

Predictors of intraoperative conversion to cesarean hysterectomy during attempted conservative management of placenta accreta spectrum: a multicenter cohort study



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BACKGROUND: Conservative management of placenta accreta spectrum (PAS) is increasingly attempted to reduce maternal morbidity and preserve fertility. However, in a substantial proportion of cases, uterine preservation cannot be maintained and conversion to cesarean hysterectomy is required before skin closure, a distinct clinical event whose predictors and associated morbidity remain poorly described.

OBJECTIVE: We aimed to determine the incidence of intraoperative conversion to cesarean hysterectomy during attempted conservative PAS management, to identify its preoperative predictors, and to characterize the associated maternal morbidity.

METHODS: Retrospective multicenter cohort study conducted between January 2013 and December 2023 across 3 French tertiary PAS referral centers. Women with antenatal PAS suspicion in whom conservative management was attempted were included. Conservative management comprised leaving the placenta partially or completely in situ or performing focal resection of the invaded myometrium and adherent placenta, followed by uterine reconstruction. Intraoperative conversion was defined as cesarean hysterectomy performed before skin closure due to uncontrolled hemorrhage refractory to hemostatic measures. Preoperative predictors were identified by univariate and multivariable logistic regression analysis.

RESULTS: Among 189 women with antenatal PAS suspicion, 101 in whom conservative management was initially attempted were included.

Intraoperative conversion to cesarean hysterectomy occurred in 29 of 101 women (28.7%), corresponding to nearly 1 in 3 women undergoing attempted conservative management. In the conversion group, median estimated blood loss was 3600 mL (IQR 2500–6000) vs 600 mL (Interquartile Range [IQR] 300–1525) in the successful group ($P < .001$), with bladder injuries in 13.8% vs 0% ($P = .006$), and requirement for conversion to general anesthesia in 82.8% vs 33.3% ($P < .001$). On multivariable analysis, antenatal vaginal bleeding was independently associated with intraoperative conversion (adjusted odds ratios [aOR] 2.85, 95% confidence interval [CI] 1.10–7.39; $P = .031$). The model had an AUC of 0.70 (95% CI 0.59–0.80), indicating modest discriminative ability.

CONCLUSION: Intraoperative conversion to cesarean hysterectomy occurs in nearly 1 in 3 women undergoing attempted conservative PAS management and is associated with substantially higher maternal morbidity than successful uterine preservation. Antenatal vaginal bleeding independently predicts this event. It may help guide preoperative counseling and surgical planning.

Key words: placenta accreta spectrum, conservative management, cesarean, hysterectomy

Introduction

Placenta accreta spectrum (PAS) refers to the abnormal adherence of the placenta to the uterine myometrium, resulting from a defect in the decidua basalis.¹ Its incidence has increased over recent decades, driven by increasing cesarean delivery rates worldwide, with contemporary

estimates approaching 1 in 313 cesarean deliveries in the United States.²

Although cesarean hysterectomy remains the standard approach endorsed by several professional societies,³ the updated RCOG guideline states that, where feasible, uterus-preserving surgery, including partial myometrial resection, is preferable when performed by expert surgeons following appropriate counseling.⁴ Uterus-preserving approaches to PAS include leaving the placenta partially or completely in situ and focal myometrial resection, which involves removing the invaded myometrium and adherent placenta followed by uterine reconstruction.^{5,6} These approaches may reduce maternal morbidity, particularly hemorrhage, transfusion requirements, and injury to adjacent

organs, while offering the additional benefit of potential fertility preservation.^{7–15}

Despite growing adoption of conservative management, a critical and undercharacterized phase of this surgical strategy has received no dedicated attention in the literature: the intraoperative decision to convert from planned uterine preservation to immediate cesarean hysterectomy. This conversion, performed under acute hemorrhagic conditions, before skin closure, during the same surgery as the delivery, is fundamentally distinct from delayed hysterectomy occurring in the days or weeks following delivery. This conversion requires an irreversible surgical decision under time pressure, in the context of active hemorrhage, and before the abdomen is closed—circumstances that are clinically distinct

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AJOG MFM at a Glance

Why was this study conducted?

- Conservative management of placenta accreta spectrum (PAS) is increasingly used to preserve the uterus, but some women require intraoperative conversion to cesarean hysterectomy. Data on predictors and associated morbidity remain limited.

What are the key findings?

- Intraoperative conversion occurred in 28.7% of women undergoing attempted conservative PAS management.
- Conversion was associated with substantially higher maternal morbidity, including greater blood loss, more bladder injuries, and more frequent conversion to general anesthesia.
- Antenatal vaginal bleeding independently predicted conversion.

What does this add to what is known?

- This study identifies intraoperative conversion to hysterectomy as a frequent and clinically important outcome during conservative PAS management.
- Antenatal vaginal bleeding may help guide patient counseling, risk stratification, and multidisciplinary surgical planning.

from those of delayed postpartum hysterectomy.

While several studies have examined predictors of delayed hysterectomy and compared outcomes between conservative and radical management, no study has specifically investigated the predictors and consequences of intraoperative conversion to cesarean hysterectomy during planned uterine-preserving surgery for PAS.^{9,12,16,17} Identifying preoperative risk factors for this event is essential: it would allow surgeons to better select candidates for conservative management, tailor preoperative planning, counsel patients more accurately on the realistic probability of achieving uterine preservation, and ensure optimal intraoperative resources are available for the highest-risk cases.

Accordingly, we aimed to determine the incidence of intraoperative conversion to cesarean hysterectomy during attempted conservative PAS management; to identify preoperative factors independently associated with this conversion; and to characterize the maternal morbidity associated with intraoperative conversion compared with successful uterine preservation.

Methods

We conducted a retrospective multicenter cohort study across 3 French

tertiary university maternity units recognized as expert referral centers for placenta accreta spectrum, between January 2013 and December 2023. Together, these 3 centers perform approximately 15,200 deliveries and manage 18 to 28 PAS cases annually, representing among the highest-volume PAS referral centers in France. During the 11-year study period, 189 women delivering across the 3 centers (189/168,561 deliveries, 0.11%) had a prenatal suspicion of PAS.

Study population

We included all women who delivered at or beyond 22 weeks of gestation with an antenatal suspicion of PAS based on ultrasound and/or MRI, and in whom conservative management was attempted, whether planned preoperatively or decided intraoperatively. Conservative management was defined as leaving the placenta partially or completely in situ, or performing focal resection of the invaded myometrium and adherent placenta, followed by uterine reconstruction. We excluded women who underwent planned cesarean hysterectomy, those who delivered vaginally, those in whom PAS was diagnosed solely intraoperatively without prior antenatal suspicion, and cases of pregnancy termination.

PAS was classified according to the FIGO grading system as grade 1 (accreta), grade 2 (incretta), and grade 3 (percreta).¹⁸ PAS diagnosis was based on histologic examination of hysterectomy or focal myometrial resection specimens. When the placenta was left in situ, the diagnosis required at least 1 of the following: absence of a cleavage plane between placenta and uterus at surgery; prenatal suspicion confirmed by failure of placental separation at delivery; or macroscopic evidence of placental extension into the myometrium at surgery.^{8,19}

Multidisciplinary management and selection criteria for conservative management

In all 3 centers, when PAS was suspected during ultrasonography, targeted ultrasound evaluation was performed by an experienced operator, combined with placental MRI. Cases with strong suspicion of PAS were discussed during a multidisciplinary surgical meeting (involving obstetricians, gynecological surgeons, urologists, anesthesiologists, and intensivists). A preoperative management strategy, planned cesarean hysterectomy or attempted conservative management (with local resection or placenta left in situ partially or entirely), was established for each case. Conservative management was preferentially discussed when the patient explicitly desired fertility preservation after comprehensive counseling, or immediate hysterectomy was judged to carry high perioperative risk, particularly in anterior percreta with extensive bladder involvement or severe pelvic hypervascularization. Final surgical strategy could be modified intraoperatively based on findings at the time of cesarean. The choice between leaving the placenta in situ and focal myometrial resection was based on intraoperative findings, placental characteristics, and surgical feasibility. All procedures, including emergency cesarean deliveries, were performed by experienced multidisciplinary teams in PAS

referral centers, with several specialists available.

Definition of intraoperative conversion

The primary outcome, intraoperative conversion to cesarean hysterectomy, was defined as cesarean hysterectomy performed during the same surgery as the delivery, before skin closure. In all cases, conversion was performed for uncontrolled hemorrhage refractory to all available hemostatic measures (uterotonics, uterine compression sutures, arterial ligation [ligation of the uterine, round ligament, and utero-ovarian arteries], and balloon tamponade). This outcome is explicitly distinct from delayed hysterectomy, performed after cesarean skin closure in the postoperative period, which represents a separate clinical event.

Data collection

Data were collected from medical records and included maternal characteristics (maternal age, prepregnancy body mass index, geographic origin), obstetric and gynecological history (parity, number of previous cesarean deliveries, history of uterine surgery (myomectomy or hysteroscopy) and curettage, history of PAS, and history of uterine rupture), and characteristics of the current pregnancy (singleton or multiple pregnancy, conception by Assisted Reproductive Technology (ART), at least 1 episode of antenatal vaginal bleeding requiring hospitalization, hospitalization, premature rupture of membranes, antenatal corticosteroid administration (used as a clinical proxy for anticipated preterm delivery or obstetric instability, and tocolysis). Prenatal imaging findings from ultrasound and MRI were recorded. Intraoperative data included gestational age at delivery, planned or emergency cesarean delivery, type of uterine and abdominal incisions, and type of conservative management. We also recorded the subtype of placental abnormality as assessed visually by the surgeon during surgery, with grades 2 and 3 cases grouped together. FIGO grades 2 and 3 were grouped for analysis because both

represent invasive forms of PAS and share more similar pathophysiological and management considerations than FIGO grade 1, which primarily represents abnormal placental adherence. Estimated blood loss, use of postpartum hemorrhage management strategies, type of anesthesia, selective placement of double-J ureteral stents to facilitate intraoperative ureteral identification in cases considered at increased risk of urinary tract injury, and the use of intraoperative cell salvage were also recorded.

Statistical analysis

First, we described the incidence of intraoperative conversion and compared maternal morbidity between conversion and successful groups. Second, we performed univariate analyses of preoperative and perioperative variables to identify factors associated with conversion, using chi-square or Fisher's exact tests for categorical variables and the Mann–Whitney U test for continuous variables. Third, a multivariable logistic regression model was built to identify independent preoperative predictors of intraoperative conversion. Variables were selected a priori based on 2 criteria: preoperative availability, to ensure clinical applicability at the time of surgical planning, and statistical association in univariate analysis ($P < .20$). Variables available only at the time of surgery, including emergency cesarean delivery and intraoperative PAS grading, were excluded from the model regardless of their univariate association, as their inclusion would be inconsistent with a preoperative prediction objective and would risk capturing mediating rather than causal relationships. Hospitalization and antenatal corticosteroid administration, although associated with conversion in univariate analysis, were also excluded because they were considered a clinical proxy for antenatal bleeding and obstetric instability rather than independent preoperative predictors. The final model included 2 covariates—prior uterine curettage and antenatal vaginal bleeding—consistent with the 10 events-per-variable rule.

Results are expressed as adjusted odds ratios (aOR) with 95% confidence intervals. Model discrimination was assessed by the area under the receiver operating characteristic (ROC) curve. All analyses were performed with STATA 16 (StataCorp LLC, College Station, TX). All tests were 2-sided; $P < .05$ was considered statistically significant.

Ethics

This multicenter study was approved by the Research Ethics Committee in Obstetrics and Gynecology (CEROG 2024-OBS-1002), this approval covered all 3 participating centers. Given the retrospective nature of the study and the use of anonymized data, the requirement for written informed consent was waived by the Ethics Committee.

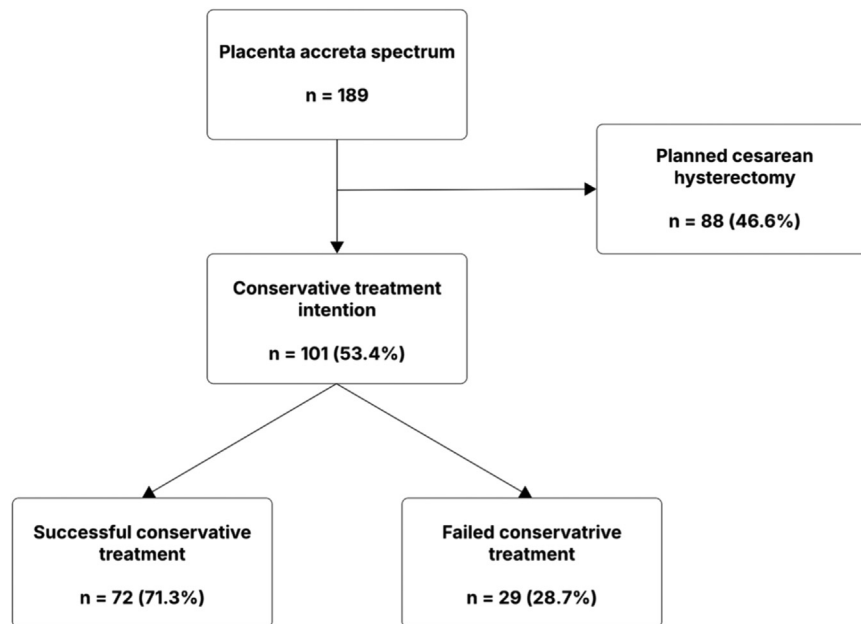
Results

Study population and incidence of intraoperative conversion

From January 2013 to December 2023, 189 women were suspected of having PAS (Figure 1). Among them, 88 underwent a planned cesarean hysterectomy and were excluded. The remaining 101 women in whom conservative management was initially attempted constituted the study population. Intraoperative conversion to cesarean hysterectomy occurred in 29 of 101 women (28.7%), corresponding to nearly 1 in 3 women undergoing attempted conservative management. Conservative management was successfully completed in the remaining 72 (71.3%).

Among the 99 women with available technique data, the placenta was left completely in situ in 67, partially in situ in 17, and focal myometrial resection was performed in 15. Among the 27 women in the conversion group with available technique data, 18/27 (66.7%) had the placenta left entirely in situ, 8/27 (29.6%) partially in situ, and 1/27 (3.7%) underwent focal myometrial resection, compared with 49/72 (68.1%), 9/72 (12.5%), and 14/72 (19.4%), respectively, in the successful group ($P = .04$). In all 29 cases, conversion was performed for uncontrolled

FIGURE 1
Flowchart of the study population.



Segui. Predictors of intraoperative conversion to cesarean hysterectomy during attempted conservative management of placenta accreta spectrum: a multicenter cohort study. *Am J Obstet Gynecol* 2026.

hemorrhage refractory to hemostatic measures including uterotonics, uterine compression sutures and/or arterial ligation. Table 1 summarizes maternal and antenatal characteristics.

Maternal morbidity associated with intraoperative conversion

Intraoperative conversion was associated with substantially higher maternal morbidity compared with successful conservative management (Table 2). Median estimated blood loss was 3600 mL (IQR 2500–6000) in the conversion group vs 600 mL (IQR 300–1525) in the successful group ($P<.001$). This difference was consistent across PAS subtypes: among grade 1 cases, median blood loss was 3625 mL vs 1150 mL ($P<.001$); among grade 2 to 3 cases, 3000 mL vs 400 mL ($P<.001$). Bladder injuries occurred in 4 of 29 (13.8%) conversion cases vs none in the successful group ($P=.006$). Conversion to general anesthesia during the procedure was required in 82.8% of the conversion group vs 33.3% of the successful group ($P<.001$).

Preoperative and perioperative predictors of intraoperative conversion

Univariate analyses are presented in Tables 1 and 2. Women in the conversion group had a significantly higher rate of prior uterine curettage (51.7% vs 25.0%, $P=.01$), antenatal vaginal bleeding (69.0% vs 38.9%, $P=.006$) and hospitalization during pregnancy (79.3% vs 56.9%, $P=.035$). Antenatal corticosteroid administration was also more frequent in the conversion group (69.0% vs 43.7%, $P=.02$). Emergency cesarean delivery was not significantly more frequent in the conversion group than in the successful group (41.4% vs 23.6%, $P=.07$). The proportion of intraoperative FIGO grade 1 diagnosis was higher in the conversion group (75.9% vs 55.6%, $P=.09$). Prenatal ultrasound similarly suggested a higher proportion of FIGO grade 1 PAS in the conversion group (89.7% vs 65.7%, $P=.054$).

Multivariable analysis

On multivariable logistic regression, antenatal vaginal bleeding was

independently associated with intraoperative conversion (aOR 2.85, 95% CI 1.10–7.39; $P=.031$). Prior uterine curettage was not independently associated with intraoperative conversion (aOR 2.53, 95% CI 0.99–6.49; $P=.054$). The overall model was statistically significant (likelihood ratio $\chi^2=11.32$, $P=0.004$) with an area under the ROC curve of 0.70 (95% CI 0.59–0.80), indicating modest discriminative ability (Figure 2).

Discussion

In this multicenter cohort study of 101 women with PAS in whom conservative management was initially attempted, intraoperative conversion to cesarean hysterectomy occurred in 28.7% of cases, corresponding to nearly 1 in 3 women, and was associated with substantially higher maternal morbidity than successful uterine preservation. Antenatal vaginal bleeding was independently associated with conversion on multivariable analysis. To our knowledge, this is the first study to characterize intraoperative conversion as a distinct clinical outcome, separate from delayed postpartum hysterectomy, and to specifically investigate its preoperative predictors.

The conversion rate observed in our cohort is higher than the failure rates reported in most prior studies of conservative PAS management. Sentilhes et al.^{8,9} reported failure rates of 7.0%–10.8%,^{8,9} and Amro et al.¹⁵ a rate of 14%,¹⁵ but these studies exclusively used a leave-in-situ approach without uterine resection. Friedrich et al.¹⁶ and Shazly et al.¹⁷ who systematically performed segmental uterine resection, reported failure rates of 13.8% and 20.1%, respectively. However, direct comparison remains difficult because these studies defined failure as hysterectomy performed during cesarean delivery or within 24 hours postpartum, conflating intraoperative conversion with early postoperative hysterectomy. In contrast, our study restricts the outcome strictly to intraoperative conversion—hysterectomy performed before skin closure—which represents a more acute and clinically

TABLE 1

Characteristics of the study population.

	Study population n=101	Intraoperative conversion group n=29	Successful conservative management n=72	P
Maternal characteristics				
Maternal age (y)	34.4 (30.9–37.4)	33.8 (29.8–36.6)	34.7 (31.0–38.2)	.532
Pre-pregnancy BMI ^a	24.1 (19.6–29.3)	24.1 (19.6–29.3)	25.0 (21.4–29.1)	.578
Geographic origin (n=97)				.674
Europe	47 (48.5)	14 (53.9)	33 (46.5)	
North Africa	23 (23.7)	4 (15.4)	19 (26.8)	
Sub-Saharan Africa	17 (17.6)	6 (23.1)	11 (15.5)	
Other origin	10 (10.3)	2 (7.7)	8 (11.3)	
Parity	2 (1–3)	2 (1–3)	2 (1–3)	.651
Number of previous cesareans				
0	7 (6.9)	4 (13.8)	3 (4.2)	.220
1	39 (38.6)	11 (37.9)	28 (38.9)	
2	27 (26.7)	9 (31.0)	18 (25.0)	
≥3	28 (27.7)	5 (17.2)	23 (31.9)	
Previous uterine surgery	13 (12.9)	5 (17.2)	8 (11.1)	.405
Previous curettage	33 (32.7)	15 (51.7)	18 (25.0)	.010
Previous placenta accreta	2 (1.9)	1 (3.5)	1 (1.4)	.502
Previous uterine rupture	3 (3.0)	0 (0)	3 (4.2)	.555
Characteristics of current pregnancy				
Twin pregnancy	2 (2.0)	1 (3.5)	1 (1.4)	.494
Pregnancy obtained by ART ^b	13 (12.9)	5 (17.2)	8 (11.1)	.405
Antenatal vaginal bleeding	48 (47.5)	20 (69.0)	28 (38.9)	.006
Hospitalization	64 (63.4)	23 (79.3)	41 (56.9)	.035
PROM ^c	11 (10.9)	3 (10.3)	8 (11.1)	.911
Corticosteroids (n=100)	51 (51.0)	20 (69.0)	31 (43.7)	.022
Tocolysis	40 (39.6)	14 (48.3)	26 (36.1)	.258
Prenatal imaging findings				
Type of placental abnormality suspected on ultrasound (n=99)				.054
– Grade 1	72 (72.7)	26 (89.7)	46 (65.7)	
– Grade 2	3 (3.0)	1 (3.5)	2 (2.9)	
– Grade 3	24 (24.2)	2 (6.9)	22 (31.4)	
Ultrasound placental location	23 (22.8)	4 (13.8)	19 (26.4)	.305
– Low lying or normal	78 (77.2)	25 (86.2)	53 (73.6)	
– Partial or complete placenta previa				
Type of placental abnormality suspected on MRI (n=90)				.384
– Grade 1	42 (46.7)	15 (57.7)	27 (42.1)	
– Grade 2	12 (13.3)	4 (15.4)	8 (12.5)	
– Grade 3	36 (40.0)	7 (26.9)	29 (45.3)	

Results presented as number (percentage) or median (Q1–Q3). Percentages were calculated using the available-data denominator.

^a Body mass index.; ^b Assisted reproductive technology.; ^c Premature rupture of membranes.

Segui. Predictors of intraoperative conversion to cesarean hysterectomy during attempted conservative management of placenta accreta spectrum: a multicenter cohort study. *Am J Obstet Gynecol* 2026.

TABLE 2

Characteristics of cesarean delivery.

	Study population n=101	Intraoperative conversion group n=29	Successful conservative management n=72	P
Gestational age at delivery (w)	36.0 (34.4–37.0)	36.0 (34.3–37.3)	36.1 (34.6–36.9)	.436
Emergency cesarean delivery	29 (28.7)	12 (41.4)	17 (23.6)	.074
Indication of emergency cesarean	n=29	n=12	n=17	.605
– Maternal emergency	5 (17.2)	3 (25.0)	2 (11.8)	
– Metrorrhagia or starting labor	22 (75.9)	8 (66.7)	14 (82.4)	
– Fetal emergency	2 (6.9)	1 (8.3)	1 (5.9)	
Laparotomy	29 (28.7)	11 (37.9)	18 (25.0)	.194
– Pfannenstiel transverse incision	72 (71.3)	18 (62.1)	54 (75.0)	
– Midline vertical incision				
Double J stent placement	60 (59.4)	16 (55.2)	44 (61.1)	.582
Hysterotomy	13 (12.9)	5 (17.2)	8 (11.1)	.405
– Low transverse	88 (87.1)	24 (82.8)	64 (88.9)	
– Midline vertical				
Type of conservative management (overall n=99; conversion n=27; successful n=72)				
– Complete placenta left in situ	67 (67.7)	18 (66.7)	49 (68.1)	.037
– Partial placenta left in situ	17 (17.2)	8 (29.6)	9 (12.5)	
– Focal myometrial resection	15 (15.2)	1 (3.7)	14 (19.4)	
Intraoperative diagnosis				
– FIGO grade 1	62 (61.4)	22 (75.9)	40 (55.6)	.088
– FIGO grades 2–3	39 (38.6)	7 (24.1)	32 (44.4)	
Total blood loss (mL)	1200 (400–3000)	3600 (2500–6000)	600 (300–1525)	<.001
– FIGO grade 1	2000 (800–3400)	3625 (2500–5100)	1150 (500–2000)	<.001
– FIGO grades 2–3	500 (200–1250)	3000 (2000–7500)	400 (200–600)	<.001
Uterine balloon tamponade	11 (11.0)	1 (3.6)	10 (13.9)	.139
Surgical procedure				
– Arterial ligature	17 (17.0)	7 (25.0)	10 (13.9)	.184
– Uterine compression sutures	10 (10.0)	3 (10.7)	7 (9.7)	.882
Organ injuries				
Bladder	4 (4.0)	4 (13.8)	0 (0)	.006
Ureteral	1 (1.0)	1 (3.5)	0 (0)	.287
Digestive	0 (0)	0 (0)	0 (0)	-
Embolization	1 (1.0)	0 (0)	1 (1.4)	.531
Anesthesia modalities				
Locoregional	43 (42.6)	1 (3.5)	42 (58.3)	<.001
General	10 (9.9)	4 (13.8)	6 (8.3)	
Locoregional and general	48 (47.5)	24 (82.8)	24 (33.3)	
Use of Cell Saver	46 (46.0)	14 (48.3)	32 (45.1)	.770

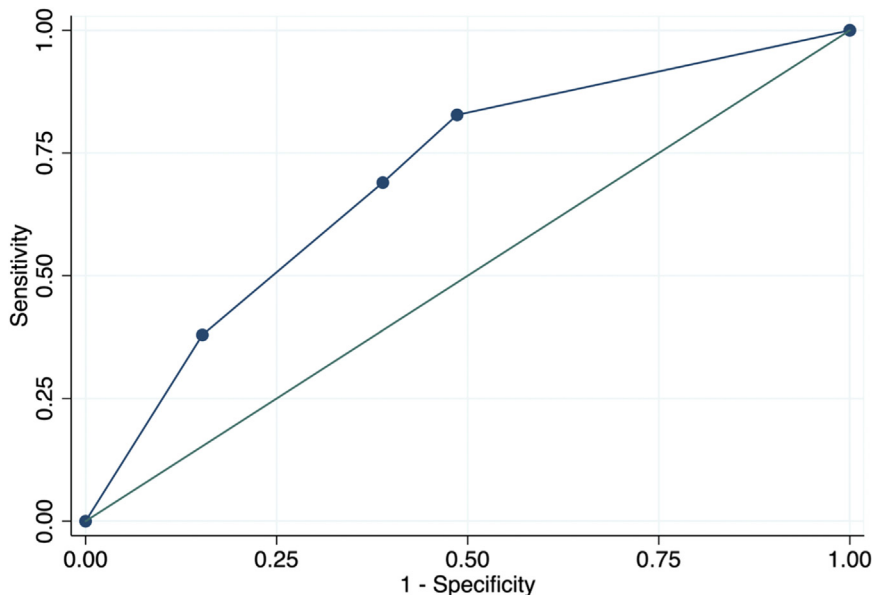
Results presented as number (percentage) or median (Q1–Q3). Percentages were calculated using the available-data denominator.

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distinct event. The heterogeneity of conservative techniques across our 3 centers, combined with a deliberate strategy of persisting with conservative management even in complex FIGO 3 cases,

further contributes to the observed rate. Only 1 of the 15 women managed by focal myometrial resection required conversion to hysterectomy. This result is consistent with the favorable outcomes

of resection-based techniques reported in previous studies.^{5,6} However, our study was not designed to compare the effectiveness of the different conservative techniques.

FIGURE 2
ROC curve.

AUC 0.70, 95%CI 0.59–0.80

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Antenatal vaginal bleeding emerged as the main independent predictor of intraoperative conversion in our study. This finding is consistent with prior literature documenting that antenatal bleeding in PAS is associated with markers of disease severity, including major hemorrhage, increased transfusion requirements, earlier gestational age at delivery, and higher rates of unplanned cesarean delivery.^{20,21} Hospitalization and antenatal corticosteroid administration, both more frequent in the conversion group, may represent markers of acute obstetric instability related to antenatal bleeding rather than independent risk factors for conversion. In our cohort, antenatal bleeding was the leading indication for emergency cesarean delivery. Although emergency cesarean delivery was not significantly associated with intraoperative conversion, it may act as an intermediate step on the causal pathway from antenatal bleeding to intraoperative conversion, potentially reflecting less favorable surgical conditions and greater maternal instability at delivery.^{22–24}

The higher blood loss and maternal morbidity observed in the conversion group should be interpreted in the context of confounding by indication, as uncontrolled hemorrhage was the reason for conversion to hysterectomy, rather than an effect attributable to conversion itself.

Prior uterine curettage was associated with intraoperative conversion in univariate analysis but not after adjustment. Curettage is an established risk factor for PAS,^{25,26} however, its potential relationship with failure of initial conservative management remains uncertain.

The apparent paradox of a higher proportion of FIGO grade 1 PAS in the conversion group compared with FIGO grades 2 to 3 warrants specific comment. This finding reflects a deliberate surgical strategy across all 3 centers rather than a biological difference according to PAS grade. In cases of anterior FIGO grade 3 with extensive bladder involvement or severe pelvic hypervascularization, leaving the placenta in situ was specifically preferred because immediate hysterectomy was

judged to carry an unacceptably high risk of hemorrhage and urinary tract injury.^{11,27,28} Surgeons consequently persisted with conservative management in FIGO grade 3 cases and achieved a relatively higher success rate in this subgroup. Conversely, in FIGO grade 1 cases complicated by intraoperative hemorrhage, the perceived lower technical difficulty of hysterectomy may have lowered the threshold for conversion, consistent with the high proportion of unplanned hysterectomies among FIGO grade 1 cases reported by Paping et al.²⁹

The present study has several strengths. Its multicenter design across 3 high-volume PAS referral centers ensures real-world applicability and limits center-specific bias. Our study specifically examines predictors of failure of initial conservative management, defined as intraoperative conversion to cesarean hysterectomy. A separate complementary study, based on the same cohort, examines predictors of delayed hysterectomy among women with initially successful conservative management. Distinguishing these 2 clinically distinct events provides a more granular and actionable framework than prior studies that conflated these 2 outcomes. The standardized diagnostic criteria and consistent multidisciplinary management across centers further improve the comparability of findings.

Several limitations must be acknowledged. The retrospective design limits causal inference and is susceptible to documentation bias. The 11-year study period may have introduced temporal variability in imaging quality, patient selection and surgical practice. Changes in the relative use of leave-in-situ and focal resection techniques could not be formally assessed and may have influenced the observed results. The multivariable model was limited to 2 covariates given the number of events, and its modest discriminative ability limits its clinical applicability. These findings should be considered exploratory and require validation in larger prospective studies. The decision to attempt conservative management was based on multidisciplinary clinical

judgment rather than predefined criteria, and the choice of conservative technique was not standardized, which may have introduced selection bias. Because only women with antenatally suspected PAS were included, these findings may not be generalizable to cases first identified intraoperatively. Blood loss at the time of the decision to convert was not consistently documented; therefore, no specific blood-loss threshold for conversion could be identified. Finally, the absence of standardized quantification of antenatal bleeding severity and detailed prenatal imaging data limited our ability to fully characterize these risk factors and may have constrained the predictive performance of the model.

Conclusion

Intraoperative conversion to cesarean hysterectomy occurs in nearly 1 in 3 women undergoing attempted conservative management for PAS and is associated with substantially higher maternal morbidity than successful uterine preservation. Antenatal vaginal bleeding independently predicts this event. These findings may help guide preoperative counseling and surgical planning in this setting.

Declaration of generative AI and AI-assisted technologies in the manuscript preparation process

During the preparation of this manuscript, the authors used generative AI (ChatGPT) to improve language, clarity, and organization. The authors reviewed and edited the output as needed and take full responsibility for the content of the published article. ■

CRedit authorship contribution statement

Léna Segui: Writing – original draft. **Lola Loussert:** Formal analysis, Conceptualization. **Maëlys Nkobetchou:** Data curation. **Lise Couderc:** Data curation. **Aude Girault:** Validation, Conceptualization. **Paul Guerby:** Validation, Conceptualization. **Yoann Athiel:** Validation, Conceptualization.

Louise Ghesquiere: Validation, Conceptualization. **Charles Garabedian:** Validation, Supervision, Conceptualization.

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Tweetable Statement: Nearly 1 in 3 women undergoing attempted conservative management of placenta accreta spectrum required intraoperative conversion to cesarean hysterectomy. Antenatal vaginal bleeding independently predicted conversion.

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