)	p-value
Age (years), median (IQR)	28 (23-35)	25 (21-32)	0.417
Serum β-hCG at diagnosis (mIU/mL)	212,330 (86,352-387,124)	85,000 (28,700-138,067)	**<0.001**
Gravidity, median (IQR)	1 (1-3)	2 (1-3)	0.344
Parity, median (IQR)	0 (0-1)	0 (0-1)	0.741
Number of previous miscarriages, median (IQR)	0 (0-0)	0 (0-0)	0.573
Previous normal vaginal delivery, median (IQR)	0 (0-0)	0 (0-0)	0.870
Previous cesarean section, median (IQR)	0 (0-0)	0 (0-0)	0.506

Data are presented as median (IQR). P-values were calculated using the Mann–Whitney U test; $p < 0.05$ was considered statistically significant.
β-hCG: beta-human chorionic gonadotropin.

Table 2. Primary treatment modality, postmolar course, and contraception duration according to molar subtype

Variable	Complete mole (n=65)	Partial mole (n=25)	p-value
Primary treatment modality			
Uterine evacuation only, n (%)	59 (90.8)	23 (92.0)	1.000
Primary hysterectomy, n (%)	6 (9.2)	2 (8.0)	
Postmolar invasive mole / GTN, n (%)	1 (1.5)	0 (0.0)	1.000
Contraception duration after molar evacuation (months), median (IQR)	4 (1-8)	2 (1-7)	0.129

Categorical variables are presented as n (%) and compared using Fisher's exact test; continuous variables are presented as median (IQR) and compared using the Mann–Whitney U test. p-value < 0.05 was considered statistically significant.

Table 3. Reproductive outcomes after molar pregnancy according to prior molar subtype

Outcome	Prior complete mole	Prior partial mole	p-value[a]
Women with potential for subsequent pregnancy[b]	n=43	n=14	
Achieved ≥1 subsequent pregnancy, n (%)	22 (51.2)	8 (57.1)	0.697
No subsequent pregnancy[c], n (%)	21 (48.8)	6 (42.9)	0.697
Outcome of the first subsequent pregnancy[d]	(n= 22)	(n= 8)	
Miscarriage, n (%)	4 (18.2)	1 (12.5)	1.000
Live birth, n (%)	14 (63.6)	7 (87.5)	0.374
Recurrent molar pregnancy, n (%)	4 (18.2)	0 (0.0)	0.550

[a]P-values were calculated using the chi-square or Fisher's exact test, as appropriate; $p < 0.05$ was considered statistically significant.

[b] Women with uterine preservation, no permanent contraception, reproductive age, and adequate follow-up.

[c]Includes women remaining non-pregnant during follow-up (does not distinguish voluntary vs involuntary).

[d]Only the first subsequent pregnancy per woman was considered

In both groups, all deliveries occurred at term and no preterm birth was observed. Gestational age at delivery, birthweight, and 1-, 5-, and 10-minute Apgar scores were similar between women with a history of complete and partial mole. There was no significant difference in mode of delivery between the groups (cesarean section: 57.1% vs 57.1%; vaginal delivery: 42.9% vs 42.9%; p=1.000). Fetal growth restriction (7.1% vs 0.0%, p=1.000), preeclampsia (0.0% vs 14.3%, p=0.333), uterine atony (0.0% vs 14.3%, p=0.333), and

Table 4. Obstetric outcomes of the first subsequent live birth according to prior molar subtype

Outcome	Prior complete mole (n=14)	Prior partial mole (n=7)	p-value
Gestational age at delivery (weeks), mean ± SD	38.0 ± 0.68	37.71 ± 0.49	0.336
Birthweight (g), mean ± SD	3,238.57 ± 442.63	3,258.57 ± 452.38	0.924
Mode of delivery, n (%)			1.000
Cesarean section	8 (57.1)	4 (57.1)	
Vaginal delivery	6 (42.9)	3 (42.9)	
1-min Apgar score, mean ± SD	6.93 ± 0.99	6.57 ± 0.98	0.446
5-min Apgar score, mean ± SD	7.93 ± 0.99	7.57 ± 0.98	0.446
10-min Apgar score, mean ± SD	8.86 ± 0.86	8.57 ± 0.98	0.502
Fetal growth restriction, n (%)	1 (7.1)	0 (0.0)	1.000
Preeclampsia, n (%)	0 (0.0)	1 (14.3)	0.333
Uterine atony, n (%)	0 (0.0)	1 (14.3)	0.333
Oligohydramnios, n (%)	3 (21.4)	3 (42.9)	0.354

Continuous variables were compared using the independent-samples t-test; categorical variables were compared using Fisher's exact test. A p-value < 0.05 was considered statistically significant.

oligohydramnios (21.4% vs 42.9%, p=0.354) did not differ significantly between women with a history of complete and partial mole. None of the pregnancies were complicated by PPROM (preterm premature rupture of membranes), PROM (premature rupture of membranes), placental abruption, placenta previa, or PAS (placenta accreta spectrum).

DISCUSSION

In this single-center retrospective cohort, we evaluated the postmolar course and subsequent reproductive and obstetric outcomes following complete and partial molar pregnancies. Although our study is based on a small and selected patient group, it provides practical data that may be useful for clinical counseling, as it reflects real-life experience from a tertiary referral center.

First, the differences in baseline characteristics between complete and partial molar pregnancies support the expected biological distinction. The markedly higher serum β-hCG levels at diagnosis in complete mole cases, with other clinical parameters remaining similar, are consistent with the more pronounced trophoblastic proliferation and higher malignant transformation potential of complete mole (4,8). In large series in the literature, postmolar GTN rates after complete mole have also been reported to be significantly higher than after partial mole. In the centralized surveillance program by Jiao et al., the incidence of postmolar GTN was approximately 12% following complete mole and around 0.4% following partial mole (9). Recent evidence further supports this subtype-specific biological distinction. In a 2025 retrospective cohort from Shanghai including 506 pathologically confirmed hydatidiform moles, 42 women (8.3%) developed postmolar GTN, and both pathological subtype and pre-evacuation lesion diameter were independently associated with malignant progression (10). Notably, all patients who developed postmolar GTN achieved complete response after treatment. These findings are in line with the 2025 update on gestational trophoblastic disease, which continues to emphasize careful risk-adapted surveillance after molar evacuation (2). In our series, the postmolar GTN rate after complete mole was 1.5%, and no cases of GTN were observed after partial mole. The rate observed in the complete mole group appears lower than that reported in several large series. However, this finding was based on a single GTN event and should therefore be interpreted cautiously. The limited sample size, center-specific referral and surveillance patterns, early diagnosis and

evacuation in some cases, and statistical imprecision related to the very small number of events may have contributed to this lower observed rate. Therefore, this finding should not be interpreted as evidence of a lower GTN risk after complete mole.

In the subgroup of women with potential for subsequent pregnancy, the proportions achieving at least one subsequent pregnancy after complete and partial mole were 51.2% and 57.1%, respectively, with no significant difference between the two groups. When only the first subsequent pregnancy was considered, live birth rates were 63.6% after complete mole and 87.5% after partial mole. Although numerically higher in favor of partial mole, this difference did not reach statistical significance due to the sample size. These findings are in line with large cohort and review studies reporting that successful pregnancy and live birth rates in conservatively treated GTD patients are broadly comparable to those in the general population (11,12). In the meta-analysis by Capozzi et al., live birth rates after complete and partial mole were reported as 53.6% and 51.0%, respectively, and no significant difference was demonstrated between the two subtypes (4). Similarly, Joneborg et al. reported that, among women wishing to conceive after hydatidiform mole and across the GTD spectrum including low-risk GTN, pregnancy and live birth rates were preserved, while the prevalence of infertility was comparable to that in the general population (6).

Gestational age at delivery, birthweight, and 1, 5, and 10-minute Apgar scores for the first subsequent live birth did not differ between women with a history of complete versus partial mole, and all subsequent live births occurred at term with favorable neonatal outcomes. In addition, the low frequencies of major complications such as preeclampsia, fetal growth restriction, uterine atony, and oligohydramnios in both groups, together with the absence of severe events such as PPROM, placenta previa, and placental abruption, are broadly consistent with the existing literature suggesting no clear increase in obstetric risk after a molar pregnancy (4,12,13). However, these findings should be interpreted cautiously, as the sample size, particularly in subgroup analyses and rare obstetric outcomes, was limited. Similarly, miscarriage and preterm birth rates were low in our cohort. Nevertheless, given the small number of cases and the very small number of postmolar GTN cases, our results should be viewed as reassuring but preliminary rather than definitive evidence of favorable obstetric prognosis after molar pregnancy.

Recurrent molar pregnancy was observed only in women with a history of complete mole and in their first subsequent pregnancy (4/22; 18.2%). Although this proportion is higher than the recurrence risk reported in most large series, including the approximately 1–1.5% risk described by Eagles et al.(5), it was based on only four events and a small denominator. Therefore, this finding should be interpreted cautiously and should not be considered a precise recurrence risk estimate for the entire cohort. Potential selection effects related to the retrospective tertiary referral-center design and the inclusion of women with available follow-up data may also have influenced the observed case mix. Overall, this descriptive finding supports the importance of early β-hCG monitoring and ultrasound assessment in subsequent pregnancies after a molar pregnancy.

With regard to postmolar surveillance and contraception practice, the longer contraception interval observed after complete mole than after partial mole in our cohort is broadly consistent with current subtype-specific follow-up recommendations (2,14). Contemporary guidance does not uniformly require a universal 1-year delay after every molar pregnancy. Rather, follow-up is adapted according to molar subtype, with shorter surveillance after partial mole and longer monitoring after complete mole. In particular, current recommendations support hCG surveillance for 1 month after the first normal hCG value in partial mole and monthly surveillance for 6 months after the first normal hCG value in complete mole (2,14). In addition, a large retrospective cohort of 7,761 women reported postmolar GTN after hCG normalization in 0% of histologically confirmed partial moles and 0.36% of complete moles, supporting a risk-adapted rather than uniformly prolonged follow-up approach (15). Nevertheless, in our cohort, the observed contraception interval still appears shorter than the recommended surveillance duration in many patients, particularly after complete mole, and this should be taken into account when interpreting subsequent reproductive outcomes. Therefore, our findings should

not be interpreted as evidence against guideline-based surveillance and contraception practices; instead, they should be considered cautiously in light of the limited sample size, the small number of recurrence events, and the retrospective design of the study.

Findings from our complete and partial mole cases are consistent with FIGO guidance and recent reviews. They show that fertility preservation is a realistic goal when postmolar follow-up and treatment are appropriate. In well-treated and regularly monitored women, the chances of conceiving and achieving a healthy live birth are high. Major obstetric complications do not appear to differ markedly from those in the general population. These results support a reassuring approach when counseling young women who plan future pregnancies.

Recent Turkish publications also support the relevance of reporting contemporary single-center experience from Türkiye. In a 2025 Turkish benign GTD cohort, complete mole accounted for 57.4% and partial mole for 42.6% of cases; vaginal bleeding remained the leading presenting symptom (68.9%), and 26.2% of diagnoses were made during follow-up visits, illustrating that case mix and timing of diagnosis remain highly center-dependent (16). Likewise, a 2025 Turkish tertiary-center series reported high complete response rates across standard GTD treatment regimens, reinforcing the generally favorable outcomes achievable with referral-center care (17).

This study has some limitations. It is a retrospective, single-center study with a relatively small sample size. These findings should be interpreted with caution, as the subgroup sizes, particularly in the PHM group and in analyses restricted to subsequent live births, were small, limiting the statistical power to detect potentially meaningful between-group differences. Therefore, nonsignificant findings should not be interpreted as evidence of equivalence between complete and partial mole groups. Because the number of outcome events was limited, particularly for recurrent molar pregnancy, postmolar GTN, and live-birth subgroup analyses, multivariable modeling was considered statistically unreliable and was therefore not performed. In addition, although we identified a subgroup of women with potential for subsequent pregnancy, the retrospective design did not allow us to reliably distinguish voluntary postponement of pregnancy from reduced fertility or unsuccessful attempts to conceive. Moreover, focusing only on the first subsequent pregnancy may not fully capture the overall reproductive and obstetric experience of women with more than one postmolar pregnancy. The number of postmolar GTN cases was also very small. Nevertheless, the inclusion of pathologically confirmed complete and partial mole cases, detailed subtype-specific analyses, the focus on women with potential for subsequent pregnancy, and the comprehensive recording of obstetric outcomes in completed pregnancies represent important strengths of our study. These data may contribute to local clinical counseling and provide supportive real-world evidence for subtype-specific postmolar follow-up discussions.

CONCLUSION

This study suggests that fertility potential and obstetric outcomes appear generally favorable after both complete and partial molar pregnancy. However, given the limited sample size and the small number of outcome events, potential differences between subtypes should be interpreted with caution. These findings may contribute to more balanced and realistic counseling of women with a history of molar pregnancy regarding their future reproductive outcomes.

Ethical approval

This study has been approved by the Ethics Committee for Non-Drug and Non-Medical Device Research of Necmettin Erbakan University (approval date anuary 24, 2025, number 2025/5472). As the study was conducted retrospectively and all data were analyzed after removal of identifying information, the Ethics Committee for Non-Drug and Non-Medical Device Research of Necmettin Erbakan University determined that written informed consent was not required. Accordingly, individual patient consent forms were not obtained.

Author contribution

Surgical and Medical Practices: OA, FŞ, PB, AA; Concept: OA,DT; Design: OA, PB; Data Collection or Processing: FŞ, PB, AA; Analysis or Interpretation: OA,

PB, DT, AA; Literature Search: OA; Writing: OA, FŞ, PB, DT, AA. All authors reviewed the results and approved the final version of the article.

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Conflict of interest

The authors declare that there is no conflict of interest.

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