Best Practice & Research Clinical Obstetrics and Gynaecology 28 (2014) 429–442

Contents lists available at ScienceDirect

Best Practice & Research Clinical Obstetrics and Gynaecology

journal homepage: www.elsevier.com/locate/bpobgyn

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Ultrasound in placental disorders

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Keywords:
placenta previa
ultrasound
placenta accreta
invasive placentation
chorioangioma
vasa previa

The definition of placenta previa based on ultrasound findings is more practical, and the traditional definition (implantation of the placenta in the lower uterine segment) needs to be revised. The term 'placenta previa' should only be used when the placental edge overlaps or is within 2 cm of the internal cervical orifice in late pregnancy. If the placental edge is located further than 2 cm but within 3.5 cm from the internal cervical orifice, the placenta should be termed 'low-lying'. Unless the placental edge at least reaches the internal orifice at mid-trimester, symptomatic placenta previa in the third trimester will not be encountered. Caesarean section is the recommended mode of delivery for placenta previa at term. Attempt at vaginal delivery is appropriate for low-lying placenta, but the possibility of post-partum haemorrhage should be kept in mind. The incidence of invasive placentation, such as placenta accrete, has progressively risen in the past 3 decades, possibly as a consequence of increasing caesarean section rates. Ultrasound has a sensitivity of 91% and a specificity of 97% for the identification of all forms of invasive placentation. Chorioangiomas are benign non-trophoblastic placental tumours with excessive vascular proliferation within the stroma of chronic villi. They are usually asymptomatic, although occasionally can be associated with adverse fetal outcomes. Chorioangiomas usually appear as well-circumscribed, rounded, hypo-echoic lesions next to the chorionic surface. Iatrogenic delivery or prenatal intervention are two options, if fetal compromise is present. Prenatal detection leads to a dramatic increase in survival compared with those cases unsuspected antenatally.

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1521-6934/$ – see front matter © 2014 Published by Elsevier Ltd.
http://dx.doi.org/10.1016/j.bpobgyn.2014.01.001

Introduction

Placenta previa remains a serious complication of pregnancy, and clinicians are increasingly facing invasive placentation. Prenatal diagnosis has been shown to decrease the rate of maternal and fetal morbidities that are usually higher if these conditions remain undiagnosed until delivery. Ultrasound is usually used as the primary tool in evaluating women at a risk for placental disorders. Prenatal magnetic resonance imaging (MRI) can be complementary to ultrasound, and may add information that helps clinicians in guiding the management. Increased awareness and improvements in ultrasound techniques have led to an increase in the prenatal diagnosis of placental chorioangiomas. Although usually asymptomatic, they can be associated with adverse fetal outcomes, and concerns have been raised about their association with poor neurodevelopmental outcome. Vasa previa is a rare, but potentially disastrous, condition, and can lead to severe fetal distress and death. Prenatal diagnosis of this condition has been shown to dramatically improve the outcome.

Therefore, knowledge of how to diagnose these conditions is mandatory for the obstetrician, especially if working in high-risk units. In this chapter, we provide an up-to-date review of prenatal diagnosis of placental disorders with ultrasound.

Placenta previa

Definition

Traditionally, implantation of the placenta, fully or partially, in the lower uterine segment is defined as placenta previa. This definition is not useful in practice, because the lower uterine segment is difficult to identify without opening the abdomen and inspecting the uterus, or with the use of ultrasound scan. Ultrasound is now the gold standard for identifying placenta previa. Therefore, a definition based on ultrasound findings is more practical, and a revision of the traditional definition is timely. Placenta previa is responsible for potentially life-threatening conditions for the mother, including severe ante- and postpartum bleeding, higher risk of invasive placentation, need for hysterectomy, blood transfusions, septicaemia, and thrombophlebitis. Furthermore, adverse fetal and neonatal outcome, such as perinatal death and preterm delivery, is increased in pregnancies complicated by placenta previa [1–3].

Incidence and prevalence

The prevalence of placenta previa is about 5.2 per 1000 pregnancies [4]. The occurrence of placenta previa has increased in recent decades. A systematic review published in 2003 exploring the occurrence of this condition between 1966 and 2000 found an overall prevalence of placenta previa of 4.0 per 1000 pregnancies. This figure was different from that reported from a recent meta-analysis examining the occurrence of placenta previa in the past 30 years; in this study a prevalence of 5.2 per 1000 pregnancies was reported. The prevalence of placenta previa was reported to be highest among Asian studies (12.2 per 1000), and lower among studies from Europe (3.6 per 1000), North America (2.9 per 1000), and Sub-Saharan Africa (2.7 per 1000). In the review by Cresswell [4], the pooled prevalence of major placenta praevia was 4.3 per 1000 pregnancies. The increasing rate of caesarean deliveries in the past 3 decades may have contributed to this increase in the prevalence of placenta previa.

Risk factors

Previous caesarean delivery or uterine surgery represents a major risk factor for placenta previa [5]. The occurrence of placenta previa seems to be correlated also with the number of caesarean sections. In a recent systematic review, Marshall et al. [5] found that the incidence of placenta previa increased from 10 per 1000 deliveries with one previous caesarean section to 28 per 1000 with more than three caesarean deliveries. In addition, advanced maternal age, multiparity, smoking, cocaine abuse, history of induced abortions, and multiple pregnancy are other risk factors associated with the occurrence of placenta previa [5,6].