

Can the Presence of a Surrounding Endometrium Differentiate Eccentrically Located Intrauterine Pregnancy from Interstitial Ectopic Pregnancy?



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Abstract

Objectives: Differentiation of an eccentric intrauterine pregnancy (IUP) from an interstitial ectopic pregnancy (EP) is challenging. No sign for differentiation is reported. The purpose of this study was to determine whether the presence of surrounding endometrium (SE) can distinguish eccentric IUP from interstitial EP.

Methods: This study was approved by the institutional ethics board; consent acquisition was waived. Cases were identified using ultrasound (US) reports that included the words “interstitial,” “cornual,” and “angular.” Blinded to official reports, one reviewer reviewed US examinations retrospectively for the presence of SE, defined as the extension of endometrial lining around the gestational sac (GS) as an indication of an eccentric IUP. US examinations without SE on the retrospective review were diagnosed as interstitial EP.

Results: Forty-four cases were identified from 2007 to 2015. On retrospective review, 20 cases were labeled as eccentric IUP and 24 as interstitial EP. Ten of the 20 cases retrospectively labeled as eccentric IUP had been reported and managed as eccentric IUP prospectively: four followed to a viable second trimester, and six had spontaneous abortion/termination. The remaining 10 cases retrospectively labeled eccentric IUPs because of the presence of SE had been reported and managed as interstitial EP on the official prospective report. There was follow-up suggestion of eccentric IUP in six of the latter discordant pregnancies with non-concordant retrospective and prospective diagnosis: three had hysteroscopy/curettage demonstrating retained products, two had US follow-up showing the GS moving farther down in the uterine cavity, and in one patient, the GS was shown to pass per vagina. Twenty-four of the 44 cases were called interstitial EP both on the retrospective and prospective reviews and were managed as interstitial EP.

None of these patients (without SE) had follow-up suggestive of eccentric IUP.

Conclusion: Our results suggest that the presence of surrounding endometrium around the GS allows for differentiation of eccentric IUP from interstitial EP.

Résumé

Objectifs : Il est difficile de distinguer une grossesse angulaire intra-utérine (GAIU) d'une grossesse interstitielle extra-utérine (GIEU). À l'heure actuelle, il n'y a aucun signe établi pouvant être utilisé à cette fin. Cette étude avait donc pour but de déterminer si la présence d'endomètre autour du sac gestationnel (ESG) permettait de faire cette distinction.

Méthodologie : Cette étude a été approuvée par le comité d'éthique institutionnel; l'obtention des consentements n'a pas été nécessaire. Nous avons retenu des cas dont le rapport d'échographie contenait les termes « interstitial », « cornéal » et « angular ». Un examinateur a, sans connaître les rapports officiels, mené une évaluation rétrospective des échographies à la recherche d'ESG qui servirait de signe de GAIU. Les grossesses sans ESG étaient signalées comme étant des GIEU.

Résultats : Nous avons retenu 44 grossesses survenues entre 2007 et 2015. Selon l'examen rétrospectif, 20 d'entre elles étaient des GAIU et 24 étaient des GIEU. Dans les rapports officiels, 10 des 20 grossesses signalées comme étant des GAIU à l'évaluation rétrospective avaient bel et bien été diagnostiquées comme telles et avaient été traitées en conséquence; quatre d'entre elles étaient viables et se sont rendues au deuxième trimestre, tandis que les six autres se sont terminées par un avortement spontané ou médical. Les rapports officiels des 10 autres grossesses que l'évaluation rétrospective avait classées comme étant des GAIU en raison de la présence d'ESG montraient plutôt que ces grossesses avaient été diagnostiquées comme étant des GIEU et avaient été traitées en conséquence. Parmi les rapports des 10 GIEU présentant une contradiction, 6 faisaient état d'un suivi laissant croire qu'il s'agissait de GAIU : dans trois cas, une hystérocopie et un curetage ont indiqué la présence de produits de conception en rétention, dans deux, un suivi par échographie a révélé la progression du SG vers la cavité utérine, et pour le dernier, le sac gestationnel a été expulsé par voie vaginale. Les 24 grossesses signalées comme étant des GIEU à l'évaluation rétrospective avaient également été diagnostiquées comme telles selon les rapports officiels et avaient été traitées en

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conséquence. Aucune de ces grossesses (sans ESG) n'avait fait l'objet d'un suivi laissant croire qu'il s'agissait d'une GAIU.

Conclusion : Nos données laissent croire que la présence d'endomètre autour du sac gestationnel permet de distinguer une grossesse angulaire intra-utérine d'une grossesse interstitielle extra-utérine.

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INTRODUCTION

Ectopic pregnancy is an important public health issue, especially because, in contrast to many other diseases, its incidence is increasing. Current prevalence is 16 per 1000 reported pregnancies.¹ Interstitial EP refers to implantation in the proximal part of the fallopian tube that traverses the uterine myometrium. It accounts for 2% to 4% of all EPs¹ and has traditionally been considered a particularly dangerous form of EP because of the distensibility of the surrounding myometrial tissue and potential for the pregnancy to proceed into the second trimester and cause catastrophic hemorrhage.² Even though the overall mortality rates for EPs have steadily declined over the past 5 decades to 0.14%,³ the case mortality rate for interstitial EP remains at 2% to 2.5%.¹

Interstitial EP can be difficult to differentiate from eccentric intrauterine pregnancies that are eccentrically implanted in the uterine cavity cornu. However, this distinction is of paramount importance because eccentric IUP can potentially progress to full-term pregnancy. In addition, there is lack of consistency about the terminology for an eccentric IUP, with the terms used including angular, cornual, and cornual pregnancy in one of the cornua of a bicornuate or septate uterus.^{4–6}

The double sac sign is used to document the intrauterine location of pregnancy. It is based on the premise that an early gestational sac, protruding into the uterine cavity, displays an

appearance of two concentric rings representing the normal decidual reaction peripherally surrounding a chorionic ring.⁷ This sign has not been tested in the differentiation of eccentric IUP from interstitial EP, a frequently difficult distinction. Applying the concept of the double sac sign to an eccentric gestation, we hypothesized that the presence of surrounding endometrium can determine an eccentric IUP location as opposed to the “interstitial line sign” (extension of endometrium to the GS edge) that is used to diagnose an interstitial EP.⁸ We define SE as the endometrial lining seen to surround the GS. The presence of SE has not been evaluated systematically in any published reports of eccentric IUP to help distinguish the locations of pregnancy.

Our main objective was to determine whether the presence of SE around the GS could be used to correctly differentiate between eccentric IUP and interstitial EP. Secondly, we aimed to test the reproducibility of the SE feature.

MATERIALS AND METHODS

The institutional Research Ethics Board approved this retrospective study. Acquisition of consent was waived. We performed a retrospective review of all ultrasound examinations in our radiology database of the three tertiary care institutions with the keywords “interstitial” or “cornual” or “angular” pregnancy from 2007 to 2015. We included cases with video clips, unless static images were diagnostic. Also, cases were included that had adequate US or clinical follow-up. Relevant clinical data were collected from the institutional online charts provided by Allison Grant. Data collected included patient demographics, size and morphology of the pregnancy, serum β -hCG levels at presentation (if available), official US and surgical reports, and follow-up notes.

One abdominal radiologist (M.A.), who has 27 years of experience in transvaginal US assessment of first trimester pregnancy, reviewed video clips and 2-D and 3-D images of the study cases while blinded to all clinical information, including the original US report, follow-up US, and clinical outcome. The reviewer assessed for the presence or absence of the SE sign. SE was defined as the extension of the endometrial lining to surround the eccentrically located GS (Figure 1, Video Clip 1). US was considered diagnostic of eccentric IUP if SE was present and diagnostic of interstitial EP if SE was absent (Figure 2). In addition, the presence or absence of the interstitial line sign and thickness of the overlying myometrium lateral to the sac were recorded. The same reviewer repeated the review 6 months after the first review to evaluate intraobserver reproducibility of the SE sign. Also, a second abdominal radiologist

ABBREVIATIONS

β -hCG	beta human chorionic gonadotropin
EP	ectopic pregnancy
GS	gestational sac
IUP	intrauterine pregnancy
MTX	methotrexate
SE	surrounding endometrium
US	ultrasound

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