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EMERGENCY PERIPARTUM HYSTERECTOMY IN WOMEN WITH PLACENTA ACCRETA SPECTRUM: A CASE SERIES

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ABSTRACT Morbidly adherent placenta(MAP) is a rare albeit significant cause of massive obstetric hemorrhage. It occurs as a result of failure of normal decidualisation in the area of a previous uterine scar, which leads to abnormally deep infiltration of placental chorionic villi. Early radiological diagnosis in the antenatal period ensures time for adequate preparation for its optimal management by peripartum hysterectomy. A good outcome in these patients depends on a collaborative approach between Obstetricians, Urologists, Intervention Radiologists, Anaesthetists, Transfusion physicians and Neonatologists. In this case report, we present three cases of adherent placenta and their management and outcomes, in our tertiary care setting.

KEYWORDS : Caesarean hysterectomy, Internal Iliac artery ligation, Percreta, Placenta accreta spectrum(PAS)

INTRODUCTION

Placenta accreta spectrum(PAS) refers to defective placental implantation, wherein the chorionic villi penetrate through the decidua and adhere to or invade the uterine myometrium, accordingly classified as placenta accreta and increta.

The most severe type of abnormal placental attachment is called as placenta percreta, where the villi invade beyond the full thickness of the myometrium, breaching the uterine serosa and possibly adjacent pelvic structures, commonly the bladder.(Ibrahim et al., 2015)

The most commonly observed risk factors for this condition are previous caesarean sections, uterine scars or curettage and multiparity. Increasing caesarean rates have led to an alarming rise in incidence of PAS disorders, upto 0.1-0.3% in some series. (Ibrahim et al., 2015; Zhang et al., n.d.)

PAS can cause massive obstetric haemorrhage and significant maternal morbidity and mortality. Therefore, prompt diagnosis and proactive management is essential for a good outcome. We report three such cases of PAS; percreta, increta and accreta respectively, managed in a tertiary care setting with multidisciplinary team approach.

CASE REPORTS

CASE 1.

A 30-year-old multiparous woman presented to us at 36+5 weeks of gestation in spontaneous preterm labour. Her obstetric index was G4P1L1A2 and she had undergone a caesarean section and uterine curettage twice in the past for missed abortion.

She was referred to our center with Magnetic Resonance Imaging (MRI) report suggestive of placenta percreta with focal invasion of placenta into posterior bladder wall (as shown in figure 1). After arranging adequate blood products, with high-risk consent, she was taken up for emergency caesarean hysterectomy under general anaesthesia.

Intraoperatively, features suggestive of placenta percreta or grade 3B PAS were noted. Once the baby was delivered by classical caesarean incision, an intentional anterior cystotomy was made and focal area of placental invasion was delineated on the posterior bladder wall. Hysterectomy was done with placenta left in-situ along with segmental excision of bladder wall. Assistance of Urologist was sought and bladder rent was repaired.

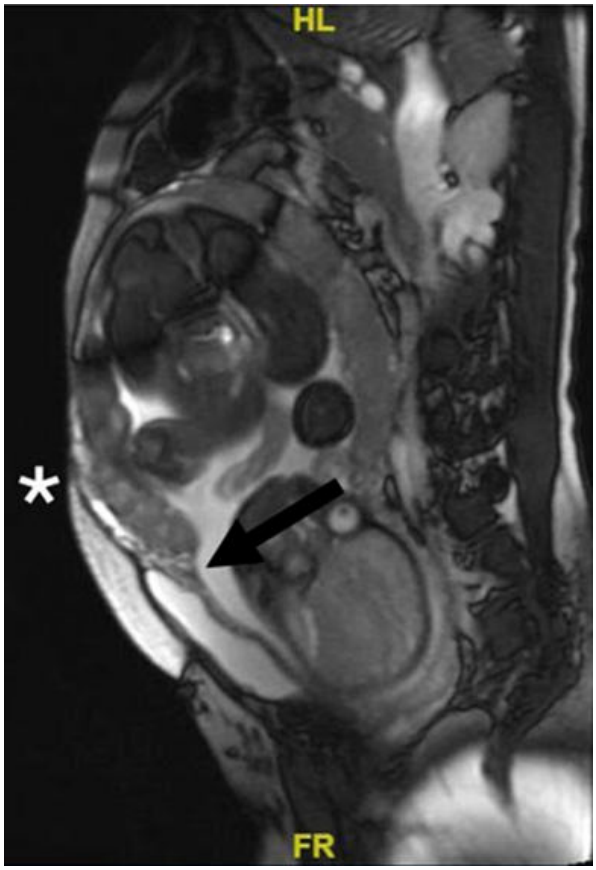

Figure 1. T2 weighted sagittal MRI image showing low lying placenta with focal invasion into posterior bladder wall (black arrow) and thinning of myometrium(asterix)

The patient suffered 3.5 liters of blood loss for which massive transfusion protocol was activated and she received 5 units of packed cells(PC), 4 units of fresh frozen plasma (FFP) and 4 units of platelets.

Nevertheless, we had a successful perinatal outcome with a healthy child weighing 2.7kg. Post-operative course was uneventful. Urinary

catheter was removed after a normal voiding cystourethrogram after 21 days.

CASE 2.

A 29-year-old multiparous woman was referred to our center at 25+3 weeks of gestation with preterm premature rupture of membranes(PPROM). She was a third gravida having undergone caesarean section twice in the past with two healthy children.

Ultrasonogram showed a central placenta previa with multiple lacunae, focal thinning of myometrium and placental bulge reaching up to uterine-bladder interface with no obvious extension beyond serosa, suggestive of placenta increta.

She was admitted and monitored for chorioamnionitis. Antenatal corticosteroids were administered. Three weeks later, at 28+3 weeks of gestation patient complained of bleeding per vaginum and she was taken up for emergency caesarean hysterectomy under general anaesthesia, with high risk of complications duly explained to the patient and family members.

Intraoperatively, placental bulge was noted on the left anterior surface of the lower segment of the uterus with increased vascularity and intact uterine serosa (as shown in Fig 2.) suggestive of placenta increta or grade 2 PAS. Classical caesarean section was done and fetus delivered by breech extraction. An alive female baby of 940g was delivered but she expired on the same day due to prematurity and perinatal asphyxia.

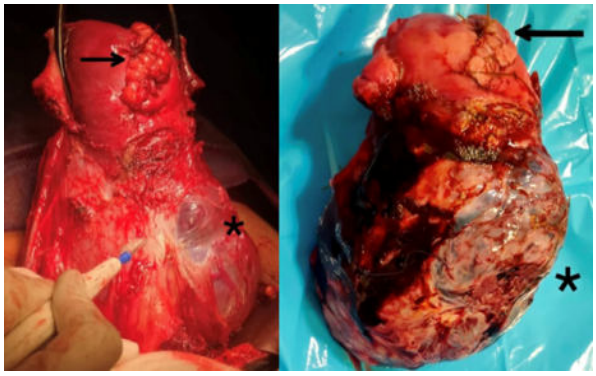

Figure 2. Intraoperative picture and hysterectomy specimen showing placental bulge(asterix) and increased vascularity on the left anterior surface of uterus with intact uterine serosa and classical caesarean incision on the upper segment(black arrow)

Bladder was found to be pulled up and densely adherent to lower uterine segment over the previous scar, which was meticulously dissected and pushed away. A small serosal tear was noted over the dome of the bladder which was repaired separately. Internal iliac artery ligation was done on the left side to achieve hemostasis during which left ureter kinking was noted and was released. Course of both ureters was traced, bladder integrity was checked and found to be intact. The total blood loss from the procedure was 5liters. Patient received massive transfusion with 8 units of packed blood, 8 units of FFPs, 8 units of platelets and 5 units of cryoprecipitates.

Post-operatively patient required transient inotropic support and was shifted to intensive care unit(ICU) for further monitoring. Thereafter she recovered well. Bladder catheter was removed after 10 days and she was discharged with advice of urology outpatient follow-up Histopathological examination concurred with the laparotomy findings of placenta increta. Patient has been well thereafter with no new complaints.

CASE 3.

A 25-year-old lady, G8P1L1A6 was referred to our center at 33+5 weeks of gestation in view of placenta accreta.

She had 5 spontaneous abortions in first and second trimester for which she underwent uterine curettage each time. Hysteroscopic uterine septal resection was done following which, she had an anembryonic pregnancy managed by instrumental evacuation. In the subsequent pregnancy, encerclage was performed for cervical incompetence but she developed PPROM and delivered by caesarean section at 8 months of gestation. She was admitted and administered antenatal corticosteroids. She gave history of multiple episodes of spotting per vaginum from first trimester. Ultrasonogram and doppler showed placental lacunae and increased retroplacental vascularity, in a low lying right laterally located placenta. MRI was done which confirmed the diagnosis of PAS(as shown in figure 3).

A week later, at 34+5 weeks of gestation she went into spontaneous preterm labour and was taken up for emergency caesarean hysterectomy under general anaesthesia, after arranging blood products and obtaining high risk consent.

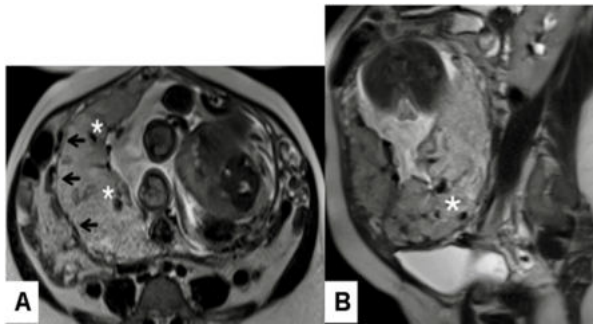

Figure 3 A.T2 weighted axial section of MRI showing placental vascular lacunae(white asterix) and increased retroplacental vascularity within the myometrium(short black arrows) B. Sagittal section of same MRI showing multiple placental lacunae(white asterix)

Intraoperatively, increased vascularity was noted over the right anterior uterine wall extending laterally over the broad ligament. Baby was delivered by breech extraction through a classical upper segment incision and we proceeded with caesarean hysterectomy. Bladder was inspected and course of both ureters was fully traced. Surgical blood loss was 1.5liters for which she received 2 packed cell transfusion. Post operatively she was monitored in ICU and recovered without any complications. A healthy female child weighing 1.9kg was delivered and handed over to the mother and discharged after one week.

Table 1. summarizes the salient features of the three patients discussed above.

Table 1. Management and outcomes of Peripartum Hysterectomy(PH) in PAS in our series

S. No	Age (yrs)	Obstetric index	Risk factors*	Gestational Age at Diagnosis (weeks)	Mode of imaging	Gestational age at delivery (weeks)	Indication for emergency surgery	Procedure	Type of PAS (grade)	Blood loss (litres)	Transfusion Of blood products	Duration of ICU stay (days)	Perinatal outcome
1.	30	G4P1L1A2	CS Uterine curettage (twice)	33+4	MRI#	36+5	Preterm labour	Emergency PH Left IIAL** Bladder rent repair	Percreta (3B)	3.5	5 PC 4FFP 4 Platelets	2No inotropes required	2.7kg healthy female
2.	29	G3P2L2	Previous two CS	25+3	USG+	28+3	Bleeding per Vaginum	Emergency PH Bladder serosal tear repair	Increta (2)	5	8 PC 8 FFP 8 Platelets 5 Cryo	5Inotropes for 1 day	940g Female Expired on same day
3.	25	G8P1L1A6	CS Uterine septumUterine curettage (6 times)	33	MRI#	34+5	Preterm labour	Emergency PH	Accreta (1)	1.5	2PC	1 No inotropes required	1.9 kg Healthy Female

Note: *CS-Caesarean section; # MRI- Magnetic Resonance Imaging; +USG- Ultrasound; **IIAL- Internal Iliac ligation

DISCUSSION

Abnormal placentation or accrete syndromes can cause life-threatening obstetric haemorrhage which may culminate in peripartum hysterectomy. Fortunately, they are extremely rare and occur in 1 in 2500 to 1 in 500 births —(Jain et al., 2020) and less than 5% of these are placenta percreta —(Jain et al., 2020; Konijeti et al., n.d.)

PAS occurs due to deficiency of decidualized endometrium and absence of Nitabuch's fibrinoid layer, allowing undue trophoblastic invasion directly into the myometrium. This was previously termed as morbidly adherent placenta(MAP). (Jauniaux et al., 2019) The International Federation of Gynecology and Obstetrics(FIGO) has suggested a new classification system to address such defective placental implantation disorders, that is, Placenta accreta spectrum(PAS).(Jauniaux et al., 2019)

- Grade 1: Abnormally adherent placenta(placenta adherenta or creta) with absent decidua between villous tissue and myometrium. Placental villi are attached directly to the superficial myometrium.
- Grade 2: Abnormally invasive placenta(Increta) where placental villi are found within the myometrium
- Grade 3: Abnormally invasive placenta(Percreta)

Grade 3a: villous tissue breaching the uterine serosa
Grade 3b: With urinary bladder invasion
Grade 3c: With invasion of other pelvic tissue like broad ligament, vaginal wall or other pelvic organs

Most important risk factor for PAS is placenta previa(low lying placenta) after a caesarean section. If placenta accreta has been managed conservatively the recurrence risk is very high in the subsequent pregnancies. Other notable risk factors are advanced maternal age, multiparity, uterine curettage, Asherman syndrome, endometritis, submucous myomas and any uterine scars. (Ibrahim et al., 2015) In our patients we noted that all of them had at least one previous caesarean section. Case #1 and 3 had one previous caesarean and multiple uterine curettage whereas case #2 had two previous caesareans.

Patients with PAS may present with dull lower abdominal pain, vaginal bleeding or spotting and hematuria. —(Jain et al., 2020) Our patients presented with bleeding per vaginum in first and third case and preterm labour in the second case.

Ultrasonography is used for antenatal diagnosis with reasonably good accuracy, with sensitivity of 80% and specificity of 96%. (Jain et al., 2020; Pagani et al., 2018; Placenta Accreta Spectrum, n.d.) Findings on ultrasound suggestive of PAS are placental lacunae, loss of retroplacental hypoechoic zone, breach in the linear hyperechoic uterine serosa, disruption of the bladder-myometrium interface. Doppler may reveal blood vessels extending from placenta to surrounding structures and retroplacental vessels within 1mm of uterine serosa-bladder interface.(Baughman et al., 2008) Additionally, MRI can also be used for diagnosis if ultrasound is inconclusive or there are definite high-risk factors. MRI has a sensitivity and specificity of 94% and 84% respectively.(*Placenta Accreta Spectrum*, n.d.) Features on MRI suggestive of PAS are placental bulge, heterogenous signals within the placenta suggestive of lakes or lacunae and intraplacental bands.(Baughman et al., 2008)

The second patient in our report had characteristic features suggestive of PAS on ultrasound and hence, MRI was not required for diagnosis. The other two cases showed typical features of PAS on MRI.

Ideal time for delivery in patients with PAS has to be decided on a case-to-case basis, balancing risks of fetal prematurity versus maternal complications of emergency hysterectomy and serious haemorrhage. Delivery is recommended between 34-36 weeks of gestation as the risk of bleeding significantly increases thereafter. (*Placenta Accreta Spectrum*, n.d.) In our patients, procedure was performed in emergency setting at 36+5, 28+3 and 34+5 weeks respectively.

General anaesthesia was preferred over regional ,in all our cases, as per recommendation, because it provides control of ventilation in the event that extensive blood loss leads to cardiovascular collapse. (Parva et al., 2010).

Caesarean hysterectomy is the primary management modality in patients with PAS. Selected few cases of focal placenta accreta may undergo uterine preservation procedures or conservative management. However, there are risks of sepsis, haemorrhage, disseminated intravascular coagulation and thromboembolism in this approach. Methotrexate for placental resorption in such methods, is of negligible benefit.(Hays et al., 2008; *Placenta Accreta Spectrum*, n.d.)

Preoperative endovascular catheter placement for internal iliac artery balloon occlusion and uterine artery embolization maybe useful to mitigate blood loss. Since our patients were operated emergently, these were not an option. Intra operative internal iliac artery ligation is especially useful in cases of bulky and vascular adherent placenta, as in our second case.(Jain et al., 2020)

The high risk of injuries to bladder and ureter during caesarean hysterectomy for PAS necessitates a collaborative approach among obstetricians and urologists. Pre-operative ureteric stenting may also be considered to reduce the risks of injury. None of our patients underwent pre-operative vascular or ureteric catheterization.

The first patient with placenta percreta grade 3B required bladder rent repair and prolonged catheterization. Our second case, with placenta increta, required left internal iliac artery ligation to achieve haemostasis. There was no urological morbidity or need for internal iliac artery ligation in the third case of accreta. All these patients had substantial blood loss of 3.5, 5 and 1.5litres respectively and required numerous units of blood products transfusion.

Fetal outcome was good in two patients as opposed to the second case, wherein the baby expired on the same day due to extreme prematurity and perinatal asphyxia.

CONCLUSION

Placenta accreta spectrum of disorders are a rare but significant cause of maternal and fetal morbidity and mortality with potential to cause catastrophic haemorrhage. Peripartum hysterectomy performed for these patients poses challenges even to the most experienced obstetricians, especially in emergency setting. Hence, an elective approach by a multidisciplinary team can optimise outcomes.

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