


CLINICAL ARTICLE

Obstetrics

Anesthesia and postpartum pain management for placenta accreta spectrum: The healthcare provider perspective

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Abstract

Objective: To explore the management and experiences of healthcare providers around anesthetic care in placenta accreta spectrum (PAS).

Methods: This descriptive survey study was carried out over a 6-week period between January and March 2023. Healthcare providers, both anesthesiologists and those involved in operative care for women with PAS, were invited to participate. Questions invited both quantitative and qualitative responses. Qualitative responses were analyzed using content analysis.

Results: In all, 171 healthcare providers responded to the survey, the majority of whom were working in tertiary PAS referral centers (153; 89%) and 116 (70%) had more than 10 years of clinical experience. There was variation in the preferred primary mode of anesthesia for PAS cases; 69 (42%) used neuraxial only, but 58 (35%) used a combined approach of neuraxial and general anesthesia, with only 12 (8%) preferring general anesthesia. Ninety-nine (61%) were offering a routine antenatal anesthesia consultation. Content analysis of qualitative data identified three main themes, which were "variation in approach to primary mode of anesthesia", "perspectives of patient preferences", and "importance of multidisciplinary team care". These findings led to the development of a decision aid provided as part of this paper, which may assist clinicians in counseling women on their options for care to come to an informed decision.

Conclusions: Approach to anesthesia for PAS varied between healthcare providers. The final decision for anesthesia should take into consideration the clinical care needs as well as the preferences of the patient.

KEYWORDS

decision aid, multidisciplinary team care, obstetric anesthesia, obstetric hemorrhage, placenta accreta spectrum, public and patient involvement

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1 | INTRODUCTION

Placenta accreta spectrum (PAS) is a clinical/histopathologic condition of abnormal placental adherence or invasion into the uterine myometrium.^{1,2} PAS is classified into three grades by FIGO (the International Federation of Gynecology & Obstetrics).² Patients with PAS have complex care needs, which are best managed within multidisciplinary teams.^{3,4} As the perioperative period in PAS can be associated with factors such as massive obstetric hemorrhage and cesarean hysterectomy,⁵⁻⁷ anesthesiologists are an essential part of providing safe maternal care.^{8,9} However, the optimal mode of primary anesthesia for women with PAS is unknown.⁸⁻¹⁰

The options for primary mode of anesthesia include neuraxial for the duration of the procedure, general anesthesia (GA) or neuraxial followed by GA after the baby has been delivered.⁸ Each mode is associated with maternal and fetal risks and benefits.^{8,9,11} Neuraxial anesthesia offers benefits over GA in terms of early maternal-fetal bonding, minimal effect on uterine tone with reduced blood loss, avoidance of the effects of anesthetic agents on the fetus, and less requirement for intravenous opioids postoperatively.¹² However, neuraxial anesthesia may not always be possible or adequate for PAS surgeries, and unplanned conversion to GA during the surgery may be required.¹³⁻¹⁵

Although much of the research exploring anesthetic technique has focused on the various intraoperative and postoperative outcomes, the experiences and preferences of healthcare providers for mode of anesthesia in PAS have, to our knowledge, not been explored to date. Therefore, we sought to explore the current practices of healthcare providers and their experience of anesthesia care.

2 | MATERIALS AND METHODS

This study was conducted over a 6-week period between January and March 2023. This was a descriptive survey study, consisting of two surveys, exploring both the patient and healthcare provider experience of anesthesia care in PAS. The results from the patient experience survey are presented separately.²⁸ Ethical approval was granted by the National Maternity Hospital ethics committee (EC02.2023) and written informed consent was obtained from participants. The methodology was performed in accordance with all relevant guidelines and regulations.

2.1 | Survey design

An initial draft of questions to investigate the current practices and experiences of providing anesthesia care was developed. The questions were reviewed by members of the research team, and questions were added and removed by consensus. The final survey consisted of 31 questions; 25 questions for quantitative data, and 7 that were open-ended questions allowing for qualitative analysis (see Data S1).

2.2 | Survey distribution

The sampling strategy involved contacting healthcare providers who care for women with PAS by the research team. The survey was distributed by email to colleagues and international collaborators involved in PAS care, either anesthesiologists or those involved in surgical care. The survey on the patient experience was distributed by two patient advocacy groups, with detailed methodology previously reported²⁸.

2.3 | Qualitative analysis

For analysis of the narrative comments to open-ended questions, content analysis was applied to identify key themes.¹⁶ Initially, two researchers (HB, JL) reviewed the comments and assigned codes to each comment. Overarching and subthemes were identified. Final themes were selected and agreed upon by consensus (DJB, RFOC, AJNC).

2.4 | Decision aid

Based on the results from this survey and the patient survey²⁸, a decision aid to help women make the decision around mode of anesthesia was developed (presented in the Data S1). A decision aid is a tool to allow patients to participate in decision making when facing choices on healthcare options.^{17,18} The decision aid was developed according to the Ottawa Decision Support Framework.^{17,19} The Ottawa Decision Support Framework assesses the patients' decisional needs in order to improve decision outcomes. The International Patient Decision Aid Standards were followed to ensure the three main aims of a decision aid were met: prepare the person for decision making, provide information about the decision to be made, and allow the person to clarify their values and explore the features that matter most to them.^{17,18} Input from patient from two separate PAS patient advocacy groups was sought throughout the development process; one based in Ireland (Placenta Accreta Ireland) and one from the USA (National Accreta Foundation). An initial meeting was held with representatives from each group to explore their views on the content of a decision aid. Based on the survey results and the patient advocacy group's feedback, a draft decision aid was developed. The decision aid was then reviewed in detail by group leads (NC, KT) and members of both advocacy groups, before a final decision aid was developed that was in keeping with the values of the key stakeholders. Patient input ensured that they considered the decision aid as acceptable and balanced, that it was understood by patients in the target group, and, most importantly, that it would be helpful for women with a PAS diagnosis.

2.5 | Statistical analysis

Statistical analysis was performed in RStudio (version 4.2.2). χ^2 tests were used to compare categorical variables and contingency

tables were used to calculate unadjusted odds ratios and 95% confidence intervals. A two-tailed *P* value less than 0.05 was considered significant.

3 | RESULTS

3.1 | The survey

In all, 171 participants responded to the survey; 250 were approached and 171 completed the survey, resulting in a response rate of 68%. Healthcare providers comprised both anesthesiologists (82; 48%) and surgeons (89; 52%). The majority of participants were from North and South America (Table 1). Eighty-nine percent (*n* = 153) of respondents were members of a tertiary level PAS referral center and anesthesiologists were formal members of the PAS multidisciplinary team in nearly all of these centers (85%, *n* = 147); however, only 60% (*n* = 99) offer a routine formal antenatal anesthetic consult for PAS cases (Table 1). Seventy percent of respondents (*n* = 116) had more than 10 years of experience in management of PAS cases. There was significant variation in the preferred primary mode of anesthesia, 69 favored neuraxial anesthesia (42%), 58 favored neuraxial with conversion to GA after the birth (35%), and only 8 (12%) advocated for GA only. Table 2 describes the preferences of healthcare providers when managing PAS cases, both from an anesthesiology and a surgical perspective.

Content analysis of narrative comments (89; 52%) identified three main themes; "variation in approach to primary mode of anesthesia", "perspectives of patient preferences", and "importance of multidisciplinary team care". Additional supporting quotes for each theme are presented in Table 3.

With respect to theme 1 "variation in approach to primary mode of anesthesia" those that preferred neuraxial anesthesia felt that this technique offered "more stability, the baby is delivered in better condition and postoperative pain control is better", whereas others felt that GA allowed for better "hemodynamic control, but only used in selected cases with longer procedures or if there are intraoperative complications".

Surgeons who performed a midline laparotomy were more likely to have a preference for GA for the duration of the surgery (odds ratio 8.44, 95% confidence interval 3.21-14.2), with reasons given such as "Women can be relieved that they don't have to try to tolerate the procedure awake. Midline laparotomy above the umbilicus can be difficult to tolerate even with a thoracic epidural". Most surgeons did not find the mode of anesthesia made a difference to the operation from a surgical perspective (59; 70%), with many comfortable operating on awake patients (Table 2).

The second theme that arose was "perspectives of patient preferences". Some healthcare providers were keen to understand and integrate patient choice into care decisions. Some commented on the importance of involving the woman's preferences in the anesthesia planning; however, there was variation in their views on the preferences of their patients. For example, some felt that GA was preferred "Patients choice with antenatal information available and

TABLE 1 Healthcare provider demographics.^a

	Healthcare providers (N=171)
Geographical location	
North America	18 (11)
Central America	12 (7)
South America	87 (51)
Europe	30 (17.5)
Middle East	6 (3.5)
Africa	6 (3.5)
Asia	4 (2)
Australia and New Zealand	8 (4.5)
Tertiary referral center for PAS	153 (89)
PAS MDT includes anesthesiologists	147 (85)
Years of specialty experience (n = 165)	
<2 years	2 (1.5)
2-5 years	18 (11)
5-10 years	29 (17.5)
>10 years	116 (70)
Number of FIGO Grade 2-3 cases managed per year (n = 164)	
<10	62 (38)
10-20	57 (36)
20-30	11 (6)
>30	15 (9)
Unsure	19 (11.5)
Additional procedures used in PAS care (n = 163)	
Aortic balloon	40 (24.5)
Internal iliac balloon	39 (24)
Ureteric stenting	100 (61)
No interventional radiology	61 (37)
No ureteric stenting	51 (31)
Elective HDU admission for PAS cases (n = 159)	
	111 (70)
Routine anesthesia pregnancy consult for suspected PAS (n = 161)	
	99 (61)
Preferred anesthetic approach for suspected PAS (N = 164)	
Neuraxial only	69 (42)
General anesthesia only	12 (8)
Neuraxial/elective GA conversion after delivery	58 (35)
Other	25 (15)

Abbreviations: FIGO, the International Federation of Gynecology & Obstetrics; GA, general anesthetic; HDU, high-dependency unit; MDT, multidisciplinary team; PAS, placenta accreta spectrum.

^aData are presented as number (percentage).

meeting with anesthesiologists to discuss is important. Often general anesthesia is preferred by women who have more severe PAS and may need a hysterectomy". Others said a hybrid technique was

TABLE 2 Quantitative results—healthcare provider perspectives.^a

Anesthesiologists perspective (N = 82)	
Routine use for suspected FIGO Grade 1 PAS (n = 80)	
Point of care thromboelastometry	30 (38)
Cell salvage, or any other intraoperative cell saver devices	35 (44)
Arterial line placement	60 (75)
Central line placement	18 (22)
Routine use for suspected FIGO Grade 2–3 PAS (n = 80)	
Point of care thromboelastometry	42 (52)
Cell salvage, or any other intraoperative cell saver devices	50 (62)
Arterial line placement	70 (87.5)
Central line placement	40 (41)
Postoperative analgesia routinely offered ^b (n = 78)	
Epidural analgesia with local anesthetic and opioid	62 (78)
Patient-controlled analgesia with morphine or other opioid	26 (33)
Wound infusion catheter	9 (11)
Other regional technique such as truncal/quadratus lumborum/erector spinae blocks	15 (18)
Surgeons' perspective (n = 89)	
Subspecialty (n = 85)	
General obstetrician and gynecologist	46 (54)
Maternal-fetal medicine	22 (26)
Gynecologic oncologist	15 (18)
General gynecologist	2 (2)
Surgical approach for suspected FIGO Grade 3 with planned hysterectomy (n = 85)	
Patient positioning	
Lithotomy	52 (61)
Supine	33 (39)
Skin incision	
Midline	54 (63)
Transverse	31 (37)
Self-retaining retractor use (such as Bookwalter)	
Yes	24 (28)
No	61 (72)
Surgical stapler to perform hysterotomy	
Yes	18 (21)
No	67 (79)
Cell salvage or any other intraoperative cell saver devices use	
Yes	18 (21)
No	67 (79)
Operating technique and mode of anesthesia ^c (n = 85)	
I need to modify my surgical approach when the patient is awake	
Disagree-strongly disagree	55 (64)
Agree-strongly agree	30 (36)

TABLE 2 (Continued)

Anesthesiologists perspective (N = 82)	
I find it easier to perform PAS surgery when the patient is asleep for the duration of the procedure	
Disagree-strongly disagree	42 (49)
Agree-strongly agree	43 (51)
It makes no difference to me as the surgeon whether the patient is awake or asleep	
Disagree-strongly disagree	26 (30)
Agree-strongly agree	59 (70)

Abbreviations: FIGO, the International Federation of Gynecology & Obstetrics; PAS, placenta accreta spectrum.

^aData are presented as number (percentage).

^bIn addition to paracetamol and nonsteroidal anti-inflammatory drugs, unless contraindicated.

^cWhen performing cesarean hysterectomy for PAS.

preferable “Usually, we perform general anesthesia once the mother has met her baby. In our experience, ... patients ask for sedation after the delivery of their baby. Many women commented that being awake for the whole process caused a lot of anxiety.” Furthermore, some felt neuraxial anesthesia for the duration of the procedure can be well tolerated with patient selection and care within a specialist team, with reasons given such as “An adequate selection of the patient, and teamwork, allows us in most cases to successfully carry out these surgeries with neuraxial anesthesia.”

Those who provided an antenatal anesthesiology consult felt that this service was an important part of counseling, with reasons given such as “A review during pregnancy to give information to our patients is essential. We prefer combination of anesthetic procedure, first regional anesthesia (spinal or epidural) until baby is delivered and after that general anesthesia, if desired.”

The third theme that arose was “importance of multidisciplinary team care”, which is not surprising given that 89% of respondents were members of a PAS multidisciplinary team (Table 1).

It was evident that working within specialist teams was recognized as essential to ensure the delivery of safe care. Many considered the care for women with PAS as “a subspecialty surgical area with absolute dependence on specialist surgeons.”

Others commented that they have changed their approach over time as their teams gained in confidence and experience; for example, one participant commented that they had moved away from GA over time: “We used general anesthesia in the first few cases when the team was still learning about the severity of bleeding and the role of everyone in the surgery. Now we use mostly neuraxial.”

3.2 | The decision aid

This study explored both the experience of healthcare providers and that of women with a history of PAS; the results of the patient

TABLE 3 Qualitative results.

Overarching theme: Healthcare provider experience of anesthesia (N = 89)	
Theme 1: Variation in approach to primary mode of anesthesia	<p>"We usually use a hybrid technique to allow them to be awake for the birth, then converting to general anesthesia once baby is born works well."</p> <p>"I feel only emergent cases should be general anesthesia from the start. After meeting the woman and talking her through the procedure, we routinely give neuraxial anesthesia, followed by general anesthesia in a controlled fashion after delivery once decision is made for hysterectomy."</p> <p>"Some surgeons preference is for a general anesthetic, but prolonged induction to delivery time is a concern for fetal exposure."</p> <p>"General anesthesia does have advantage that if major bleeding does happen or major bladder or bowel resection needed then this extra stress does not impact on the patient."</p> <p>"We reserve this technique (general anesthesia) for cases of severe PAS, ideally only after the birth of the baby and only if bleeding management is very difficult to achieve."</p> <p>"An adequate selection of the patient, and teamwork, allows us in most cases to successfully carry out these surgeries with neuraxial anesthesia."</p> <p>"I prefer an awake patient. We recommend a family centered cesarean section, with her companion in the room, and support early breast feeding."</p> <p>"There is no difference to me as surgeon but as maternal fetal medicine specialist I would prefer an awake patient for a better neonatal outcome."</p>
Theme 2: Perspective of patient preferences	<p>"Patients choice with antenatal information available and meeting with anesthesiologists to discuss is important. Often general anesthesia is preferred (by women) for more severe PAS."</p> <p>"Women can be relieved that they do not have to try to tolerate the procedure awake. Midline laparotomy above the umbilicus can be difficult to tolerate even with a thoracic epidural."</p> <p>"Neuraxial anesthesia is an option to give the mother the chance to see her baby. We stress this option as much as we can. After that, general anesthesia is used, if appropriate and desired by the mother."</p> <p>"We use a lot of epidural anesthesia, and I find it very helpful, it helps me to be in communication with my patient, explaining to her what is happening during the surgery, and how the surgery in general is progressing. I think that communications helps a lot to reduce stress in the patient."</p> <p>"The most important thing is the communication between the patient, the surgeon, and the anesthesiologist."</p> <p>"Usually, we perform general anesthesia once the mother has met her baby. In our experience, 100% of the patients ask for sedation after the delivery of their baby. This is because many women commented that being awake for the whole process caused a lot of anxiety."</p> <p>"We generally offer the woman the option of being awake for the birth and then a general anesthetic for the hysterectomy. Most women prefer this option."</p> <p>"We prefer combination of anesthetic procedure, first regional anesthesia (spinal or epidural) until baby is delivered and after general. A review during pregnancy to give information to our patients is essential."</p> <p>"We explain the pros and cons, and involve patients choice. Often patients like the idea of being awake for the birth but can be scared about quick need to go to general anesthesia if a problem happens"</p>
Theme 3: Importance of multidisciplinary team care	<p>"It has been a great experience (using neuraxial anesthesia) with good pain control, good outcomes, and satisfaction for the patients. All due to the multidisciplinary team we have and the protocols we have for PAS in our institution."</p> <p>"Regional anesthesia improves postoperative pain management, allows the mother to be awake when the baby is born. If as a team we are working with good communication we can be ready in case of major bleeding and/or complications. The advantage of the neuraxial opioids and the early use of norepinephrine allows us to control the hemodynamics of the patient in case of bleeding. The use of a known protocol is very important to achieve good outcomes within a specialist PAS team."</p>

Abbreviation: PAS, placenta accreta spectrum.

experience are presented separately.²⁸ In the patient survey, women were asked if they felt the use of a decision aid would have been helpful to them during their PAS pregnancy to assist them in understanding and making decisions around their anesthesia care. The vast majority responded that they would have found this helpful. Reasons given included being provided with reliable information, in language that they can understand, and having their preferences heard (supporting quotes presented here.²⁸ The decision aid is presented in the Data S1. Following the International Patient Decision Aid Standards criteria, the decision aid describes the health condition, outlines the decision to be considered, and presents the risks and benefits of each option with equal detail in

a non-biased way.¹⁷ The purpose of the decision aid is to provide information, allow the patient to weigh up the risks and benefits of anesthesia mode for PAS, and for them to explore what values are most important to them. Furthermore, the decision aid allows patients to consider who might assist them in making the decision, such as their healthcare team, their partner or family, or a patient advocate. The aid does not advise one option over the other, rather it presents the options in an unbiased manner with relevant information. The aid is designed to complement the anesthesiology consultation, allowing the patient to come to a decision with all the options available to them, explore their values and discuss these with their healthcare provider.

4 | DISCUSSION

The present study presents the healthcare provider management and experiences of anesthesia care in PAS. Preferences for primary mode of anesthesia used by healthcare providers in this study differed. Furthermore, there was variation in their views on what women are seeking in terms of choice, autonomy, and decision making. A decision aid may be useful to align the considerations and preferences of both the healthcare provider and the patient, ensuring that the final decision is agreed in partnership and that the patient understands that circumstances may necessitate a change in these plans.

Each mode of anesthesia is associated with risks and benefits. Neuraxial anesthesia facilitates the mother to be awake for the birth with her support partner with her, has minimal effect on uterine tone, avoids fetal exposure to anesthetic agents, and typically facilitates postoperative pain control through use of an epidural infusion or intrathecal opioids.^{8,20} However unplanned conversion to GA may be needed in the event of an emergency and the block may be inadequate for the duration of the procedure.¹⁴

General anesthesia, on the other hand, is associated with a higher risk of hemorrhage and risk of failed intubation.^{21, 22} Furthermore, the fetus is exposed to anesthetic agents, although a single, brief exposure to GA is unlikely to affect neurodevelopmental outcomes for the child.^{23,24} The benefit of GA is a secured airway from the start of the procedure, and optimal comfort for the mother. A combination of neuraxial anesthesia at the start with planned conversion to GA offers many of the benefits of both neuraxial and GA; however, it necessitates intubation in the middle of the procedure.

Responses of healthcare providers in this study showed significant variation in preference for a primary mode of anesthesia: approximately a third used neuraxial anesthesia only as a preference, and a third used a combination of neuraxial and GA. Providers stated various reasons for their choice of anesthetic, taking into account various factors including patient preferences and the extent of the surgery. Many cited the benefits of a neuraxial technique (either alone or in combination with GA) and sought to provide this where possible, whereas others cited the frequent need for a GA technique with severe disease. Surgeons who predominantly performed midline laparotomy for cesarean hysterectomy were more likely to prefer GA. For most providers, however there was no preference for a particular mode of anesthesia, but rather that the anesthesia provided was adequate to ensure patient comfort.

Based on these findings, and also on our work presented on the patient perspective²⁸, there is a clear message that women want to be informed and involved in decision making, with clear communication from their healthcare team. Therefore, we suggest a decision aid that may assist healthcare providers in counseling their patients and exploring the possible risks, benefits, and implications of each anesthesia mode. Decision aids have been found to be particularly useful in these situations, by improving patient's knowledge of the risks and benefits, creating more realistic expectations, and assisting healthcare providers to understand their patients' expectations and

preferences.^{19,25} Certainly, participants in this study responded positively to the suggestion of a decision aid²⁸ and their use in PAS has been recommended by others.^{26,27}

Additionally, using a decision aid may also identify those who prefer their healthcare providers to advise them on what is best, and not have to make decisions around care. Although these were in the minority²⁸, it's important for clinicians to recognize women who prefer not to play an active role in decision making because repeating information that they find stressful can add to the trauma of the experience.

This study has a number of strengths and limitations. To our knowledge, the experiences of healthcare providers in PAS anesthesia care have not been previously reported. Participants were from various geographical locations, with low-, high- and middle- to low-resource settings represented. Furthermore, the study was conducted by an international multidisciplinary team representing multiple specialties including anesthesiology, midwifery, and gynecologic oncology and patient representatives. This study is limited as the qualitative data were obtained using open-ended questions as part of a descriptive survey, which does not give the level of depth and insight that an interview study would. Although the response rate of participants was high, we do not have data on non-responders and this may limit the generalizability of the results. However, as the sampling strategy contacted participants involved in PAS care, we have no reason to believe that those who did not respond would differ significantly from the almost 70% who did participate.

In conclusion, the approach of healthcare providers to anesthesia care preferences in PAS varies. The decision around final mode of anesthesia should be tailored to the plan for surgery, taking into consideration the woman's preferences and anticipated complications for each case. The use of a decision aid may assist healthcare providers to counsel patients in these complex and dynamic circumstances; however, their impact in this setting is unknown and should be investigated in future studies.

AUTHOR CONTRIBUTIONS

Helena C. Bartels, Doireann O'Flaherty, and Donal J. Brennan contributed to ethical approval; Helena C. Bartels, JGL, Don Walsh, Kristen Terlezzi, Naomi Cooney, Robert ffrench-O'Carroll, and Donal J. Brennan contributed to study design; Helena C. Bartels, JGL, Don Walsh, Kristen Terlezzi, Naomi Cooney, Robert ffrench-O'Carroll, and Donal J. Brennan contributed to study planning; Helena C. Bartels, JGL, Don Walsh, Kristen Terlezzi, Naomi Cooney, Robert ffrench-O'Carroll, Albaro José Nieto-Calvache, José Miguel Palacios-Jaraquemada, Doireann O'Flaherty, and Siaghal MacColgain contributed to data collection and analysis; Helena C. Bartels, JGL, Don Walsh, Robert ffrench-O'Carroll, Doireann O'Flaherty, and DJ contributed to manuscript writing; and Helena C. Bartels, JGL, Don Walsh, Kristen Terlezzi, Naomi Cooney, Robert ffrench-O'Carroll, Albaro José Nieto-Calvache, José Miguel Palacios-Jaraquemada, Doireann O'Flaherty, and Siaghal MacColgain contributed to manuscript editing. All authors read and approved the final manuscript.

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CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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