A Two View Approach to Identify Uterine Sites of Ectopic Pregnancy with Ultrasound in the First Trimester

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BACKGROUND AND RATIONALE

Ectopic pregnancy remains the UK’s leading cause of morbidity and mortality in the first trimester of pregnancy. 1,2 Whilst the Fallopian tube is the most common site by far, other rare but possible sites include the ovary, peritoneal cavity and uterine sites such as the cervix, interstitial portion of the tube and caesarean scar. These uterine sites are diagnosed and managed according to patient preferences, surgical history, and resultant management. This paper will address the early ultrasound diagnosis of first trimester pregnancy and its consequence shall be described.

VIEW 1 - SAGITTAL SAC TO CERVIX VIEW

The sagittal sac to cervix view describes a sagittal view of the uterus, which is recorded to demonstrate that the gestation sac is correctly sited within the cavity and continuous with the cervix. To be diagnostic of an intrauterine pregnancy, the view must fulfil the following criteria:

- A sagittal view of the uterus including the fundus and the cervix
- No communication with a previous caesarean scar
- Continuity of the endometrial cavity between the gestation sac and the cervical canal

The second type of CSP involves a partial implantation into the sac site. The sac then grows into the endometrial cavity as the pregnancy progresses. 3 When the sac fails to slide against the cervical canal following the application of pressure with the transvaginal probe the two views taken

VIEW 2 - INTERSTITIAL VIEW

The interstitial view is a transverse view of the uterine fundus to demonstrate the appearances of the interstitial portion of the tube. The interstitial portion passes through the myometrium and can be visualised by transvaginal ultrasound as thin, hyperechogenic lines extending from the lateral aspect of the fundal cavity. 4 To be diagnostic of an IUP within a normal uterus, the view must fulfil the following criteria:

- Two interstitial tubes arising from the lateral aspects of the fundal cavity
- Endometrial cavity widening towards the fundus
- No products of conception seen separate from the cavity

CAESAREAN SCAR PREGNANCY

Two types of caesarean scar pregnancy (CSP) have been reported in the literature. 5 The sagittal sac to cervix view is paramount to timely detection of both forms.

The first type involves the gestation sac implanting deep within the caesarean scar (see fig 3). This type grows anteriorly to the scar towards the maternal bladder. This type is associated with significant maternal morbidity due to uterine rupture early in the pregnancy. 6

The second type of CSP involves a partial implantation into the scar site. The sac then grows into the endometrial cavity as the pregnancy progresses 7 (see fig 4). These pregnancies are much harder to diagnose beyond the early first trimester 8 but have been known to progress well into the third trimester. These CSPs are associated with late uterine rupture and placenta accreta. 9

INTERSTITIAL PREGNANCY

An interstitial ectopic is a pregnancy implanted within the interstitial portion of the Fallopian tube. Pregnancy in this area may present at a later gestation, as the surrounding myometrium protects it from early rupture.

The interstitial view is key to accurate and timely diagnosis. The view will demonstrate products of conception separate from the endometrial cavity, surrounded by a continuous rim of myometrium (see fig 7). The ‘interstitial line sign’ may also be seen in this view as an echogenic line between the endometrial cavity and the gestation sac. 10

Achieving a normal sagittal sac to cervix view in an interstitial pregnancy is impossible (see fig 9). Because the sac is surrounded by myometrium, there is no continuity of the cavity from the sac to the cervix.

CERVICAL PREGNANCY

Diagnosis of cervical ectopic pregnancy depends upon the identification of the gestation sac within the cervical cavity, implanted below the level of the internal os. 11 Difficulties in diagnosis arise when a viable fetus cannot be identified within the sac, whereby care must be taken to differentiate between a cervical ectopic pregnancy and the cervical phase of a miscarriage. 12

The sagittal sac to cervix view can be used to identify the gestation sac within the cervix. Once its position has been established, the following criteria can be used to confirm a cervical ectopic pregnancy: 6

- Absence of the sliding sign
- Use of colour Doppler reveals a vascular supply at the sac site

CORNUAL PREGNANCY

The term cornual ectopic is often used incorrectly to describe an intramural pregnancy. A cornual pregnancy correctly refers to a pregnancy located within a rudimentary horn of a unicornuate uterus (see fig 11). The rudimentary horn, will often contain functional endometrium but has no connection with the cavity of the unicornuate uterus. 13

CONCLUSIONS

Late or incorrect diagnosis of non-tubal ectopic pregnancy remains a problem in the UK, often because the position of the gestation sac within the uterus has not been considered or adequately assessed. If applied to everyday practice, the views advocated in this paper will change that. Whilst the need for expert opinion / tertiary referral will remain, this approach will assist early pregnancy sonographers assess the position of the first trimester gestation sac with improved confidence. Timely detection is key to appropriate management and reducing first trimester maternal morbidity.

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10. Cornual pregnancy

11. Interstitial tube arising from the fundus

12. Site of cornual pregnancy

13. Interstitial tube arising from the fundus

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