Perinatal diagnosis of placenta accreta spectrum disorders in the 21st Century: visual inspection at birth is not enough

Placenta accreta is a relatively new medical condition, first reported in the modern medical literature in 1927 by DS Foster (Can Med Assoc J. 1927;17:204-7) who described a case of placenta increta in a patient with prior placental surgical deliveries. In 1937, Irving and Hertig (Surgery, Gynecol Obstet 1937;64:178-200) described the characteristic histology i.e. the absence of decidua with the villi directly adherent to the underlying myometrium, in a series of 18 women presenting with difficult manual and/or piecemeal removal of the placenta. None of their cases presented with evidence of myometrial villous invasion. Lukes et al (AJOG.1966;95:660–8) introduced the concept of placenta accreta spectrum (PAS) to accommodate the grades of invasion and the variable extent of adherence/invasion which often co-exist in the same specimen. Reporting these parameters is essential when confirming a prenatal ultrasound diagnosis and evaluating surgical outcome since clinical signs such as bleeding from the placental bed at cesarean delivery and retained placental fragment requiring curettage after vaginal birth may also be seen with non-accreta placental retention or adherence without invasive villi (low grade PAS). However, most of the literature on PAS omits detailed and professional pathologic correlation.

The epidemiology of PAS has considerably changed since the beginning of the 21st century with more than 90% of cases now occurring in women with a history of caesarean deliveries (CDs) presenting with an anterior low-lying/placenta praevia (Jauniaux et al., BJOG.2019;126:e1-e48). The main factors that determine the outcomes of PAS in these cases are early prenatal diagnosis and the grade of villous invasion. Since the first ultrasound description of a placenta increta by Tabsh et al in

1982 (J Clin Ultrasound. 1982;10:288-90) and up to 2016, over 1116 cases of PAS diagnosed prenatally by ultrasound imaging were reported in the international literature (Jauniaux et al.,AJOG.2016;215:712-21) but only 72, mainly single case reports, included detailed histopathological grading. Not surprisingly, modern epidemiology data are highly heterogeneous with an overall PAS prevalence ranging between 1 in 100 and 1 in 10,000 births (Jauniaux et al., ACOG.2019;221:208-218) and grades distribution of 35-82%, 4-44% and 7-44% for placenta creta (adherenta), increta and percreta, respectively (Jauniaux et al., ACOG.2019;221:208-218).

To improve the recording of the different grades of PAS, Collins et al (Obstet Gynecol. 2015;126:645-53) proposed a classification system based on clinical symptoms and visual examination of the lower segment at CD which was later integrated in the FIGO classification (Jauniaux et al.,Int J Gynaecol Obstet. 2019;146:20-24). This classification relies on the expertise of the obstetrician to differentiate between placenta creta and placental retention and placenta percreta and scar dehiscence. Accurate grading of PAS at birth (Figure) is pivotal to evaluate the accuracy of prenatal diagnosis and the outcome of different management strategies. This requires collaboration between clinicians and pathologists similar to that existing for other gynaecology or perinatal disorders. Histopathology samples should be obtained whenever possible and reported using new guidelines for the pathology diagnosis of PAS (Hecht et al., Modern Pathol 2020 doi: 10.1038/s41379-020-0569-1).

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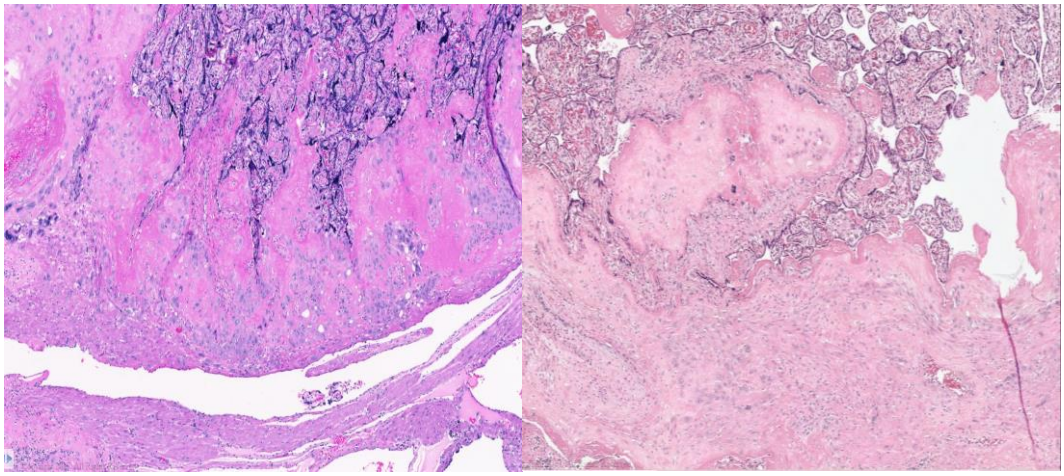
Disclosure of interests

The authors declare no conflicts of interest.

Figure. A: A case of placenta Creta (adherens) showing placental villi (PV) apposed to the myometrium (M) with no interposing decidua. The normal contour of the uterine-placental interface is preserved (arrows) and lined by a thin layer of fibrin; B. A case of placenta increta showing destructive invasion of the myometrium (M) by placental villi (PV). There is no clear boundary between the placenta and myometrium (arrows). An adjacent myometrial vein (V) is distorted by the placenta. Slides were stained with haemotoxylin and eosin; a 500 micron scale bars is included.



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