

CLINICAL ARTICLE

International survey of practices used in the diagnosis and management of placenta accreta spectrum disorders

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Keywords: Placenta accreta spectrum disorders; placenta previa Prenatal diagnosis; ultrasound imaging; caesarean hysterectomy; Surgical management: conservative management.

Synopsis: Wide variations existed in the diagnosis and management of placenta accreta spectrum disorders; however, most respondents favored cesarean hysterectomy with the placenta left in situ.

Abstract

Objective: To identify geographic differences in diagnostic and treatment practices during the perinatal management of placenta accreta spectrum (PAS) disorders.

Methods: An online survey was conducted from May 1st to August 1st, 2017. The 18-item questionnaire was emailed to all members of the expert panel for the 2018 International Federation of Gynecology and Obstetrics consensus guidelines on PAS (n=34), as well as international experts who had contributed to the content of these guidelines (n=16).

Results: Questionnaires were returned by 36 of the 50 experts (72% response rate). Most respondents were from Europe (n=22; 61%) or Asia (n=9; 25%) from Asia. Despite large disparity in the number of PAS cases managed surgically or conservatively and the different techniques used by the respondents, the screening and diagnostic methods used were similar. In all, 22 (61%) experts indicated a preference for radical surgery, with primary cesarean hysterectomy leaving the placenta in situ reported as the most frequent approach (n=20; 55%).

Conclusion: Wide variation found in global PAS practices indicated a need for standardized data and an evidence-based approach to the diagnosis and management of PAS disorders. [1](#)

1 INTRODUCTION

Placenta accreta spectrum (PAS) disorders are rapidly becoming one of the major causes of maternal morbidity and mortality worldwide owing to the exponential increase in cesarean deliveries recorded in almost every geographic region [1]. Diagnosis and management of PAS disorders (particularly the invasive forms) is a complex process that requires the coordinated efforts of many different health resources [2]. Prenatal diagnosis of this condition can be achieved with a high degree of accuracy [3]. Furthermore, the management of women with PAS disorders in specialized centers of excellence has been shown to decrease morbidity and mortality [4–8].

Experience and access to specialist care varies throughout the world [2]. In high-income countries, in particular in North America many centers have a multidisciplinary team that regularly manages complex cases [4-8]. By contrast, there are limited data on how PAS are diagnosed and managed in low- and middle-income countries.

The International Federation of Gynecology and Obstetrics (FIGO) has developed three new consensus guidelines on the diagnosis and management of PAS [3,9,10]. All national member societies of FIGO were asked to appoint one subject-matter expert with wide knowledge of the scientific literature on PAS. A total of 34 experts were nominated to assist in guideline development and to review the content. Additionally, 16 experts who had published major clinical research on the epidemiology, prenatal diagnosis, and surgical or conservative

management of PAS were asked to contribute to the content of each individual guideline.

The aim of the present study was to evaluate geographic differences in diagnostic and therapeutic approaches among the experts involved in the development of the 2018 FIGO guidelines on PAS. [

2 MATERIALS AND METHODS

An online survey was conducted from May 1st to August 1st, 2017, among the 50 international experts who had worked on the new FIGO guidelines [3,9,10].

As all data were anonymized for analysis, patient consent and specific ethics committee approval were not required for the present study. All respondents agreed for their data to be used in this study

An 18-item web-based questionnaire was created using the Google Forms tool (Google, Mountain View, CA, USA) and emailed to the experts for completion.

[The primary objective was to assess practice patterns within the participant's own department; therefore, the questionnaire was designed to determine locally established methods for diagnosis and management of PAS disorders. Data were collected from each respondent regarding age, sex, geographic region and country, years since completion of training, number of PAS cases managed since graduation, and exposure to the diagnosis and management of PAS disorders in the preceding year. Specific questions regarding the diagnosis and management of PAS disorders included whether the department conducted

routine prenatal screening of women at high risk, the situations in which prenatal screening would be performed, the preferred imaging method used to confirm diagnosis, the primary place of management, the existence of a multidisciplinary team, the specialties involved in the multidisciplinary team, the type of anesthesia recommended, the first-choice approach (radical vs conservative), and other management options used.

The survey data were collected using Google Forms. The demographic characteristics and management strategies reported by the participants were expressed as numbers and percentages.

3 RESULTS

The survey was completed by 36 of the 50 experts (72% response rate). The demographic characteristics of the respondents are presented in Table 1. In all, 19 (53%) respondents were older than 50 years and 23 (64%) had experienced more than 15 years in practice after graduation. The respondents represented 31 different countries; however, most came from either Europe (n=22; 61%) or Asia (n=9; 25%). A total of 19 (53%) respondents reported having managed 11–50 cases of PAS disorders since their graduation as specialists. The range for the whole cohort was two to 1500 cases. Overall, 26 (72%) respondents reported that they had managed between one and 10 cases in the preceding year, with one respondent having managed more than 100 cases.

Table 2 outlines the responses to questions regarding local management strategies for PAS disorder. In all, 33 (92%) respondents indicated that their

department routinely performs prenatal screening among women at high risk of PAS disorder. Of those, 30 (91%) reported that such screening was prompted by a prior history of uterine surgery and/or cesarean delivery plus a low-lying placenta or placenta previa at mid-pregnancy using grey-scale transabdominal ultrasonography. The most common additional method of diagnosis among women with a high suspicion for PAS disorders was transvaginal ultrasonography (n=31; 86%), with 22 (61%) respondents using both ultrasonography and magnetic resonance imaging (MRI). Most respondents (n=35; 97%) indicated that they would also use color Doppler imaging, when available.

All respondents reported that they managed PAS cases in their own department with the support of a multidisciplinary team (Table 2). Most such teams included a gynecology oncology surgeon (n=26; 72%) and a urologist (n=23; 64%). General anesthesia and epidural–spinal anesthesia were the first-choice anesthetics procedures used by 20 (56%) and 16 (44%) of the respondents, respectively.

As shown in Table 2, 22 (61%) respondents favored a radical surgical management approach with cesarean hysterectomy. Twenty (55%) reported that they would attempt a primary cesarean hysterectomy with the placenta left in situ, whereas 10 (28%) would perform a partial myometrial resection or radical dissection whenever possible. Primary attempt at placental removal and compression sutures were also referred by a quarter of experts (n=9; 25%). Most participants (n=23; 64%) reported using ureteral stents, whereas used intra-

arterial balloons (17; 47%) or arterial embolization (18; 50%). Treatment with methotrexate was reported by only 6 (17%) respondents.

4 DISCUSSION

By evaluating differences in diagnostic and therapeutic approaches to PAS disorders in various regions of the world, the present study aimed to highlight strategies that might be standardized on a global scale. The current findings indicated wide variations in clinical experience and management of PAS disorders. For example, although most of the experts had managed 100 cases or fewer during their time in practice, seven had managed 101–1000 cases and two had managed more than 1000 cases. This discrepancy suggests large differences in the definition of the various grades of PAS disorders, particularly regarding the distribution of adherent versus invasive forms. The differential diagnosis between the adherent form of PAS and abnormal retention of the placenta after delivery can be clinically challenging. Consequently, the lack of histopathologic data in most cohort studies [11] might explain this wide variation in reporting cases of PAS disorder.

Regionalization of care for women in centers of excellence by a multidisciplinary team is dependent on accurate prenatal diagnosis. A systematic review of 30 case reports and 53 case series [11] found that, since 1992, both grey-scale imaging and color Doppler imaging were used for prenatal screening of PAS disorders in greater than 80% of cases. Furthermore, MRI was also used in 11 of the case reports and in 21 of the case series [11]. A systematic review and meta-analysis of 14 cohort studies [12]—comprising a total of 3889 women with a

history of cesarean delivery who had presented with a low placenta or a placenta previa—found that color Doppler imaging or MRI was used in 12 and five studies, respectively. By contrast, transvaginal ultrasonography was used in six studies, with the use of translabial ultrasound reported in just one study [12].

In the present study, most of the experts used both MRI and ultrasound to confirm the diagnosis of PAS disorders; however, ultrasound imaging was the single most frequently used tool for screening. Prospective cohort studies have indicated that the sensitivity and specificity of grey-scale imaging alone for diagnosis of placenta previa accreta is high (>85%) when performed by an experienced operator [13,14]. Unlike MRI, ultrasound examination is operator-dependent [3]. Nonetheless, high cost and limited access to MRI makes this method impractical as a screening tool for PAS and so ultrasonography remains the primary option in most high- and middle-income countries [11,12].

The American Congress of Obstetricians and Gynecologists (ACOG) guidelines on PAS disorders [15] highlight that improved patient safety requires delivery to be performed by an experienced multidisciplinary team, which should include an obstetric surgeon and other surgical specialists such as a gynecologic oncologist, urologist, and general surgeon, who should be available if necessary. The ACOG guidelines also recommend performing a planned preterm cesarean hysterectomy with the placenta left in situ to avoid the substantial hemorrhagic morbidity associated with attempts to remove the placenta among women with PAS disorders [15].

Surveys of healthcare providers in the USA have also highlighted varied approaches to virtually every aspect of PAS care [16–18]. A survey of 508 members of the Society for Maternal–Fetal Medicine (SMFM) found that 15.4% of respondents hospitalized asymptomatic patients with high suspicion for PAS disorders before delivery and 34.5% administered corticosteroids and scheduled delivery at 36 weeks [16]. A survey of ACOG fellows found that 20.4% referred women with PAS disorders to the nearest tertiary center, 7.1% referred them to a regional center, and 41.2% recommended delivery at 34–36 weeks [18]. Among cases of PAS disorders diagnosed during cesarean delivery, most SMFM members proceeded with hysterectomy and only 14.9%–32.0% reported attempting conservative management [16,17]. The ACOG survey showed that prophylactic iliac-artery embolization catheters and balloon occlusion catheters were used among 28.1% and 20.1% of women with suspected PAS, respectively [17]. Ureteral stents were used by approximately a quarter of the SMFM [16] and of the ACOG fellows [18]. The present study also found that most respondents (61%) favored a radical surgical approach. Nonetheless, several respondents stated that their strategy would be individualized on a patient basis, and some indicated that they would use these techniques only for complex cases. Others indicated that they would use a combination of strategies, depending on the severity of the case.

A planned cesarean hysterectomy was the primary management option among 44 of 53 case series of PAS diagnosed prenatally [12]. Conservative management was attempted among 13 of these case series. Depending on the degree of myometrial invasion, a secondary hysterectomy was required in cases

of failure. In one case series, conservative management was successful for all patients but the authors provided no information on the degree of myometrial invasion [12]. A systematic review of cohort studies conducted among high-risk women who underwent prenatal screening for PAS disorders found that 208 underwent an elective or emergency cesarean hysterectomy, whereas conservative management was attempted among seven cases, including four with focal myometrial resection of the PAS area [11]. In the present study, a conservative first-line approach was also less frequently reported than a radical surgical approach; however, the rate of conservative intervention (39%) was higher than previously reported [2,11,12,16-18]. This difference might be explained by the development of new conservative management strategies during the past decade.

A survey of 26 Israeli hospital maternities reported that general anesthesia was used almost exclusively among women with high suspicion for PAS disorders [19]. By contrast, the present study found that spinal–epidural anesthesia was used by 44% of the respondents. Currently, there is insufficient evidence to support the use of one technique over the other [9].

Limitations of the present study included the fact that not all the experts responded to the questionnaire. Furthermore, some geographic regions (e.g. Africa and South America) were under-represented in the survey. This discrepancy reflected the difficulty in identifying experts in many South American and Sub-Saharan African countries. Furthermore, there is varying access to the internet among low- and middle-income countries.

In conclusion, the findings of the present study highlight the need for international standardized data on the diagnosis of PAS disorders and the efficacy of various management strategies to develop an evidence-based approach. Given the high morbidity associated with the invasive forms of PAS disorders, it is crucial to develop targeted interventions that can be used on a global scale to improve outcomes and decrease the overall mortality and morbidity among women with PAS disorders.

Author contributions

All authors contributed to the study design, were involved in the critical discussion, and approved the final version of the manuscript for publication. MC and DA-d-C analyzed the data. MC and EJ drafted the manuscript. EJ is the guarantor of the study.

Conflicts of interest

EJ is a Guest Editor for the *International Journal of Gynecology & Obstetrics*, but had no role in the editorial review of the paper. The other authors have no conflicts of interest.

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Table 1 Demographic characteristics (n=36).

Characteristic	No. (%)
Age, y	
<35	0
35–50	17 (47)
>50	19 (53)
Sex	
Male	21 (58)
Female	15 (42)
Geographic region	
Africa	1 (3)
Asia	9 (25)
Australia	0
Europe	22 (61)
North America	2 (5.5)
South America	2 (5.5)
Time in practice as a specialist since graduation, years	
1–10	7 (19)
11–15	6 (17)
16–20	6 (17)
21–25	4 (11)
26–30	7 (19)
>30	6 (17)
No. of PAS cases managed since graduation	
0–10	3 (8)
11–50	19 (53)
51–100	5 (14)
101–1000	7 (19)
>1000	2 (6)
No. of PAS cases managed during the previous	
0–10	26 (72)
11–20	5 (14)
21–50	3 (8)
51–100	1 (3)
>100	1 (3)

Abbreviation; PAS, placenta accreta spectrum.

Table 2 Management practices for PAS disorders reported by the respondents (n=36) ^a

Management practice	No. (%)
Does your department routinely perform prenatal screening among women at high risk of PAS disorders?	
Yes	33 (92)
No	3 (8)
If yes, in which situations does your department screen for PAS disorders?	
History of uterine surgery and/or cesarean delivery	2 (6)
Low-lying placenta or placenta previa at the 20-week ultrasonographic examination	1 (3)
Both of the above	30 (91)
Technique used to confirm the diagnosis when PAS disorders is suspected prenatally	
Magnetic resonance imaging	1 (3)
Ultrasound imaging	13 (36)
Both of the above	22 (61)
Technique used for ultrasound diagnosis of PAS disorders	
Transabdominal grey-scale imaging only	24 (67)
Transvaginal imaging	31 (86)
Color Doppler imaging	35 (97)
Where is the patient managed when PAS disorder is confirmed prenatally? [
Referred to another hospital for delivery	0 (0)
In your own department	36 (100)
If you manage PAS disorder in your own department, do you have access to a multidisciplinary team?	
Yes	36 (100)
No	0 (0)
If yes, which other specialists do you involve?	
Gynecology oncology surgeon	26 (72)
Urologist	23 (64)
Vascular surgeon	14 (39)
General surgeon	9 (25)
What is your first-choice anesthesia?	
General	20 (56)
Epidural–spinal	16 (44)
What is your first-choice management approach?	
Radical (primary cesarean hysterectomy)	22 (61)
Conservative	14 (39)
If your first-choice management approach is radical, do you:	
Leave the placenta in situ and perform a primary hysterectomy	20 (55)
Perform a partial myometrial resection of the placental area	10 (28)
Apply compression sutures using the cervix as tamponade	6 (17)
Other	

Triple-P procedure	1 (3)
Radical dissection	1 (3)
Manual removal as first attempt	1 (3)
Additional management techniques used	
Interventional radiology artery embolization	18 (50)
Interventional radiology intra-arterial balloon	17 (47)
Ureteral stent	23 (64)
Methotrexate	6 (17)

Abbreviation: PAS, placenta accreta spectrum.