

# 1 **The new world of placenta accreta spectrum**

## 2 **disorders (PAS)**

3 Eric Jauniaux<sup>1</sup>, Robert M. Silver<sup>2</sup>, Shigeki Matsubara<sup>3</sup>

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5 <sup>1</sup> EGA Institute for Women's Health, Faculty of Population Health Sciences,  
6 University College London, London, UK

7 <sup>2</sup> University of Utah School of Medicine, Salt Lake City, UT, USA

8 <sup>3</sup> Department of Obstetrics and Gynecology, Jichi Medical University, 3311-1  
9 Yakushiji, Shimotsuke, Tochigi, Japan

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12 A PubMed ([www.ncbi.nlm.nih.gov/pubmed](http://www.ncbi.nlm.nih.gov/pubmed)) search of the term "placenta accreta" at  
13 the time of writing this editorial generates 2296 hits, including 147 for the year 2017  
14 up to 1<sup>st</sup> of December and 138 for the entire year 2016. Currently each year records  
15 more publication on placenta accreta than the entire period between 1947-1962.

16 There are two different main categories of placenta accreta: the abnormally adherent  
17 placenta or placenta creta and the abnormally invasive placenta (AIP). The latter  
18 category is divided between placenta increta and placenta percreta depending on  
19 the depth of penetration of the villous tissue in the uterine myometrium. As many  
20 articles do not differentiate between the two categories and/or do not provide  
21 detailed data on histopathology, to be inclusive we have opted to use the term  
22 placenta accreta spectrum (PAS) disorders throughout this theme issue of the  
23 International Journal of Gynecology and Obstetrics.

24 The first case of placenta accreta listed on PubMed was reported in 1927 by  
25 Dr DS Forster, a scholar in gynaecology in the Pathology Department of the  
26 Montreal General Hospital, Montreal, Canada [1]. This case, for which a  
27 hysterectomy had to be performed was the only one recorded out of 8 000 deliveries  
28 (0.013%) during a 6-year survey at the Montreal General Hospital. This case

29 predates by a decade the now “classical” cohort study of 18 cases published by  
30 Irving and Hertig who calculated the prevalence of placenta accreta to be 1 in 1 956  
31 deliveries (0.12%) in their study population at the Boston Lying-in Hospital and 1 in  
32 30 000 deliveries in the USA [2]. Eight decades later, the prevalence of PAS has  
33 jumped to around 1 in 500 (0.2%) deliveries in most high and middle-income  
34 countries [3]. In some cases, the high incidence of PAS may due to overdiagnosis  
35 secondary to the inclusion of cases of placental retention in many cohort studies [4].  
36 This may also have been the case in the study of Irving and Hertig as none of their  
37 cases had villous tissue penetrating the myometrium on microscopic examination [2].

38         The distribution of risk factors and grades of PAS has also completely  
39 changed from the 1930s. The case described by Foster, was a case of placenta  
40 increta following a prior curettage during a second birth and manual removal of the  
41 placenta during a third delivery [1]. Only one of the 20 cases personally treated by  
42 Irving and Hertig occurred after a previous caesarean delivery [2]. Predisposing  
43 factors for PAS in subsequent pregnancies until the 1950s were manual removal of  
44 the placenta and/or “vigorous” uterine curettage during a prior delivery. Today,  
45 around 95% of women presenting with a PAS at delivery have had at least one prior  
46 caesarean delivery and the most common presentation is a placenta previa with  
47 accreta [3]. Moreover, there is strong evidence that the incidence of PAS increases  
48 with the number of prior caesarean deliveries [5]. Similarly, the ratio of  
49 adherent/invasive accreta placentas has changed from 70/30 in the 1970s to 50/50  
50 in the last two decades [3], a change that can be linked to the increase in the number  
51 of grand multiparas presenting with multiple caesarean scar(s).

52         Accreta placentation is now almost an entirely iatrogenic condition. Worse,  
53 the increased incidence and severity make it a leading cause of peripartum

54 hysterectomy, maternal morbidity and even mortality. The development of FIGO  
55 consensus guidelines on PAS disorders and a theme issue on this topic in a  
56 specialist international journal are therefore very timely. Both the FIGO guidelines  
57 and the peer-reviewed articles included in this special issue address various aspects  
58 of the epidemiology, diagnosis and conservative and surgical managements of PAS  
59 and should provide readers with a comprehensive overview of this complex disorder.  
60 Recent progresses have been made in standardizing the clinical and ultrasound  
61 diagnosis of PAS but there is still a need for authors to use an inclusive terminology  
62 and to included detailed histopathologic data when possible. Within this context,  
63 multi-centric prospective studies are essential to improve the perinatal management  
64 of PAS disorders. We hope that this theme issue will promote such collaborations at  
65 both the national and international level.

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#### 69 **Author contributions**

70 EJ drafted the manuscript. All authors were involved in the critical discussion and  
71 approved the final version of the manuscript for publication. EJ is the guarantor of  
72 the article.

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#### 74 **Conflicts of interest**

75 The authors are Guest Editors for the *International Journal of Gynecology &*  
76 *Obstetrics* and have no conflicts of interest.

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80 **References**

- 81 1. Forster DS. A case of placenta accreta. *Can Med Assoc J.* 1927;17:204-7.
- 82 2. Irving C, Hertig AT. A study of placenta accreta. *Surgery, Gynecol Obstet*  
83 1937;64:178–200.
- 84 3. Jauniaux E, Chantraine F, Silver RM, Langhoff-Roos J; for the FIGO Placenta  
85 Accreta Diagnosis and Management Expert Consensus Panel. FIGO  
86 consensus guidelines on placenta accreta spectrum disorders: Epidemiology.  
87 *Int J Gynecol Obstet.* 2018.
- 88 4. Jauniaux E, Collins SL, Jurkovic D, Burton GJ. Accreta placentation. A  
89 systematic review of prenatal ultrasound imaging and grading of villous  
90 invasiveness. *Am J Obstet Gynecol.* 2016;215:712–21.
- 91 5. Silver RM, Landon MB, Rouse DJ, Leveno KJ, Spong CY, Thom EA, et al.  
92 National Institute of Child Health and Human Development Maternal-Fetal  
93 Medicine Units Network. Maternal morbidity associated with multiple repeat  
94 cesarean deliveries. *Obstet Gynecol.* 2006;107:1226–32.

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