

Emergency Management of Undiagnosed Anterior Placenta Accrete with Uterine Wall Excision

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ABSTRACT

Abbreviations: PASD: Placentae Accrete Spectrum Disorder; AIP: Abnormally Invasive Placenta; FMU: Foetal Medicine Unit.

Introduction

Placentae accrete spectrum disorder (PASD), also referred to as abnormally invasive placenta (AIP), is a condition where the placenta does not detach spontaneously after delivery. This occurs because the placenta is implanted into the uterine muscle and other deeper layers. The placenta cannot be removed without causing massive and potentially life-threatening bleeding. Queens hospital was one of the first implementors of a multi-disciplinary approach to the management of PASD in the United Kingdom. The management begins with screening at the 20-weeks anomaly scan and referral to the foetal medicine unit (FMU). These steps are followed by close observation and discussion about time and mode of delivery in an MDT, with an aim to deliver around 36-37 weeks' gestation. Initial screening is performed ensuring that all women having undergone a previous caesarean section in the index pregnancy and showing a low-lying placenta in the scan during the current pregnancy are assessed for PSAD. This required training of all the sonographers to identify the subtle signs associated

with the detection of PASD. If these are present at that visit, they are immediately referred to the FMU. Otherwise, they are all referred to FMU at 32 weeks' gestation to ensure no cases are missed. Sonographers are advised to be vigilant about these ultrasound changes in all scans performed after the 20-weeks scan. Once the diagnosis is made, regular follow up in FMU occurs and a pelvic MRI is performed, and these results are discussed at the first (virtual) MDT usually at 32-34 weeks.

During this meeting, the mode and time for delivery are arranged. To facilitate availability of extended operating time and short notice additions to the list, the team created a 'complex obstetric surgical list' that is flexible enough to accommodate immediate changes; this is important to provide a service available 24/7. In this way, if a slot for an accrete is needed, those that are already in the list are safely moved to other lists to enable the accrete to be booked at short notice. At Queen's hospital, we manage women with placenta accrete using a multidisciplinary approach and have done so for the last eight years.

The team approach ensures that the same people are performing every surgery. Usually, two consultants operate together alternating as surgeon and assistant, so that they both acquire skills during each case. The third assistant is usually a trainee, who gains vital skills in diagnosing and managing PASD, including learning surgical hemostatic techniques and caesarean hysterectomy. The same applies to the urologists, anesthetists, scrub nurses, and interventional radiologists. This article describes the emergency management of a woman with an anterior low placenta accrete taken to theatre initially by the registrar on call. The images below describe the steps required to safely manage a woman with an anterior placenta accrete, where the placenta is amenable to excision and where reconstruction of the uterus is possible. The procedure may not be suitable if the placenta is posterior or if the placenta is invading the cervix, where a hysterectomy is likely required.

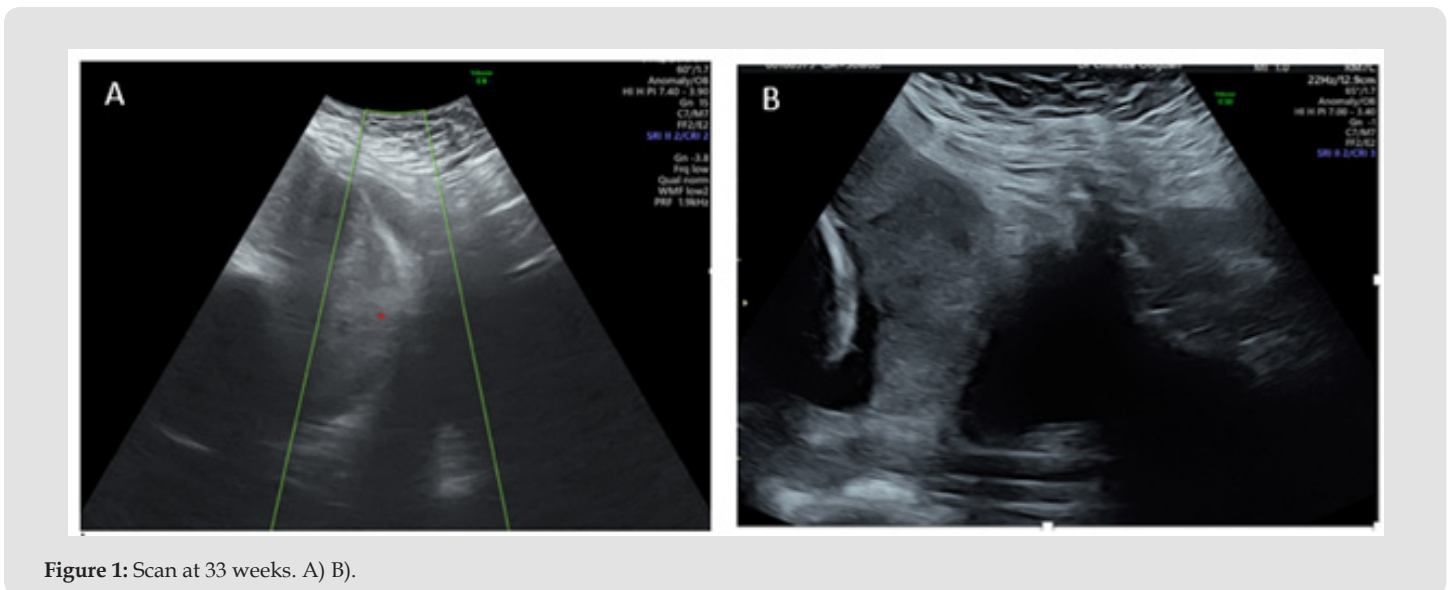
Case Summary

Here, we describe a case that presents the management of an emergency placenta accrete at Queen's Hospital in Romford, United Kingdom. The patient was Asian, 36 years old, BMI 36 with diabetes mellitus Type II (treated with insulin and metformin), and with a previous history of three caesarean sections, which increased her

risk for morbid adherent placenta in this pregnancy. The placenta was anterior low-lying on the 20-week anomaly scan. The patient was seen in the antenatal clinic, and subsequently referred to the FMU to investigate whether she had a morbidly adherent placenta. On further investigation in FMU, there was evidence of loss of the hypoechoic space between the placenta and the thin lower segment but as there were no other signs of PASD as per the FIGO guidelines[1], after discussion at the PASD MDT it was decided that the patient did not appear to have a morbidly adherent placenta, and her case would not be managed as a potential placenta accrete. The rest of her antenatal care was otherwise relatively uneventful. She was booked for elective caesarean section at 38 weeks since she had three previous Caesarean sections.

Important Ultrasound Features

The scan in Figure 1A was taken at 33 weeks and shows very clearly an absence of the typical features seen in PASD of hypervascularity. Loss of hypoechoic space appears to be present; however, since the patient had a high BMI, views were restricted. Figure 1B shows loss of the hypoechoic space, without any other feature of placenta accrete. No hypervascularity was present.



Delivery

The Woman presented with a significant Antepartum Hemorrhage (APH) before the day of her scheduled ELCS at 37+5 weeks gestation and a decision was taken to perform a Grade 2 caesarean. This was discussed with the consultant on call who was offsite, and the decision was to start the surgery as treat this case as a placenta praevia with appropriate steps including use of Tranexamic acid and cell salvage. The consultant made their way into hospital whilst the procedure started. A routine bedside scan was performed in the theatre for placental localization and fetal position. On opening the abdomi-

nal cavity there was evidence PASD with a thin lower segment with a bulging placenta, also known as a 'blueberry appearance' (Figures 2 & 3). This was correctly identified by the registrar (who had seen PASD previously as part of the exposure Queens Hospital provides to its trainees in learning how to manage PASD) and the consultant was informed. As the baby required delivery, the caesarean continued with a fundal uterine incision and delivery of the baby away from the placenta and then arrival of the consultant was waited for definitive management. What is vitally important is that the registrar made no attempt to deliver the placenta or perform further surgery without

senior assistance as this can result in catastrophic hemorrhage and risks patient mortality. The steps taken are outlined in images 4 - 37

and can be used as an example of how to manage a case of PASD diagnosed at delivery.



Figure 2: Initial 'blueberry appearance' of PASD on opening abdomen.

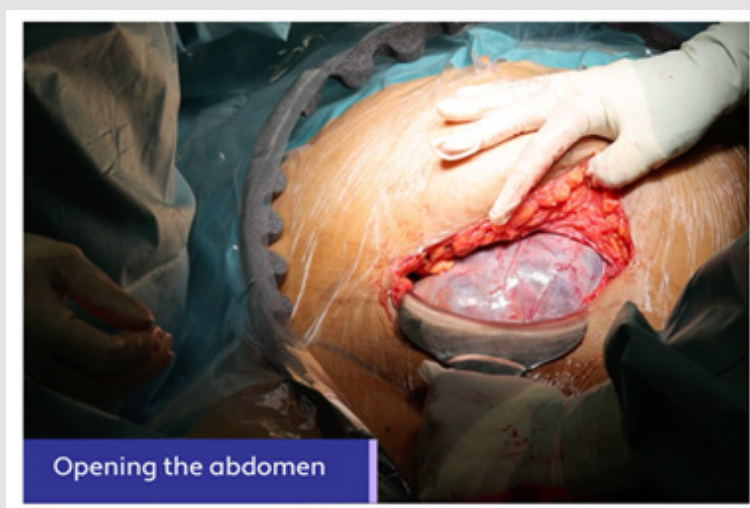


Figure 3: Bulging of placenta in lower segment classical of PASD.

Operation Steps by Registrar

The registrar started the operation as the baby required delivery. These pictures outline the steps taken until the consultant arrived.

- Step 1: Pfannenstiel incision is performed.
- Step 2: Identification of the placenta accrete (Figure 4).
- Step 3: Pfannenstiel incision must be extended to allow appropriate access to deliver baby away from the placenta (Figure 5).
- Step 4: A vertical uterine incision is made as high as possible and close to the fundus. This is performed by ensuring adequate lateral space (as created by extending the Pfannenstiel incision) and by the assistant applying fundal pressure to mobilise the uterine Fundus lower down (Figure 6).

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- Step 5: If possible, the uterus is completely exteriorized to aid delivery. This can be performed prior to step 4 if possible (Figure 7).
- Step 6: Careful Extension of vertical incision away from the placenta (Figure 8).
- Step 7: The baby is delivered with breech extraction (Figure 9).

- Step 8: The placenta is left in situ and the umbilical cord is timed at the base of the placenta and then subsequently tied and replaced inside the uterine cavity without disturbing the placenta (Figure 10).
- Step 9: Green Armytage's are applied at the uterine incision site and a Jacques catheter is applied temporarily below the low segment. This is performed by passing the Cather around the posterior uterus, as low down as possible, and tying the knot anterior lay below the placental bulge. This

temporary hemostatic ligature incorporates the Infundibulopelvic Ligament (IP) ligaments, round ligaments and uterine artifice and provides quick and easy hemostatic control. This step can be used in any cases of placenta praevia or PPH at caesarean (Figure 11).

- Step 10: Await senior consultant input. As you can see, with the Jaqueline Cather applied there is very little bleeding at this point (Figure 12).



Figure 4.



Figure 6.



Figure 5.



Figure 7.



Figure 8.

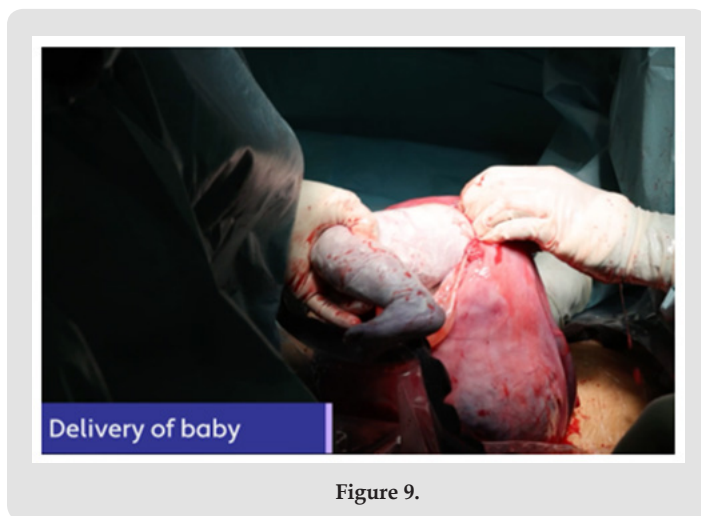


Figure 9.

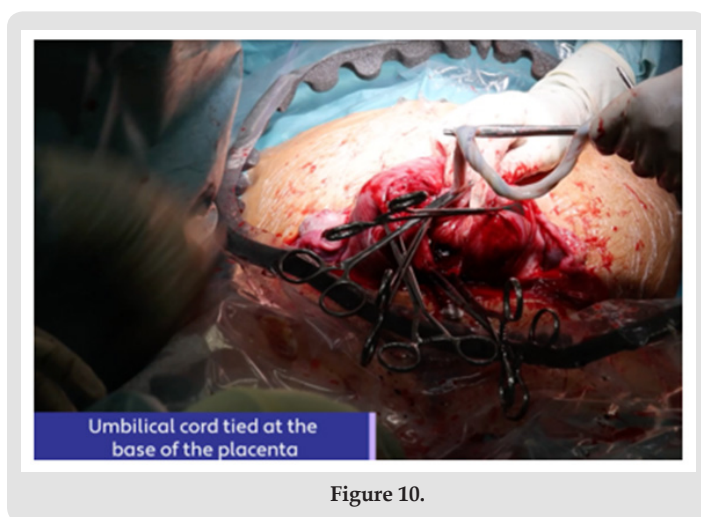


Figure 10.

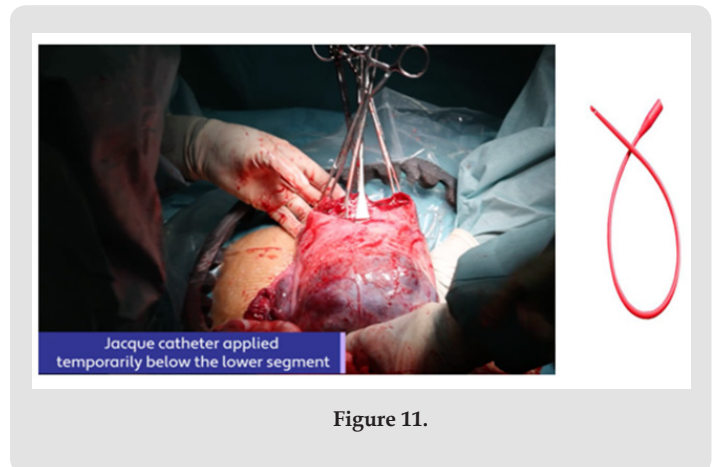


Figure 11.

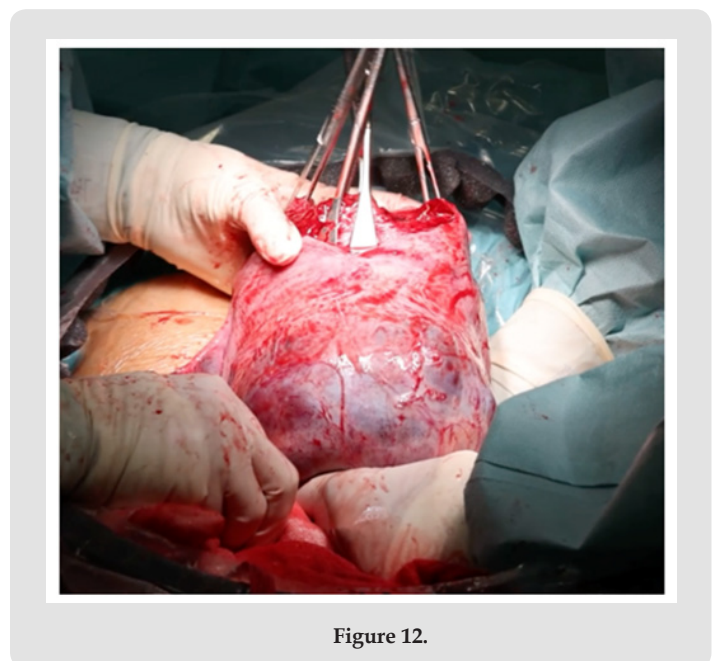


Figure 12.

Operation Steps by Consultant

Thirty minutes after the beginning of the operation, the consultant arrives in the theatre and continues as follows:

- Step 11: Closure the uterus in 2 layers is performed with the placenta left in situ (Figure 13).
- Step 12: Separating the uterovesical peritoneum is performed, allowing the bladder to be mobilised inferiorly (Figures 14 -16).
- Step 13: Liga clips for hemostasis are used to bridge vessels between the uterus and the bladder (Figure 17).
- Step 14: Bladder reflected inferiorly carefully with use of

Liga clips as required (Figure 18).

- Step 15: Once the bladder is mobilised inferiorly a second Jacque catheter is applied including around broad ligaments to reduce the risk of bleeding at excision (Figure 19). Appearance of uterus after closure the uterine incision and bladder mobilised inferiorly (Figure 20).
- Step 16: The myometrium with attached placenta on the anterior low uterine wall is excised, ensuring that at least 1-2cm of myometrium is left above the cervix for the repair to be conducted (Figures 21 & 22).
- Step 17: The uterus is closed, starting at both angles simultaneously and working towards the middle: first layer interrupted and second layer continuous Vicryl 1-0 (Figures 23-25).
- Step 18: Uterine arteries are ligated bilaterally using Vicryl 1-0 (Figures 26 & 27).
- Step 19: Jacque's catheter are removed; uterus feels contracted. Uterus appearance after closure (Figures 28 & 29).
- Step 20: Extra box sutures are applied to any bleeding points to achieve haemostasis (Figures 30-33).
- Step 21: Sterilization with Filsche clips is performed, as per patient request and discussed ante tally.
- Step 22: Robinson drain is inserted (Figure 34).
- Step 23: In some cases, Omentum is placed in between the posterior wall of the bladder and the anterior uterine wall to reduce the risk of fistula formation (Figure 35).
- Step 24: Routine abdomen closure is performed using PDS 1-0 (Figure 36).
- The total blood loss in this case was 800 mls. The woman did not need a blood transfusion and had an uneventful recovery with a 4-day post-operative hospital stay. Both baby and mother were discharged on the same day.

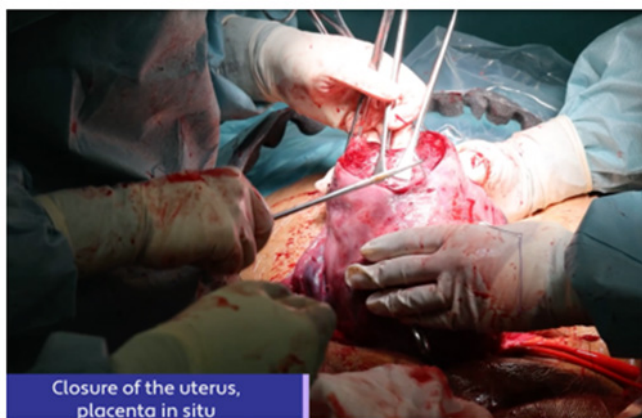


Figure 13.



Figure 14.



Figure 15.



Figure 16.



Figure 17.

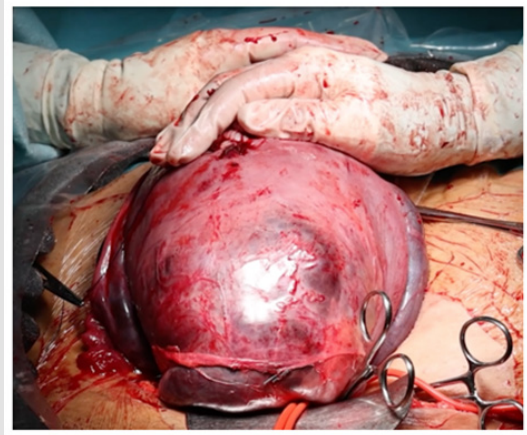


Figure 20.

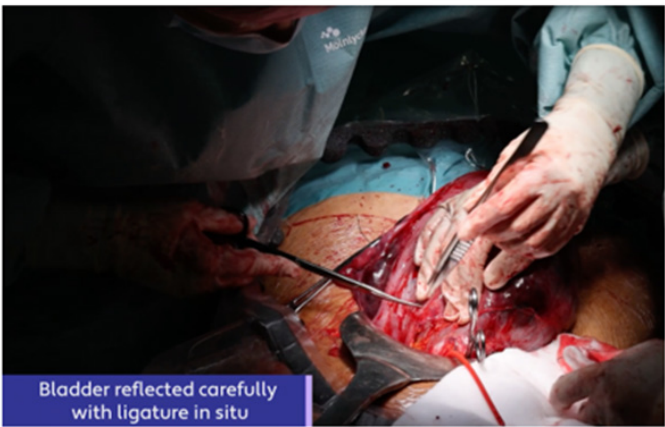


Figure 18.



Figure 21.



Figure 19.

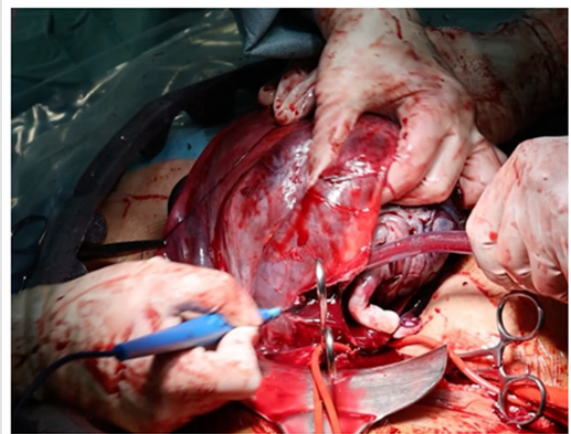


Figure 22.



Figure 23.



Figure 26.



Figure 24.



Figure 27.



Figure 25.



Figure 28.

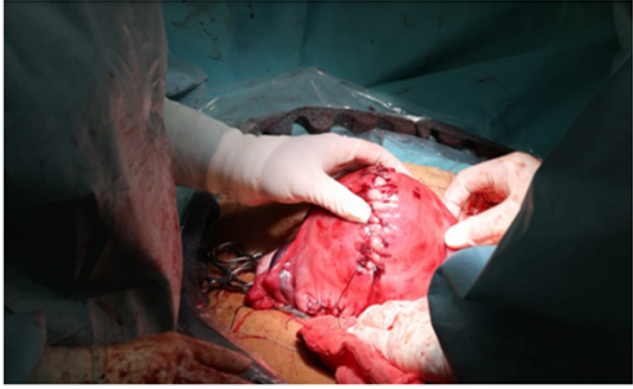


Figure 29.



Figure 32.



Figure 30.



Figure 33.



Figure 31.

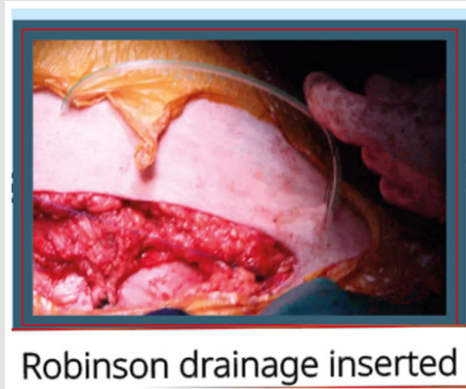


Figure 34.

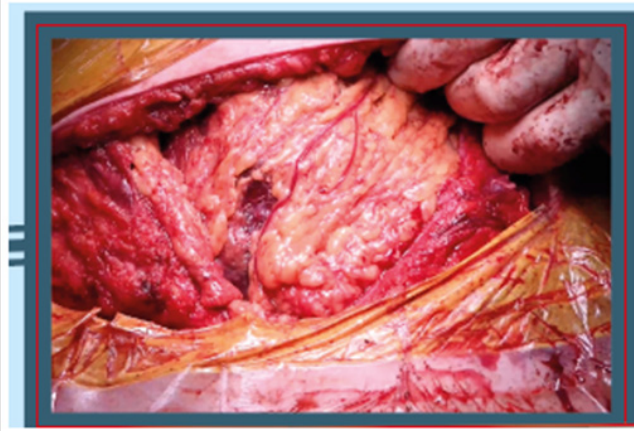


Figure 35.



Figure 36.

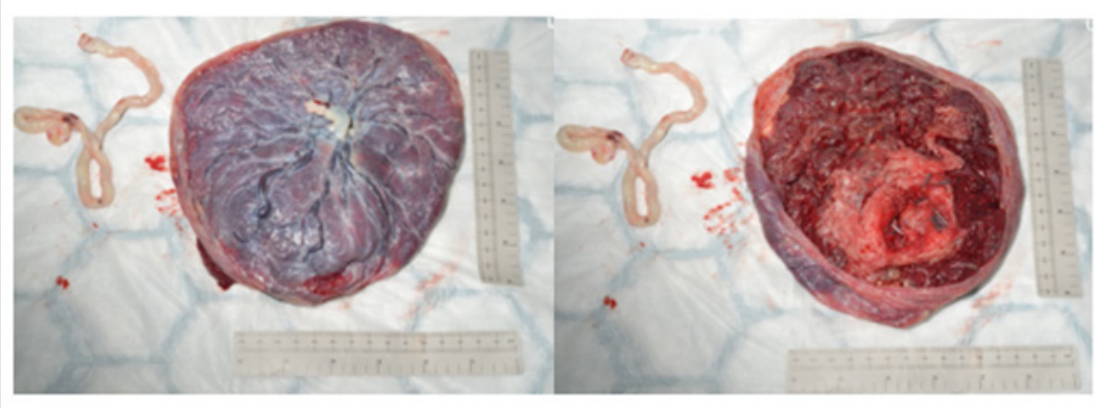


Figure 37.

Histology

On 22/09/22, the histopathology confirmed the placenta accrete (Figures 37-39).

NATURE OF SPECIMEN:

Placenta and membranes. Placenta accreta.

CLINICAL DETAILS:

Placenta praevia. Placenta accreta.

DIAGNOSIS:

Placenta and membranes: Placenta accreta.

Placenta with chorionic villi showing focal chorangiosis, perivillous fibrin deposition and a focus of calcification.

Membranes, free of inflammation.

Three blood vessel umbilical cord.

Figure 38.

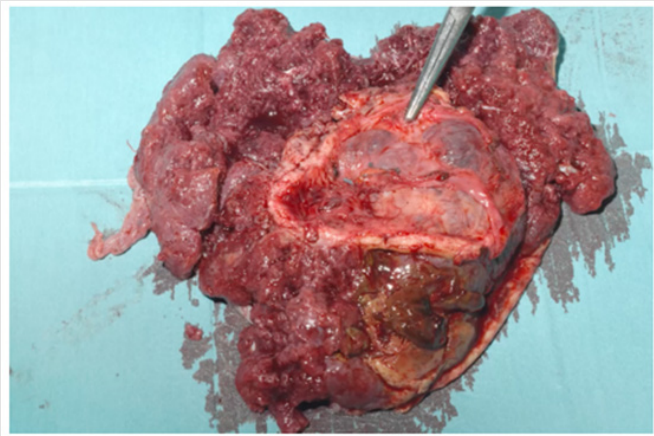


Figure 39.



Figure 40.

Follow-up

On review, three months later, the woman had resumed menstruation and an ultrasound of the uterus showed a well involuted uterus with minimal evidence of such significant surgery (Figure 40).

Big Picture & Scenario for on-Call Registrars

What if patient with PASD Needs Emergency Delivery?

At Queens Hospital we have a multi-professional PASD team available within 30 minutes but in the situation where there is immediate maternal or fetal compromise, or when PASD is not expected, as in this case, emergency delivery by a registrar may be required. If this occurs the most important steps are to be able to identify PASD on entry, call for help early and then use the steps outlined above to deliver the baby away from the placenta and not to disturb the placenta whilst waiting for senior support.

Additional Steps Required

In a situation such as the one described the registrar ensured that the patient received Tranexamic acid, that cell salvage was set up, that 4 units of RBC were cross matched and importantly that not only the obstetric consultant on call was informed but the anesthetic consultant, haematologist and transfusion practitioner were all informed. It should also be remembered that the on-call consultant can provide live, real-time advice on the phone for all complicated deliveries, including in this situation where the advice to perform a fundal uterine incision was clearly explained.

Conclusion

This scenario will help registrars to deal with emergency cases of anterior placenta accrete. It is important for trainees to understand how to identify and manage this complex condition, which has increased due to the rise in caesarean section rates all over the world. It is also important that we develop techniques, such as the use of a Jacques catheter, that can be easily implemented in income poor countries who have poor transfusion services and do not have the facilities for interventional radiology services.

Learning Points

In this case, the registrar must:

1. Know that loss of hypoechoic space could be the only ultrasound feature for placenta accrete.
2. Anticipate the risk of possible placenta accrete.
3. Identify if there are signs of placenta accrete (e.g., plugging of the placenta; blueberry appearance).
4. Avoid disturbing the placenta on delivering the baby.

Acknowledgements

I would like to thank the placenta accrete team: radiologists, transfusion practitioners, interventional radiology, theatre staff, PASD Midwife, urologists and medical photographers who make this type of complex and extremely effective surgery appear simple.

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1. Jauniaux E, Bhide A, Kennedy A, Woodward P, Hubinont C, et al. (2018) FIGO consensus guidelines on placenta accreta spectrum disorders: Prenatal diagnosis and screening. *Int J Gynecol Obstet* 140(3): 274-280.

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