

THE MANAGEMENT STRATEGIES IN THE PLACENTA ACCRETA SPECTRUM IN TERTIARY CENTERS IN TÜRKİYE

TÜRKİYE'DEKİ ÜÇÜNCÜL MERKEZLERDE PLASENTA AKRETA SPEKTRUMUNUN YÖNETİM STRATEJİLERİ

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ABSTRACT

Objective: To determine the differences and consensus points in managing patients with placenta accreta spectrum (PAS) disorder in a nationwide survey.

Material and Method: Forty-seven items were asked via an online survey. Seventy-seven percent responded to the survey (37/48). Consensus/strong consensus was predefined as 75%–89% (28–33/37)/>90% (≥34/37) of panelists agreeing on an answer.

Result: In a few areas, consensus or strong consensus was achieved. These are the absence of interventional radiology (89.2%) and cell-saver in the institution (94.6%), a rare selection of magnetic resonance (83.8%), and frequent use of transvaginal sonography (94.6%) as an adjuvant diagnostic tool. Penetrative sexual intercourse is prohibited (78.4%); perineal shaving (81.1%) and rectal enema (94.6%) are not used; general anesthesia (75.7%) is the preferred technique; hypothermia control (97.3%) is not omitted; and administration of oxytocin (75.7%) is similar to routine cesarean section; vascular injuries are managed by vascular surgeons (78.4%); gynecologic oncologists are not a regular part of the surgical team (86.5%); routine insertion of a central venous cannula (78.4%) is not considered and placement of an abdominal drain (89.2%) is usually performed. Surgery is often performed through a median abdominal incision (83.8%), and a total hysterectomy (81.1%) is chosen. Routine hypogastric artery ligation (91.9%) is not performed. In the postoperative period, the patients are allowed to have early mobilization (91.9%) and oral intake (83.8%). They are habitually discharged on the 3rd-4th postoperative day (75.7%). Psychiatric needs are often neglected (94.6%).

Conclusion: These consensus points could help obstetricians manage this complicated condition. These results also demon-

ÖZET

Amaç: Plasenta akreta spektrumunun (PAS) yönetimindeki ortak ve farklı yaklaşımların ulusal çapta bir anket çalışmasıyla belirlenmesi.

Gereç ve Yöntem: Çevrim içi bir anket ile 47 soru yöneltildi. Katılımcıların %77'si ankete cevap verdi (37/48). Katılımcıların cevaplarında uyum için %75-89 (28–33/37), kuvvetli uyum için ≥ %90 (≥34/37) fikir birliği arandı.

Bulgular: Az sayıda konuda uyum ve kuvvetli uyum sağlanabildi. Bunlar girişimsel radyoloji imkânı olmaması (%89,2), hücre kurtarıcı olmaması (%94,6), manyetik rezonansın nadiren kullanılması (%83,8), yardımcı görüntüleme yöntemi olarak sıklıkla transvajinal sonografi (%94,6) kullanılmasıdır. Penetran cinsel ilişkinin yasaklanması (%78,4), perine traşı (%81,1) ve lavman kullanılmaması (%94,6), genel anestezi kullanılması (%75,7), hipotermi kontrolünün ihmal edilmemesi (%97,3), oksitosinin sezaryende kullanılan dozda uygulanması (%75,7), damar yaralanmalarında damar cerrahisinden yardım alınması (%78,4), jinekolojik onkoloji uzmanlarının ameliyatlara rutin olarak çağırılmaması (%86,5), santral venöz kateterin rutin olarak takılmaması (%78,4) ve ameliyat bitiminde genellikle dren konulması (%89,2) ise diğer noktalar. Katılımcılar arasında insizyon tercihi genellikle orta hat kesidir (%83,8) ve ameliyat şekli total histerektomidir (%81,1). Ameliyat sonrası dönemde hastaların hareket etmesi (%91,9) ve beslenmesi (%83,8) kısıtlanmamaktadır. Genellikle ameliyat sonrası 3.-4. günlerde taburcu edilmelerine (%75,7) karar verilmektedir. Psikiyatrik ihtiyaçları genellikle ihmal edilmektedir (%94,6).

Sonuç: Görüş birliği elde edilen noktalar bu karmaşık sorunun yönetiminde doğum hekimlerine yardımcı olabilir. Bu sonuçlar

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strate the need for evidence-based data for implementing proper treatment strategies for PAS disorder. Future research is sought for these points.

Keywords: Perinatology, placenta accreta, postpartum hemorrhage, surveys and questionnaires

aynı zamanda PAS'ın doğru yönetimi için kanıta dayalı bilgi açığının ortaya koymaktadır. Bu konular için gelecekte yapılacak çalışmalara ihtiyaç vardır.

Anahtar Kelimeler: Perinatoloji, plasenta akreta, postpartum kanama, anket

INTRODUCTION

The placenta accreta spectrum (PAS) disorder is an iatrogenic disease and an essential risk factor for maternal health. Currently, the incidence of the disease is reported as 3 in 1000, and the mortality may be as high as 6-7% (1). As the denominator of maternal mortality is 100,000, the estimated number of maternal deaths due to PAS disorder may be as high as 18 in 100,000 deliveries. The morbidity and mortality could be lowered significantly by antenatal diagnosis and proper management (2). The "centers of excellence" briefly define the hospitals where the multi-disciplinary, experienced clinical staff and supporting facilities are present. The management of these cases in the centers of excellence is praised, but the minimum requirements for defining these centers and the level of clinical expertise are unclear. The clinical practice in managing PAS disorder varies significantly in these centers, and few evidence-based data exist. The combination of the differences between the institutions regarding facility and staff with the heterogeneous nature of the disease makes it difficult to dispel these gaps. Surveys are candidates for creating at least experience-based data in such situations. We analyzed the literature and found recent surveys from high-income countries. We aimed to evaluate the trends in managing PAS disorder in a developing country where the cesarean rate is more than 50%.

MATERIAL and METHODS

We conducted a nationwide survey among 48 experts in complicated obstetric surgery from 26 cities in Türkiye. A questionnaire was prepared using the Google Forms tool. The survey was available for one month in August of 2022. During this interval, three remainder surveys were sent to candidate participants. The candidates were senior obstetricians or consultants suggested by senior physicians in tertiary hospitals. In addition, the participants have published papers in international or national journals or have presented their experiences at international or national scientific meetings. The participants received an e-mail with a link to the survey, and the authors contacted them personally to invite them to fill it out. The Ethics Committee of Çukurova University approved the study protocol (Date: 30.06.2022; No: 48).

The topics selected in the survey are determined from the points in which the heterogeneity is apparent and ev-

idence-based data is hard to find. The survey contains five chapters: department and surgeon description, diagnosis of PAS, preparation for surgery, intraoperative management of PAS, and postoperative care. In sum, participants were asked 47 questions. Less than 75% accepted as no consensus, 75-89% (28-33/37) taken as consensus, and >90% ($\geq 34/37$) accepted as strong consensus.

RESULTS

We identified 34 units from 26 cities. The population of these cities is 53.3 million, constituting 63.5% of the country's population. The survey was sent to 48 experts, and 37 responded (77%). Survey data were collected using Google Forms. The demographic characteristics of survey participants and the different management approaches reported by participants are presented as numbers and percentages in Table 1. In addition, the consensus points are depicted in an iconography shown in Figure 1.

DISCUSSION

Proper management of PAS disorder compromises antenatal diagnosis, anti-anemic support before the surgery, coordination and collaboration of experienced partners, and adequate facilities in the hospital. By performing this nationwide questionnaire, we aimed to demonstrate the consensus points in order to find a standardized way. The survey participants were experts from hospitals with a high number of operations in high-population cities. While the number of towns is 26 out of 81 provinces, the population of these cities represents 63% of the entire country.

In our survey population, most of the participants practiced for more than ten years and practiced PAS surgery for more than five years. More than 90% of the participating institutions had more than 10 PAS surgeries annually. Although the strong recommendation is consistently stated in recent publications, regular conversation before surgery with other departments is performed by nearly half of our participants. Support for interventional radiology is not sought by international organizations and is absent in most institutions. While the predetermined transfusion policy ratio did not reach a consensus level, nearly 65% preferred a combination of fresh frozen plasma and thrombocyte with erythrocyte in a ratio 1:1:1. Early restoration of the coagulation system is defined as "damage control

Table 1: Management practices for PAS disorders among the participants (n=37)

Description of the hospital and the physician	
Questions	n (%)
Years in practice	
<10 years	4 (10.8)
>10 years	33 (89.2)
Years in PAS surgery	
<5 years	8 (21.6)
>5 years	29 (78.4)
Number of PAS surgeries per year in the institution	
<10	3 (8.1)
>10	34 (91.9)
Presence of other institutions occupying PAS surgery in the city	
Yes	23 (62.1)
No	14 (37.8)
Presence of a predetermined transfusion policy in the institution	
1 ES/1 FFP/1 TS	24 (64.9)
1 ES/2 FFP/4 TS	2 (5.4)
Other	6 (16.2)
Not predetermined	5 (13.5)
Preoperative meeting with blood bank staff	
Yes	16 (43.2)
No	21 (56.8)
Preoperative meeting with anesthesiology staff	
Yes	18 (48.6)
No	19 (51.4)
Preoperative meeting with neonatology staff	
Yes	16 (43.2)
No	21 (56.8)
Preoperative meeting with operating room staff	
Yes	23 (62.1)
No	14 (37.8)
Presence of interventional radiology in the institution	
Yes	4 (10.8)
No	33 (89.2)
Presence of cell saver in the institution	
Yes	2 (5.4)
No	35 (94.6)
Prenatal diagnosis	
Questions	n (%)
The role of MRI	
Never	26 (70.3)
Rarely selected	5 (13.5)
Frequently	6 (16.2)
The role of transvaginal ultrasound	
Never	2 (5.4)
Rarely selected	7 (18.9)
Frequently	28 (75.7)
Operation time (weeks)	
34	4 (10.8)
34-35	9 (24.3)
35	4 (10.8)
35-36	3 (8.1)
36	8 (21.6)
36-37	3 (8.1)
37	5 (13.5)
<37	1 (2.7)

Table 1: Continue

Preoperative	
Questions	n (%)
Preoperative hospital stay	
1 day before	14 (37.8)
Within 7 days	9 (24.3)
<7 days	10 (27)
Not standardized	4 (10.8)
Routine corticosteroid use <34 weeks	
Yes	17 (45.9)
No	20 (54.1)
Strategy for preventing anemia	
Oral iron	12 (32.5)
IV iron	10 (27.0)
Oral + IV iron	14 (37.8)
Erythropoietin	1 (2.7)
Tubal ligation is an option in your institution	
Yes	34 (91.9)
No	3 (8.1)
Routine intestinal cleaning	
Yes	2 (5.4)
No	35 (94.6)
Routine perineal shaving	
Yes	7 (18.9)
No	30 (81.1)
Prohibition of penetrating sexual intercourse during pregnancy	
Yes	29 (78.4)
No	8 (21.6)
Intraoperative	
Questions	n (%)
Anesthesia	
General	28 (75.7)
Regional	9 (24.3)
Routine cystoscopy and ureteral stents	
Yes	2 (5.4)
No	35 (94.6)
Repair of non-complicated urinary injuries	
Obstetrician	24 (64.9)
Urologist	13 (35.1)
Repair of injury of great vessels	
Obstetrician	8 (21.6)
Vascular surgeon	29 (78.4)
Routine admission of gynecological oncologist	
Yes	5 (13.5)
No	32 (86.5)
Routine arterial cannulation	
Yes	20 (54.1)
No	17 (45.9)
Routine central venous cannulation	
Yes	8 (21.6)
No	29 (78.4)
Patient position during surgery	
Supine	17 (45.9)
Dorso-lithotomy	20 (54.1)

Table 1: Continue

Intraoperative	
Questions	n (%)
Abdominal incision	
Low abdominal transverse	6 (16.2)
Median	31 (83.8)
Bladder insufflation before dissection	
Yes	17 (45.9)
No	20 (54.1)
Tool for hemostasis during bladder dissection	
Suture	14 (37.8)
Electrocautery	13 (35.1)
Vessel sealing systems	10 (27)
Uterine incision	
Low transverse	4 (10.8)
High transverse	10 (27)
Classical	23 (62.2)
Principal surgical approach	
Cesarean hysterectomy	21 (56.8)
Placenta left in situ	1 (2.7)
Segmental resection	10 (27)
Pelvic devascularization and tamponade after placental removal	5 (13.5)
Type of hysterectomy	
Subtotal	7 (18.9)
Total	30 (81.1)
Routine hypogastric artery ligation	
Yes	3 (8.1)
No	34 (91.9)
Routine antibiotic prophylaxis	
<24 hours	23 (62.2)
>24 hours	14 (37.8)
Oxytocin policy	
As is in routine cesarean	28 (75.7)
Higher than routine	5 (13.5)
No uterotonic	4 (10.8)
Intraoperative blood analysis	
Blood gas	24 (64.9)
Blood count	8 (21.6)
Thromboelastography 1	(2.7)
None	4 (10.8)
Body heat stabilization	
Pre-anesthetic heating	5 (13.5)
Passive isolation	15 (40.5)
Active heating	10 (27)
Heating of fluids	6 (16.2)
None	1 (2.7)
Routine drain placement	
Yes	33 (89.2)
None	4 (10.8)
Late cord clamping or milking	
Yes	20 (54.1)
No	17 (45.9)

Table 1: Continue

Postoperative	
Questions	n (%)
Prophylaxis for venous thromboembolism	
Anti-embolism socks	1 (2.7)
Early mobilization	6 (16.2)
Anti-embolism socks + early mobilization	2 (5.4)
Early mobilization + low-molecular-weight heparin	7 (18.9)
Anti-embolism socks + low-molecular-weight heparin	4 (10.8)
All	17 (45.9)
Time of mobilization	
≤24 hours	34 (91.9)
<24 hours	3 (8.1)
Time of oral intake	
≤24 hours	31 (83.8)
Following normal bowel function	6 (16.2)
Time for discharge	
48 hours	3 (8.1)
72-96 hours	28 (75.7)
<96 hours	6 (16.2)
Routine evaluation for need of psychiatric support	
Yes	2 (5.4)
No	35 (94.6)

PAS: Placenta accreta spectrum, ES: erythrocyte suspension, FFP: fresh frozen plasma, TS: thrombocyte suspension, MRI: Magnetic resonance imaging, IV: Intravenous

resuscitation." It is recommended in massive transfusion to treat hypovolemia, tissue oxygenation, dilutional coagulopathy, and decreasing the crystalloid requirement (3). There is no consensus in the literature on the composition of blood products. Holcomb et al. compared the 1:1:1 to 1:1:2 in severely injured people. They found no difference in mortality in 24 hours and 30 days (3). Cell-saver technology is not present in the great majority of institutions. New filtering technologies reduce the risk of the transmission of fetal blood and debris in maternal circulation. Liu et al. compared cell salvage and allogeneic blood transfusion in obstetric patients. Nearly 65% had PAS disorder and blood loss of more than 3000mL. They found less allogeneic transfusion, infection, hospital stay, and hypoproteinemia in the cell salvage group (4).

Transabdominal ultrasonography markers of PAS disorder are well-defined and useful. However, some practitioners need adjuvant imaging modalities to diagnose or determine the prognosis. Faralli et al. found that careful and standardized use of ultrasonography is superior to magnetic resonance imaging (MRI) (5). Similarly, other reports often found the routine MRI unnecessary (6, 7). However, many surveys collecting expert attitudes use MRI as an adjunct tool (8-10). The participants in our study agreed on using transvaginal ultrasound and not MRI. It may be attributed to limited sources.

The gestational age at delivery has two sides: prematurity and risk of emergency surgery. Prematurity is a lead-

ing cause of perinatal mortality and morbidity. However, surgery under emergency conditions brings additional risks. The perinatal mortality and morbidity are apparent before the 34th week. Our study participants have no agreement on delivery time, but none offered elective surgery before the 34th week of gestation. The *American College of Obstetricians and Gynecologists* consensus report strongly recommends (grade of recommendation 1A) to schedule the delivery in PAS disorder between 34–36 weeks of pregnancy (6). An evidence-based report proposes to create a risk-based grouping. In the absence of bleeding, rupture of membranes, or regular uterine contractions, postponing the delivery until 36 weeks is recommended (grade of recommendation D) (1). Other expert surveys are aligned to perform scheduled surgery at the 34th week of gestation or later (7, 9-12).

Another option for preventing prematurity and decreasing the risk of urgent surgery is early admission to the hospital. This may increase nosocomial infections, hospital charges, and anxiety but not ameliorate maternal and perinatal outcomes. There is no evidence nor consensus seeking the benefits of early admission in asymptomatic women. Even in placenta previa, ambulatory management is acceptable (1). One-third of our survey group believe that entry one day before would be sufficient. Others propose hospitalization of less than one week or more than a week. This diversity may be attributed to the variations in transportation availabilities.

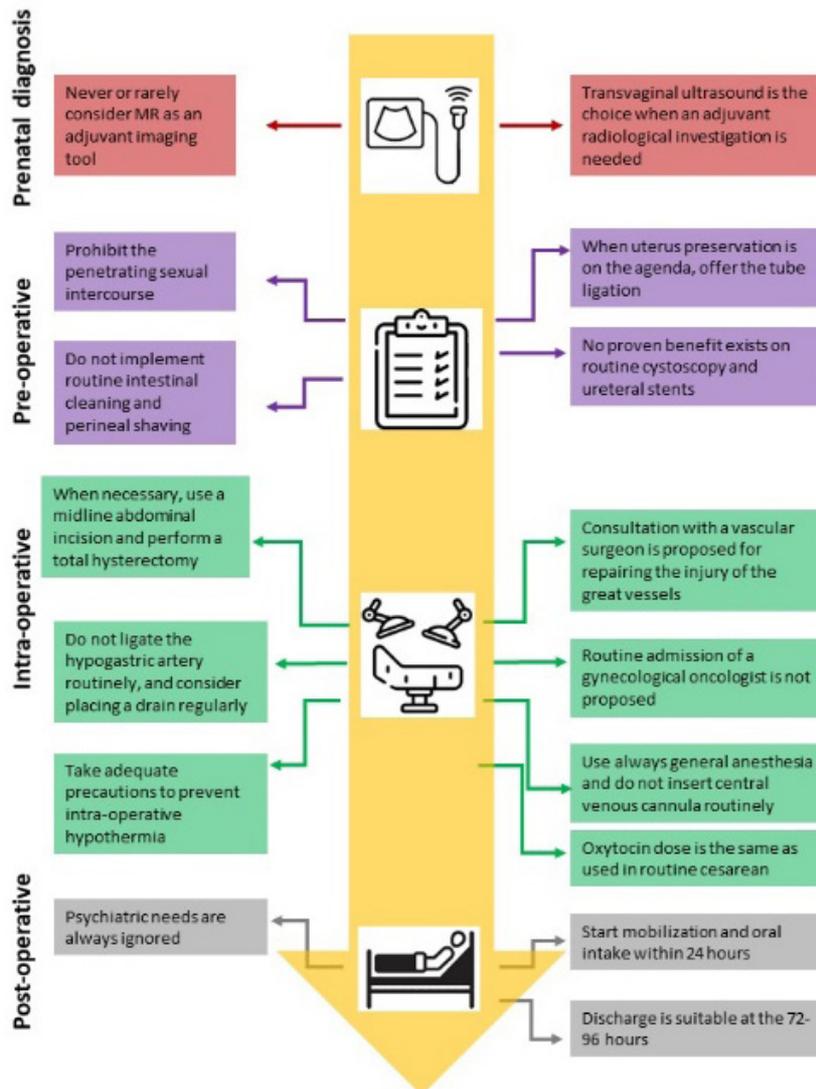


Figure 1: Consensus reached bullets in prenatal diagnosis, preoperative, intraoperative, and postoperative management of PAS disorder.

PAS: Placenta accreta spectrum

Even after 34 weeks, routine use of corticosteroids is also a subject of debate. There is no data or consensus on using antenatal steroids in scheduled PAS surgery. Due to intermittent episodes of vaginal bleeding, most of these women had received corticosteroid prophylaxis previously. Meta-analyses show higher rates of neonatal hypoglycemia, neurocognitive disorders, mental and behavioral disorders when using antenatal corticosteroids after the 34th week (13). Our participants demonstrate similar confusion, with nearly half using antenatal corticosteroids after 34 weeks of gestation.

Preventing anemia before surgery is another critical issue in managing PAS disorder. Anemia is present in nearly half of pregnancies. Prevention of anemia before the de-

livery will help to reduce the need for blood products. Except for the rare instance, it can be prevented by supplementing iron. While oral iron supplementation is the easiest and cheapest, it requires patient compliance. Close monitoring of hemoglobin and patient education are essential factors. When anemia is detected shortly before the delivery, the time would not be sufficient for oral treatment. Despite the higher cost and rare but severe side effects, intravenous iron can be considered for fast recovery (14). Our participants prefer equally using oral, intravenous, or both to prevent anemia.

Many patients wish to preserve their uterus for many reasons. However, the risk of recurrence of PAS disorder is considerably high in subsequent pregnancies (15). If

the point of uterine preservation is not fertility conservation, tubal ligation is a reasonable option. There is strong consensus among our participants for planning tubal ligation.

Many women have increased anxiety during a pregnancy complicated by PAS. Failure to provide respectful care and interventions with unproven efficacy may exacerbate them. Although current knowledge argues against their use, preoperative enemas and perineal shaves are routine in many maternity units (16). Our survey group was aligned against intestinal cleaning and consensus against perineal shaving.

A recent review demonstrated that expert opinions strongly restrict sexual intercourse for many obstetric complications, though evidence is lacking (17). This review addressed many obstetric complications, including placenta previa, but not PAS disorders. While there is no data about the effects of penetrative sexual intercourse on the prognosis of PAS disorder, our contributors agree that penetrative intercourse should be prohibited.

Some suggest using general anesthesia for better hemodynamic control. Others believe that even large amounts of blood loss in these patients could be managed with regional techniques (6-10). Ioscovič et al. conducted a survey study among the anesthesiologists assessing the condition's intensity. They found that in aggressively adherent cases, the anesthesiologists tend to use general anesthesia (12).

In a case study, the authors stated that even in macroscopic hematuria, preoperative cystoscopy did not add information other than obtained from radiologic works (1, 6). Determining the role of ureteral stents is more complex. Current evidence highlights that the identification of ureters is easier with stents. However, the evidence on ureteral injury reduction is scarce. Our participants do not use routine cystoscopy or ureteral stents in asymptomatic patients. They usually repair non-complicated bladder injuries themselves. They ask for the assistance of a urologist for complicated bladder and ureteral damages and a vascular surgeon for those of great vessels.

The patient's position during PAS surgery depends on many factors. These include visualization of the amount of vaginal bleeding, preventing joint injury due to an uncomfortable position, and manipulating the cervix. There is no agreement on this topic in the literature, and our participants also could not have a consensus (1, 6).

The primary surgical approach among participants is hysterectomy, and if they choose to do so, they agree to perform a total rather than a subtotal hysterectomy. Leaving the placenta in situ was an option only for one participant. Others preferred segmental resection or pelvic devascularization and tamponade after placental remov-

al. These results are concordant with other surveys (1, 8, 10, 11). The main problem with surgery during PAS disorder is the bladder dissection from the lower uterine segment and control of bleeding. Both issues require a wide sight of the surgical field. Our participants and many others agreed that a midline incision is necessary. However, Collins et al., have noted no evidence on this topic (1). Recently, Ghaleb et al. published their experience with PAS surgery. They made a segmental excision with uterine devascularization through a Pfannenstiel incision on 62 women (18). We previously presented our data on the surgical treatment of PAS. We performed a total abdominal hysterectomy on 161 women having placenta increta or percreta with very low transfusion and complication rates (19). Like abdominal incisions, many prefer a cor-poral incision on the uterus for preventing iatrogenic placental damage. This incision may be vertical or transverse fashion over the uterine corpus. While a low transverse incision over the uterus would lead to placental injury, it could only be a choice when segmental myometrial excision is the target for uterine preservation. Bladder injury is the most typical complication of PAS surgery. It occurs in nearly one in ten. Çelik et al. stated that preoperative bladder filling with 200 mL of saline solution prevents the risk of bladder injury in PAS surgery and diminishes the volume of blood loss (20). Our survey members are nearly equally divided on retrograde filling the bladder. Turan et al. proposed using a hand-held vessel sealing system for hemostasis during bladder dissection (21). Only a few of our participants chose this. Others stated that they used sutures and/or electrocautery. The preference for ligating, coagulating, or sealing the vessel depends on the availability and the size of the vessel. New technologies promise speed but may not be available in all settings.

The efficacy of hypogastric artery ligation in obstetric hemorrhage is not proven. It may be attributed to the excessive pelvic anastomotic connections. Therefore, routine use is not recommended (1, 6). However, any of the previous surveys did not investigate this topic. Our survey participants are aligned on this topic and do not perform routine hypogastric artery ligation.

Cesarean section is the leading risk factor for postpartum infection, and the benefits of single-dose antibiotic prophylaxis have been demonstrated (22). Re-dosing during surgery was evaluated in a meta-analysis and was found beneficial if administered within 240 minutes (23). Dose adjustment was defined in cesarean regarding the maternal weight but not for operation length or blood loss, which are common in PAS surgery. Furthermore, no antibiotic regimen was determined when the placenta remained in situ. All of our participants use antibiotic prophylaxis but disagree on the duration. Some prefer to continue antibiotics beyond 24 hours.

While the evidence is apparent in non-complicated cases, prophylactic oxytocin for preventing postpartum bleeding has not been studied in PAS disorder (24). Potential problems may be seen in the presence of a partially invasive placenta. In such cases, oxytocin infusion could cause incomplete separation and excessive bleeding. However, oxytocin is proposed for preventing uterine atony generated from the mass effect of the placental remaining in the uterus until the termination of the hysterectomy. Finally, the cardiovascular effects of oxytocin could trigger arrhythmia, decrease myocardial contractility, and cause hypotension (25). The cardiovascular effects of oxytocin on physiologic and supraphysiologic doses during a surgery in which acute volume depletion is expected require further research. Using minimal effective doses seems to be safe instead of higher dosages. Our participants opted for a similar dosage as used in non-complicated cesarean in most cases.

Intraoperative blood analysis may determine hemoglobin level (blood gas, complete blood count), type and severity of coagulopathy (complete blood count, coagulation tests, fibrinogen level, thromboelastography), and electrolytes (blood gas, biochemical analysis). Thromboelastography is a quick test for the specific assessment of the affected component. A recent study that did not include obstetric patients found that its use reduces bleeding or transfusion (26). Despite this advantage, many institutions do not have this facility, and the most used only during the operation is blood gas in our survey group. Determining the deficient blood compartment using these tests will reduce the use of blood products.

Body heat stabilization is a critical but neglected issue during major surgeries. It has been demonstrated that many easy and cheap methods are available, but healthcare professionals' compliance is poor (27). In our survey group, there is a strong consensus on using one of these measures to prevent perioperative hypothermia. This high compliance may be attributed to the qualification of our group selection. No previous surveys have taken this matter into account, according to our review of the literature.

Late cord clamping has positive effects on the adaptation of the newborn; this is more apparent in preterm infants (28). However, there has yet to be a consensus on this topic among our participants. Nearly half agree, but others do not. While almost all of these infants are premature, this subject was outside the scope of any other previous surveys.

Thromboembolism is a silent enemy during the perinatal period. Prolonged hospital stay, decreased activity, hypercoagulable state of pregnancy, and triggered coagulation due to pelvic surgery are the stimulants of thromboembolism. This fact requires meticulous and balanced prophylaxis between thromboembolism and drug-induced iat-

rogenic bleeding. To our knowledge, no evidence-based recommendation or expert opinion is present for venous thromboembolism prophylaxis in PAS surgery. In non-complicated cesarean, early mobilization, anti-embolism socks, and low-molecular-weight heparin are preferred concomitantly (29). Nearly half of our survey participants practice this as well. Our participants have a strong consensus on mobilization within one day and a consensus on oral intake within one day. They also have a consensus on discharging the patient on the third or fourth day. While enhanced recovery after surgery guidelines on cesarean delivery similarly propose these items, the evidence level is low (30).

Pregnancy and the postpartum period itself cause different psychiatric disturbances. Loss of fertility and life-threatening surgery would likely increase the intensity of these disorders. Bartels et al. have demonstrated that PAS surgery has long-lasting effects on women's mental health (31). Despite this result, our participants do not systematically evaluate the need for psychiatric support.

Study limitations

This survey has some strengths and limitations. To our knowledge, this is the first study conducted in a developing country where sources may be limited. While the number of participants is limited, the urban population represents more than 60% of the country. In addition, the group is homogeneous in many respects, including experience, age, and institutional setting.

CONCLUSION

In conclusion, our study shows significant differences in treating PAS in Türkiye, which has high PAS rates, as the cesarean section rate is more than 50%. Considering the high mortality of this condition, we need more evidence-based data on the effectiveness of the different treatment strategies used. The consensus points identified in this paper will guide healthcare providers, and the points highlighted by the lack of evidence would stimulate the design of new clinical trials.

Ethics Committee Approval: The Ethics Committee of Çukurova University approved the study protocol (Date: 30.06.2022, No: 48).

Informed Consent: Written informed consent was obtained from all participants who participated in this study.

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Data Sharing Statement: The data supporting this study's findings are available from the corresponding author upon reasonable request.

REFERENCES

- Collins SL, Alemdar B, van Beekhuizen HJ, Bertholdt C, Braun T, Calda P, et al. Evidence-based guidelines for the management of abnormally invasive placenta: recommendations from the International Society for Abnormally Invasive Placenta. *Am J Obstet Gynecol* 2019;220(6):511-26. [\[CrossRef\]](#)
- Silver RM, Fox KA, Barton JR, Abuhamad AZ, Simhan H, Huls CK, et al. Center of excellence for placenta accreta. *Am J Obstet Gynecol* 2015;212(5):561-8. [\[CrossRef\]](#)
- Holcomb JB, Tilley BC, Baraniuk S, Fox EE, Wade CE, Podbielski JM, et al. Transfusion of plasma, platelets, and red blood cells in a 1:1:1 vs a 1:1:2 ratio and mortality in patients with severe trauma: The PROPPR randomized clinical trial. *JAMA* 2015;313(5):471-82. [\[CrossRef\]](#)
- Liu Y, Li X, Che X, Zhao G, Xu M. Intraoperative cell salvage for obstetrics: a prospective randomized controlled clinical trial. *BMC Pregnancy Childbirth* 2020;20(1):452. [\[CrossRef\]](#)
- Faralli I, Del Negro V, Chinè A, Aleksa N, Ciminello E, Piccioni MG. Placenta Accreta Spectrum (PAS) disorder: Ultrasound versus magnetic resonance imaging. *Diagnostics (Basel)* 2022;12(11):2769. [\[CrossRef\]](#)
- Cahill AG, Beigi R, Heine RP, Silver RM, Wax JR. American College of Obstetricians and Gynecologists; Society for Maternal-Fetal Medicine Obstetric Care consensus no. 7: Placenta accreta spectrum. *Obstet Gynecol* 2018;132(6):e259-75. [\[CrossRef\]](#)
- Pacheco LD, Gei AF. Controversies in the management of placenta accreta. *Obstet Gynecol Clin North Am* 2011;38(2):313-22. [\[CrossRef\]](#)
- Cal M, Ayres-de-Campos D, Jauniaux E. International survey of practices used in the diagnosis and management of placenta accreta spectrum disorders. *Int J Gynaecol Obstet* 2018;140(3):307-11. [\[CrossRef\]](#)
- Wright JD, Silver RM, Bonanno C, Gaddipati S, Lu YS, Simpson LL, et al. Practice patterns and knowledge of obstetricians and gynecologists regarding placenta accreta. *J Matern Fetal Neonatal Med* 2013;26(16):1602-9. [\[CrossRef\]](#)
- Jolley JA, Nageotte MP, Wing DA, Shrivastava VK. Management of placenta accreta: a survey of maternal-fetal Medicine practitioners. *J Matern Fetal Neonatal Med* 2012;25(6):756-60. [\[CrossRef\]](#)
- Esakoff TF, Handler SJ, Granados JM, Caughey AB. PAMUS: placenta accreta management across the United States. *J Matern Fetal Neonatal Med* 2012;25(6):761-5. [\[CrossRef\]](#)
- Ioscovich A, Shatalin D, Butwick AJ, Ginosar Y, Orbach-Zinger S, Weiniger CF. Israeli survey of anesthesia practice related to placenta previa and accreta. *Acta Anaesthesiol Scand* 2016;60(4):457-64. [\[CrossRef\]](#)
- Ninan K, Liyanage SK, Murphy KE, Asztalos EV, McDonald SD. Evaluation of long-term outcomes associated with preterm exposure to antenatal corticosteroids: A systematic review and meta-analysis. *JAMA Pediatr* 2022;176(6):e220483. [\[CrossRef\]](#)
- Sultan P, Bampoe S, Shah R, Guo N, Estes J, Stave C, et al. Oral vs intravenous iron therapy for postpartum anemia: a systematic review and meta-analysis. *Am J Obstet Gynecol* 2019;221(1):19-29.e3. [\[CrossRef\]](#)
- Kabiri D, Hants Y, Shanwetter N, Simons M, Weiniger CF, Gielchinsky Y, et al. Outcomes of subsequent pregnancies after conservative treatment for placenta accreta. *Int J Gynaecol Obstet* 2014;127(2):206-10. [\[CrossRef\]](#)
- Akyıldız D, Çoban A, Gör Uslu F, Taşpınar A. Effects of obstetric interventions during labor on birth process and newborn health. *Florence Nightingale J Nurs* 2021;29(1):9-21. [\[CrossRef\]](#)
- MacPhedran SE. Sexual activity recommendations in high-risk pregnancies: What is the evidence? *Sex Med Rev* 2018;6(3):343-57. [\[CrossRef\]](#)
- Ghaleb MM, Safwat S, Purohit R, Samy M. Conservative stepwise surgical approach for management of placenta previa accreta: A prospective case series study. *Int J Gynaecol Obstet* 2022;157(2):383-90. [\[CrossRef\]](#)
- Buyukkurt S, Sucu M, Hatipoglu I, Ozlu F, Unlugenc H, Evruke C, et al. Placenta accreta spectrum surgery with the Joel Cohen incision for abdominal access: a single-center experience. *Ginekol Pol* 2023;94(7):532-8. [\[CrossRef\]](#)
- Celik S, Celik H, Soyer Caliskan C, Tosun M, Hatirnaz S. Bladder filling before accreta surgery is a very effective method for preventing bladder injury: a retrospective cohort study. *J Matern Fetal Neonatal Med* 2021;34(3):2206-11. [\[CrossRef\]](#)
- Turan OM, Shannon A, Asoglu MR, Goetzinger KR. A novel approach to reduce blood loss in patients with placenta accreta spectrum disorder. *J Matern Fetal Neonatal Med* 2021;34(13):2061-70. [\[CrossRef\]](#)
- ACOG Practice Bulletin No. 199: Use of prophylactic antibiotics in labor and delivery. *Obstet Gynecol* 2018;132(3):e103-19. [\[CrossRef\]](#)
- Wolfhagen N, Boldingh QJJ, de Lange M, Boermeester MA, de Jonge SW. Intraoperative redosing of surgical antibiotic prophylaxis in addition to preoperative prophylaxis versus single-dose prophylaxis for the prevention of surgical site infection. *Ann Surg* 2022;275(6):1050-7. [\[CrossRef\]](#)
- Murphy DJ, MacGregor H, Munishankar B, McLeod G. A randomised controlled trial of oxytocin 5IU and placebo infusion versus oxytocin 5IU and 30IU infusion for the control of blood loss at elective caesarean section--pilot study. *ISRCTN 40302163*. *Eur J Obstet Gynecol Reprod Biol* 2009;142(1):30-3. [\[CrossRef\]](#)
- Szczepanska-Sadowska E. The heart as a target of vasopressin and other cardiovascular peptides in health and cardiovascular diseases. *Int J Mol Sci* 2022;23(22):14414. [\[CrossRef\]](#)
- Wikkelsø A, Wetterslev J, Møller AM, Afshari A. Thromboelastography (TEG) or thromboelastometry (ROTEM) to monitor haemostatic treatment versus usual care in adults or children with bleeding. *Cochrane Database Syst Rev* 2016;2016(8):CD007871. [\[CrossRef\]](#)
- Oden TN, Doruker NC, Korkmaz FD. Compliance of health professionals for prevention of inadvertent perioperative hypothermia in adult patients: A review. *AANA J* 2022;90(4):281-7.

28. Lara-Cantón I, Badurdeen S, Dekker J, Davis P, Roberts C, te Pas A, et al. Oxygen saturation and heart rate in healthy term and late preterm infants with delayed cord clamping. *Pediatr Res* 2022. doi: 10.1038/s41390-021-01805-y [\[CrossRef\]](#)
29. Lau CQ, Wong TC, Tan EL, Kanagalingam D. A review of caesarean section techniques and postoperative thromboprophylaxis at a tertiary hospital. *Singapore Med J* 2017;58(6):327-31. [\[CrossRef\]](#)
30. Macones GA, Caughey AB, Wood SL, Wrench IJ, Huang J, Norman M, et al. Guidelines for postoperative care in cesarean delivery: Enhanced recovery after surgery (ERAS) society recommendations (part 3). *Am J Obstet Gynecol* 2019;221(3):247.e1-247.e9. [\[CrossRef\]](#)
31. Bartels HC, Mulligan KM, Lalor JG, Higgins MF, Brennan DJ. A life changing experience: An interpretative phenomenological analysis of women's experiences of placenta accreta spectrum. *Eur J Obstet Gynecol Reprod Biol* 2020;254:102-8. [\[CrossRef\]](#)