

## DIRECTIVES/GUIDELINES

# GUIDELINES FOR INTRAOPERATIVE-MANAGEMENT OF UNEXPECTED “PLACENTA ACCRETA SPECTRUM”

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ON BEHALF OF THE LEBANESE PERCRETA GROUP

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**ABSTRACT** • There has been several fold increase in the rate of placenta accreta spectrum (PAS) paralleling the ever-increasing surge in the rate of cesarean deliveries worldwide. Delivery of PAS is associated with increased maternal morbidity and mortality primarily due to hemorrhagic catastrophes. Nonetheless, outcome could be optimized with prenatal diagnosis which permits planning elective delivery by a multidisciplinary team at specialized centers. In spite of the improvements in prenatal diagnosis, yet, a substantial proportion of these cases are first encountered during or after delivery. Unexpected PAS eventually presents minimal difficulty and can be dealt with safely in large specialized centers, albeit some possible logistic inconveniences. This encounter, however, could represent dangerous challenges in small hospitals and birthing centers with limited resources. In spite of its seriousness, there is paucity of guidelines concerned with the management of unexpected PAS, particularly in less than optimal setups. Having had operated on 350 cases of PAS in our three tertiary-care university hospitals, we, the representatives of the Lebanese Percreta Group, opted to provide some useful practical guidelines to obstetricians confronted with such unexpected yet dangerous challenges.

Keywords : unexpected; intraoperative/postpartum management; placenta accreta spectrum

### INTRODUCTION

As the rate of cesarean delivery has increased worldwide, so is the incidence of the morbidly adherent placenta or what was recently termed by FIGO as “PAS”. [1,2] In 2011 in the U.S., one out of every three women was delivered by cesarean route. [3] Similarly, the rate of PAS has increased from 1:4027 in the 1970s to 1:273 in 2011 and this trend is expected to continue in the foreseeable future. [4,5] Except for this associated increase in the cesarean delivery rate, we still lack the understanding of the direct causes of this pathologic invasive conduct.

Although preoperative imaging (ultrasonography or

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magnetic resonance imaging) of invasive placentae has significantly improved, [6] nevertheless, up to one third to one half of PAS cases were reported to be unexpectedly encountered only during delivery. [7,8] This means that, currently, the practicing obstetrician might be compelled to manage an undiagnosed PAS.

Optimized outcome of PAS has been shown to be attained when diagnosis is made prenatally [9,10] permitting planning of elective delivery [11,12] performed by a multidisciplinary team [13,14] at a specialized center without attempting to disturb the placenta [12] and preferably between 34 and 36 weeks’ gestation. [15] Delivery at a center of excellence is probably the single most important factor in the proper and safe management of these patients. [16]

There has been abundance of instructive guidelines on conservative and non-conservative management of these cases in centers of excellence, though each expert group may have different approaches. [17,18] On the other hand, there is a paucity of guidelines dedicated to the management of PAS accidentally encountered in a small hospital or maternity lacking essential resources and experienced surgeons. Only two comprehensive reviews on the management of PAS provided detailed instructions about the management of unexpected PAS following cesarean section but not vaginal delivery. [16,19]

Currently, three tertiary-care university centers are performing almost all deliveries of PAS in Lebanon given the timely cooperation and referral from obstetricians around the country when diagnosis was made prenatally. When PAS is unexpectedly encountered in centers with proper resources and skillful surgeons (centers of excellence), this represents minor logistic difficulty but is certainly manageable without impact on maternal safety. [20] On the other hand, if this encounter occurs at a small maternity, untoward outcome might ensue, mostly related to hemorrhagic catastrophes. Logically, not all hospitals are expected to be centers of excellence. Those existing are very few and mostly concentrated in the capital.

It is for this reason that representatives of three university teaching tertiary-care centers in Beirut-Lebanon – who jointly operated on approximately three hundred fifty cases of PAS (unpublished data) – propose the following life-saving steps for the management of unexpected PAS. In the present guidelines we elaborated on the management of unexpected PAS discovered during or following

vaginal and cesarean delivery in small hospitals and birthing centers, assuming the absence of appropriate resources in such facilities.

**UNEXPECTED PAS  
DISCOVERED FOLLOWING VAGINAL DELIVERY**

Cases of unexpected PAS following vaginal delivery typically present with retained placenta with or without hemorrhage.

When the placenta does not expulse spontaneously within 30 minutes after the delivery of the newborn infant, any injudicious attempts at prompt manual separation or extirpation of the placenta can result in heavy-bleeding. Placental retention might be due to entrapment of a detached placenta, non-detachment of an adherent placenta (Grade 1 PAS) or an abnormally invasive placenta (Grades 2 & 3 PAS). Ultrasonography can readily and reliably discern among these three conditions. [21]

**Sonographic features of entrapped (detached) placenta (Figure 1A)**

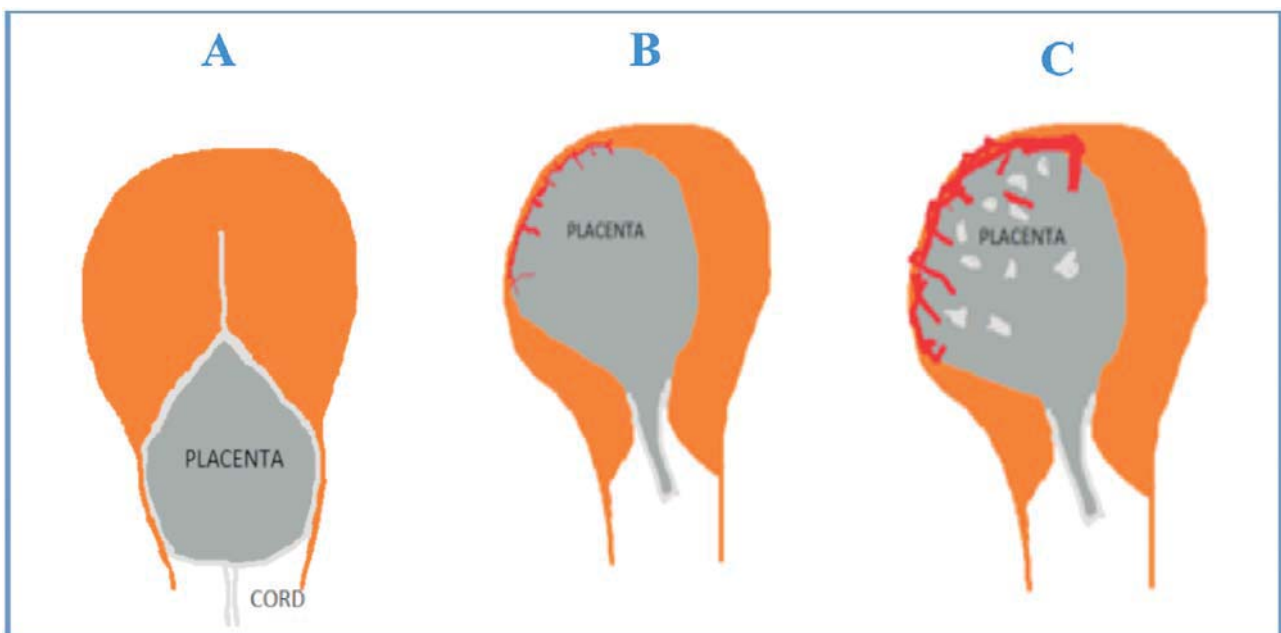
- Uterine cavity at the fundus is empty, myometrium looks uniformly thick denoting complete detachment of the placenta from its bed and the surroundings. The placenta occupies the lower uterine segment, cervical canal or upper vagina.
- Color Doppler shows no vascular activity inside or around the placenta.

**Sonographic features of placenta adherata/creta (PAS grade-1) (Figure 1B)**

- The placenta can be seen anywhere high in the uterine cavity. Placenta adherens is probably caused by deficiency in the contractile forces exerted by the myometrium underlying the placental site and represents incomplete detachment of the placenta. This is usually a transient condition that commonly progresses to complete detachment with time. The myometrium typically demonstrates initial thickening of some but not all sides surrounding the placenta. Thickening later will involve all surrounding myometrium denoting complete detachment.
- Color Doppler shows sparse vascular flow limited to the placental bed, with absence of intense vascular activity inside the placental mass. This flow also corresponds to the degree of detachment. Eventually, it will weaken gradually and disappear with complete detachment.

**Placenta increta & percreta : PAS grades 2 & 3 (Figure 1C)**

- Following vaginal delivery, the placenta is usually implanted high in the uterine cavity (non-previa).
- The placenta might display some or all sonographic features associated with PAS (extensive lacunae, bulging, thinning of adjacent myometrium).
- Color Doppler will reveal active vascular flow inside and under the placenta which typically demonstrates multilayer hypervascularity with turbulence and high flow and possibly bridging vessels.



**Figure 1.** Types of retained placenta  
(A) Entrapped detached placenta (B) Placenta adherata/accrta (C) Fundal placenta increta/percreta

## PREPARATIONS AND MANAGEMENT OF RETAINED PLACENTAE

Ultrasonographic imaging should be employed to assess the etiology of placental retention no later than one hour after vaginal delivery. Imaging can precisely discern between the three different causes. For any retained placenta lasting for >1 hour:

- Type and cross-match 2 units of PRBCs
- Two large-bore IV lines should be secured.
- Anesthesia team should be informed and involved.
- Empty the urinary bladder if deemed necessary.

### For entrapped (detached placenta)

- Continuous gentle traction on the umbilical cord ( $\pm$ USG guidance).
- Uterotonic medications:
  - Oxytocin, of limited value.
  - Prostaglandins : Sulprostone 250  $\mu$ g IV/30 min with 50% success and Misoprostol 800  $\mu$ g with minimal success.
- Glycerin trinitrate might be of value in cases with lower uterine contraction ring.
- Manual removal of placenta (MROP) when medical and simple measures fail.

### For incomplete detachment (placenta adherenta/accreta)

- In the absence of bleeding, no high quality evidence-based guidelines exist. [22]
- Allocate and measure the non-detached part of the placenta.
- Start monitoring vital signs and watch for hemorrhage.
- Start uterotonics (Oxytocin 10 units IV drip slowly but avoid Methergine).
- Monitor for complete detachment of the placenta with ultrasound; assessing myometrial thickness around the placenta and vascular activity in the placenta bed. Uniform thickness and absence of placental flow denote complete detachment.
- Monitor for the clinical signs of placental separation.
- If separation occurs but spontaneous expulsion of the placenta does not ensue, gentle controlled traction of the umbilical cord can be attempted  $\pm$  IVOxytocin.
- If separation does not occur in spite of cessation of vascular flow within few hours (2 hours), MROP with the help of experienced personnel if not previously done is a good choice.
- We prefer to perform MROP only after sonographic evidence of detachment.
- MROP requires the use of anesthesia as the procedure is painful.
- Prepare tamponade balloons in anticipation of any postpartum hemorrhage.

- A single-dose IV broad spectrum antibiotic is advised after MROP. [22]
- In the presence of hemorrhage, MROP should be performed immediately, if bleeding persists after MROP, 3-way Foley catheter or Bakri balloon could be employed under ultrasound guidance depending on the uterine size.

### PAS 2 & 3 (Increta & Percreta)

- No attempts at cord traction or MROP should be allowed.
- Any uterotonics should be withheld.
- In the absence of the optimal setting the patient is preferably transferred.
- The presence of bleeding mandates inserting a tamponade balloon and preparing the patient for transfer to a specialized center for further management while fluid therapy and transfusion with available units is underway.

### PAS DISCOVERED DURING CESAREAN DELIVERY

For all women at clinical high risk of developing PAS (previous cesarean deliveries, placenta previa or anterior low covering cesarean scars), even when imaging is not in favor of this pathology, the following general recommendations can be of immense benefit in management of cesarean delivery:

- Performing repeat cesarean delivery of all suspected PAS cases on the basis of clinical risk assessment (even without imaging evidence of PAS) at level III or IV health care facilities can save these patients many complications. [19]
- For all anterior low-placentae, sonographic placental mapping with exact delineation of its borders together with a clear plan for the level and site of a “safe hysterotomy” would help avoiding traversing the placenta and should preferably be done before the operation. Traversing the placenta has been associated with severe blood loss and the need for massive transfusion especially in the presence of PAS. [23]. Avoiding incisions through the placenta was also recommended by the ACOG. [19]
- Dorsal lithotomy positioning of the patient might permit assessment of vaginal bleeding, easy access to vaginal packing when needed and allow a space for extra surgical assistance. [19]

### Discovery before the hysterotomy incision

- After entering the abdominal cavity, careful inspection of the lower segment should be done. It is important to note that the managing obstetrician should be familiar with the different appearances of the lower

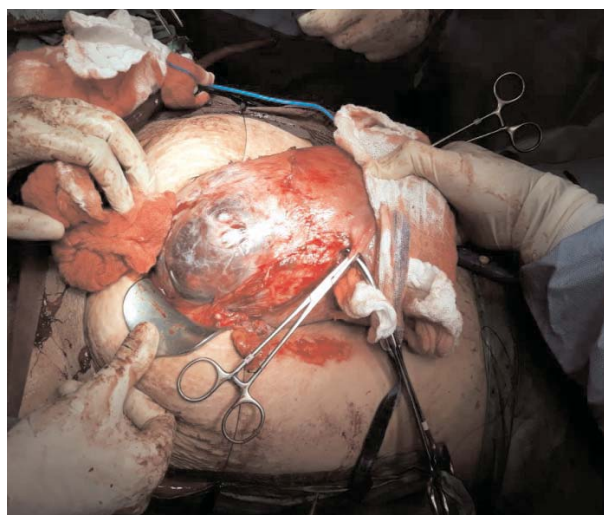
uterine segment corresponding with various degrees of placental invasion. In its severest form (PAS-3), there is usually an area of extensive varicosities, exhibiting a bluish hue/discoloration with an abnormal bulge of the placenta to the outside (Figure 2). In rare instances, dense adhesions prohibit assessment of the lower uterine segment which necessitates removing them surgically with some downward dissection of the bladder.

- If the initial inspection is strongly indicative of PAS, it is wiser to close the abdominal incision without delivering the fetus, unless there is severe fetal distress mandating immediate delivery of a viable fetus. [16]
- On rare and infrequent occasions, there is a need for emergent delivery of a distressed viable fetus. Delivery of a compromised fetus should be accomplished without jeopardizing the mother's life. [16] Intraoperative sonographic placental mapping, using sterile sleeve, should be done (if not done earlier). It is of immense value in averting traversing the placenta if delivery of a jeopardized fetus was determined.
- Here, modifying the skin incision (usually Pfannenstiel's) to an inverted-T midline incision is advised, as this allows access to perform a classical fundal hysterotomy without traversing the placenta while giving better vision of the whole pelvic organs and vessels if hysterectomy is needed. [16]
- Following the delivery of the fetus, the placenta should not be disrupted as extensive hemorrhage commonly does not commence without manipulation of the placenta. [16] Closing the hysterotomy and the skin incisions after cutting short the umbilical cord should be done as usual before transferring the patient to a specialized center for further management.

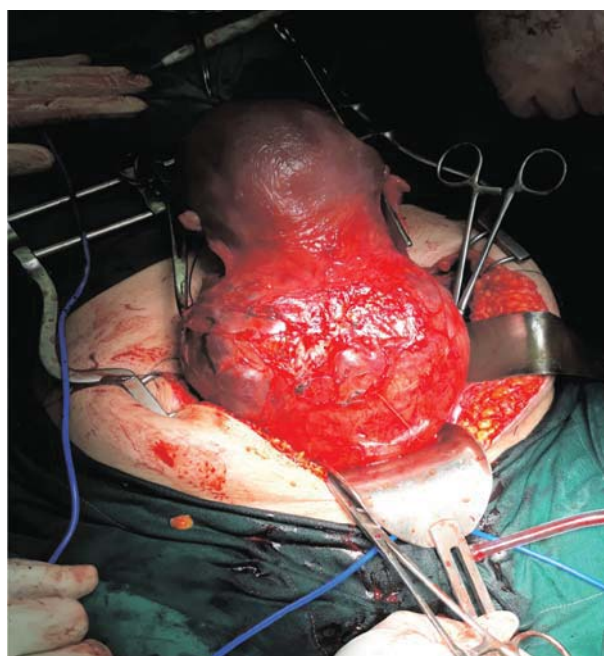
#### Discovery after cesarean hysterotomy and delivery of newborn

- When posteriorly located and with a PAS of milder degrees of invasion, the external appearance at the initial inspection of lower uterine segment might look normal.
- Here, properly planned "safe hysterotomy" is done, trying to avoid traversing the placenta and securing a distance away from its border. [16] This will ensure that the placenta will not bleed or protrude from the hysterotomy site when the uterus contracts after delivery.
- Because the positive predictive value of ultrasonography for placenta accreta ranges from 65% to 93% [24,25], it is reasonable to await spontaneous placental separation to confirm placenta accreta clinically as recommended by the ACOG. [19] A lapse

of 12-15 minutes while exerting mild external massaging to the uterine muscle should be enough. This methodology is safer in small unequipped centers than the approach applied by Weiniger *et al.*, who actively peeled manually the placenta off the myometrium while massaging the uterus and exerting traction on the cord. [26] Also, the use of uterotonic agents is not advised for the fear of disrupting an invasive placenta.



**Figure 2**  
Appearance of lower segment with extensive placental invasion PAS Grade 3



**Figure 3**  
Postpartum appearance where the empty uterine fundus is contracted while the lower part is distended with an invasive placenta acquiring a "number 8 configuration"

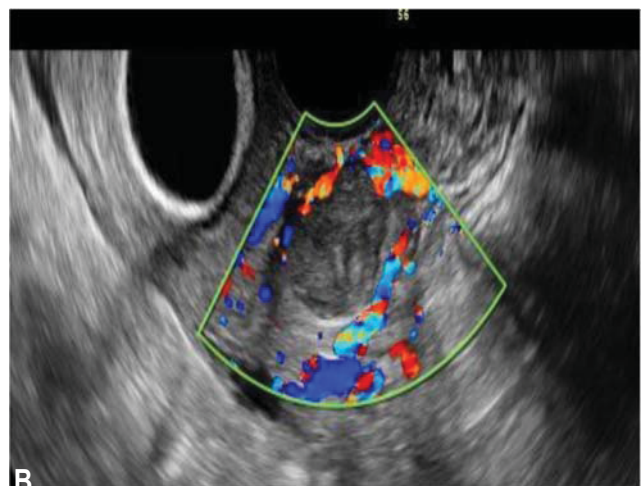
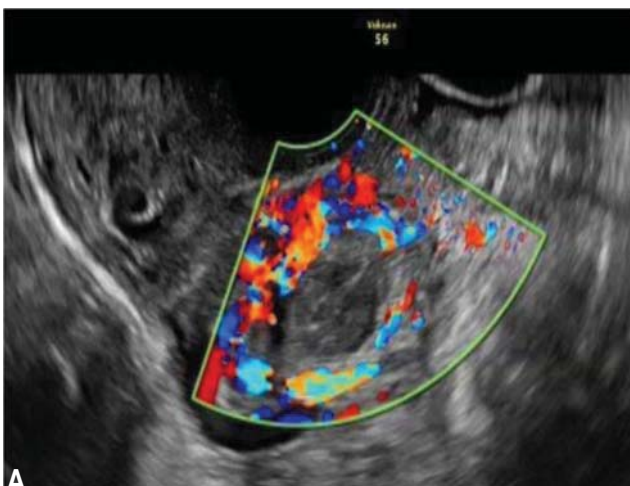
- If separation does not occur, closure of the uterine and skin incisions should be accomplished after cutting short the umbilical cord without placental manipulation before transferring the patient to a specialized center. Typically, and especially with substantial placental invasion, the empty uterine fundus will contract while the part lodging the placenta will not, resulting in a number eight configuration where the upper part is much smaller than the lower part. (Figure 3)
  - If the placenta separates totally and spontaneously, we can proceed with cleaning the uterine cavity and closing the uterine incision in two layers as appropriate.
  - If, however, hemorrhage starts due to any cause – after spontaneous partial separation or triggered by inadvertent pulling on the umbilical cord or manual separation of the placenta –, tight packing of the uterine cavity with abdominal pads or towels should be done with rapid closure of the uterus and abdominal wall. Here, fluid replacement and blood transfusion must be started while arrangements for the transfer to a tertiary care center are underway. The use of balloon tamponading or taking large square sutures in the myometrium overlying the placenta have been reported with variable results and their effectiveness has yet to be confirmed. [27,28]
- Ligation of uterine or internal iliac arteries have not been shown to be of great benefit in cases of postpartum hemorrhage due to atony. Administration of tranexamic acid, 1 gm IV bolus, when available, can be of benefit. [18]
- Calling for help of more experienced obstetricians to a hospital with inadequate setting should not be done in lieu of a rapid transfer to a safer center.

#### SPECIFIC CONDITIONS

Recently, an increasing frequency of PAS cases complicating early pregnancy has been reported. These cases can give rise to hemorrhagic problems even before possible diagnosis at scheduled 2<sup>nd</sup> or even 1<sup>st</sup> trimester scans. Multiple cases presenting with missed abortion began to develop extensive bleeding at the commencement of the suction evacuation or surgical curettage (Figure 4). Other cases of early PAS were reported to start bleeding upon trying to deliver the retained placenta after passage of the dead conceptus (IUFD). Ultrasonography with color Doppler is of immense value in depicting the underlying pathology (Figure 5). Insertion of an ordinary Foley catheter (No. 14-16) for pregnancies  $\leq 13$  weeks is usually appropriate to stop bleeding.



**Figure 4**  
PAS complicating an 11 weeks + 3 days pregnancy with anomalous fetus



**Figure 5.** PAS complicating 8 weeks + 4 days pregnancy. Before (A) and after (B) insertion of a tamponade balloon.

If pregnancy is  $\geq 14$  weeks, a larger catheter might be needed, e.g. a three-way Foley No. 22-24. This procedure is preferably done under ultrasound guidance. The balloon is then inflated with enough volume of sterile water till cessation of uterine bleeding (Figure 5). Once again, further management depends on the resources of the hospital. In birthing centers with limited resources, it is better to transfer the patient to a specialized center after stabilization.

#### SUMMARY

Besides following technical steps in managing unexpected PAS, we feel that adhering to the following recommendations can ensure safe management of this risky obstetric population.

- Management of retained placentae should be tailored in accordance with sonographic findings. Obstetricians should refrain from MROP before obtaining a thorough idea of the underlying etiology.
- Performing repeat cesarean delivery of patients at clinical risk for developing PAS exclusively at level III or IV health care facilities, even without imaging evidence, can save these patients many complications. [19]
- All small hospitals with maternity units should anticipate and consider the possibility of unexpected PAS and must consequently formulate detailed plans and establish institutional agreements with the closest experienced centers for stabilizing and transferring emergent and potentially catastrophic cases. [29]
- We advocate screening for PAS as early as 6-8 weeks gestation especially for patients with previous cesarean delivery. [30] This routine must be applied before any surgical procedure to evacuate a missed abortion or retained placenta.

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