International Journal of Women's Health

Dovepress
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CASE REPORT

Diagnostic Pitfall: Intrauterine Pseudogestational Sac Mimicking an Anembryonic Pregnancy in Tubal Ectopic Pregnancy A Case Report

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Purpose: Ectopic pregnancy is a potentially life-threatening condition, and its diagnosis may be complicated when an intrauterine pseudogestational sac mimics a nonviable intrauterine pregnancy. This diagnostic pitfall can lead to mismanagement and delay in appropriate treatment.

Case Presentation: A case of a 33-year-old woman (G4P2A1) at 9–10 weeks of gestation presenting with vaginal bleeding. Ultrasonography revealed an intrauterine sac suggestive of blighted ovum and a concomitant adnexal mass suspicious for ectopic pregnancy. Curettage was performed, yielding tissue that on histopathology showed endometrial hyperplasia without chorionic villi, consistent with a pseudogestational sac. Subsequent exploratory laparotomy revealed a right tubal abortion, and right salpingectomy was performed. Histopathological examination confirmed chorionic villi within hemorrhagic tissue. The postoperative course was uneventful, and the patient was discharged in good condition.

Conclusion: This case highlights the diagnostic challenge of differentiating a pseudogestational sac from a nonviable intrauterine pregnancy in ectopic pregnancy. A sac-like intrauterine structure alone is insufficient to confirm intrauterine pregnancy, and accurate diagnosis requires integration of serial β-hCG assessment, repeat transvaginal ultrasonography, and histopathological evaluation. Awareness of this diagnostic pitfall is essential to avoid unnecessary uterine intervention and ensure timely, appropriate management.

Keywords: ectopic pregnancy, pseudogestational sac, blighted ovum, tubal abortion, case report

Introduction

European Society of Human Reproduction and Embryology (ESHRE) defined ectopic pregnancy as a visualization of a pregnancy outside of the uterine cavity using an ultrasonography or histologically after surgery.[1] It accounts for 1.5–2% pregnancies. Classification of ectopic pregnancies is divided into tubal pregnancies (accounts for 95% of ectopic pregnancies) and non-tubal pregnancies (5%). Symptoms of ectopic pregnancy are present with the classic triad of amenorrhea, vaginal bleeding and pelvic pain, and the diagnosis relies on a combination of transvaginal ultrasound and assessment of beta human chorionic gonadotropin (β-hCG) levels. Sonographically, ectopic pregnancy may appear as "cogwheel sign", a sign of gestational sac with an indeterminate or partially developed fetal structures in the adnexa, whereas a ruptured ectopic pregnancy is suggested by the presence of free fluid in the Douglas pouch and required urgent medical or surgical intervention.[2]

A pseudogestational sac is a fluid collection within the endometrial cavity that mimics an intrauterine gestational sac but does not represent a true pregnancy. It commonly appears in cases of ectopic pregnancy, particularly when the endometrium responds to elevated progesterone levels, leading to decidual changes and accumulation of intrauterine fluid. The reported incidence of pseudogestational sac in ectopic pregnancy ranges from 14% to 16%, making it

https://doi.org/10.2147/IJWH.S582019
Received: 16 November 2025
Accepted: 25 February 2026
Published: 7 March 2026

a relatively common sonographic finding in these cases. Unlike a blighted ovum, which is a non-viable intrauterine pregnancy characterized by a gestational sac containing no embryo or yolk sac, a pseudogestational sac contains no embryonic tissue and does not follow normal gestational growth patterns. Differentiating between the two is critical, as a blighted ovum may require uterine evacuation once diagnostic criteria are met, whereas a pseudogestational sac warrants careful evaluation for an extrauterine pregnancy and does not justify curettage unless ectopic pregnancy has been reasonably excluded.[3] This case report presents a 33-year-old woman, Gravida 4, Para 2, Abortus 1 (G4P2A1), who was diagnosed with an ectopic pregnancy in the right tube, coexisting with a pseudogestational sac in the intrauterine cavity.

Case Presentation

A 33-year-old woman, Gravida 4, Para 2, Abortus 1 (G4P2A1), at 9–10 weeks of gestation, presented to District Hospital with a three-day history of vaginal bleeding. She had been referred from a local clinic with a provisional diagnosis of heterotopic pregnancy with a blighted ovum. She reported oral contraceptive pill use. There was no documented history of prior ectopic pregnancy, tubal surgery, pelvic inflammatory disease, intrauterine device use or assisted reproductive technology. On admission, her vital signs were stable (BP 109/71 mmHg, HR 89 bpm, temperature within normal limits), while laboratory tests indicated mild anemia (hemoglobin 9.1 g/dL, hematocrit 31%, erythrocytes 5.9 million/µL). Preoperative serum β-hCG level is 2681 mIU/mL. A serial β-hCG examination was not performed due to resource limitations.

Transvaginal ultrasonography revealed both intrauterine and extrauterine gestational sacs. The intrauterine sac measured 1.59 cm, consistent with 6–7 weeks of gestation, but no crown-rump length (CRL) was visualized. The sac demonstrated a single layer. An additional sac of similar size was identified in the right ovary, also corresponding to 9–10 weeks, without detectable fetal heart activity. The sac demonstrated a double layer. The patient was diagnosed with an ectopic pregnancy with suspected pseudogestational sac. Figure 1 describes the ultrasonography examination.

Initially, the intrauterine sac was suspected to represent a blighted ovum based on ultrasonographic findings. Uterine curettage was therefore performed according to standard management for suspected nonviable intrauterine pregnancy. As per routine practice, the specimen weighing 10 grams of tissue mass was sent for pathological examination (Figure 2A). The pathology report demonstrated endometrial tissue with hyperplastic glands, decidual reaction, and without identification of chorionic villi and no evidence of malignancy. This finding excluded the presence of a true intrauterine pregnancy, thereby ruling out the heterotopic pregnancy and confirming the diagnosis of an intrauterine pseudogestational sac (Figure 2B).

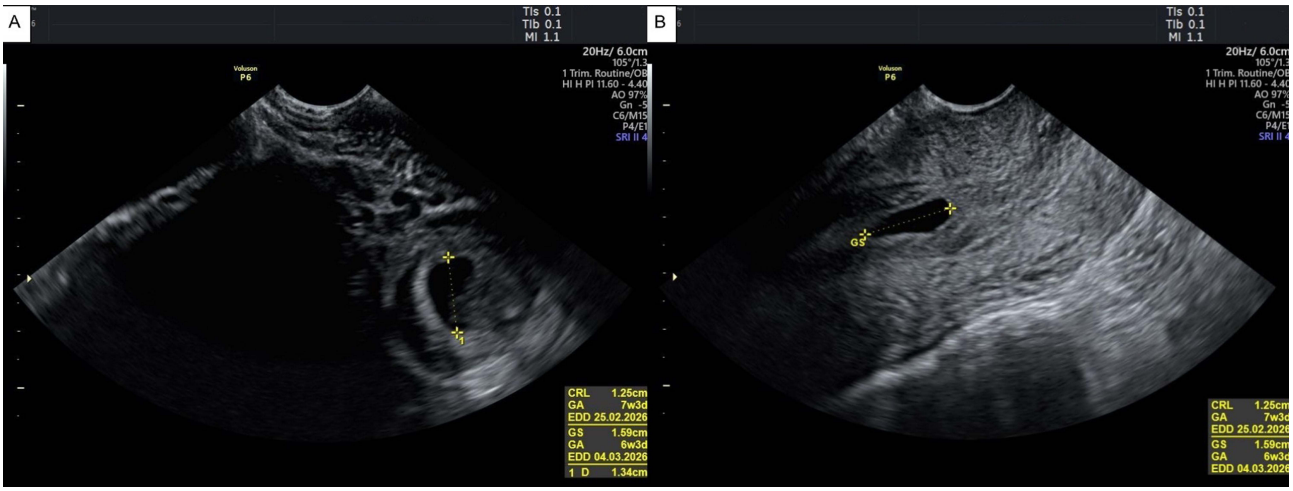

Figure 1 Ultrasound Findings. (**A**) An extrauterine gestational sac was found at right ovary, approximately 1.59 cm, appropriate to 9–10 weeks of gestation. (**B**) An intrauterine gestational sac, measured about 1.59 cm was found, with no crown-rump length (CRL) and no fetal heart rate present.

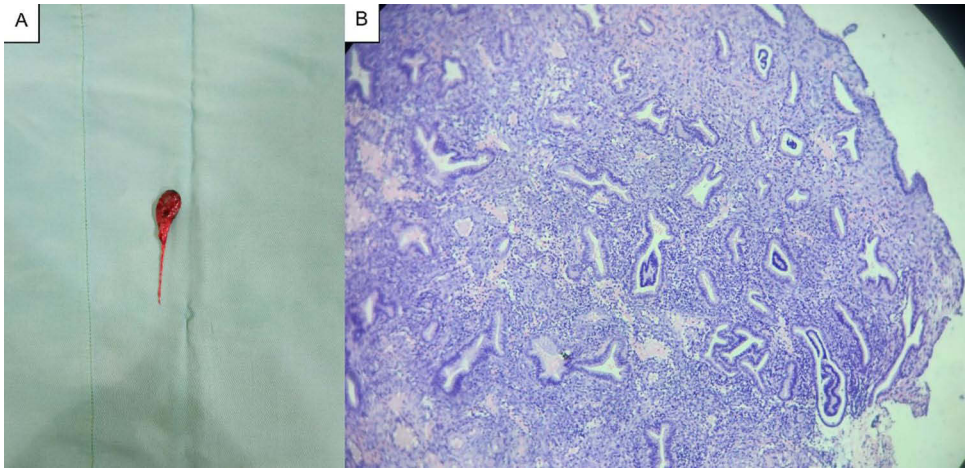

Figure 2 (**A**) The specimen obtained from uterine curettage. (**B**) Histopathological section of curettage specimen showing endometrial hyperplasia without chorionic villi, consistent with pseudogestational sac. Magnification information was not available.

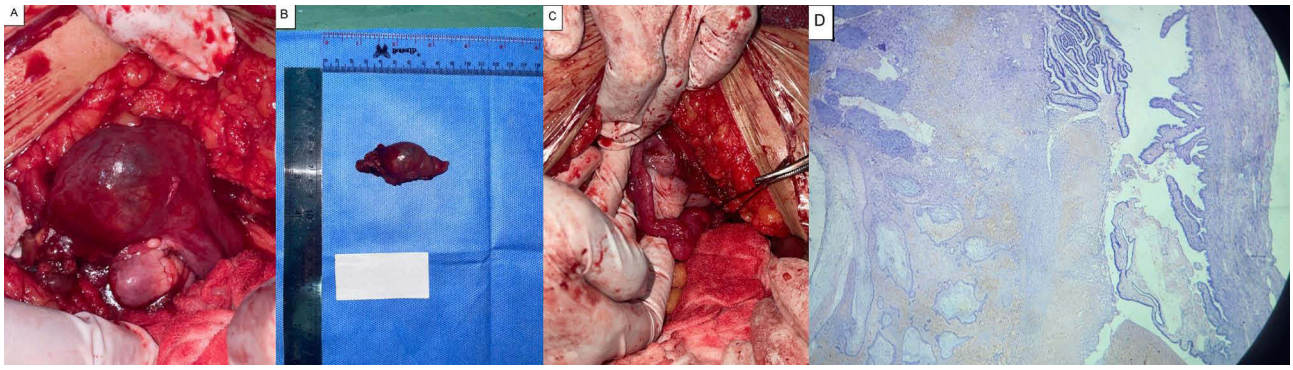

Figure 3 (**A**) Intraoperative finding: dilated fimbriae of the right fallopian tube. (**B**) The specimen right fallopian tube. (**C**) The normal ovaries and left fallopian tube. (**D**) Histopathological section of salpingectomy specimen demonstrating chorionic villi within hemorrhagic tissue, confirming tubal abortion.

Exploratory laparotomy subsequently revealed a dilated fimbriae of the right fallopian tube (1 × 1×0.5 cm) with evidence of tubal abortion at the fimbrial end (Figure 3A). A right salpingectomy was performed, and the resected specimen is shown in Figure 3B after sectioning. The uterus appeared enlarged, consistent with 9–10 weeks of gestation, while both ovaries and the left fallopian tube were unremarkable (Figure 3C). Histopathological analysis of the salpingectomy specimen confirmed tubal abortion, demonstrating chorionic villi within hemorrhagic tissue (Figure 3D).

Following the surgical intervention, the patient's postoperative course was uneventful. She was discharged in stable condition, without any further complaints, and subsequent follow-up revealed no complications. This case highlights the diagnostic challenge of differentiating an intrauterine pseudogestational sac from a true gestational sac, particularly in the context of heterotopic pregnancy, and underscores the importance of histopathological confirmation in guiding appropriate management.

Discussion

We report a case initially diagnosed as heterotopic pregnancy with blighted ovum, which on further evaluation was revealed to be a tubal ectopic pregnancy with an intrauterine pseudogestational sac mimicking a failed early gestational sac. This underscores the diagnostic challenge posed by pseudogestational sacs, as they can closely resemble early uterine pregnancy (IUP) failure on ultrasonography. Symptoms, laboratory evaluation, and accurate interpretation of sonographic findings is therefore critical, along with histopathological examination that remains essential for diagnostic confirmation.

A true gestational sac eccentrically located with a dense, echogenic rim and central hypoechoic area, accompanied by a yolk sac or the double decidual sac (DDS) sign, usually round shape, with high flow of peripheral blood vessels.[4] In the absence of these features, reliable sonographic discrimination between a failing IUP and ectopic pregnancy becomes impossible, creating diagnostic uncertainty.[5] Ectopic pregnancy is a complication of pregnancy, defined by implantation of the embryo outside the endometrial cavity, with the fallopian tube accounting for approximately 95% of cases. Of tubal ectopic pregnancies, about 70% occur in the ampulla, followed by the isthmus (12%), and fimbriae (11%), while non-tubal sites include interstitial (2–6%), ovarian (3%), and cesarean scar (<1%) implantations.[2]

On ultrasound, tubal ectopic pregnancy has characteristics as a thick echogenic ring encircling the ectopic gestational sac, known as the "tubal ring sign", which is typically more radiant than usual corpus luteum or ovarian parenchyma. The corpus luteum is usually positioned eccentrically within the ovaries, and unlike an ectopic pregnancy, it moves together with the ovary when pressure is applied during ultrasound examination.[5] Color Doppler imaging may demonstrate as "ring of fire", showing hypervascular trophoblastic tissue around an ectopic gestational sac. The presence of free pelvic or hemoperitoneum fluid in the Doughlas pouch, in the context of a positive β-hCG level and empty uterus, is suggestive of ruptured ectopic pregnancy and warrants urgent intervention.[2,6]

In contrast, a pseudogestational sac tends to be a small, centrally located, hypoechoic intrauterine fluid collection surrounded by an echogenic lining, devoid of intradecidual or double decidual sac signs. It is often teardrop-shaped, avascular on Doppler imaging, and demonstrates no chorionic villi on histopathological examination.[4] In the absence of these definitive intrauterine features, it is often impossible to differentiate between a pseudogestational sac and a failing IUP, leading to potential diagnostic pitfalls.[6] The reported incidence of pseudogestational sac in ectopic pregnancy ranges from 10% to 16%.[3] Lee et al reported the incidence of pseudogestational sac to be 4.9% among ectopic pregnancy and 46% among IUP, highlighting that the presence of pseudogestational sac is not specific for ectopic pregnancy and may also be seen in IUP.[3] Puttagunta et al further described a pseudoembryo within a pseudogetational sac as a novel sonographic pitfall, capable of mimicking early intrauterine pregnancy and increasing the risk of misdiagnosis.[7] Similarly, Utomo et al reported that intrauterine psedogestational sac may closely mimic true gestational sac in suspected heterotopic pregnancy, emphasizing that the presence of a sac-like intrauterine structure does not exclude ectopic pregnancy and may contribute to diagnostic delay or inappropriate management if adnexal findings are not carefully evaluated.[8]

Several sonographic parameters have been proposed to aid differentiation. Studies have suggested that pseudogestational sac usually measure ≤6 mm in diameter, rarely exceeding 13 mm, while intrauterine sacs >16 mm without embryonic structures are suspicious for early pregnancy failure.[3] Another reported that 97% of patients with endometrial thickness <8 mm had abnormal pregnancies, of which 71% were ectopic. No normal pregnancies were observed with thickness in <6 mm, while no ectopic pregnancies occurred with thickness >13 mm.[9] Although promising, these findings have not been consistently replicated, and thus should be interpreted with caution. Overall, the presence of an intrauterine sac-like structure does not exclude EP.

Crucially, the presence of a sac-like intrauterine structure should be interpreted with caution and must be evaluated alongside systemic adnexal assessment, including the presence of an adnexal mass, tubal ring, extrauterine sac, or free pelvic fluid. When findings are inconclusive, management should be framed as a pregnancy of unknown location (PUL) rather than immediate classification as a nonviable IUP.[5] In retrospect, curettage in this case could have been avoided had stricter diagnostic criteria for nonviable IUP been applied and the patient managed initially as PUL with serial β-hCG measurements and short-interval repeat transvaginal ultrasound with careful adnexal assessment. This reinforces the central message of this report: a sac-like intrauterine structure alone is not diagnostic of IUP and should not prompt uterine evacuation unless established criteria for nonviability are fulfilled and ectopic pregnancy has been reasonably excluded.

Treatment of ectopic pregnancy is mostly based on blood β-hCG levels and patient's hemodynamic condition.[10] In clinically stable patients, conservative treatment using methotrexate (MTX) or a "wait and see" approach may be considered. However, if β-hCG levels comes to a plateau or did not increase by twofold within 48 hours, and ultrasound does not confirm the presence of an intrauterine gestational sac, and curettage may be performed selectively for diagnostic purposes to assess for the presence of chorionic villi.[2] Women who had previously undergone medical or

surgical treatment for an ectopic pregnancy has been associated with adverse future pregnancy outcomes, such as preterm birth, hypertensive disorder of pregnancy, and placental abruption, and also found face an increased risk of recurrence and reduced rates of subsequent intrauterine pregnancy.[11,12]

Patients with hemodynamic instability or contraindicated on methotrexate (MTX) need immediate surgery, either a laparotomy or a laparoscopy. The two main surgical approaches are salpingostomy, where only the ectopic tissue is removed, and salpingectomy, which involves resection of the affected fallopian tube.[13] In most cases, salpingectomy is recommended when there are big EPs (≥5 cm), tubal rupture, significant bleeding, or extensive tubal injury.[14] However, if a woman wants to preserve her fertility, salpingostomy might be the better option, especially if the contralateral tube is blocked or nonexisted. In cases where the contralateral tube is normal, some studies have demonstrated similar future pregnancy outcomes comparing the two procedures.[14,15] In stable patients, medical or conservative management may be considered. MTX, a folate antagonist that halts trophoblastic cell division, is the standard medical management of ectopic pregnancy and can be given in single, double, or multiple dose.[13,14] In carefully chosen individuals with decreasing β-hCG levels, expectant management is an option. However, because of the dangers of tubal rupture, bleeding, and possibly requiring emergency surgery, it necessitates close monitoring.[16] In our present case, salpingectomy was performed because MTX was not available at our hospital. This limitation underscores the challenges faces in resource-constrained settings, where surgical intervention often remains the only feasible option despite potential benefits of medical therapy.

Conclusion

This case highlights the diagnostic challenge of differentiating intrauterine sac-like structures, which alone are insufficient to confirm intrauterine pregnancy or rule out ectopic pregnancy. In equivocal cases, serial β-hCG assessment, repeat transvaginal ultrasonography, and histopathological evaluation are critical for accurate diagnosis. Awareness of this diagnostic pitfall is essential to prevent unnecessary procedures and ensure timely treatment.

Registration of Research Studies

Registration of research is not applicable in our case.

Abbreviations

DDS, double decidual sac; D&C, dilatation and curettage; EP, ectopic pregnancy; ESHRE, European Society of Human Reproduction and Embryology; IUP, uterine pregnancy; MTX, methotrexate.

Ethical Approval

This study is exempted from an ethical approval as determined by the institutional and department review board.

Informed Consent Patient Statement

The author(s) confirm that written informed consent has been obtained from the involved patient(s). The patient(s) has been informed about the details of the case and has provided approval for the information to be published in this case report (series).

Acknowledgment

The authors would like to sincerely thank Aisyah Shofiiatun Nisa for their critical review of the manuscript and valuable input that enhanced the quality and clarity of this work.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Funding

The study did not receive external funding.

Disclosure

The authors declare that they have no competing interests for this work.

References

1. Kirk E, Ankum P, Jakab A, et al; The ESHRE working group on Ectopic Pregnancy. Terminology for describing normally sited and ectopic pregnancies on ultrasound: ESHRE recommendations for good practice. *Hum Reprod Open*. 2020;2020:hoaa055. doi:10.1093/hropen/hoaa055
2. Papageorgiou D, Sapantzoglou I, Prokopakis I, Zachariou E. Tubal ectopic pregnancy: from diagnosis to treatment. *Biomedicines*. 2025;13(6):1465. doi:10.3390/biomedicines13061465
3. Lee IT, Rubin ES, Wu J, Koelper N, Barnhart KT. The incidence and importance of the pseudogestational sac revisited. *Am J Obstet Gynecol*. 2022;226(4):537.e1–537.e7. doi:10.1016/j.ajog.2021.10.033
4. Murugan VA, Murphy BO, Dupuis C, Goldstein A, Kim YH. Role of ultrasound in the evaluation of first-trimester pregnancies in the acute setting. *Ultrasonography*. 2020;39(2):178–189. doi:10.14366/USG.19043
5. Laifer-Narin SL, Fruauff A, Romero CC, et al. ACR appropriateness criteria® first trimester vaginal bleeding: 2025 update. *J Am College Radiol*. 2025;22(11):S531–S538. doi:10.1016/j.jacr.2025.08.043
6. Schallert K, Deangelis G, Krishnaraj A. Common and Uncommon Imaging Presentations of Ectopic Pregnancy. *Contemp Diagn Radiol*. 2018;45(15):1–7. doi:10.1097/01.CDR.0000540066.42951.72
7. Puttagunta S, Lee SY. Pseudoembryo associated with pseudogestational sac: a novel sonographic finding in ectopic pregnancy. *Eur J Radiol Open*. 2019;6:281–283. doi:10.1016/j.ejro.2019.06.004
8. Utomo A, Aditiyono A, Marlina D, Disastra YP, Susilo AFP, Adriansyah PNA. Diagnostic challenges in ectopic pregnancy: identifying Pseudo Sacs in suspected heterotopic cases. *Am J Case Rep*. 2025;26:e944924. doi:10.12659/AJCR.944924
9. Fylstra D. Avoiding misdiagnosing an early intrauterine pregnancy as an ectopic pregnancy. *World J Obs Gynecol*. 2015;4(3):58–63.
10. Mullany K, Minneci M, Monjazeb R, Coiado OC. Overview of ectopic pregnancy diagnosis, management, and innovation. *Womens Health*. 2023;19:17455057231160349. doi:10.1177/17455057231160349
11. Papageorgiou D, Sapantzoglou I, Zachariou E, Antsaklis P, Daskalakis G, Pergialiotis V. Impact of ectopic pregnancy on the outcomes of the subsequent pregnancy: a systematic review and meta-analysis. *J Clin Med*. 2025;14(12):4112. doi:10.3390/jcm14124112
12. Chouinard M, Mayrand MH, Ayoub A, Healy-Profitós J, Auger N. Ectopic pregnancy and outcomes of future intrauterine pregnancy. *Fertil Steril*. 2019;112(1):112–119. doi:10.1016/j.fertnstert.2019.03.019
13. Hendriks E, Rosenberg R. Ectopic pregnancy: diagnosis and management—American Family Physician. *Am Fam Physician*. 2020;101:599–606.
14. Brady PC. New evidence to guide ectopic pregnancy diagnosis and management. *Obstet Gynecol Surv*. 2017;72(10):618–625. doi:10.1097/OGX.0000000000000492
15. Cheng X, Tian X, Yan Z, et al. Comparison of the fertility outcome of salpingotomy and salpingectomy in women with tubal pregnancy: a systematic review and meta-analysis. *PLoS One*. 2016;11(3):e0152343. doi:10.1371/journal.pone.0152343
16. ACOG. ACOG Practice Bulletin No. 193: tubal ectopic pregnancy. *Obstet Gynecol*. 2018;131(3):e91–e103. doi:10.1097/AOG.0000000000002560