

Chapter 43

Ultrasound: Abnormal Placenta

Madhumani Rupasinghe

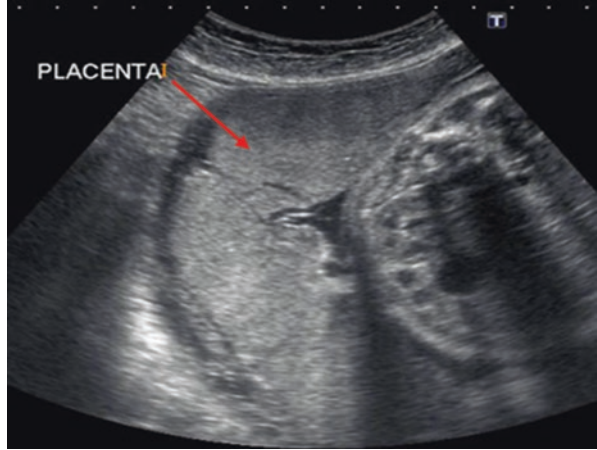
Fig. 43.1 Abnormal placental implantation (Reproduced with permissions from Elsevier [1])



1. What is concerning regarding the ultrasound image in Figs. 43.1 and 43.2?
2. What risk factors are implicated in this presentation?
3. What is the classification/grading and common sonographic findings?
4. What is the frequency of this presentation?
5. How does coagulation change during pregnancy?
6. What is your choice of anesthesia?

M. Rupasinghe, MBBS, FRCA
Department of Anesthesiology, University of Texas Health Science Center at Houston,
6431 Fannin Street, MSB 5.020, Houston, TX 77030, USA
e-mail: Madhumani.Rupasinghe@uth.tmc.edu

Fig. 43.2 Normal pregnancy ultrasound image



Answers

1. The ultrasound image depicts abnormal placental attachment to the uterine wall, which is characterized by invasion of trophoblast into the uterine myometrium.
2. The incidence of placenta accreta has been increasing and seems to parallel the increasing cesarean section rate. A low-lying placenta (placenta previa) and any condition or surgeries resulting in myometrial tissue damage, along with advanced maternal age and multiparity have been implicated as risk factors.
3. Diagnosis of placenta accreta is usually established by transabdominal and transvaginal ultrasonography and may be supplemented by magnetic resonance imaging (MRI). Abnormal placental attachment is defined according to the depth of myometrial invasion as:

- (a) Accreta: Chorionic villi attach to the myometrium
- (b) Increta: Chorionic villi invade into the myometrium
- (c) Percreta: Chorionic villi invade through the myometrium

The common sonographic findings being:

- (a) Loss of normal hypoechoic retro placental zone
- (b) Multiple vascular lacunae within placenta, giving “Swiss cheese” appearance
- (c) Blood vessels or placental tissue bridging uterine-placental margin
- (d) Retro placental myometrial thickness of <1 mm

4. Frequency of placenta accreta according to number of cesarean deliveries and presence or absence of placenta previa [2]:

Cesarean delivery	Placenta previa	No placenta previa
First (primary)	3.3	0.03
Second	11	0.2
Third	40	0.1
Fourth	61	0.8
Fifth	67	0.8
≥Sixth	67	4.7

5. Pregnancy is a relatively hypercoagulable state characterized by an increased activity of clotting factors (I, VII, VIII, IX, X, XII), increased levels of fibrinogen, and decreased activity of physiologic anticoagulants (significant reduction in protein S activity and acquired activated protein C resistance).

Procoagulant changes are balanced by significant activation of fibrinolytic system and deactivation of natural antifibrinolytics via decrease in activity of factors XI and XIII.

Platelet count can be low or normal. There is a dramatic short-term increase in coagulability immediately after delivery due to increase in factor V and VIII activity.

6. There is no single optimal anesthetic plan for all patients; both general anesthesia and neuraxial techniques have been used successfully. Involvement of a multidisciplinary team which consists of MFM, anesthesiology, urology, general surgery, and interventional radiology improves outcome. One of the primary anesthetic considerations is the potential for significant blood loss necessitating preparation for volume resuscitation which may require multiple large bore venous access and invasive arterial monitoring. Appropriate preparations may include arterial occlusion techniques, arterial embolization, skilled surgical personnel, cell salvage, as well as availability of blood products. In addition, use of point of care monitoring (TEG) and adjuncts to transfusion such as recombinant Factor VIIa and antifibrinolytics should be considered in cases of massive hemorrhage [3].

References

1. Jauniaux E, Jurkovic D. Placenta accreta: pathogenesis of a 20th century iatrogenic uterine disease. *Placenta*. 2012;33(4):244–51. doi:[10.1016/j.placenta.2011.11.010](https://doi.org/10.1016/j.placenta.2011.11.010).
2. Belfort MA, et al. Placenta accreta. *Am J Obstet Gynecol*. 2010;203(5):430–9. doi:[10.1016/j.ajog.2010.09.013](https://doi.org/10.1016/j.ajog.2010.09.013).
3. Snegovskikh D, Clebone A, Norwitz E. Anesthetic management of patients with placenta accreta and resuscitation strategies for associated massive hemorrhage. *Curr Opin Anesthesiol*. 2011;24(3):274–81. doi:[10.1097/ACO.0b013e328345d8b7](https://doi.org/10.1097/ACO.0b013e328345d8b7).