Placenta percreta with urinary bladder involvement

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ABSTRACT

A 37-year-old Pakistani lady, who had previously undergone one cesarean delivery and one uterine curettage, was admitted to the labor ward at 29 weeks of gestation with history of a sudden severe painless vaginal bleeding from a sonographically diagnosed placenta previa. An immediate cesarean section was performed and a live male infant was delivered. The placenta was morbidly adherent to the lower uterine segment and attempts at removal caused torrential bleeding, necessitating cesarean hysterectomy. In addition, attempts to dissect the bladder from the lower uterine segment were unsuccessful and, hence, the diagnosis of placenta percreta with involvement of the urinary bladder was made. A modified posterior approach to the hysterectomy was carried out, with subsequent good recovery.

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Placenta percreta involving the urinary bladder is a critical obstetric emergency. Fortunately it is rare with only 54 cases that have been described in the literature.[1] When the placenta infiltrates anteriorly through the myometrium and pubocervical fascia, the normal cleavage planes between the placenta and the uterus and between the lower uterine segment and the bladder are obliterated. Although the diagnosis is usually established when attempts are made to separate the adherent placenta from the bladder, ultrasonography or magnetic resonance imaging (MRI) may help in achieving the diagnosis preoperatively.[2] High degree of suspicion and good surgical technique may assist to minimize maternal morbidity and mortality associated with this condition.[3] This is the first case reported from Bahrain and is presented here to highlight its presentation, diagnosis and management strategies.

Case Report. A 37-year-old Pakistani lady was admitted to the labor ward with history of a sudden severe painless vaginal bleeding at 29 weeks gestation in her fourth pregnancy. Her first pregnancy had progressed uneventfully until the 38 weeks gestation, when an emergency lower segment cesarean section (CS) was performed for abnormal cardiotocograph tracing, and a female infant weighing 2.18 kilograms (kgs) was born. The second pregnancy had also been completely normal and had ended in a spontaneous vaginal delivery of a male infant weighing 2.75 kgs at 39 weeks gestation. Her third pregnancy had ended in a spontaneous miscarriage at 16 weeks gestation. An evacuation of retained products of conception followed by uterine curettage was performed. There was no significant family or previous medical history. She booked in the hospital for the current pregnancy at 20 weeks gestation. The routine booking examinations and investigations were unremarkable. She was O-Rhesus positive with no antibodies. Ultrasound examination was performed. The placenta was described as being situated centrally over the cervical os. Her antenatal care had continued satisfactorily until 26 weeks gestation when she reported to have a bright red vaginal

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discharge. Ultrasound examination revealed a central placenta previa located anteriorly. Therefore, she was admitted to the hospital for further assessment. She remained stable in the hospital, with slight on and off vaginal bleeding but no abdominal pain for 3 weeks. At 29 weeks of gestation, she experienced a sudden severe vaginal bleeding which necessitated immediate CS. The abdomen was entered through a midline incision. The anterior surface of the lower uterine segment was notable for extensive varicosities, with numerous dilated and tortuous blood vessels traversed from the bladder to the uterus and extended to the surrounding pelvic tissue. A live male infant weighing 1.84 kgs was delivered through a high transverse hysterotomy incision (**Figure 1a**). The placenta was morbidly adherent to the lower uterine segment and attempts at manual removal caused torrential bleeding. Since hemostatic sutures did not control the bleeding, hysterectomy was rapidly accomplished. The placental tissue was noted to extend through the broad ligament on the left side. The lower uterine segment was densely adherent to the bladder base and attempts to mobilize the bladder were unsuccessful; hence, the diagnosis of placenta percreta with involvement of the urinary bladder was made. A posterior approach as described by Price et al[4] was chosen for the hysterectomy. This technique consists of posterior entry of the vagina, lateral retraction of the ureters, and sequential ligation of the parametria medial to the ureter. Finally, the adherent portions of the bladder were resected with the uterus, and the bladder was repaired in 2 layers. **Figure 1a and 1b** shows the uterus with the high transverse incision and the placental tissue infiltrating through the wall of the lower uterine segment and the bladder base. The estimated blood loss for the procedure was 6000 milliliters, and the patient was transfused with 10 units of packed red blood cells, 11 units of fresh frozen plasma, and 10 units of platelets. The postoperative course was uneventful and the patient was discharged home on the seventh postoperative day. Histopathological evaluation confirmed placenta percreta with invasion of the trophoblastic tissue through the wall of the lower uterine segment to the outside, involving the base of the urinary bladder. On the other hand, the baby was resuscitated with bag and mask ventilation and transferred to the special care baby unit for prematurity. Because the mother had been treated with dexamethasone, the baby did not develop respiratory distress syndrome. Indeed there were no significant problems in the postnatal period and once feeds were established, the baby was discharged. This occurred on the tenth postnatal day.

Discussion. The chorion frondosum is normally separated from the decidua basalis by the Nitabuch membrane and, at delivery; this membrane forms the plane of separation between the placenta and the uterus. If this membrane is deficient or local decidua basalis is absent, the trophoblastic tissue may infiltrate the myometrium. Placenta accreta is the general term for all cases of abnormally adherent placenta. However, placenta percreta is the most severe and catastrophic situation of the placental accretions in that the placenta penetrates the myometrium and serosa of the uterus and may involve adjacent structures. Uterine rupture and profuse hemorrhage have been described with this type of placentation.[5] Fortunately, it is rare with the reported incidence of placenta percreta that varies from one in 3,333 to one in 400,000 births.[6] Its association with previous CS, placenta previa, multiparity and uterine trauma usually due to

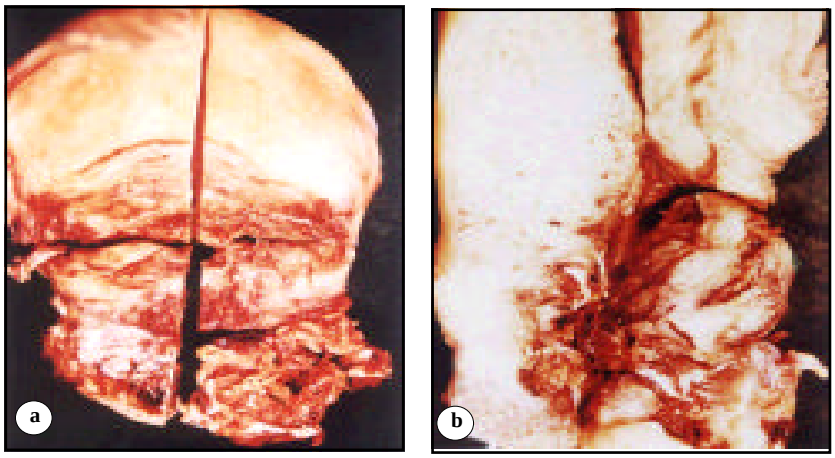

Figure 1 - Photograph showing **a)** the uterus with a high transverse incision and the placental tissue protruding out over the lower segment **b)** cut section of the uterus and the placental tissue infiltrating through the wall of the lower uterine segment and the base of the urinary bladder.

previous uterine curettage, manual placental removal and endometritis is well known. Therefore, in this patient, multiparity with known placenta previa and a history of previous CS and uterine curettage places her at high risk for having at least placenta accreta. Bladder invasion is a life threatening obstetric complication, with a reported maternal mortality rate of 6% and a fetal mortality rate of 19%.[1] Prompt recognition and treatment are paramount to reduce maternal mortality and morbidity. Unfortunately, in most reported cases including our patient, the diagnosis of placenta percreta was made intraoperatively.[1,2,4] Nevertheless, preoperative diagnosis may be suggested by an unexplained elevated maternal serum alpha-fetoprotein (AFP) level.[7] Furthermore, the extent of myometrial invasion was found to be correlated with the elevated maternal serum AFP. The more extensive the abnormal placentation, the higher the maternal serum AFP level.[7] Transabdominal or transvaginal ultrasonography can be diagnostic.[2,3,8] Sonography findings associated with an invasive placenta are: an absence of the normally visible retroplacental sonolucent space, presence of unusually large dilated vessels extending from the placenta through the myometrium, thinning or disruption of the linear hyperechoic boundary echo representing the uterine serosa and its interface with the posterior wall of the bladder and, focal nodular projections beyond the expected plane of the bladder. However, it was reported that color Doppler studies complement ultrasound (US).[9,10] Moreover, when US does not rule out placenta percreta, MRI should be carried out, particularly for assessing bladder involvement.[9,11] Other invasive modalities to potentially obtain a diagnosis include cystoscopy, sigmoidoscopy and laparoscopy. However, biopsy during any such procedure should be avoided as it may precipitate severe hemorrhage.[1,2,7] Selective angiography of the uterine vasculature may also be considered, but the utility of this technique has not been established. Once the diagnosis of placenta percreta is made, the optimal management is controversial. In a review of 109 recent cases of placenta percreta surgical removal of the uterus and involved tissue was performed in 93% (101 cases), whereas only 7% (8 cases) were managed conservatively with the placenta left in situ after the delivery of the fetus.[7] Yet in a survey of 335 members of The Society of Perinatal Obstetricians 69% opted for conservative management when urinary bladder was involved.[7] The utility of methotrexate therapy with conservative treatment has also been described and may have an important role in the management of these cases especially with bladder invasion.[6,7] However, this conservative approach should be considered in well-selected, hemodynamically stable patients and not in the emergency situations, as we experienced in our case. Moreover, such conservative therapy does place the patient at continued risk for massive hemorrhage, and therefore necessitates prolonged intensive observation with further evaluation. The surgical management of placenta percreta requires an exploratory laparotomy through a vertical midline skin incision. Disappearance of the cul-de-sac between the uterus and bladder and presence of overdeveloped blood vessels running on the serosa of the bladder and uterus provides visual confirmation.[12] The uterine incision should be located away from the percreta and the intrauterine placental margins to minimize bleeding. Initial dissection of the placenta should be avoided as it results in massive hemorrhage, as shown in our patient and previously reported ones.[1,2,4] Instead the placenta should be left in situ without manipulation and, immediately proceeding to hysterectomy is recommended, especially in patients with profuse intra-operative hemorrhage. With anterior placenta percreta subtotal hysterectomy should be avoided since most arteries (that is cervical, vaginal, and vesical) remain uncontrolled and re-operation rates approach 90% in these patients.[13,14] Moreover, 3 maternal deaths due to hemorrhagic shock associated with subtotal hysterectomy were reported.[1]

A modified posterior approach to hysterectomy is recommended.[4] Therefore; this technique was chosen for our patient to minimize blood loss. In this approach, the uterus is mobilized by dividing the uterosacral ligaments and entering the vagina posteriorly. By retracting the ureters laterally and the uterus medially, uterine vessels and parametria medial to the ureter are ligated in a cephalad to caudad direction. With this fashion, the uterus is mobilized until the only remaining attachment is where the placenta percreta has invaded the bladder. The involved portion of the urinary bladder is then resected with the hysterectomy specimen, followed by urinary reconstruction. With minor bladder invasion, the bladder defect can usually be closed in routine 2-layer fashion. However, with extensive invasion, extirpation of all tissues involved is important to avoid delayed complications. Some authors have also advocated prophylactic bilateral internal iliac artery ligation or preoperative cannulation of the hypogastric arteries with an occlusion balloon and intraoperative embolization to reduce blood loss during hysterectomy.[3,15] Moreover, postoperatively these patients need intensive monitoring due to the risk of ongoing bleeding, disseminated intravascular coagulation, sepsis, acute respiratory distress syndrome and multi-organ failure.[2,3,4] Luckily, in our patient, a good recovery with favorable maternal and fetal outcomes were achieved.

In conclusion, placenta percreta with bladder invasion remains a major contribution to maternal morbidity and mortality. It should be considered a possibility in multiparous women with placenta previa and history of at least one CS. A preoperative diagnosis would be invaluable for the management of such cases, allowing us to leave the placenta in situ even if hysterectomy is planned and thereby minimizing maternal blood loss. Although hysterectomy would be the management of choice in most cases, conservative management should be considered in well-selected ones.

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