Ultrasound appearances of non tubal ectopic pregnancies

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11/12/2024

Aims

- Define types of non tubal ectopics
- Ultrasound appearances of non tubal ectopic pregnancy

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FEELING SMUG LIKE

What is an ectopic pregnancy

- Implantation of the fertilized egg outside the uterine cavity
- 11/1000 pregnancies are ectopic
- 95%tubal (80% in the ampulla)
- 5% non tubal: Higher mortality/morbidity, often diagnosed later
- Ultrasound mainstay of diagnosis

INTERSTITIAL
INTRAMURAL
ISTHMIC TUBAL
AMPULLAR TUBAL
FALLOPIAN TUBE
FALLOPIAN TUBE
OVARY
INFUNDIBULAR/FIMBRIAL TUBAL
UTERUS
OVARIAN
FIMBRIAE
ABDOMINAL
CAESAREAN SECTION SCAR
CERVICAL
ENDOMETRIUM
CAESAREAN SECTION SCAR ECTOPIC PREGNANCY
CERVIX
VAGINA

Further types of ectopic pregnancy not shown in the diagram above are:

- Cornual/rudimentary horn pregnancy, within a uterus that has not formed as usually expected.
- Heterotopic pregnancy, where there is the co-existence of a pregnancy in the uterus and an ectopic pregnancy.

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Types of non tubal ectopic pregnancies

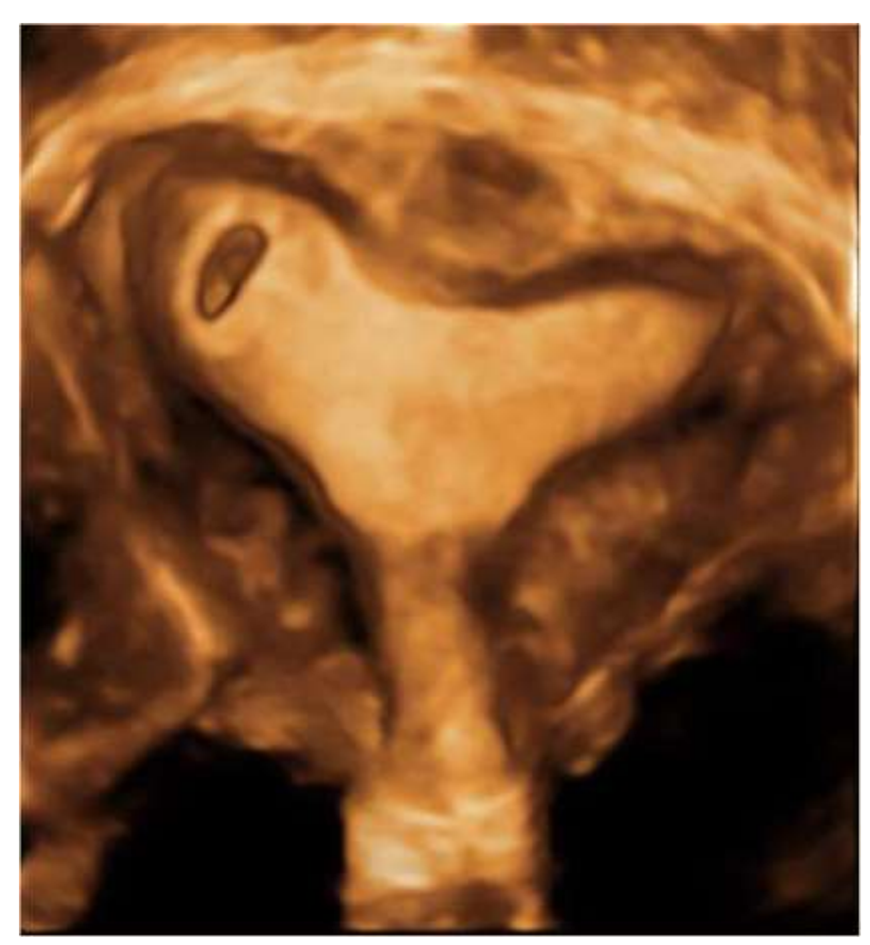
- Interstitial
- Cornual-Rudimentary horn
- Cervical
- C-scar
- Ovarian
- Abdominal
- Intramural

Angular, interstitial and cornual pregnancies often are confused!

Angular

- Intrauterine pregnancy
- Occurs when an embryo implanted in the lateral angle of the uterine cavity
- Medial to the utero-tubal junction
- It results in asymmetric enlargement of the uterus and lateral displacement of the round ligament
- Neither an ectopic pregnancy nor dangerous

This is not an interstitial pregnancy



Types of non tubal ectopic pregnancies

- Interstitial
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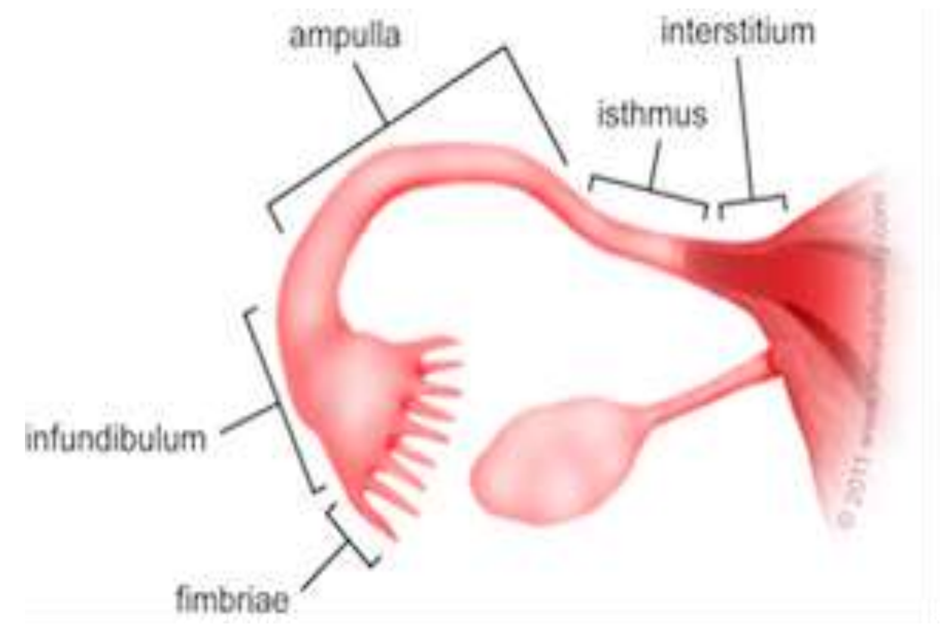
Interstitial

- Interstitium-the proximal portion of the tube that lies within the muscle wall of the uterus
- 1-2cm in length, 0.7mm wide



- Next most common ectopic after tubal (2-4%)
- Ectopic location of the gestational sac(GS) in the intra-myometrial segment of the fallopian tube
- Possibility to expand significantly before rupture: catastrophic
- 3D USS is beneficial

Features

1. Empty uterine cavity

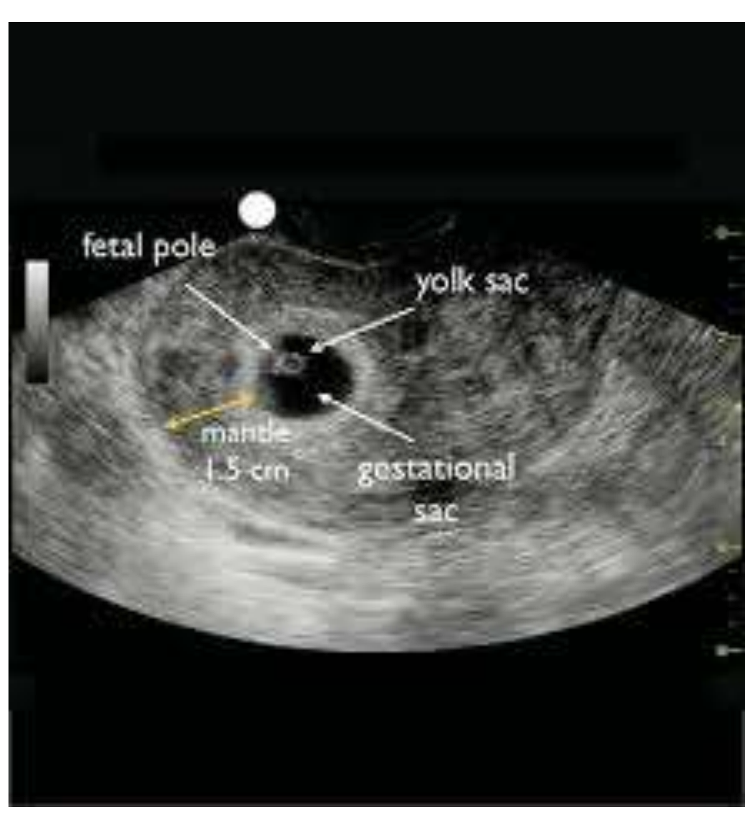
2. Abnormally eccentric GS

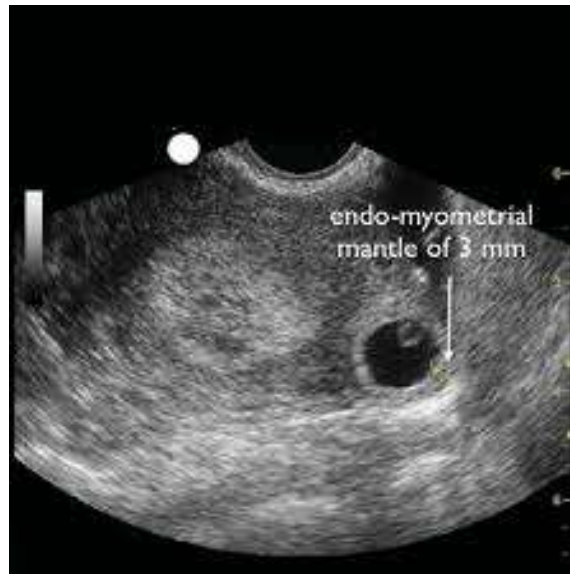
3. Thin surrounding endo-myometrium or myometrium ' endo-myometrial mantle': distance from the wall of the gestational sac to the outer wall of the uterus

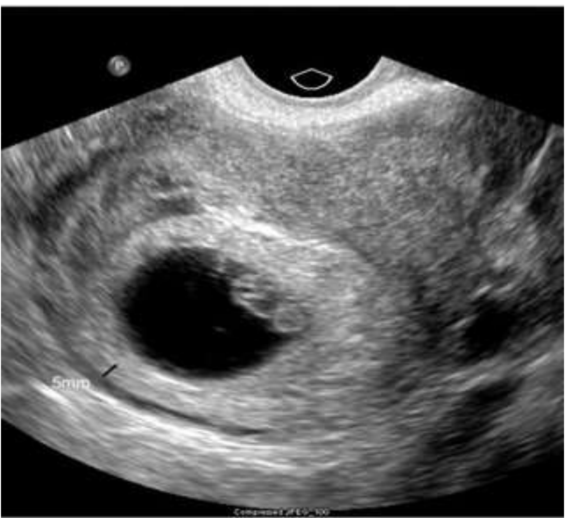
4. Thin interstitial line adjoining GS and endometrial cavity

5. Bulge in uterine serosa

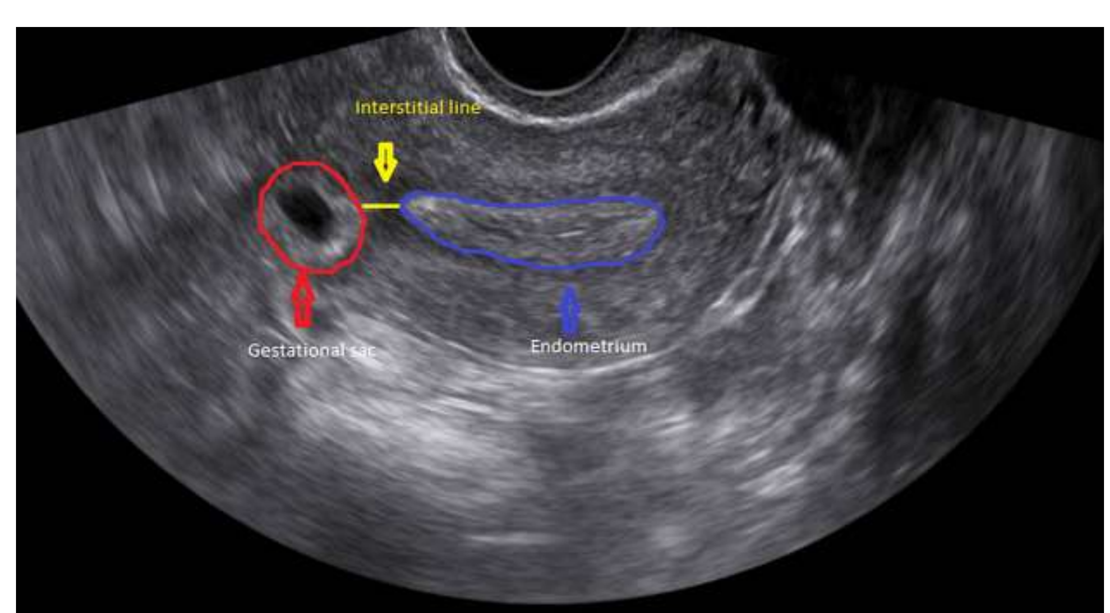
Endomyometrial mantle-<5mm

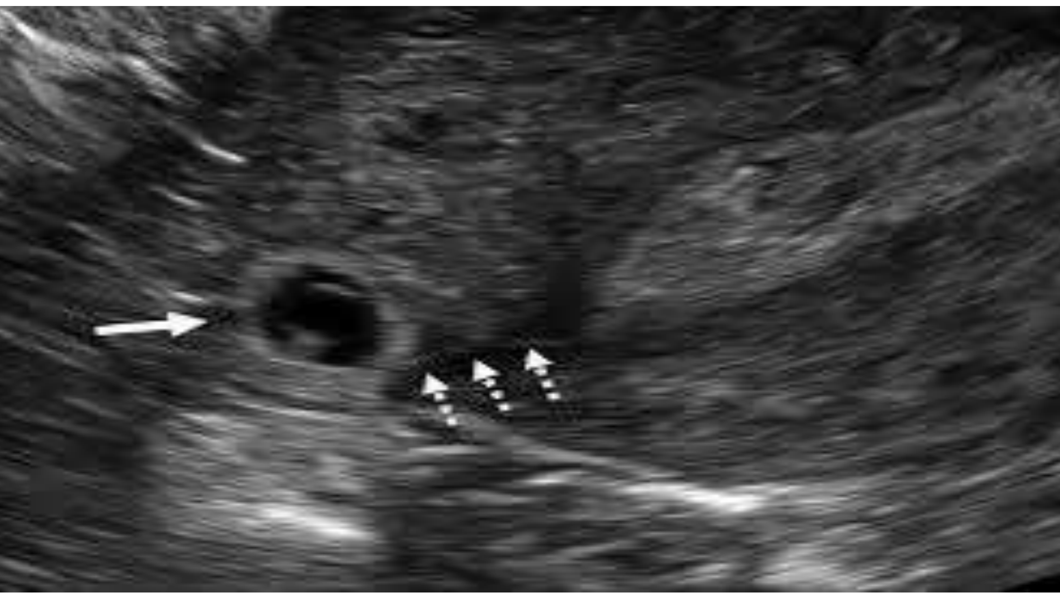






Interstitial line: echogenic line that runs from the endometrial echo complex to the interstitial mass/gestational sac

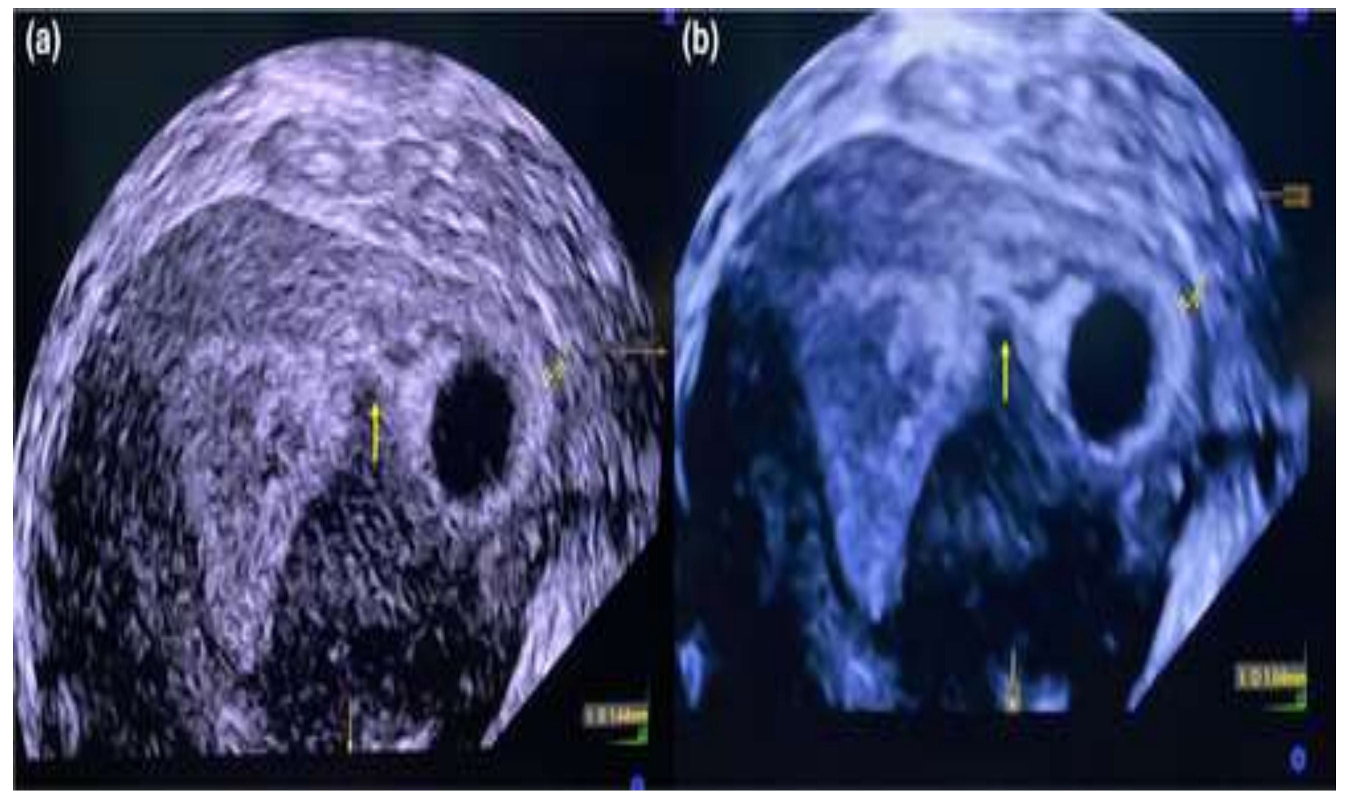




(b)

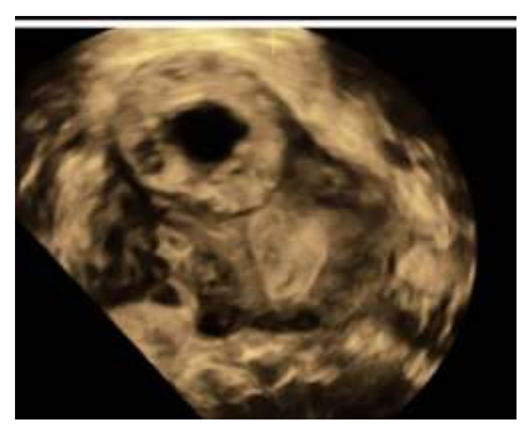
U
P
T
Surrounding myometrium
P
Interstitial line sign

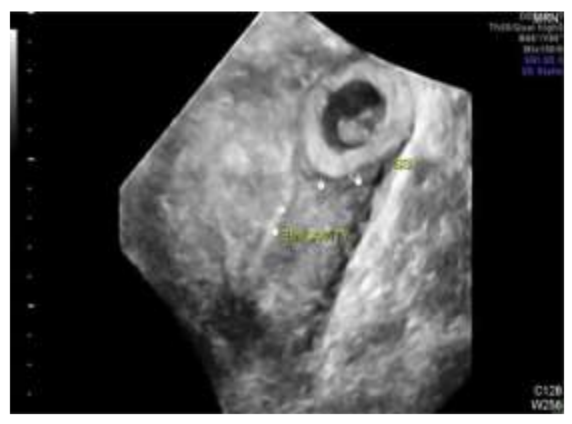
'Interstitial pregnancy: A retrospective case series of surgically managed patients over a ten-year period' ANZJOG June 2024

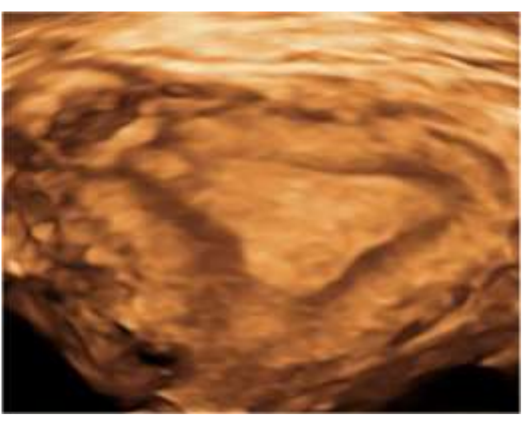


‘Interstitial pregnancy: A retrospective case series of surgically managed patients over a ten-year period’ ANZJOG June 2024

3D-look at images







- Interstitial
- Cornual-Rudimentary horn
- Cervical
- C scar
- Ovarian
- Abdominal
- Intramural

Cornual-rudimentary horn

- Any pregnancy which is implanted in the horn of a uterus, which may be one horn of a bicornuate uterus, which is *not* an ectopic pregnancy

or

- A non-communicating, functional rudimentary cornua of a unicornuate uterus, which is an ectopic pregnancy *(Mavrelos et al. 2007)*
- Occurs when there is a mullerian anomaly
- Can progress to 16-20 weeks

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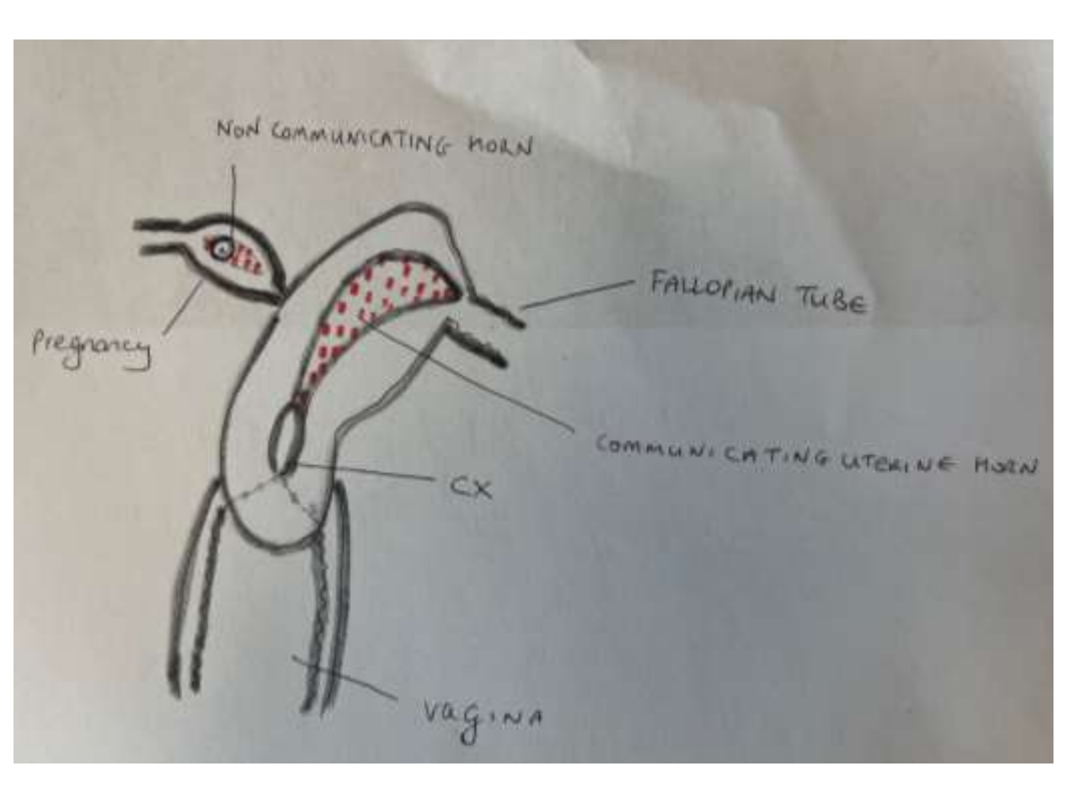
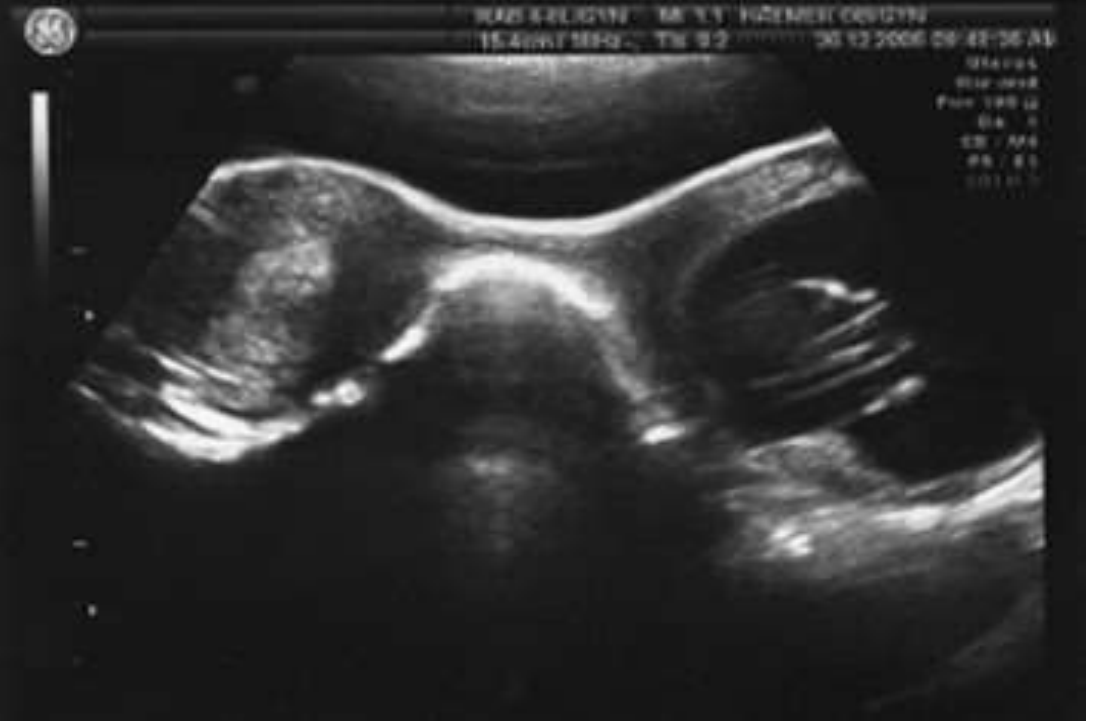
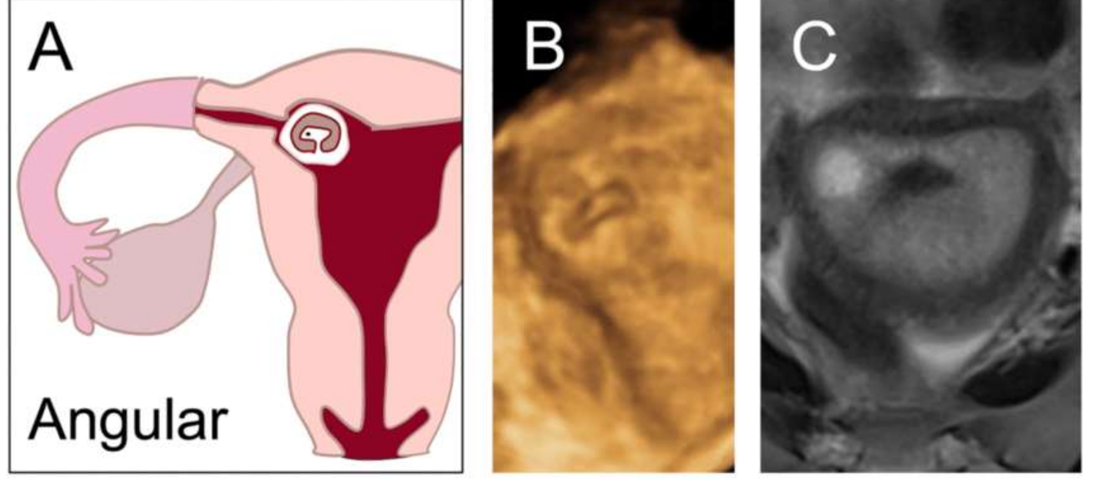
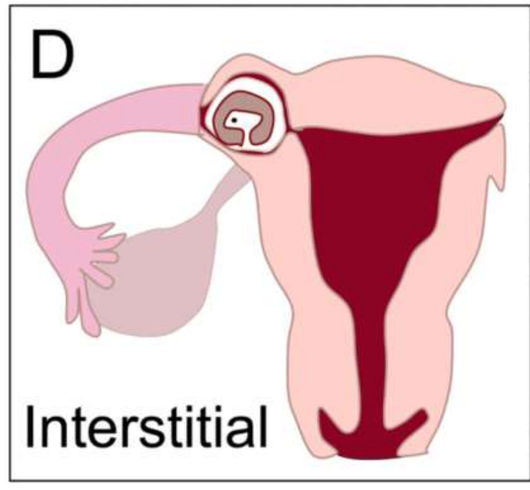
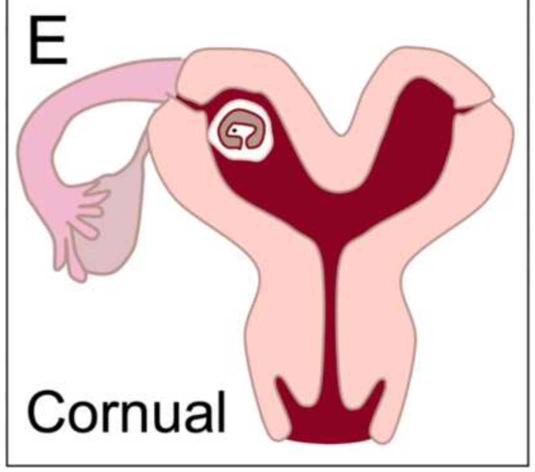

NON COMMUNICATING HORN
Pregnancy
FALLOPIAN TUBE
COMMUNICATING UTERINE HORN
CX
VAGINA



@article{Monacci2018DiagnosisAL, title={Diagnosis and laparoscopic management of a 5-week ectopic pregnancy in a rudimentary uterine horn: A case report}, author={Francesca Monacci and Nora Lanfredini and Stella Zandri and Francesca Anna Letizia Strigini and Carlo Luchi and Andrea Giannini and Tommaso Simoncini}, journal={Case Reports in Women's Health}, year={2018}, volume={21}, url={https://api.semanticscholar.org/CorpusID:57012817} }







(A) A schematic view of angular pregnancy. (B) Three-dimensional ultrasonography showing the gestational products in the right angular portion of the uterus at 5 weeks of gestation. (C) Axial T2-weighted MRI scan showing the gestational products in the right angular portion of the uterus at 5 weeks of gestation. (D) A schematic view of interstitial pregnancy. (E) A schematic view of cornual pregnancy in the bicornuate uterus.

Astuti, Siti. (2022). LITERATURE REVIEW: PLACENTAL MORPHOLOGY OF PREGNANT WOMAN WITH THE COVID-19. GEMA KESEHATAN. 14. 58-67. 10.47539/gk.v14i1.284.

- Interstitial
- Cornual-Rudimentary horn
- Cervical
- C scar
- Ovarian
- Abdominal
- Intramural

Cervical

- Implantation within the cervical canal below the level of the internal os (implantation in endocervical canal)
- 0.15-1%
- Exact cause unknown ? Due to damage to uterine cavity which stops normal implantation

Features

1. Empty uterus
2. Can be seen as a gestational sac within the distended cervix which gives an hour-glass appearance to the uterus.
3. Usually, internal os is closed. At times the gestational sac extends into the lower uterine segment (abnormally low sac position).
4. There is hyperechoic decidual reaction around the gestational sac.
5. Barrel shaped canal
6. Absent sliding sign

Cervical stage miscarriage vs cervical ectopic

- Decidual reaction
- Barrel/hour glass appearance
- Clinical information
- Bhcg not falling

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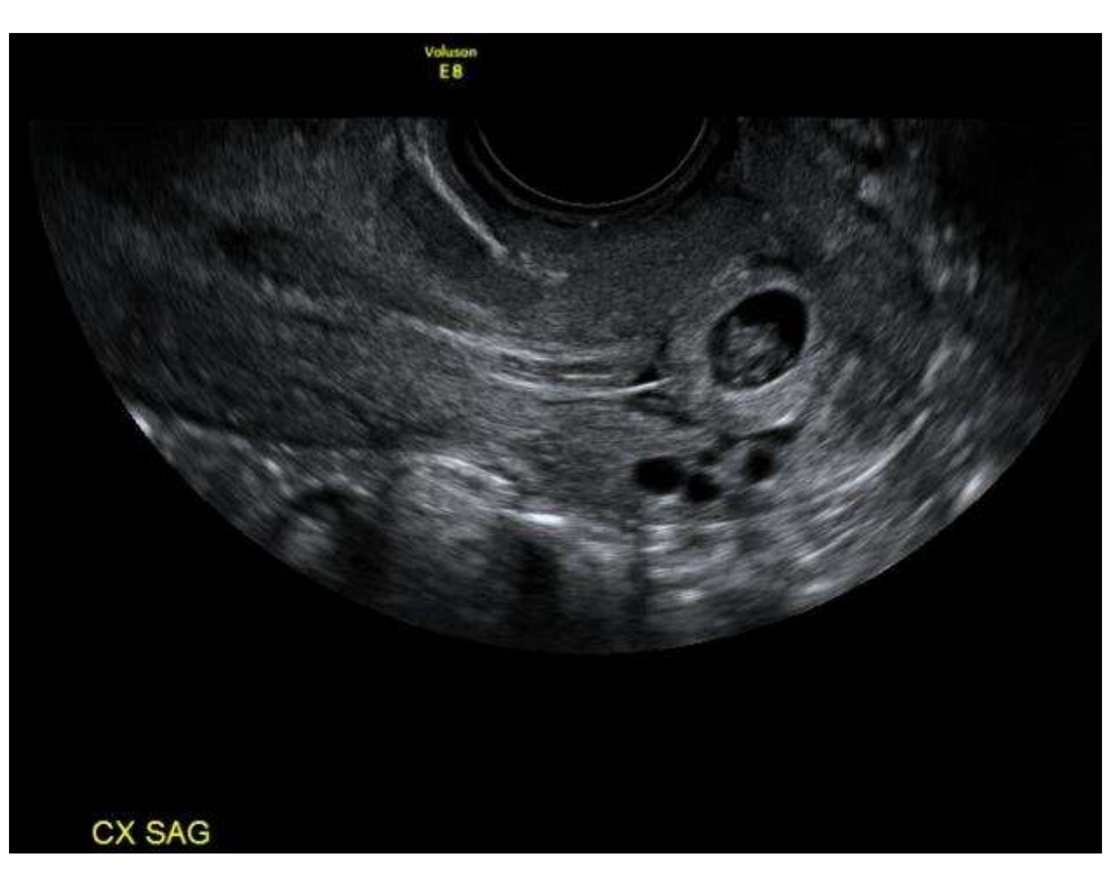
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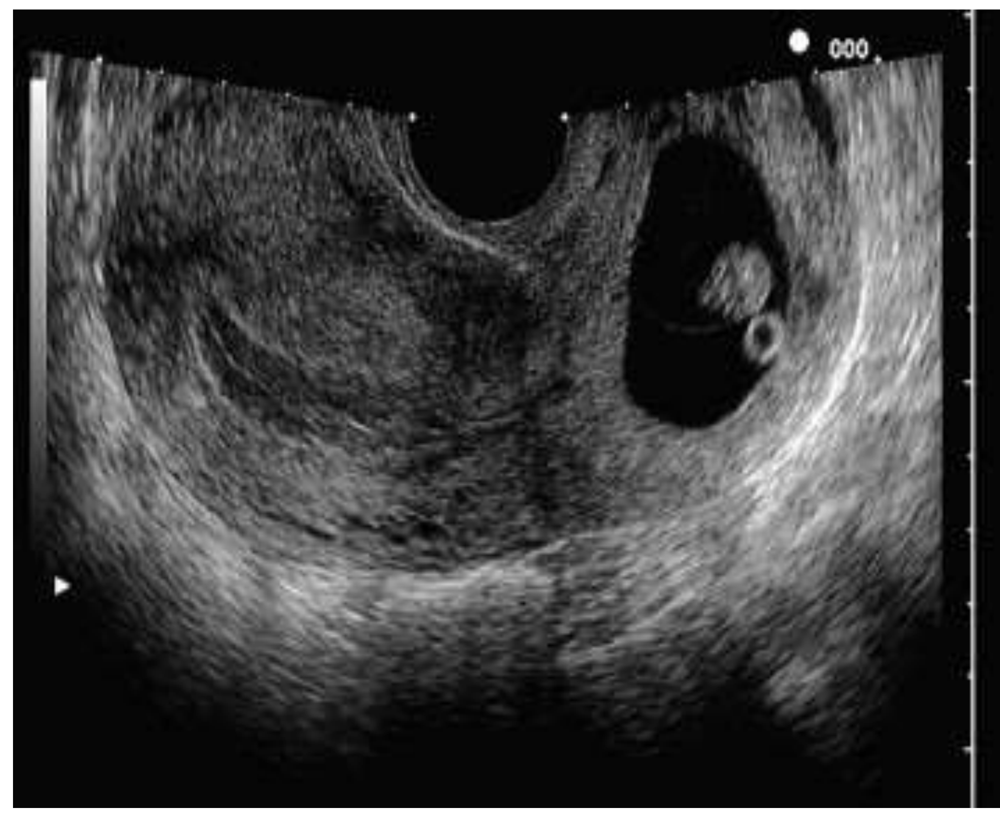
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C-scar

- Implantation into the myometrial defect of the scar of a previous caesarean section
- More common due to more c sections-high level of suspicion
- Always ask about obstetric history and visualise the scar !

Features

1. Empty uterine cavity, empty endocervical canal
2. GS anterior part of isthmus
3. GS surrounded by myometrium and fibrous tissue of the scar, fills niche of scar
4. Negative ‘sliding organs’ sign
5. Evidence of functional trophoblast/placental circulation on colour flow doppler, characterised by high velocity and low impedance blood flow
6. A thin or absent myometrial layer between the gestational sac and the bladder

Early intervention to avoid rupture

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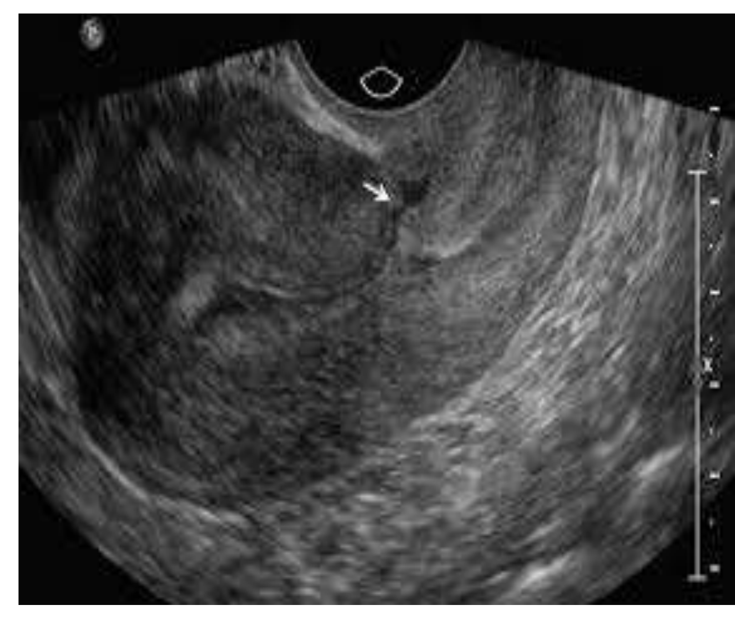

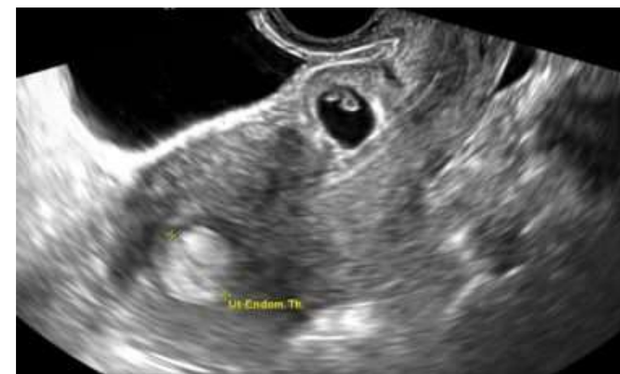
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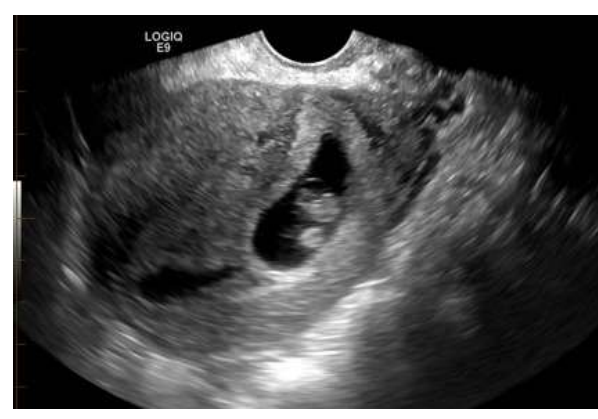
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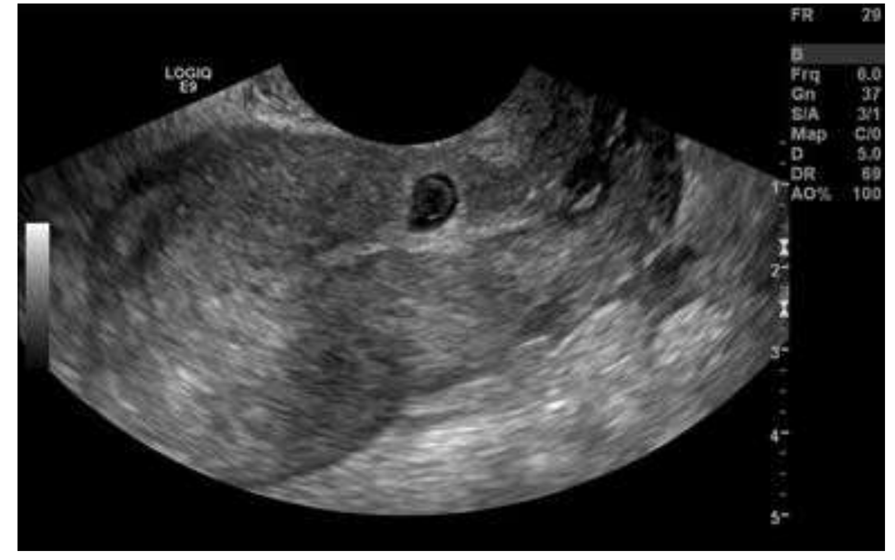
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- Interstitial
- Cornual-Rudimentary horn
- Cervical
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Ovarian

- Difficult to diagnose
- Primary or secondary ovarian ectopic pregnancy.

1. The cause of primary OEP remains obscure. It is hypothesised that due to ovulatory dysfunction, the ovum is fertilized while still within the follicle, before the follicle being expelled from the ovary .

2. Most OEP seem to be secondary due to the reflux of a fertilized ovum from the fallopian tube to the ovary

Features

1. An empty endometrial cavity
2. GS (with YS/FP(+/-) FH), that is inseparable from adjacent ovarian parenchyma
3. A wide echogenic ring with an internal echolucent area on the ovarian surface
4. The presence of ovarian cortex, including corpus luteum or follicles around the mass; the echogenicity of the ring usually greater than that of the ovary tissue

At surgery Speiglbergs criteria:

- tube must be intact
- must be ovarian tissue attached to the pregnancy in the specimen

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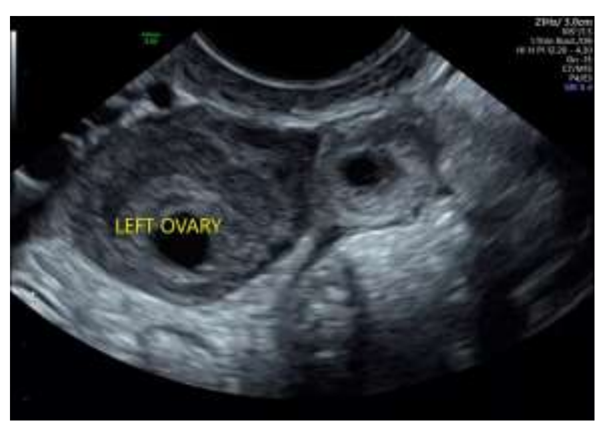
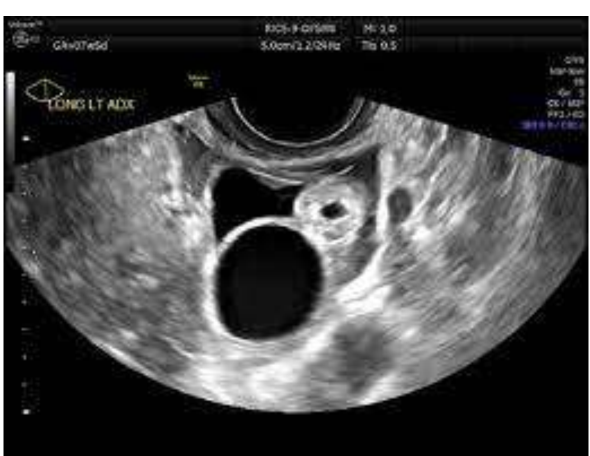
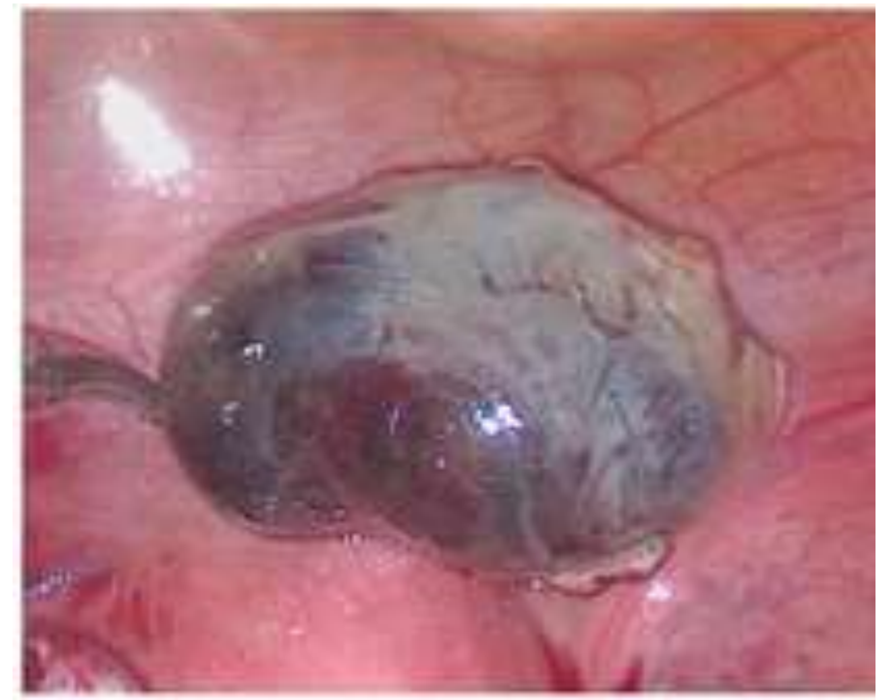

LEFT OVARY


LONG LT ADX



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Abdominal

- Pathogeneis is difficult to know exactly ?
- Theories:

1. Primary :fertilisation of the ovum in the abdominal cavity. The fertilization may occur posterior to the uterus where sperm is known to accumulate, and an egg might be found there as a result of the dependent flow of peritoneal fluid

2. Secondary may occur from an aborted or ruptured tubal pregnancy

3. Others theories that the abdominal pregnancy would occur because of migration of the embryo from the female reproductive tract to the peritoneal cavity by travelling along lymphatic channels

- Commonly posterior cul de sac (POD), mesosalpinx, omentum, bowel and mesentry, peritoneum of pelvic and abdominal wall
- Need to always ensure there is a GS within the uterus…often picked up at 13 weeks, could easily do a nuchal scan
- Latest gestation 37+6 in Ethiopia
- Late dx-room to expand
- High mortality rate

Is the pregnancy intrauterine…don’t assume!

Uterus

Abdominal Pregnancy

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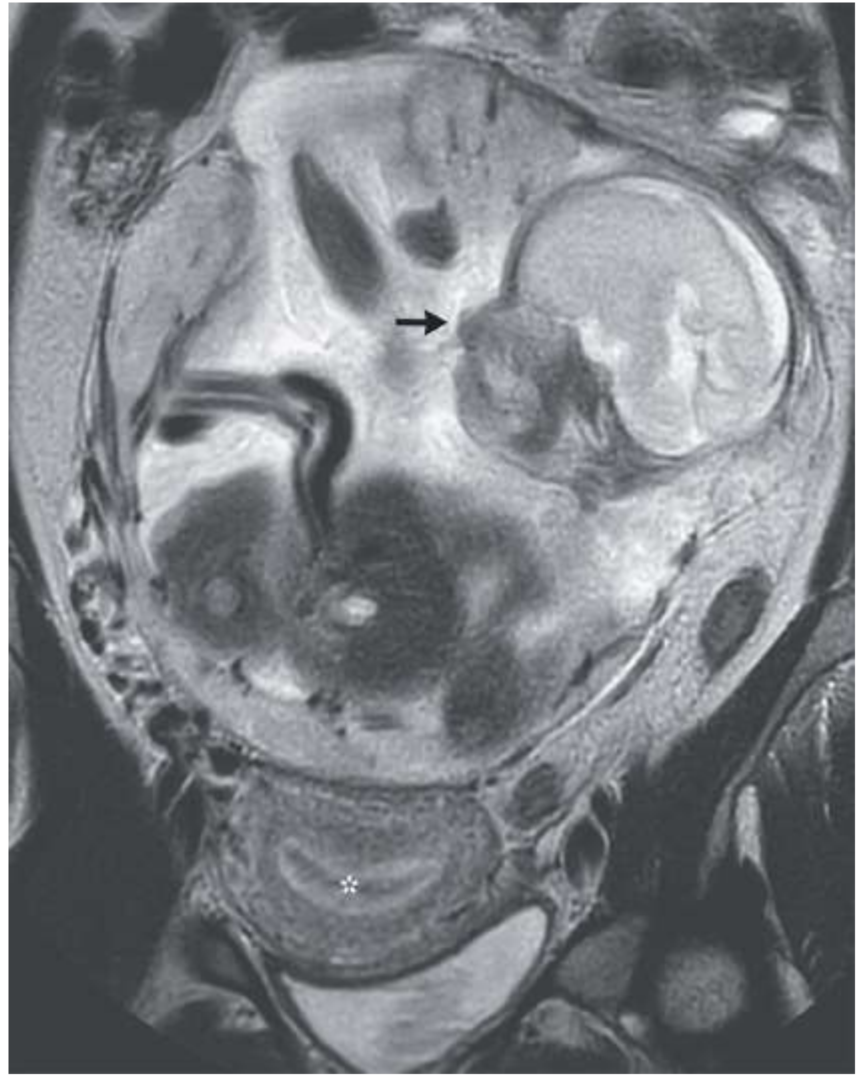
Baby Delivered From Rare Abdominal Ectopic Pregnancy

— Both the mother and neonate survived, making the case extra rare

by Rachael Robertson, Enterprise & Investigative Writer, MedPage Today
December 13, 2023

Last Updated December 18, 2023



- Interstitial
- Corneal
- Rudimentary horn
- Cervical
- C scar
- Ovarian
- Abdominal
- Intramural

Intramural

- Rare 1:30,000
- Abnormal implantation of a pregnancy within the myometrium
- Partial IEP: The gestational sac invading the myometrium but also partly protruding into uterine cavity
- Complete IEP: The gestational sac completely implanted within the myometrium, without visible communication with the uterine cavity.

- The exact aetiology is unclear:

1. Suggested that IEP may occur following any surgical procedures that could damage the endometrial-myometrial junction, such as myomectomy, hysteroscopy, in vitro fertilization (IVF) and dilatation and curettage

2. Other theories include external migration and implantation on the serosal surface of the uterus or implantation in a focus of adenomyosis

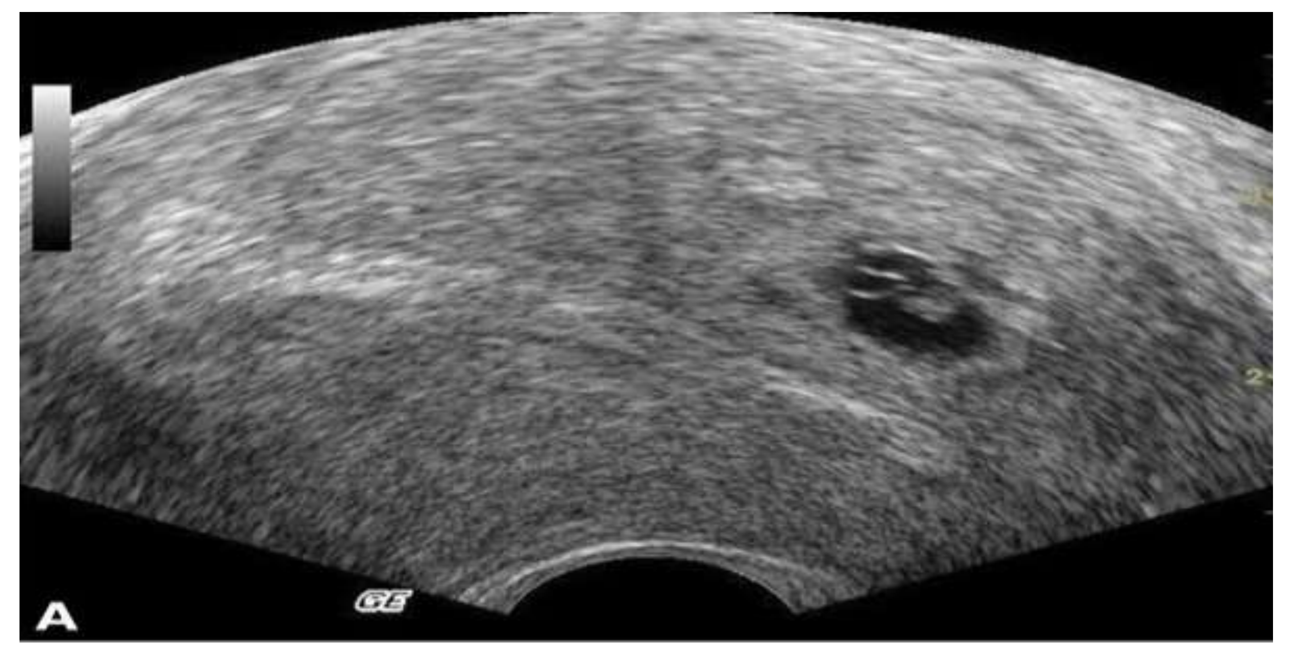
Features

1. GS/POC located above the internal os and medial to the interstitial tube

2. Evidence of trophoblast breaching the endometrial–myometrial junction (partial intramural pregnancy) or completely confined to the myometrium (complete intramural pregnancy)

3. Lack of decidual reaction in the vicinity of trophoblast

4. Evidence of increased peri-trophoblastic blood flow on colour Doppler examination *(Jurkovic D et al)*



Auer-Schmidt MM, Rahimi G, Wahba AH*, et al*
Hysteroscopic management of intramural ectopic pregnancy
BMJ Case Reports CP 2021;**14:**e244514.

Summary

- Interstitial: endomyometrial mantle, interstitial line
- Cornual-Rudimentary horn: ectopic if in rudimentary horn
- Cervical: barrel/hourglass
- C-scar: within the c scar niche
- Ovarian:internal echolucent area on the ovarian surface
- Abdominal: are you sure the pregnancy is in the uterus?
- Intramural: rare

Acknowledgements

- The Ectopic Trust
- BMUS

ECTOPIC PREGNANCY CAN BE LIFE-THREATENING

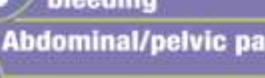
Symptoms

- May occur from 4-12 weeks gestation or later
- Vary and can resemble other conditions, e.g. gastrointestinal conditions, miscarriage, UTI

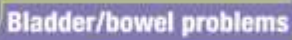
Unusual period

Usually a positive pregnancy test

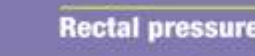
Unusual vaginal bleeding



Abdominal/pelvic pain



Bladder/bowel problems



Rectal pressure

Shoulder tip pain

Shock or collapse

Some patients experience minimal or even no symptoms

Front

With a suspected ectopic pregnancy:

- If a patient is showing signs of haemodynamic instability (including pallor, tachycardia, low oxygen level, hypotension, shock and collapse),
- triggers Early Warning Score, or
- there is concern about the degree of bleeding or pain,

arrange immediate ambulance transfer to hospital (inform on-call gynaecology).

If immediate hospital transfer is not indicated:

- *complete urine pregnancy test (if not already done);* and
- if pregnancy is confirmed, refer to early pregnancy unit.

The Ectopic Pregnancy Trust

Scan for more information

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Version: 03/2024

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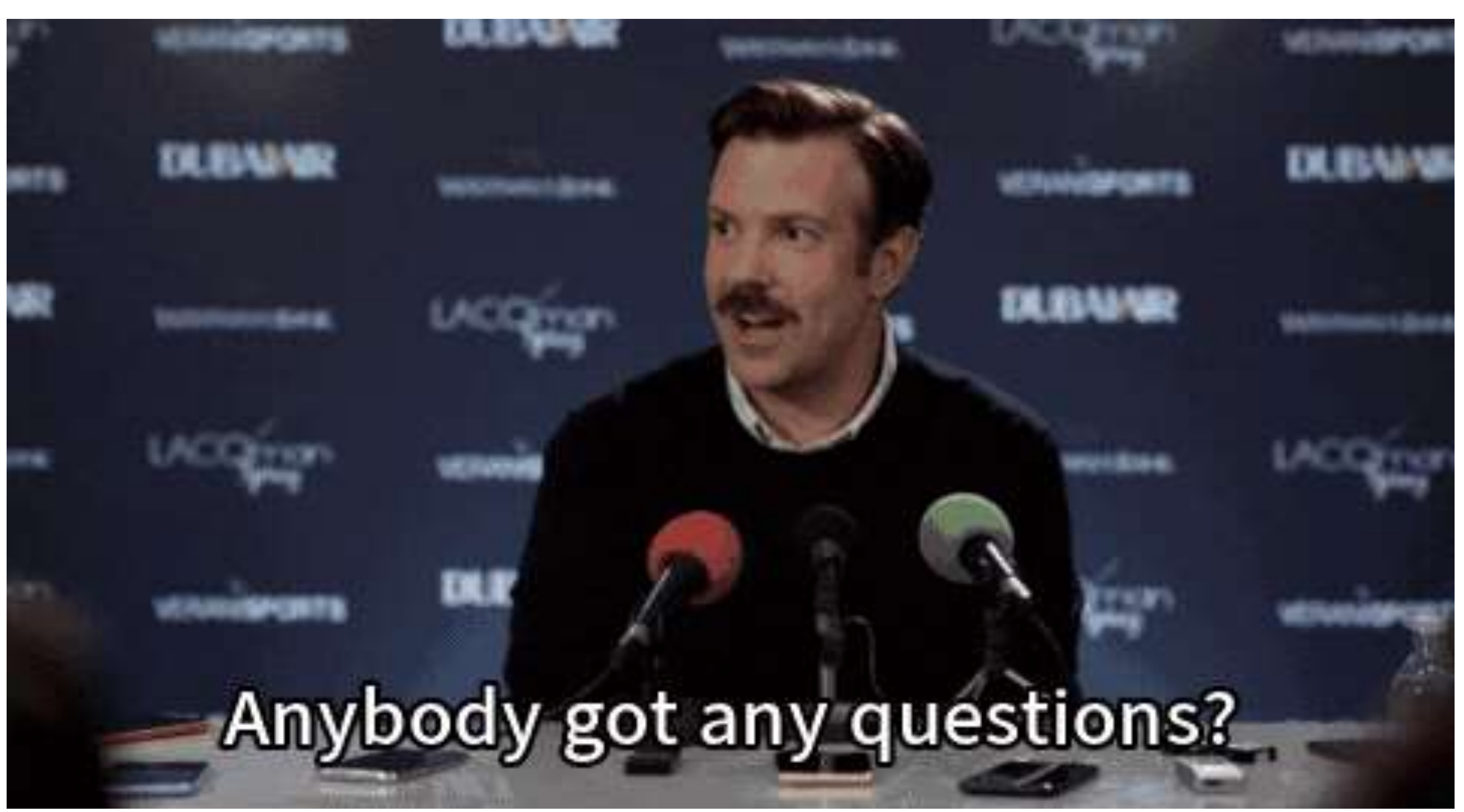
Anybody got any questions?