

1 **Moving from intra-partum to prenatal diagnosis of placenta** 2 **accreta: A quarter of a century in the making but still a long road** 3 **to go.** 4

5 In 1961, K Greig, MRCOG, then a senior registrar at the Royal Maternity reported
6 a case of placenta accreta (PA) treated by post-partum hysterectomy (Figure).
7 The patient was a grand multipara with prior history including a uterine curettage,
8 manual delivery of the placenta and caesarean delivery (CD) (J Obstet Gynaecol
9 Br Commonw. 1961;68:968-73). This was not the first case-report of accreta, but
10 before imaging techniques i.e. ultrasound and magnetic resonance imaging
11 (MRI) became available, PA was almost exclusively an intra-partum finding with
12 often dramatic consequences.

13 Irving and Hertig in 1937 published the first detailed series of PA (Surg
14 Gynec Obstet. 1937;64:178-200). Of their 20 cases, only one occurred after a
15 previous CD. Similarly in their review of 86 cases reported literature up to 1935,
16 only one was found after a CD. Predisposing factors at the time were a previous
17 manual delivery and “vigorous” uterine curettage. Their cases were all described
18 as PA vera or adherenta where the villi are attached to the myometrium without
19 invading it. More invasive forms of PA, i.e. placenta increta where villi invade the
20 myometrium and placenta percreta where villi invade through the entire uterine
21 wall and sometime the surrounding pelvic organ where rarely reported until the
22 1970s.

23 The exponential increase in the numbers of PA in the last 30 years is
24 directly linked to the rapid the increase in the numbers of CD during the same
25 period and the majority of PAs are associated with prior CD (Jauniaux and
26 Jurkovic. Placenta. 2012;33:244-51). Placenta increta and percreta are
27 associated with considerable maternal morbidity and even mortality, especially
28 when not diagnosed before delivery. The first antenatal ultrasound descriptions
29 of PA were reported around 25 years ago, less than a decade after the
30 description of major fetal anomalies such as spina bifida. Despite major
31 improvements in ultrasound technology and routine screening sonograms in
32 middle and high income countries, PA remains undiagnosed before delivery in
33 between half (Fitzpatrick et al. BJOG.2014;121:62-71) and a third (Bowman et
34 al.AJOG;212:177.e1-7) of the cases.

35 MRI is increasingly used for the diagnosis of PA and has been reported to
36 be useful in assessing the depth of myometrial invasion, especially with posterior
37 placentation. However, it is uncertain that MRI changes management or
38 improves outcomes (). Millischer et al (BJOG. 2016) reviewed the accuracy of
39 MRI with and without gadolinium contrast in a cohort of women with suspected
40 PA on ultrasound and found that gadolinium improves the MRI-based diagnostic
41 performance. Although there is concern about the risks of gadolinium during
42 pregnancy, safety data are accumulating. However, cost and limited access to
43 MRI makes it impractical as a screening tool for PA.

44 With the continuous increase in the number of CD worldwide, with the
45 marked improvement in maternal outcome when PA is diagnosed antenatally
46 there is an urgent need to improve the prenatal diagnosis of PA. Further studies

47 should assess the value and safety of gadolinium MRI as well as other modalities
48 for the detection of PA from the second trimester of pregnancy.

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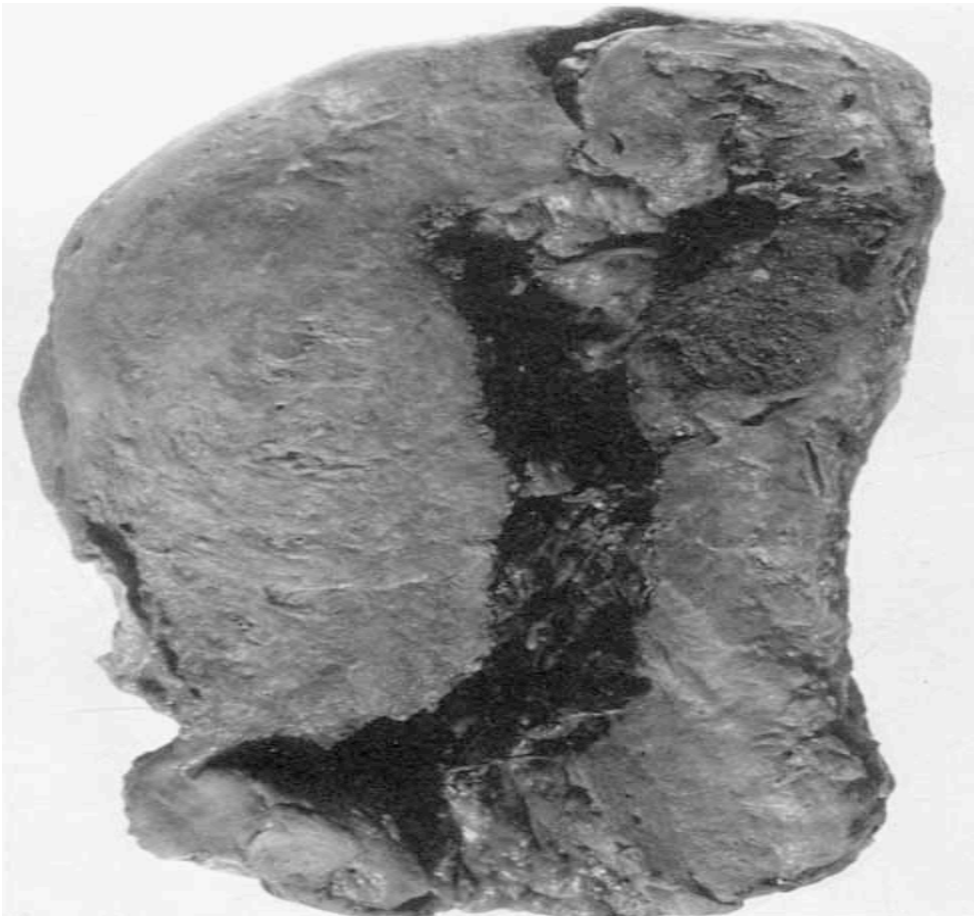
53 MC on MS2015-CM-16803 by Millischer et al

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55 Figure from Greig K. J Obstet Gynaecol Br Commonw. 1961;68:968-73.

56 Hysterectomy specimen showing a placenta increta in the upper portion of the
57 posterior wall and fundus.

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60 **Disclosure of interests**

61 We declare no conflicts of interest.

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