



## Increase in the level of $\beta$ -HCG after uterine artery embolization in the context of partial molar pregnancy: A case report

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### ABSTRACT

This report documents the case of a patient with a previously diagnosed partial molar pregnancy evacuated by dilation and suction curettage with appropriately declining post-operative levels of beta-human chorionic gonadotropin (beta-hCG), who, one month later, underwent uterine artery embolization in the setting of acute bleeding and imaging concerning for arteriovenous malformation. After embolization, beta-hCG levels increased, prompting concern for gestational trophoblastic neoplasia and referral to gynecologic oncology. With further workup, the elevation was found to be transient and benign – a phenomenon not previously described.

### 1. Introduction

Molar pregnancies are nonviable pregnancies that result from abnormal fertilization events. Categorized as “partial” or “complete” by the genetic material present, molar pregnancies can progress to malignancy in the form of gestational trophoblastic neoplasia (GTN). In its most aggressive forms, GTN can metastasize rapidly to the brain, lungs, and liver. The risk of GTN after molar pregnancy is 15–20% and 1–4% for complete and partial moles, respectively [1].

Molar pregnancies in patients desiring future fertility are most often managed with evacuation of uterine contents by dilation and curettage (D&C) and monitoring of levels of beta human chorionic gonadotropin ( $\beta$ -hCG) until an undetectable level is reached.  $\beta$ -hCG, released by placental syncytiotrophoblasts, rises in expected patterns in normal pregnancy and falls predictably after uterine evacuation of products of conception (POC). Trending  $\beta$ -hCG level allows for earlier detection of abnormal pregnancies, including molar pregnancies, and mitigates mortality risk [2].

This report presents a case of transient rise in  $\beta$ -hCG after uterine artery embolization (UAE) following a treated molar pregnancy.

### 2. Case Presentation

A 32-year-old woman, G3P1011, with a history of one miscarriage presented at 6 weeks 3 days for an initial obstetric visit (day 0) after a positive home pregnancy test. Dating ultrasound on day 16 demonstrated a cystic structure in the uterus measuring  $46 \times 10 \times 36$  mm, concerning for failed pregnancy versus less likely ectopic pregnancy.  $\beta$ -hCG levels, having risen abnormally to 78,953 from 24,223, further raised concern for molar pregnancy [see Fig. 1].

On day 24,  $\beta$ -hCG was 89,065. The patient underwent an uncomplicated suction D&C under ultrasound guidance. Pathology demonstrated trophoblastic villous tissue; FISH revealed a triploid pattern consistent with partial hydatidiform mole. Post-procedurally,  $\beta$ -hCG levels appropriately declined [see Fig. 1].

On day 77 / post-operative day (POD) 53, the patient experienced a sudden episode of vaginal bleeding. Transvaginal ultrasound demonstrated large-volume heterogeneous material within the endometrium, consistent with retained POC, and extensive vascularity in the anterior myometrium possibly representing an arteriovenous malformation (AVM). Given the significant hemorrhage risk limiting safety of future instrumentation, the decision was made with interventional radiology to proceed with uterine artery embolization (UAE) on hospital day 2.

On the day of embolization,  $\beta$ -hCG was 230. Procedural findings

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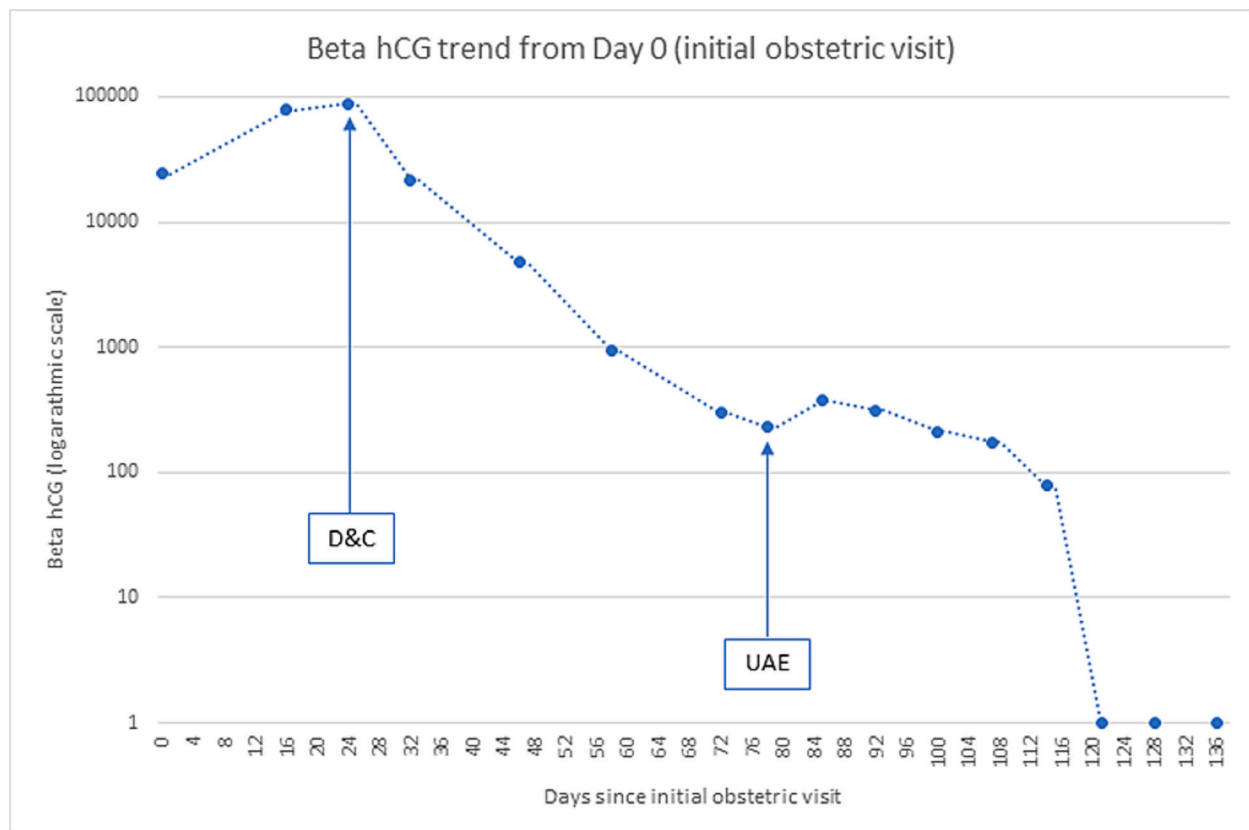


Fig. 1. Beta-hCG trend from the initial obstetric visit.

included hypertrophied bilateral uterine arteries without evidence of AVM. The right uterine artery had significantly increased vascularity, suspicious for retained POC. Bilateral arteries were successfully embolized with gelatin-sponge slurry. The patient had no further bleeding and was discharged the following day.

Seven days after embolization,  $\beta$ -hCG had risen to 374, raising concern for GTN. A referral was immediately placed to gynecologic oncology, who met with the patient on day 94. Chest X-ray was negative for evidence of metastatic disease. Possible treatment options were discussed, including hysterectomy, repeat D&C, and single-agent chemotherapy.

Before proceeding with treatment, further  $\beta$ -hCG testing was undertaken. Having decreased to 213, the level was reassuring against GTN. Given the unexpected clinical course, a plan was made to continue  $\beta$ -hCG surveillance for three months once the  $\beta$ -hCG returned to zero, following the recommended guidelines for a complete molar pregnancy [3].  $\beta$ -hCG trended to a negative level on day 121 and remained negative at the conclusion of surveillance.

Repeat vaginal ultrasound on day 114 demonstrated normal endometrium and myometrium with resolution of previously suspected abnormal vascularity and POC.

At follow-up on day 129, the patient was well. She reported weeks of irregular spotting. She described the intense emotional impact of her clinical course on her partner, her family, and herself. She remained undecided about pursuing a future pregnancy.

### 3. Discussion

Rising  $\beta$ -hCG levels after confirmed evacuation of molar uterine contents raises suspicion for GTN continuing to produce  $\beta$ -hCG. In this case, elevation in  $\beta$ -hCG after UAE was transient. The subsequent normalization of  $\beta$ -hCG levels to zero proved that dilation and suction curettage had been effective. The authors posit that this brief increase in

$\beta$ -hCG after the embolization may have been due to tissue necrosis, inflammation, and increased capillary permeability, allowing for leak of pre-formed  $\beta$ -hCG into systemic circulation.

No reports of similar cases could be found in the literature. Awareness of this possible effect of UAE is critical, as teams may reasonably initiate prompt treatment for GTN in clinical circumstances akin to those detailed in this report. Treatment may include toxic chemotherapy or surgery, with significant adverse effects [4]. Additionally, important costs to consider include the emotional burden of a GTN diagnosis to a patient and the resource expenditures associated with unnecessary treatment.

Providers reviewing  $\beta$ -hCG levels after UAE should consider the possibility of a transient rise post-procedurally and counsel patients accordingly pre-intervention.

### Contributors

Hannah Light-Olson contributed to conception of the case report, acquiring and interpreting the data, and drafting the manuscript.

Caroline Khanna contributed to acquiring and interpreting the data, undertaking the literature review, and drafting the manuscript.

Alaina Brown contributed to patient care, revising the article critically for important intellectual content, and final approval of the manuscript.

Nicholas Voutsinas contributed to patient care, revising the article critically for important intellectual content, and final approval of the manuscript.

Elise W Boos contributed to patient care, conception of the case report, revising the article critically for important intellectual content, and final approval of the manuscript.

All authors approved the final submitted manuscript.

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This article was not commissioned and was peer reviewed.

### *Conflict of interest statement*

The authors declare that they have no conflict of interest regarding

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