Caesarean Scar Pregnancy

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Introduction

- What is a caesarean scar pregnancy (CSP)?
  - How do we diagnose a CSP?
  - How should we manage a CSP?
- Current guidance and evidence

Ectopic Pregnancy

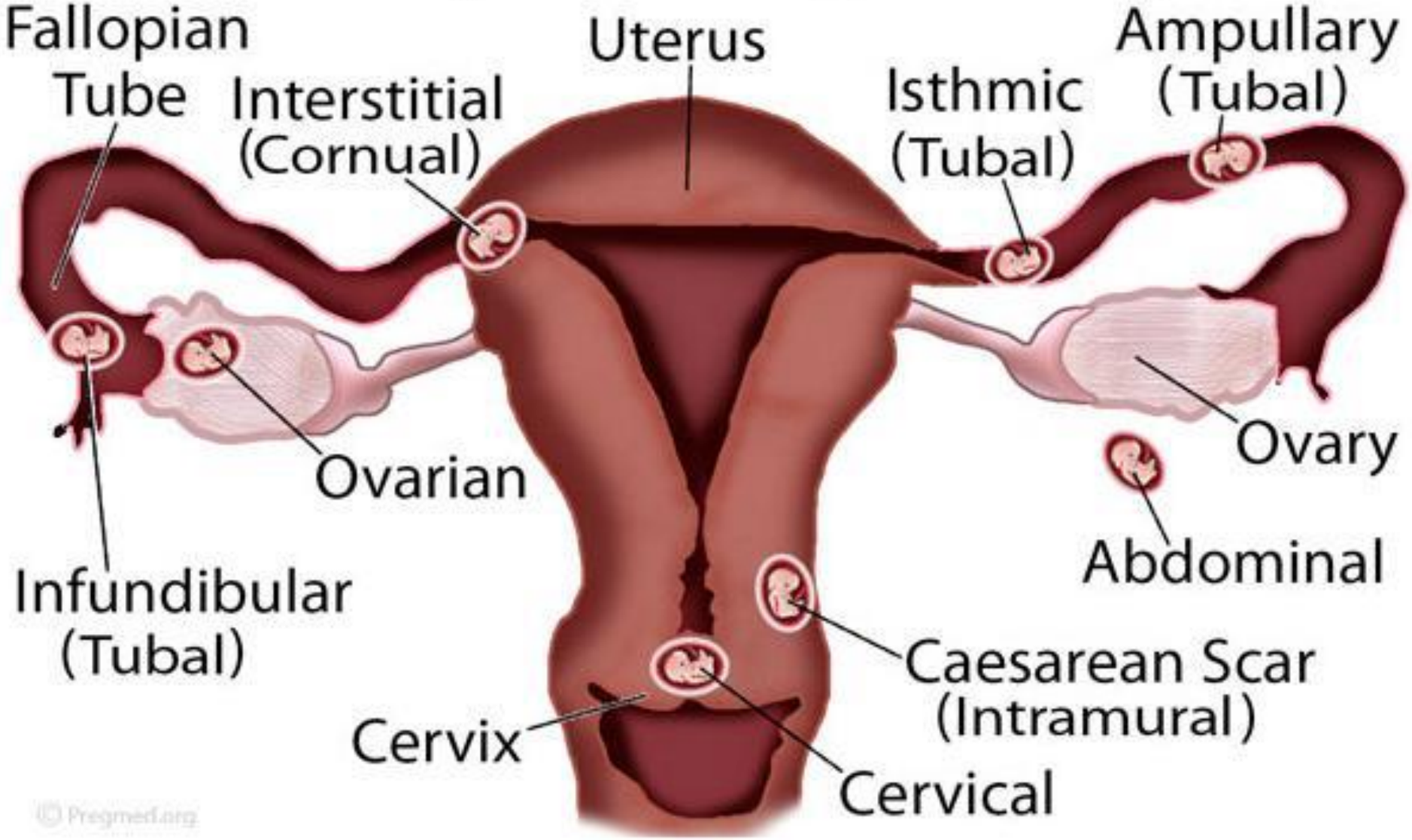
A pregnancy implanted outside the endometrial cavity:

- Beyond uterine ostia —> internal os

OR

- Trophoblast invasion beyond endometrial/myometrial junction.

Ectopic Pregnancy

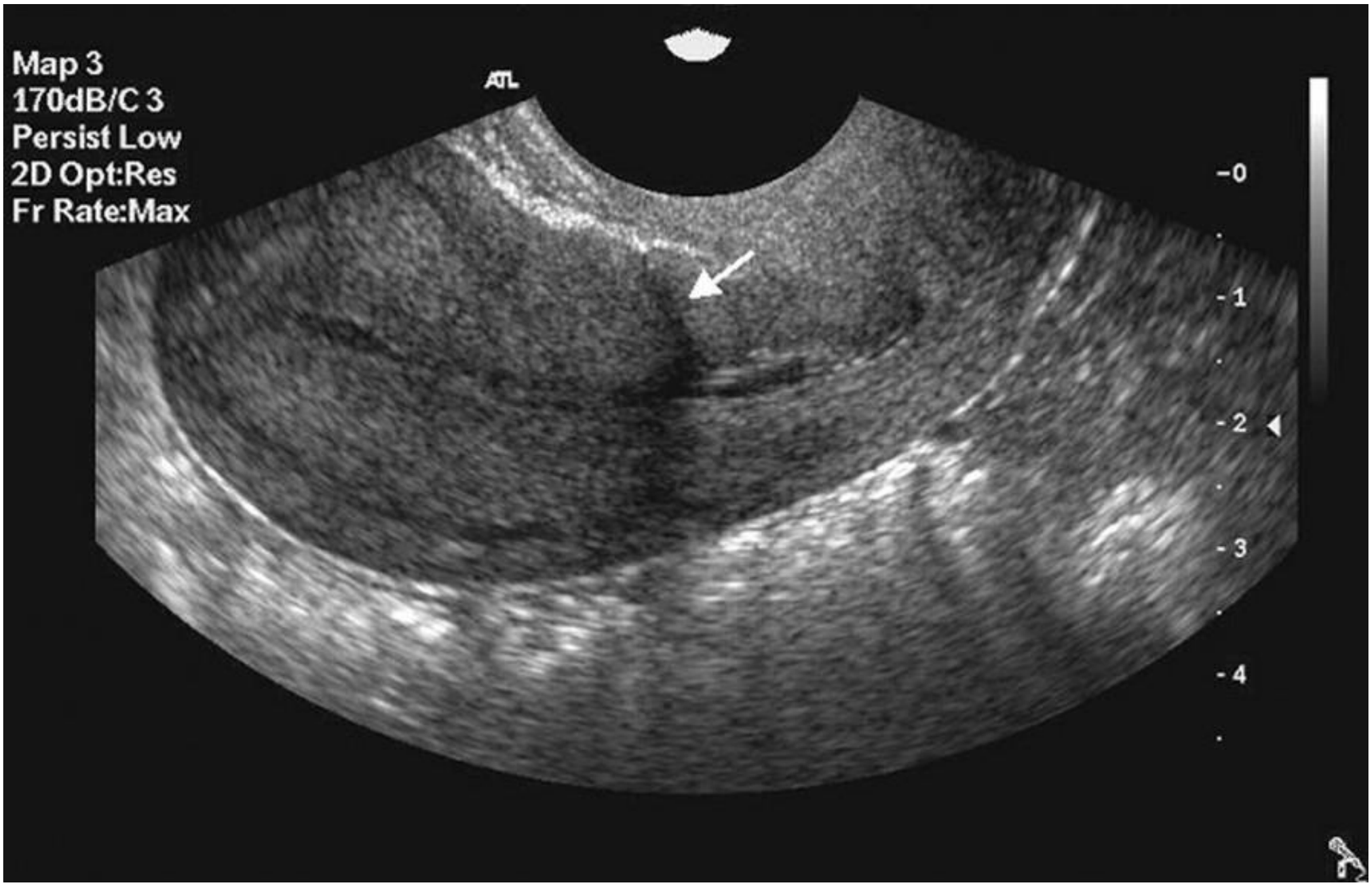


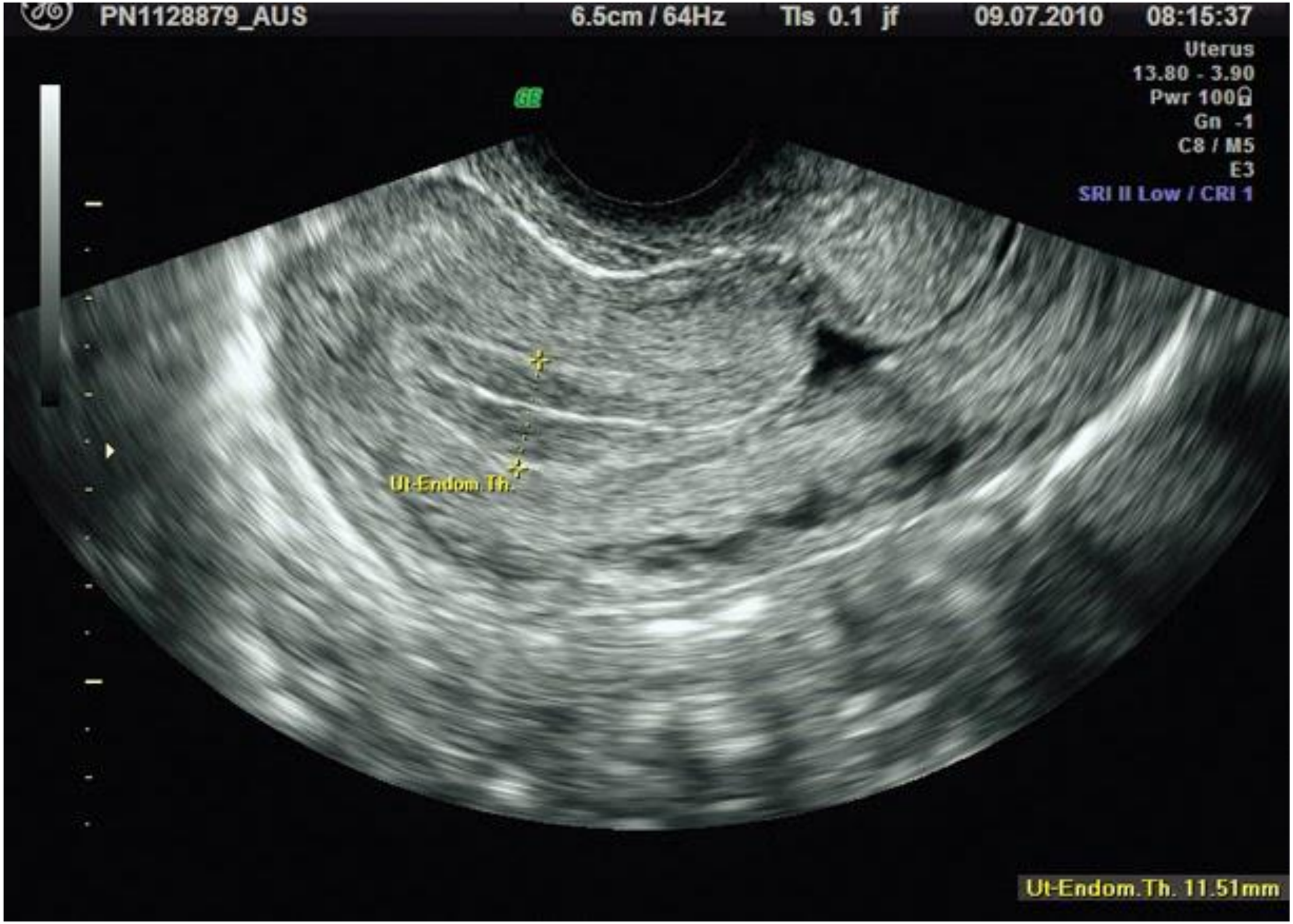
https://www.biyanicolleges.org/definition-and-types-of-ectopic-pregnancy/

Systematic Ultrasound Approach

- Assessment of endometrial cavity
- Clearly visualise both ovaries
- Close inspection of both adnexae
- Look for free fluid in Pouch of Douglas
- Inspect other areas:
  - Interstitial portion of both tubes
  - **Caesarean section scar**
  - Cervix

Identifying a CS scar on Ultrasound



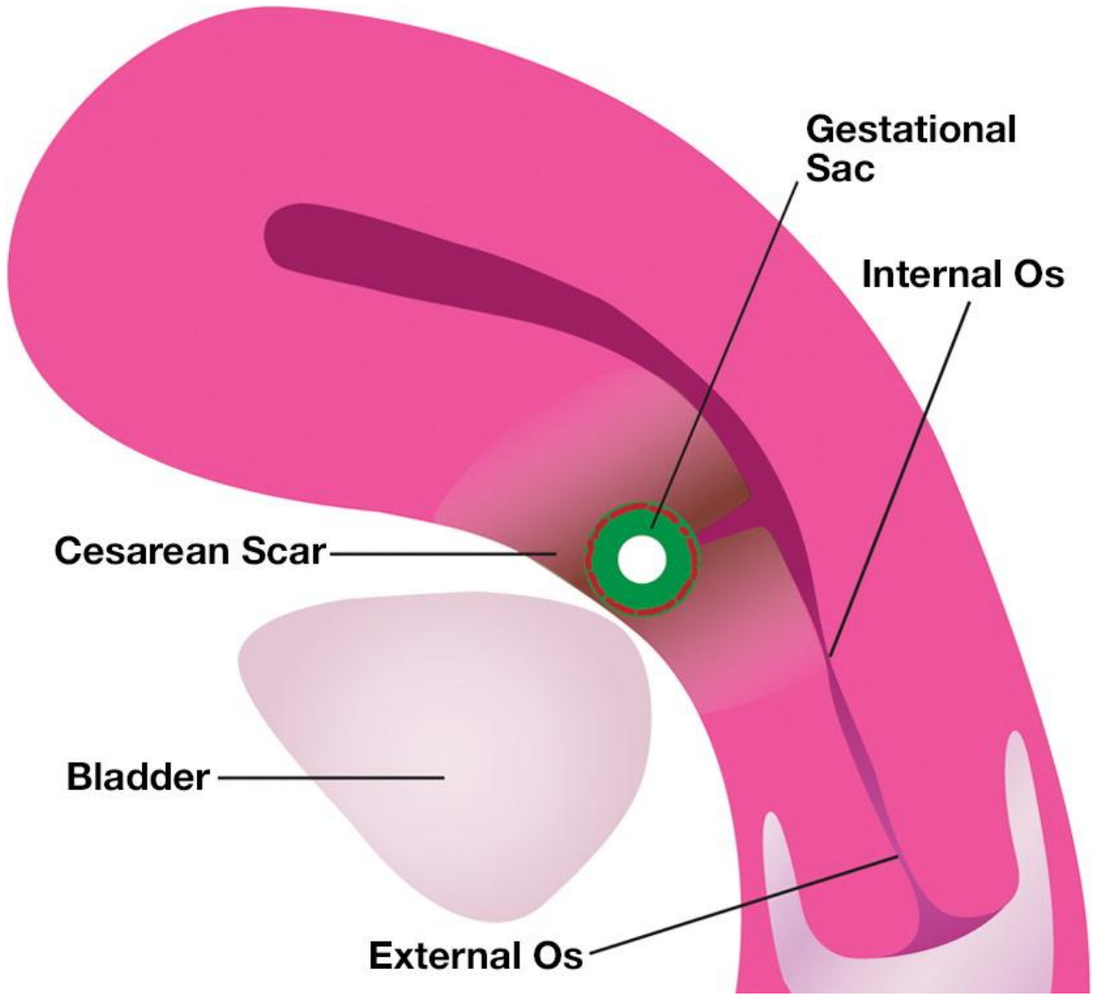


https://srsree.blogspot.com/2012/03/management-of-delivery-of-woman-with.html

Caesarean Scar Pregnancy

- Pregnancy implantation into the myometrial defect occurring at the site of the previous uterine incision.

- Results in a pregnancy partially or completely surrounded by myometrium and fibrous tissue of the CS scar.



1) Uncommon Implantation Sites of Ectopic Pregnancy: Thinking beyond the Complex Adnexal Mass. Chukus et al. RadioGraphics 2015; 35:946–959.

- Prevalence approximately 1 in 2000 pregnancies[2].
- The incidence of CSP increasing, secondary to the rise in caesarean delivery rates, increased awareness and better US diagnosis.
- Accounts for < 1% of ectopic pregnancies[1].
- The exact cause of caesarean scar pregnancy is not well understood.
- RISK FACTORS:
  - Number of previous caesarean deliveries,
  - Other uterine surgery (D&C, myomectomy),
  - Adenomyosis
  - Multiparity
  - Advanced maternal age
  - Smoking.

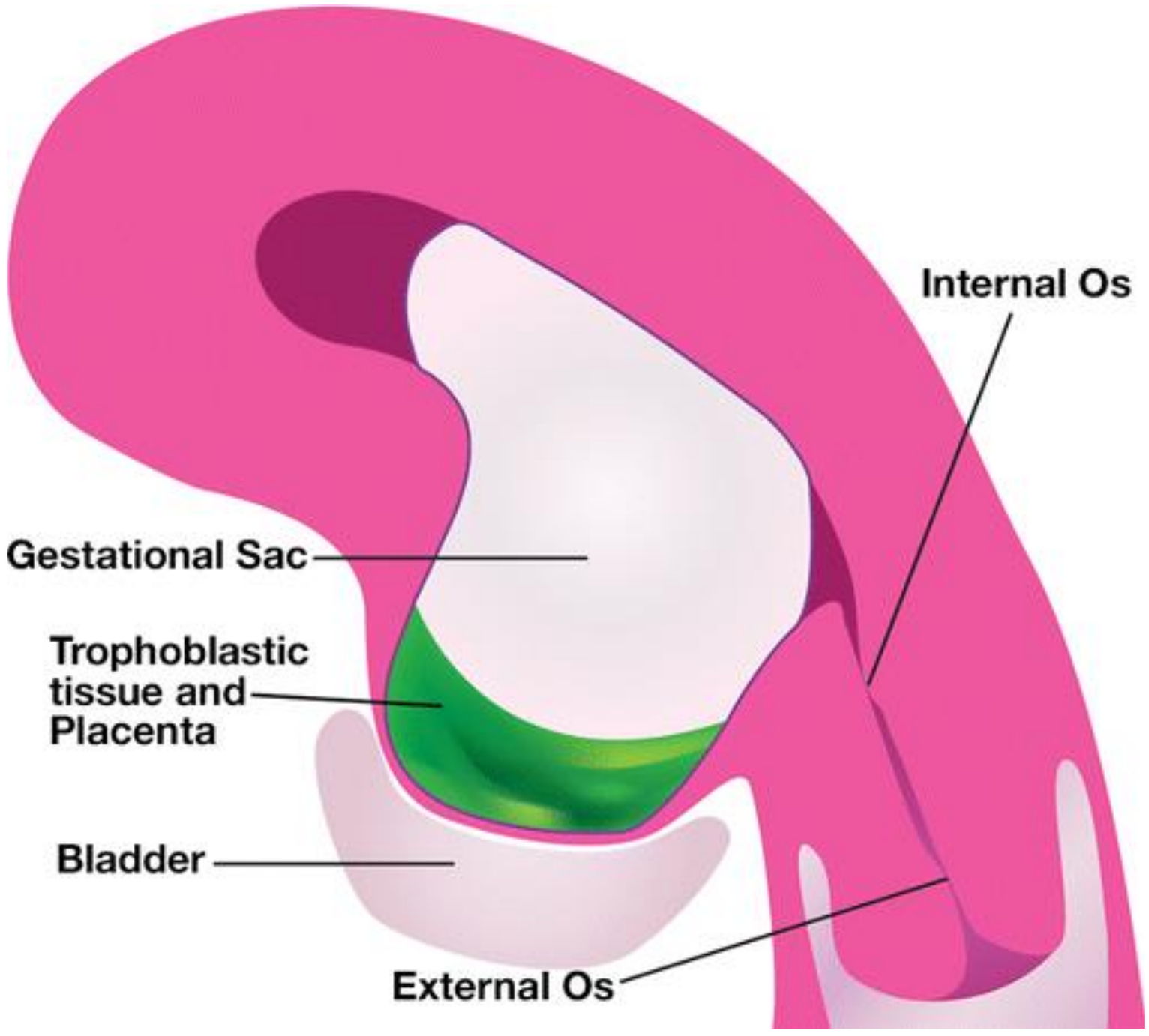
Natural History

- Some will be non-viable pregnancies and CSP may go undiagnosed
    - Miscarriage
    - Termination
        - Surgical intervention +/- major haemorrhage OR perforation.
    - Gradual resolution of a highly vascular mass of trophoblast (‘AVM’) over months +/- PV bleeding

- Viable pregnancies - two proposed types

    1. Sac grows and develops into uterine cavity – may reach viable gestation but risk of massive haemorrhage from implantation site
        - Possible precursor to placenta praevia +/- abnormally invasive placenta.

    2. Sac grows deeper toward serosal surface of uterus with risk of first trimester UTERINE RUPTURE and haemorrhage.



1) Uncommon Implantation Sites of Ectopic Pregnancy: Thinking beyond the Complex Adnexal Mass. Chukus et al. RadioGraphics 2015; 35:946–959.

Diagnosis of CSP

CHALLENGES

- **Early diagnosis** of cesarean scar pregnancy is essential because of the risk for uterine rupture and uncontrollable haemorrhage.

    - In later gestation, CSP may be missed if the gestational sac grows towards the uterine cavity.

- A **high index of suspicion** for cesarean scar pregnancy is critical because up to 40% of patients will not present with specific clinical symptoms[1].

- **13%** of CSP **misdiagnosed** as intrauterine or cervical pregnancies at presentation[2].

Diagnosis and Management of Ectopic Pregnancy

Green-top Guideline No. 21

RCOG/AEPU Joint Guideline | November 2016

How is a caesarean scar pregnancy diagnosed?[2]

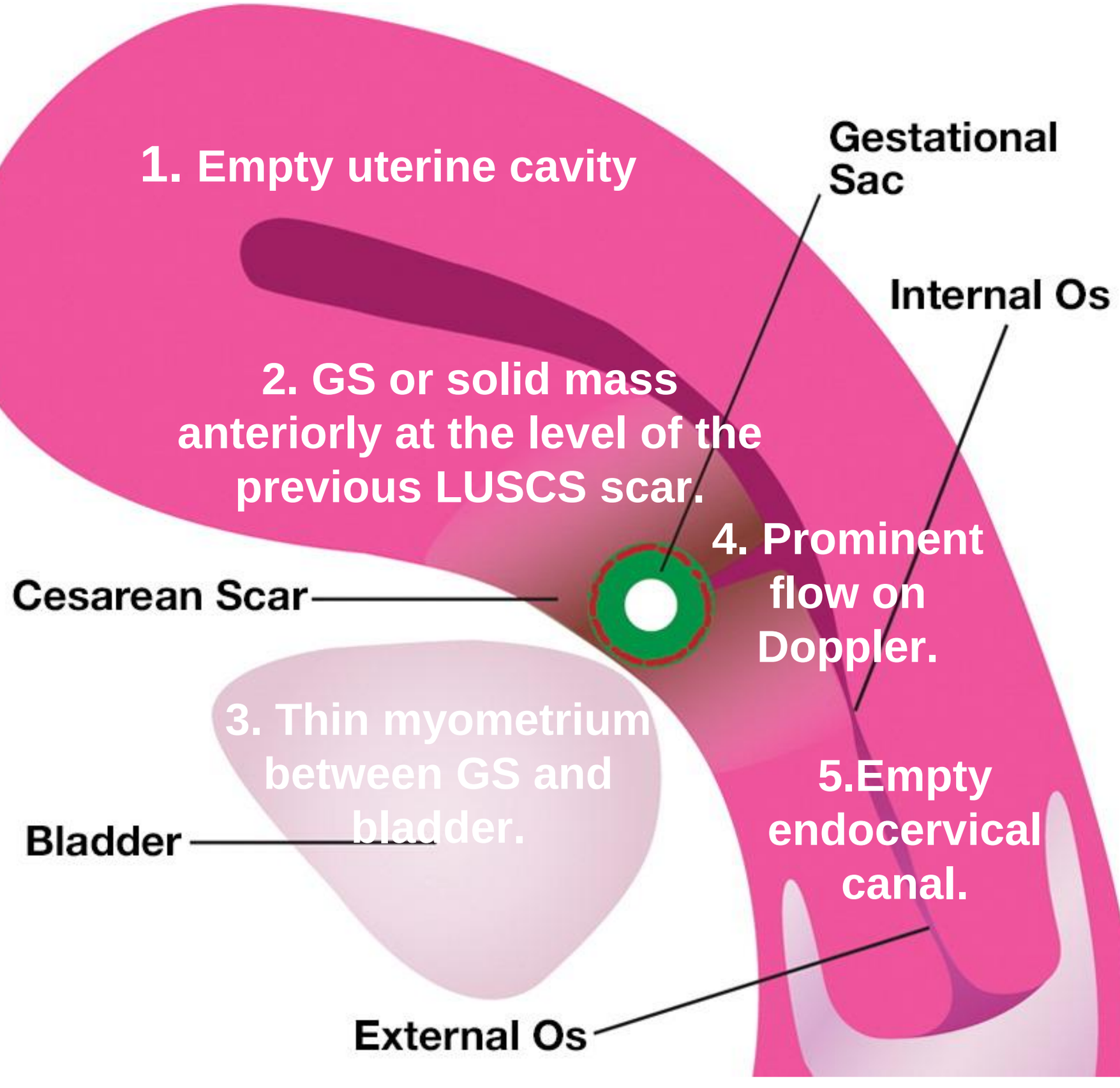
- **What is the imaging modality of choice?[2]**
  - **ULTRASOUND** is the primary diagnostic modality, using a transvaginal approach supplemented by transabdominal imaging if required.
    - MRI can be used as a second-line investigation if the diagnosis is equivocal and there is local expertise in the MRI diagnosis of caesarean scar pregnancies.

- **What biochemical investigations should be carried out?[2]**
  - No biochemical investigations are needed routinely.

DIAGNOSTIC CRITERIA FOR CSP ON TVUS:

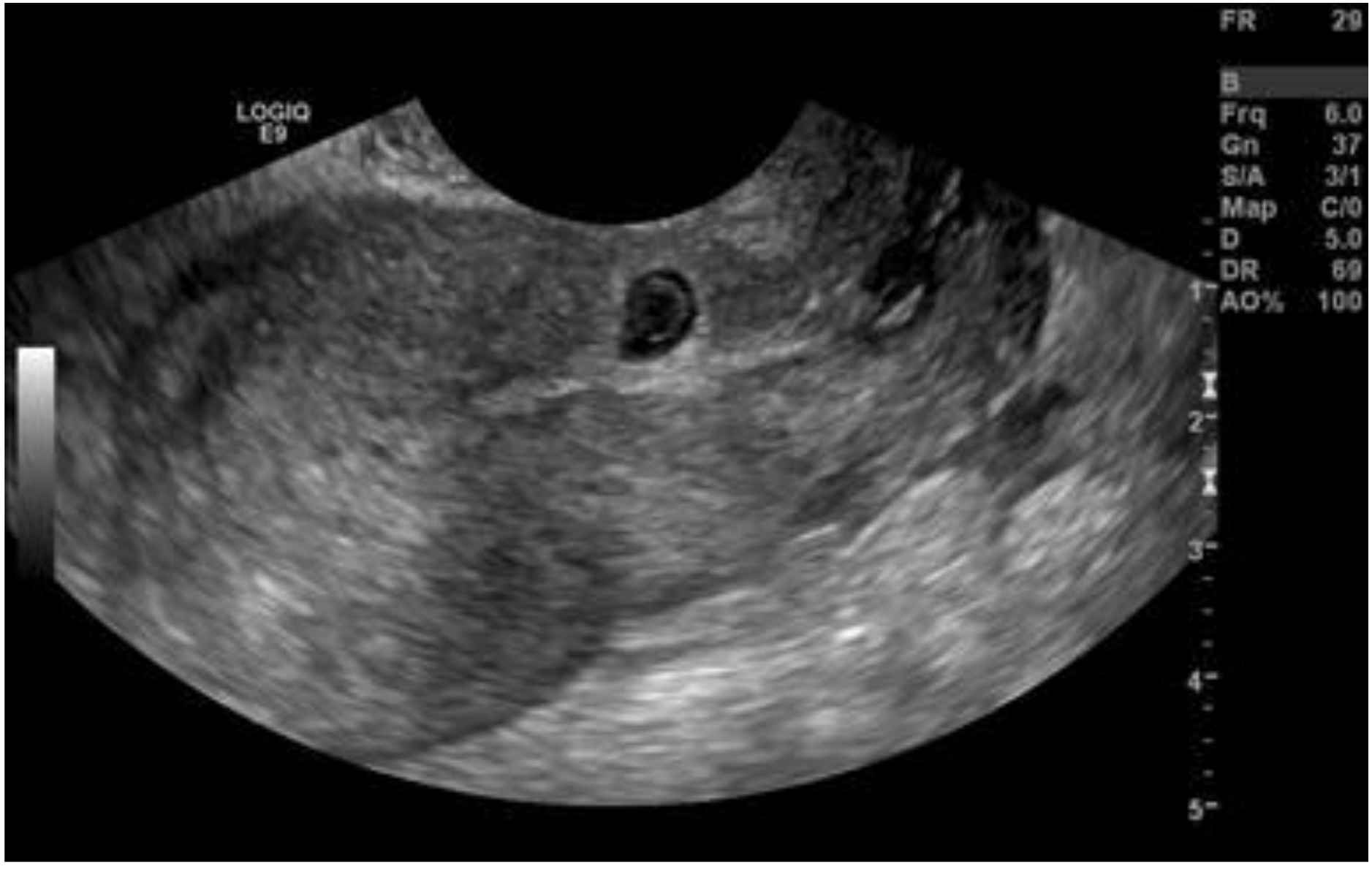
1. Empty uterine cavity.
2. Gestational sac or solid mass of trophoblast located anteriorly at the level of the internal os/site of the previous LUSCS scar.
3. Thin or absent layer of myometrium between the gestational sac and the bladder.
4. Evidence of prominent trophoblastic/placental circulation on Doppler examination.
5. Empty endocervical canal.

- It is critical to obtain sagittal US images of the uterus to assess the exact location of the gestational sac with respect to the cesarean scar and the proximity of the sac to the bladder[1].



Uncommon Implantation Sites of Ectopic Pregnancy: Thinking beyond the Complex Adnexal Mass. Chukus et al. RadioGraphics 2015; 35:946–959

Pregnancy partially or completely surrounded by myometrium and fibrous tissue of the CS scar.



Tadesse, W. G. , 2019, 'Caesarean Scar Ectopic Pregnancy', in J. E. Jr. (ed.), Non-tubal Ectopic Pregnancy, Intech Open, London. 10.5772/intechopen.89023.

The gestational sac is often triangular in shape, pointing toward the anterior serosal surface of the uterus

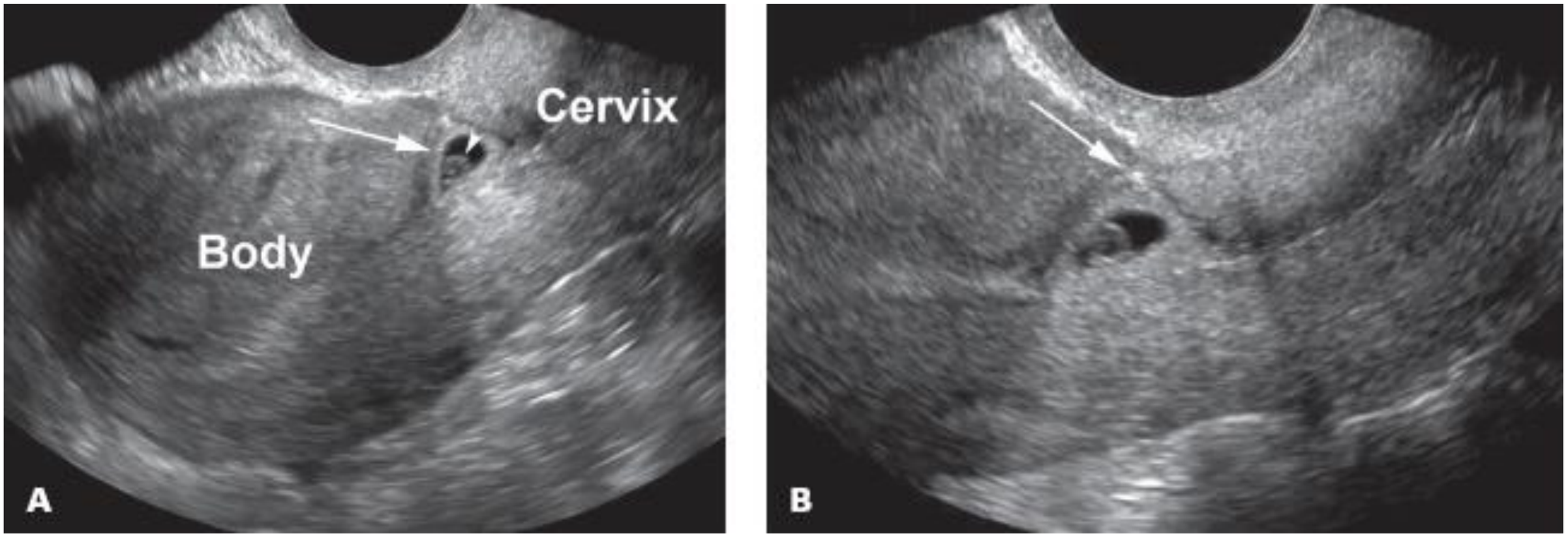
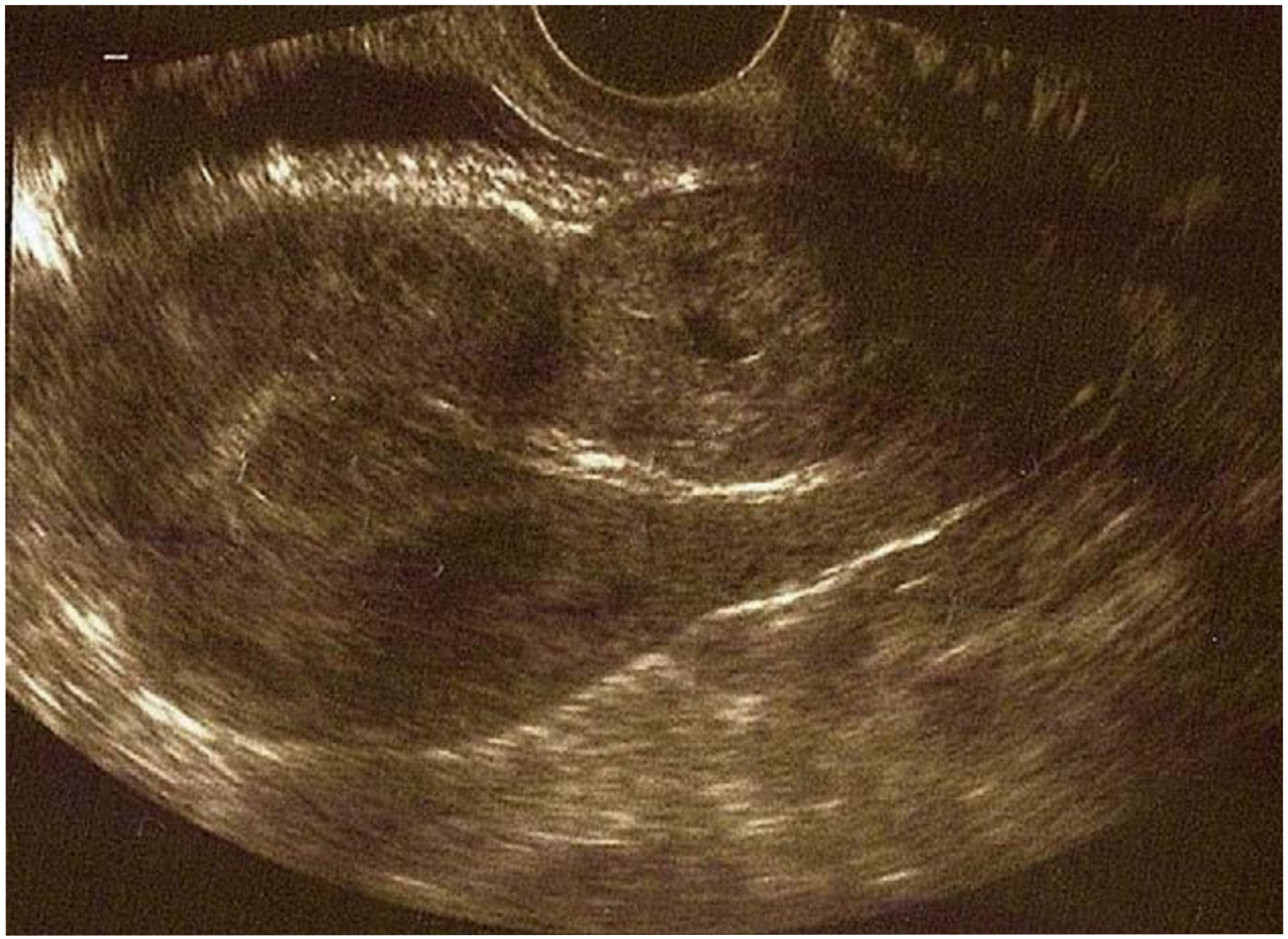
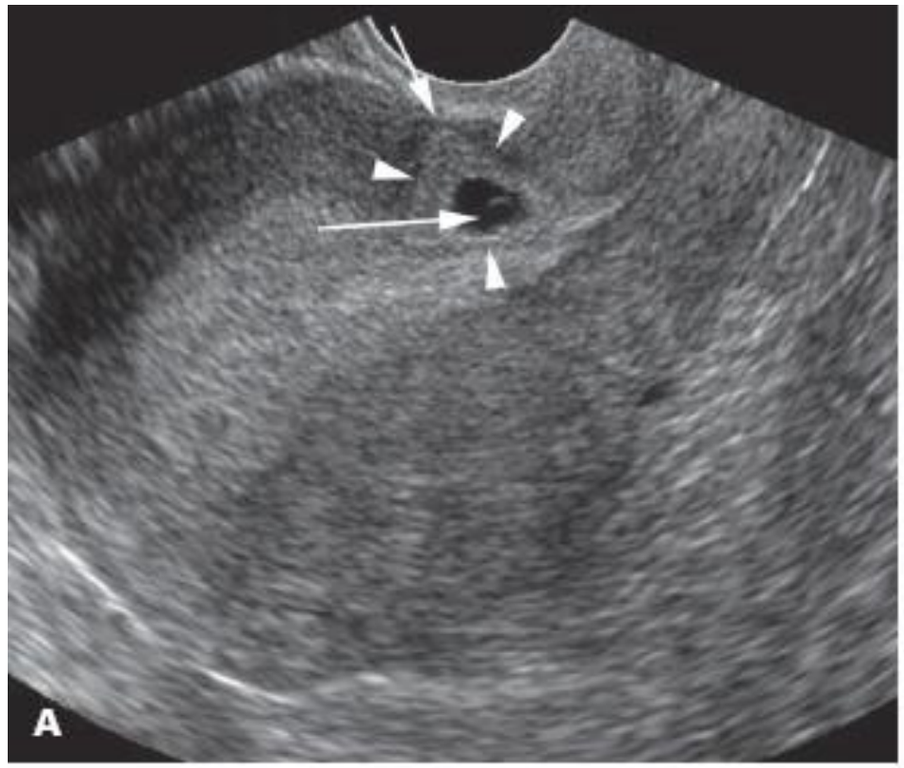


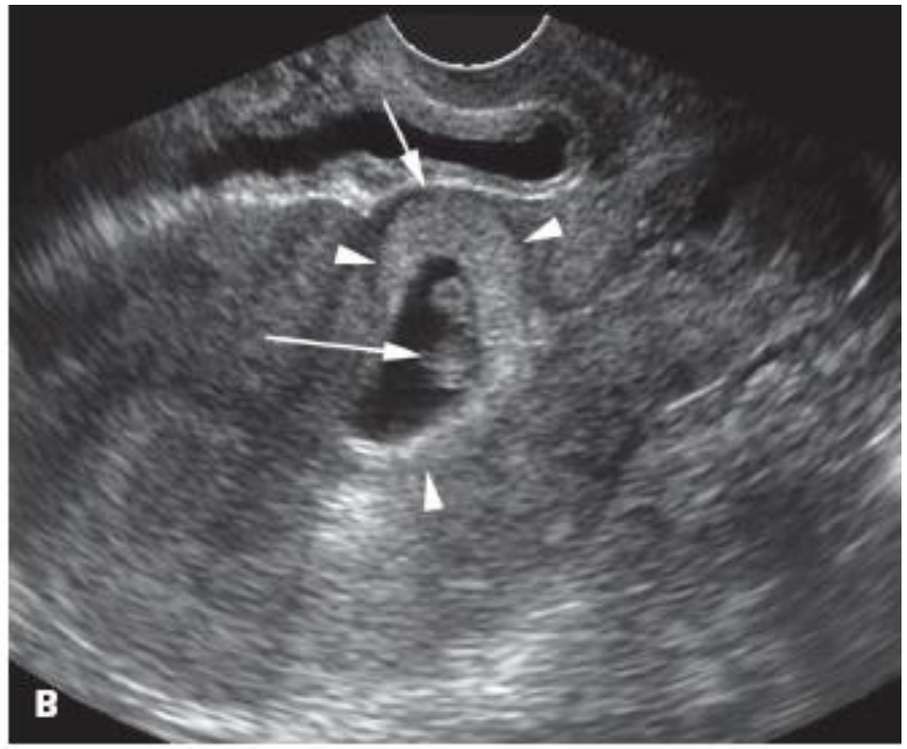
Fig 32.4.1 Atlas of Ultrasound in Obstetrics and Gynecology: A Multimedia Reference



M. Chetty, J. Elson / Best Practice & Research Clinical Obstetrics and Gynaecology 23 (2009) 529–538

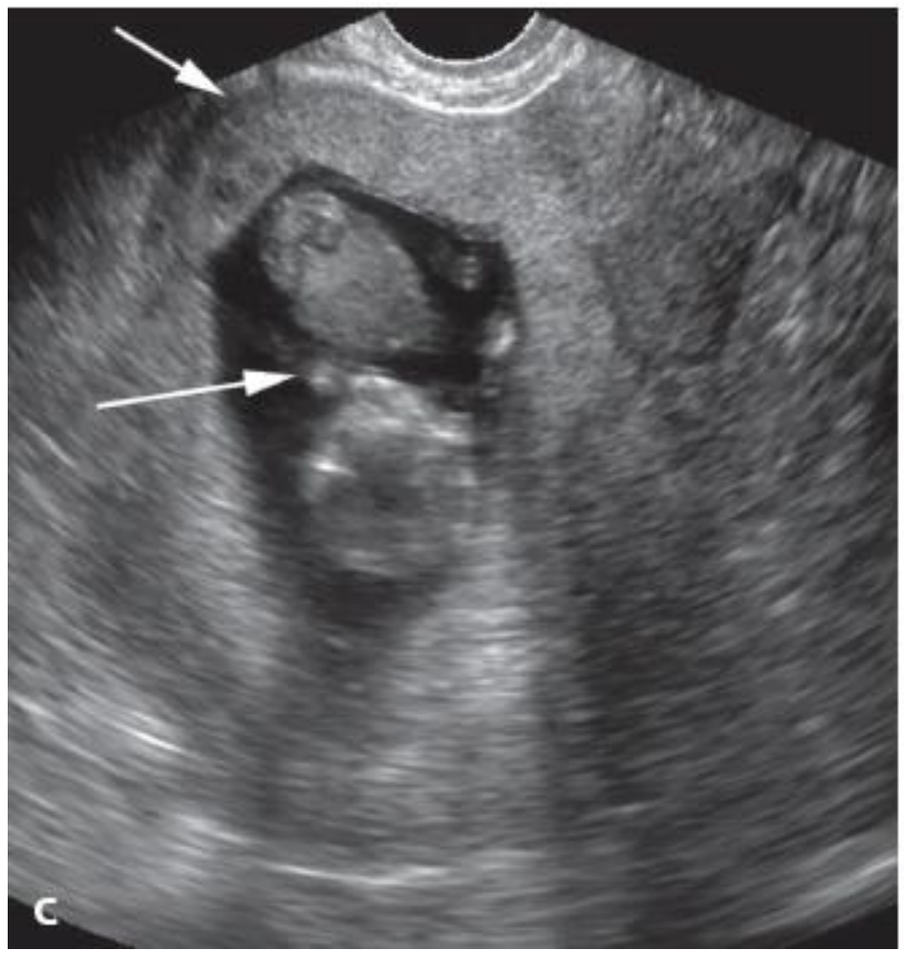
5.5 weeks





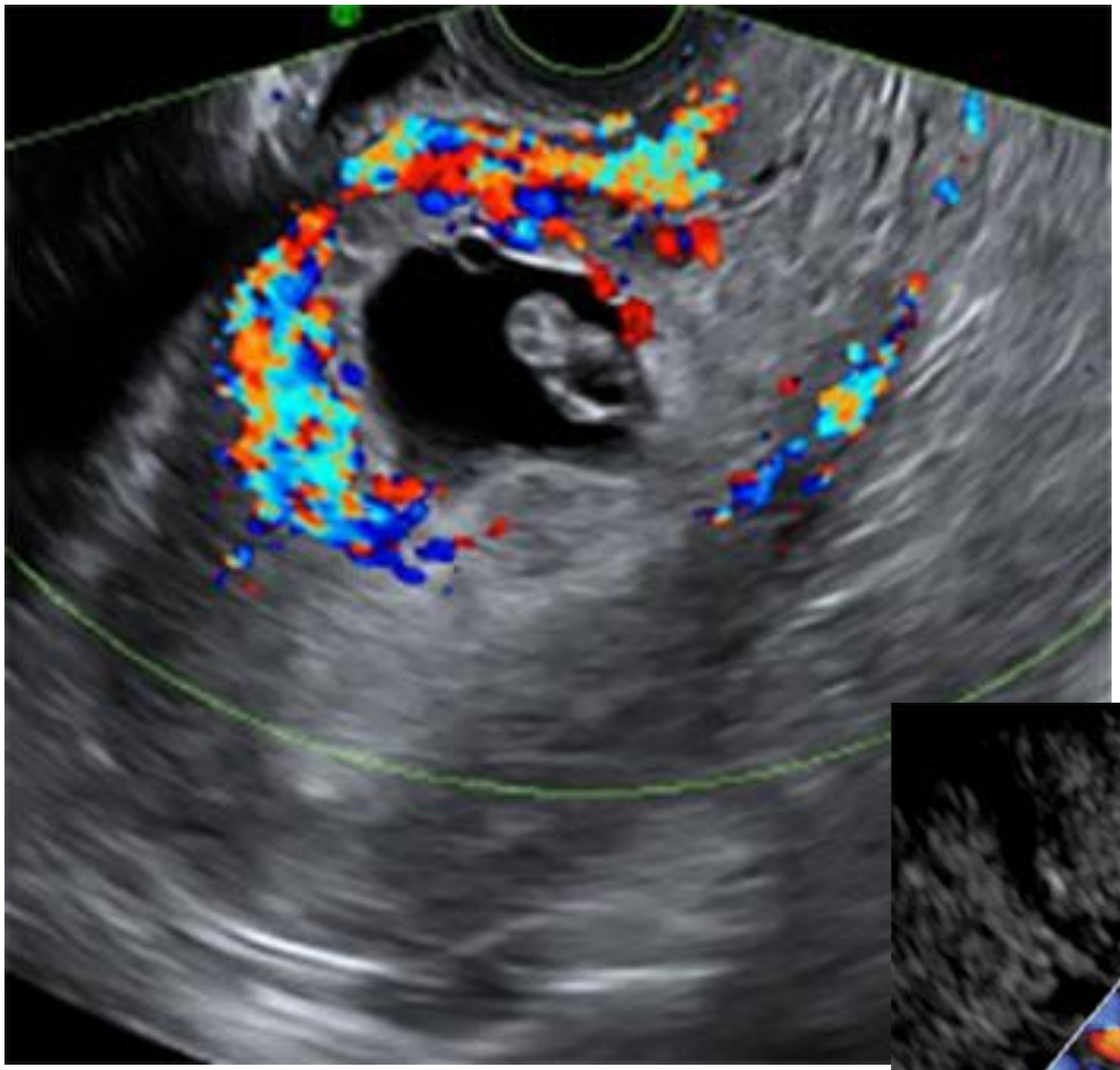
7.5 weeks

12 weeks

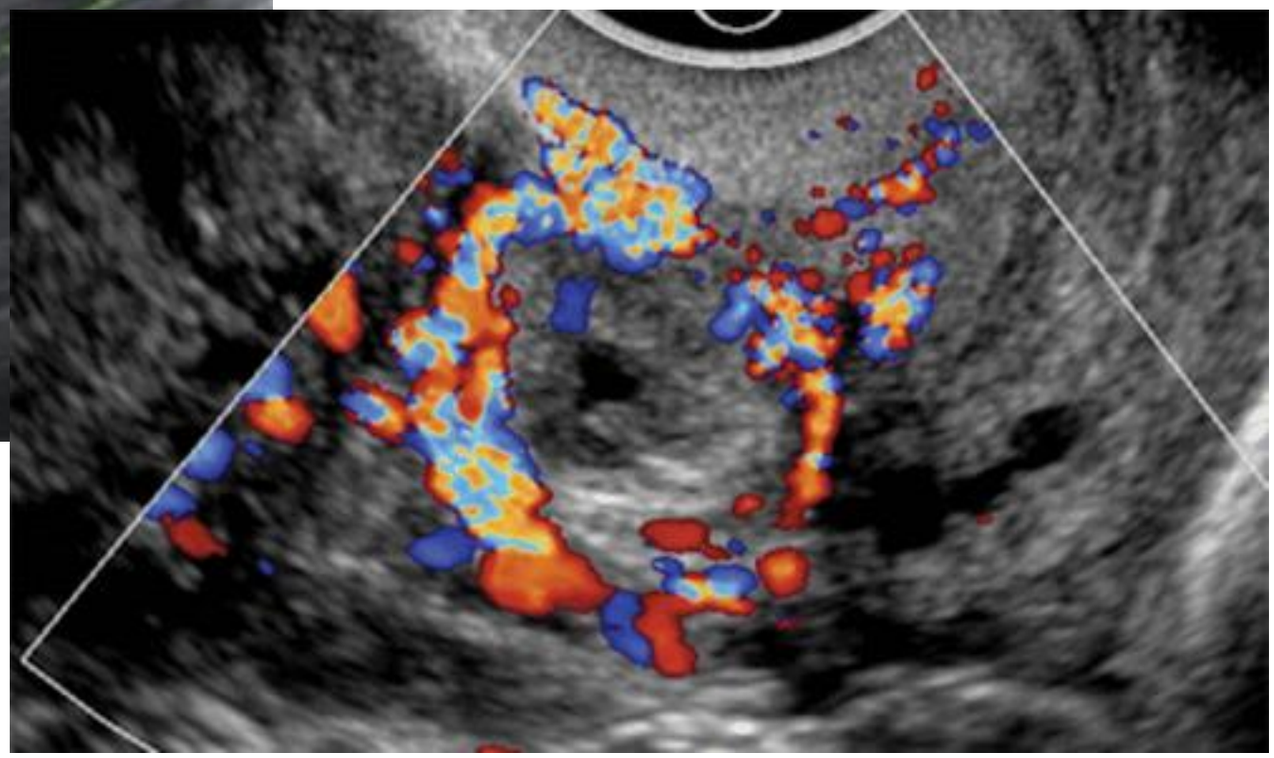


PROGRESSION OF CSP IMPLANTATION

Fig 32.4.3 Atlas of Ultrasound in Obstetrics and Gynecology: A Multimedia Reference

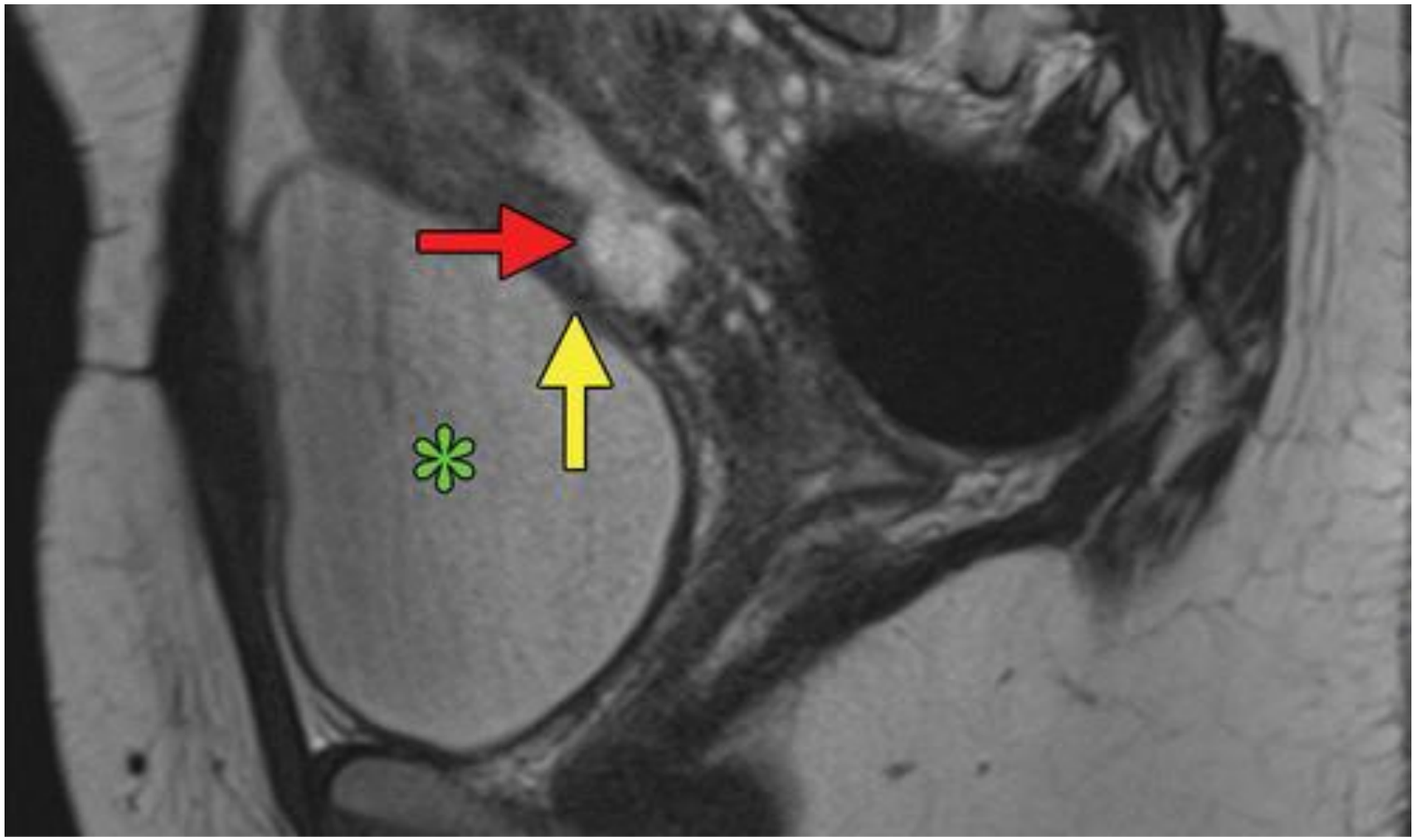


https://elearning.rcog.org.uk/pregnancy-unknown-location/management-non-tubal-ectopic-pregnancies/caesarean-0



Uncommon Implantation Sites of Ectopic Pregnancy: Thinking beyond the Complex Adnexal Mass. Chukus et al. RadioGraphics 2015; 35:946–959.

MRI features are essentially the same as those described on US



1) Uncommon Implantation Sites of Ectopic Pregnancy: Thinking beyond the Complex Adnexal Mass. Chukus et al. RadioGraphics 2015; 35:946–959.

- DIFFERENTIAL DIAGNOSIS
  - Miscarriage
    - Sac often irregular with absent/minimal colour doppler.
    - Positive sliding sign.
  - Cervical ectopic
    - Empty uterus.
    - GS below level of internal os
    - Barrel-shaped cervix
    - Absence of sliding sign
    - Doppler to identify implantation within cervix
    - (Sac generally 1-2cm from TV transducer)

- Seek a second opinion, especially when experience of such cases limited.
    - Could be an IUP implanted low in the cavity but NOT in the scar.
- To minimise the risk of false-positive diagnosis, RCOG recommend referral of all non-emergency cases to a regional centre to confirm the diagnosis.

Management of CSP

Diagnosis and Management of Ectopic Pregnancy

Green-top Guideline No. 21

RCOG/AEPU Joint Guideline | November 2016

What are the surgical, pharmacological or conservative treatment options for caesarean scar pregnancy?[2]

- Women diagnosed with CSP should be counselled that such pregnancies are associated with severe maternal morbidity and mortality.

- Medical and surgical interventions with or without additional haemostatic measures should be considered in women with first trimester caesarean scar pregnancy.

- There is insufficient evidence to recommend any one specific intervention over another for caesarean scar pregnancy, but the **current literature supports a surgical rather than medical approach as the most effective**.

- EXPECTANT
  - Small, non viable CSP.
  - If ongoing pregnancy growing into uterus, partial scar implantation and TOP declined.
- MEDICAL
  - Local or systemic methotrexate.
  - Continued risk of major haemorrhage as retained placental tissue degenerates.

- SURGICAL
    - Evacuation of the pregnancy using suction or hysteroscopic resection.
        - Additional haemostatic measures- cervical cerclage, foley catheter or uterine artery embolisation.
- Excision of pregnancy- open, laparoscopic or transvaginal.
    - Can also repair scar but more difficult and invasive.

- Ongoing 2nd trimester CSP particularly challenging
  - High risk of maternal morbidity and hysterectomy with all management options.
  - Balance of risk of surgical intervention vs risks of allowing pregnancy to continue to potentially viable gestation.
  - Care package as per morbidly adherent placenta.

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General gynaecology | Full Access

Caesarean scar pregnancy in the UK: a national cohort study

HM Harb ✉, M Knight, C Bottomley, C Overton, A Tobias, ID Gallos, M Shehmar, R Farquharson, A Horne, P Latthe, E Edi-Osagie, M MacLean, E Marston, J Zamora, F Dawood, R Small, J Ross, T Bourne, A Coomarasamy, D Jurkovic ... See fewer authors

First published: 26 April 2018 | https://doi.org/10.1111/1471-0528.15255 | Cited by: 3

- A national cohort study using the UK Early Pregnancy Surveillance Service (UKEPSS) to estimate the incidence of caesarean scar pregnancy (CSP) and to describe the management outcomes associated with this condition.

- All women diagnosed with CS pregnancy in the 86 participating Early Pregnancy Units between November 2013 and January 2015.

- 102 cases of CS pregnancy reported, full data for 92 women.

- Mean gestation at presentation = 9 weeks (range 6-18)

- Most common presentation was PV bleeding and/or abdominal pain although 20% were asymptomatic.

CAESAREAN SCAR PREGNANCY MANAGEMENT[3]	Number cases	Success rate	Complications rate	Discharge from care (median nº days)
Expectant	21/92 (23%)	43%	71%	82 (37-174)
Medical	15/92 (16%)	46%	60%	21 (10-31)
Surgical	56/92 (61%)	**96%**	**36%**	11 (4-49)

- **5 Livebirths in expectant management group –**
  - All were delivered by CS – 3 elective & 2 emergency
  - 3/5 women had AIP, all of whom required hysterectomy.

- **4 women in the study required a hysterectomy, all were in the expectant management group** & had ongoing pregnancies at diagnosis (4/9 = 44%) – three for AIP and one for uterine rupture.

WHAT DOES THIS STUDY ADD TO EXISTING GUIDANCE?

- Supports the RCOG statement that current literature supports a surgical rather than medical approach as the most effective intervention.

- Ultrasound guided surgical evacuation is a successful treatment with a lower complication rate and quicker resolution of pregnancy, vs expectant or medical management.

- Expectant management (especially with ongoing pregnancy) carries highest risk of significant morbidity.

FUTURE OUTCOMES

- Most women have a normal pregnancy following a CSP.[4]
- The risk of recurrence has been reported as 3.2–5.0% in women with one previous CSP treated by dilatation and curettage with or without uterine artery embolization.[4]

SUMMARY

- CSP is rare form of ectopic pregnancy but incidence is increasing.
- Associated with significant morbidity and mortality.
- Early diagnosis is key- to allow timely intervention and reduce risks of complications.
- If in doubt seek a second opinion.
- Involve senior medical staff experienced in early pregnancy early.
- Data suggests surgical management is more successful with lower complication rates.

Any questions?

Thank you

References

1. Uncommon Implantation Sites of Ectopic Pregnancy: Thinking beyond the Complex Adnexal Mass. Chukus et al. RadioGraphics 2015; 35:946–959.
2. Diagnosis and Management of Ectopic Pregnancy Green-top Guideline No. 21, RCOG/AEPU Joint Guideline, November 2016
3. Caesarean Scar pregnancy in the UK: a national cohort study, Harb et al. Volume125, Issue13, December 2018, Pages 1663-1670.
4. Jayaram PM, Okunoye GO, Konje J. Caesarean scar ectopic pregnancy: diagnostic challenges and management options. The Obstetrician & Gynaecologist 2017;19:13–20.