

Conservative Management of Hemorrhagic Corpus Luteum During Ovulation Induction: A Case Report

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Abstract

Hemorrhagic corpus luteum (HCL) is a functional ovarian condition characterized by bleeding within the corpus luteum after ovulation, which may present with acute pelvic pain and risk of hemoperitoneum. In women undergoing ovulation induction, distinguishing HCL from other adnexal emergencies is challenging and requires careful clinical decision-making to avoid unnecessary surgical intervention, particularly in patients seeking fertility preservation. This study aims to describe the clinical presentation, diagnostic evaluation, conservative management, and follow-up outcomes of HCL occurring during letrozole-induced ovulation. This research used a descriptive case report design involving a 28-year-old nulliparous woman with infertility who developed acute right lower abdominal pain during a letrozole ovulation-induction cycle. Clinical data were obtained from medical history, physical examination, serial hemoglobin measurements, and repeated ultrasonographic evaluations. The patient was managed conservatively through close observation, analgesic therapy, tranexamic acid administration, laboratory monitoring, and follow-up imaging. The results showed that the patient remained hemodynamically stable, experienced improvement in pain severity, maintained relatively stable hemoglobin levels, and did not require blood transfusion or surgical intervention. Follow-up ultrasonography demonstrated spontaneous regression of the ovarian lesion. This case highlights that conservative management of HCL may be appropriate in selected stable patients when supported by continuous clinical assessment and imaging evaluation. Further studies are needed to establish standardized criteria for selecting patients suitable for conservative treatment during fertility management.

Keywords: hemorrhagic corpus luteum; ovarian cyst; conservative management; infertility; ovulation induction

INTRODUCTION

Hemorrhagic corpus luteum (HCL) develops when bleeding occurs within a corpus luteum after ovulation. Its presentation ranges from an incidental ovarian finding to acute pelvic pain and, when rupture occurs, clinically important hemoperitoneum. The differential diagnosis includes ectopic pregnancy, adnexal torsion, endometrioma, and other ovarian masses. Because bleeding is often self-limiting, selected clinically stable patients may be managed expectantly with repeated clinical, laboratory, and ultrasonographic assessment (Medvediev et al., 2020).

Sonographic appearances of hemorrhagic ovarian cysts vary with clot formation and retraction. Fibrin strands and retracting clot are among the most useful sonographic features, but hemorrhagic cysts may have heterogeneous appearances that overlap with other adnexal lesions (Baltarowich et al., 1987; Patel et al., 2005). Current O-RADS guidance recommends short-interval follow-up for a typical hemorrhagic cyst larger than 5 cm but smaller than 10 cm in a premenopausal woman; however, typical classification requires appropriate morphologic and vascular assessment (Radiology, 2022).

We report conservative management of a large symptomatic right adnexal lesion clinically most consistent with HCL during a letrozole ovulation-induction cycle in a woman with infertility. The case highlights decision-making based on serial reassessment when advanced diagnostic modalities were not immediately available (Gagnier et al., 2013; Gynecologists, 2019; Lim et al., 2022; Okai et al., 1994; Pulappadi et al., 2021).

Previous studies have demonstrated that conservative management can be appropriate for selected patients with hemorrhagic ovarian cysts when clinical conditions remain stable. (J. H. Kim et al., 2014) reported successful conservative management among women with ruptured ovarian cysts and hemoperitoneum, emphasizing the importance of hemodynamic

stability and bleeding parameters in decision-making. Similarly, (M. J. Kim et al., 2021) identified clinical factors associated with surgical intervention in patients with corpus luteum cyst rupture, including the severity of hemoperitoneum and bleeding characteristics. These findings indicate that management decisions should not rely solely on lesion size but should integrate clinical symptoms, laboratory trends, and imaging findings (Katakura et al., 2023; Lim et al., 2022; Takeda et al., 2022; Xie & Jiang, 2022).

Advances in ultrasonography have improved the evaluation of hemorrhagic ovarian lesions; however, distinguishing HCL from other adnexal pathologies remains challenging. Sonographic characteristics such as fibrin strands, retracting clots, and heterogeneous internal echoes may support diagnosis, but overlapping appearances may occur with other ovarian abnormalities (Cheah & Liu, 2024; Hu & Fang, 2024; Strachowski et al., 2023). The O-RADS US v2022 guideline recommends short-interval follow-up for typical hemorrhagic cysts larger than 5 cm but smaller than 10 cm in premenopausal women, provided appropriate morphological and vascular assessment is performed. Nevertheless, diagnostic uncertainty may remain when advanced imaging features, such as Doppler evaluation, are unavailable.

Despite increasing evidence regarding conservative approaches for hemorrhagic ovarian lesions, several gaps remain in understanding the management of HCL specifically occurring during ovulation induction cycles (Chen et al., 2026; Jaheddine et al., 2026; Siu & Ding, 2025). Most previous investigations have focused on ruptured ovarian cysts with hemoperitoneum rather than hemorrhagic corpus luteum arising during fertility treatment. Additionally, limited reports describe decision-making processes when diagnostic resources are restricted, while simultaneously considering ovarian preservation in women seeking pregnancy. This gap highlights the need for clinical documentation describing the integration of serial monitoring, symptom evaluation, laboratory assessment, and ultrasound findings in conservative management.

The urgency of this case report is related to the increasing use of ovulation induction therapies and the necessity of establishing safe management pathways for complications that may arise during infertility treatment. Misinterpretation of hemorrhagic corpus luteum as an acute surgical condition may result in unnecessary intervention, whereas delayed recognition of complications may threaten patient safety. Therefore, clinicians require evidence-based considerations regarding when observation is appropriate and when escalation to surgical management becomes necessary.

The novelty of this report lies in presenting a detailed clinical course of conservative management for a large symptomatic hemorrhagic corpus luteum occurring during letrozole-induced ovulation in an infertile patient. Unlike previous reports primarily focusing on ruptured cysts with significant hemoperitoneum, this case emphasizes serial clinical reassessment, hemoglobin monitoring, repeated ultrasonography, and spontaneous lesion regression without surgical intervention. The case also illustrates practical decision-making under limitations, including the absence of color Doppler assessment and serum β -hCG measurement, while maintaining patient safety through continuous observation.

This study aims to describe the clinical presentation, diagnostic considerations, management approach, and follow-up outcomes of conservative treatment for hemorrhagic corpus luteum during ovulation induction. Specifically, this report evaluates how clinical stability, laboratory trends, imaging findings, and symptom progression contributed to the decision to avoid surgical intervention. Through this case, the study seeks to provide additional clinical insight into individualized management strategies for hemorrhagic ovarian lesions in reproductive-age women undergoing fertility treatment.

The contribution of this case report is to expand clinical understanding regarding ovarian-preserving management strategies for hemorrhagic corpus luteum during ovulation induction. The findings may benefit gynecologists, fertility specialists, and clinicians involved in

reproductive healthcare by providing considerations for balancing diagnostic caution, patient safety, and preservation of fertility potential. Furthermore, this report may serve as a reference for future research exploring predictive factors, standardized monitoring protocols, and evidence-based guidelines for conservative management of hemorrhagic corpus luteum in infertility treatment settings.

METHOD

This study employed a descriptive case report design to describe the clinical presentation, diagnostic assessment, management, and follow-up of a 28-year-old nulliparous woman with a suspected hemorrhagic corpus luteum (HCL) during letrozole-induced ovulation. Clinical data were obtained from the patient's medical history, physical examination, serial hemoglobin measurements, and grayscale ultrasonographic examinations during hospitalization and follow-up. The patient received conservative management consisting of close clinical observation, analgesic therapy, tranexamic acid, serial hemoglobin monitoring, and repeat ultrasonography. Clinical progression was assessed based on hemodynamic stability, changes in pain severity, hemoglobin trends, lesion size, and the development or absence of free intraperitoneal fluid. The diagnosis was considered clinically and sonographically most consistent with HCL based on the timing within the ovulation-induction cycle, the presence of a dominant follicle, acute unilateral pelvic pain, and a complex hemorrhagic-appearing adnexal lesion. Follow-up imaging was used to evaluate spontaneous regression of the lesion. Written informed consent was obtained from the patient for publication of the case report and accompanying anonymized clinical images.

Case Presentation

A 28-year-old nulliparous woman (P0A0) had been married for four years and had a four-year history of infertility with irregular menstrual cycles. She was not using contraception and was undergoing ovulation induction. Letrozole 2.5 mg once daily on cycle days 3–7 had been used in preceding treatment cycles. Follicular monitoring in February 2025 demonstrated a dominant follicle of approximately 21 mm without an hCG trigger.

Her last menstrual period for the index cycle was 6 March 2025. Letrozole 2.5 mg/day was administered on cycle days 3–7. Follicular monitoring during the index cycle demonstrated a dominant follicle of approximately 19 mm; no hCG trigger was administered. Ovulation was not objectively confirmed.

On 23 March 2025 (approximately cycle day 18), she developed sudden right lower abdominal pain approximately five hours before hospital presentation. The pain progressively worsened to VAS 8/10 and was associated with nausea. There was no vomiting, fever, vaginal spotting, or vaginal bleeding.

At presentation, blood pressure was 115/76 mmHg, pulse 101/min, and she was afebrile. Abdominal tenderness was present without muscular guarding. Cervical excitation pain was absent. Pelvic examination revealed a small uterus and a palpable tender right adnexal mass; the left adnexa was clinically unremarkable.

Initial hemoglobin was 12.1 g/dL, leukocyte count 10,200/mm³, and platelet count 195,000/mm³. Ectopic pregnancy was initially considered in the differential diagnosis. Urine pregnancy testing was negative; serum β -hCG was not obtained.

Grayscale ultrasonography demonstrated a large complex cystic lesion in the right adnexa measuring approximately 8.12 × 5.72 cm, with heterogeneous internal echoes suggestive of hemorrhagic content. No free intraperitoneal fluid was identified. The uterus and contralateral adnexa were otherwise unremarkable. Color Doppler evaluation was not performed.

The patient was admitted at approximately 21:00 for close inpatient observation. Treatment included ketorolac 30 mg intravenously every eight hours and tranexamic acid 500

mg intravenously three times daily. Serial hemoglobin measurements and repeat ultrasonography were performed. At approximately 06:00 the following morning, hemoglobin was 11.5 g/dL and repeat ultrasonography showed no enlargement of the lesion. Subsequent hemoglobin measurements were 11.6 g/dL at approximately 14:00 and 11.4 g/dL at approximately 21:00. Blood pressure remained stable throughout observation.

Her pain improved from VAS 8/10 to VAS 3/10 without surgical intervention. Analgesia was changed to oral mefenamic acid 500 mg three times daily. She was discharged the following morning in stable condition with hemoglobin 11.4 g/dL. No blood transfusion or surgery was required.

Early follow-up ultrasonographic measurements were not preserved in the available documentation and are therefore not reported as objective measurements. Later documented follow-up demonstrated marked spontaneous regression of the same right ovarian lesion, measuring approximately 1.58 cm on 14 October 2025.

Table 1 Clinical Timeline

Date / period	Clinical event
January 2025	Letrozole 2.5 mg/day on cycle days 3–7.
February 2025	Letrozole 2.5 mg/day on cycle days 3–7; dominant follicle approximately 21 mm; no hCG trigger.
6 March 2025	First day of last menstrual period for index cycle.
Cycle days 3–7	Letrozole 2.5 mg/day.
Index-cycle monitoring	Dominant follicle approximately 19 mm; no hCG trigger; ovulation not objectively confirmed.
23 March 2025 (~cycle day 18)	Sudden severe right lower abdominal pain, nausea, VAS 8/10.
Initial assessment	BP 115/76 mmHg; pulse 101/min; Hb 12.1 g/dL; urine pregnancy test negative.
Initial ultrasonography	Complex right adnexal cystic lesion approximately 8.12 × 5.72 cm; no free intraperitoneal fluid.
Inpatient observation	Serial Hb 11.5 → 11.6 → 11.4 g/dL; repeat US showed no enlargement; hemodynamically stable.
Following day	Pain improved to VAS 3/10; no transfusion or surgery; discharged stable.
September–October 2025	Documented later imaging showed marked and continuing spontaneous regression.

RESULT AND DISCUSSION

HCL is caused by spontaneous bleeding into a corpus luteum after ovulation. When rupture occurs, intraperitoneal bleeding may produce peritoneal irritation and, in severe cases, hemodynamic compromise. Because its clinical and sonographic appearances overlap with other causes of acute pelvic pain, management requires integration of symptoms, hemodynamic status, laboratory trends, and imaging rather than reliance on a single finding [1].

In this case, the timing within an ovulation-induction cycle, a previously documented dominant follicle, acute unilateral pain, and a complex hemorrhagic-appearing adnexal lesion supported a functional luteal process. Nevertheless, ovulation was not objectively confirmed

and no histopathology was available. The relationship to letrozole should therefore be regarded as temporal rather than causal, and the diagnosis is best described as a clinical and sonographic diagnosis most consistent with HCL.

Hemorrhagic ovarian cysts demonstrate a broad sonographic spectrum. Fibrin strands and retracting clot increase diagnostic confidence, while heterogeneous echogenic material may reflect evolving blood products [2,3]. O-RADS US v2022 describes a typical hemorrhagic cyst as a unilocular cyst without internal vascularity and with a reticular pattern or retractile clot; for a typical lesion >5 cm but <10 cm in a premenopausal woman, follow-up ultrasonography in 2–3 months is recommended [4]. Because color Doppler was not performed in the present case, retrospective assignment of a typical O-RADS hemorrhagic-cyst category would not be appropriate.

Adnexal torsion was an important differential diagnosis because the patient had sudden severe unilateral pain, nausea, and a large adnexal mass. Torsion may present with intermittent pain, and no clinical or imaging criterion—including Doppler flow alone—can definitively exclude it preoperatively [5]. In the present patient, pain progressively improved during observation, no peritoneal signs developed, the lesion did not enlarge on repeat ultrasonography, and later imaging showed spontaneous regression. These findings favored a hemorrhagic functional lesion; however, torsion cannot be stated to have been definitively excluded because Doppler evaluation and surgical exploration were not performed.

The principal management dilemma was whether lesion size and severe initial pain warranted immediate surgery. The patient remained hemodynamically stable, no free intraperitoneal fluid was detected, hemoglobin decreased modestly and then remained relatively stable, repeat ultrasonography showed no enlargement, and symptoms improved. In a retrospective series of 78 women with ruptured ovarian cysts and hemoperitoneum, 80.8% were managed conservatively; lower diastolic blood pressure and greater pelvic-fluid depth were associated with surgical intervention [6]. A separate series of 155 patients with hemoperitoneum from corpus luteum cyst rupture similarly found greater fluid collections and more severe contrast extravasation among patients requiring surgery [7]. These studies involve ruptured cysts with hemoperitoneum and therefore are not directly equivalent to the present case, but they support the broader principle that hemodynamic and bleeding-related parameters are important in management decisions.

This consideration was particularly relevant in a nulliparous patient with infertility undergoing ovulation induction. Avoidance of unnecessary ovarian surgery is desirable when conservative management can be performed safely. The present case does not establish a fertility benefit from conservative treatment; rather, it illustrates an ovarian-preserving management strategy in a patient for whom future fertility was clinically important.

The case also illustrates decision-making when advanced diagnostic modalities were not immediately available. Color Doppler ultrasonography and serum β -hCG measurement were not performed. Management therefore relied on repeated clinical assessment, hemodynamic monitoring, serial hemoglobin measurements, grayscale ultrasonography, and symptom progression. This approach should not be interpreted as a substitute for appropriate diagnostic testing where available. Conservative management requires close observation and a low threshold for escalation or referral if pain worsens, anemia progresses, hemoperitoneum develops, or hemodynamic instability occurs.

Later documented spontaneous regression strengthened the interpretation of a functional hemorrhagic ovarian lesion. Historical sonographic follow-up studies have shown that hemorrhagic functional ovarian cysts may change in appearance and resolve spontaneously during short-term surveillance [8]. In the present case, early follow-up imaging was not preserved, limiting precise characterization of the early rate of regression.

Additional limitations include the absence of serum β -hCG, color Doppler evaluation, objective confirmation of ovulation, and histopathologic confirmation. Tranexamic acid was administered as part of supportive management, but this case cannot establish its efficacy in HCL. Despite these limitations, the serial clinical course, stable hematologic trend after the initial decline, absence of free fluid, lack of lesion enlargement, symptom improvement, and later spontaneous regression collectively supported continued conservative management.

CONCLUSION

Conservative management of hemorrhagic corpus luteum (HCL) during ovulation induction can be considered a safe and effective approach in selected patients with stable clinical conditions. This case demonstrated that careful observation, serial hemoglobin monitoring, repeated ultrasonographic evaluation, and symptom assessment allowed successful management of a large symptomatic hemorrhagic ovarian lesion without surgical intervention. The patient experienced clinical improvement, maintained hemodynamic stability, and showed spontaneous regression of the lesion during follow-up. These findings emphasize that management decisions for HCL should be individualized based on the overall clinical condition rather than relying solely on lesion size or the presence of acute pelvic pain. A comprehensive evaluation involving clinical findings, laboratory parameters, and imaging progression is essential to determine the appropriateness of conservative treatment while preserving ovarian function, particularly in patients undergoing infertility therapy.

Future research should investigate larger patient populations to establish predictive factors that can guide conservative versus surgical management decisions for HCL during ovulation induction. Prospective studies involving standardized ultrasound protocols, Doppler assessment, hormonal evaluation, and long-term fertility outcomes are needed to strengthen clinical recommendations. Further research may also explore the relationship between different ovulation induction agents, ovarian response characteristics, and the incidence of hemorrhagic corpus luteum. Developing evidence-based management algorithms could help clinicians optimize patient safety, reduce unnecessary surgical procedures, and improve fertility-preserving strategies for women experiencing this complication.

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CONFLICT OF INTEREST

The author states that there are no conflicts of interest, whether personal, commercial, or financial, that can affect the implementation and results of this study.

AUTHOR'S CONTRIBUTION

Moh Dimas Aditya contributes to research design, data collection and processing, system development, result analysis, and article manuscript preparation.

GENERATIVE ARTIFICIAL INTELLIGENCE USAGE STATEMENT

In the process of compiling this article, the author uses generative artificial intelligence (AI) as a tool in language refinement, writing structure, and grammar improvement. The use of AI is carried out on a limited basis and remains under the supervision of the author. All data, analysis, interpretation, and scientific substance in this article have been checked and verified by the author. The author is solely responsible for the accuracy, authenticity, and final content of the manuscript.

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