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IDENTIFICATION OF RISK FACTORS AND OUTCOMES OF PREGNANCIES COMPLICATED BY MORBIDLY ADHERANT PLACENTA - A RETROSPECTIVE STUDY

Gynaecology

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ABSTRACT

Placenta accreta is a life-threatening obstetric condition that requires a multidisciplinary approach to management. Women at greatest risk of placenta accreta are those who have myometrial damage caused by a previous cesarean delivery with placenta previa overlying the uterine scar. Surgical management of placenta accreta may be individualized. Although a planned delivery is the goal, a contingency plan for an emergency delivery should be developed for each patient. Retrospective analysis of all deliveries between January 2015- December 2017 was done, and identification of risk factors and pregnancy outcome of all cases of morbidly adherent placenta in Jubilee Mission Medical College and Research Institute, Thrissur, Kerala, India Total 20 cases of morbidly adherant placenta were studied. Prenatal diagnosis seems to be a key factor in optimizing the counseling, treatment, and outcome of women with placenta accreta. Prior Cesarean delivery and placenta previa are independent risk factors for placenta accreta. An increased risk for adverse maternal outcomes such as, uterine rupture, and peripartum hysterectomy were noted. Use of common iliac clamps intraoperatively for 40 mins with intermittent release proved to be very beneficial. Multidisciplinary team with senior obstetricians in a tertiary care centre is recommended.

KEYWORDS

accreta, prenatal diagnosis,

INTRODUCTION

Placenta accreta spectrum (PAS) is a general term used to describe placenta accreta, increta, and percreta. It results from placental implantation at an area of defective decidualization typically caused by preexisting damage to the endometrial-myometrial interface[1].

INCIDENCE

Placenta accreta is much more common than placenta increta and percreta. In a pooled analysis of results from two series involving a total of 138 histologically confirmed, abnormally implanted placentas from hysterectomy specimens, the types and frequencies of abnormal placentation were[2,3].

- Placenta accreta: 79 percent
- Placenta increta: 14 percent
- Placenta percreta: 7 percent

In 1950, placenta accreta was rare, occurring in 1 in 30,000 deliveries in the United States (US)[2,4]. During the 1980s and 1990s, the incidence markedly increased, reaching 1 in 731 deliveries between 2008 and 2011 in a cohort of over 115,000 deliveries in 25 hospitals in the US[2,3]. The marked increase has been attributed to the increasing prevalence of cesarean delivery in recent decades. The incidence of placenta accreta in Canada was 1 in 695 deliveries in 2009 to 2010[5].

Literature review

Placenta accrete syndrome

- **Ac+Crescere** = To grow from adhesion or coalescence **(Benirschke,2012)**
- Any placental implantation with abnormally firm adherence to myometrium because of partial or total absence of the **decidua basalis** and imperfect development of the **fibrinoid** or **Nitabuch layer**[6].

Classification

Abnormal placental adherence

Complete or total –Abnormal adherence may involve **all** the lobules
Partial - the abnormal adherence involves a **few** to several cotyledons
Focal -the abnormal adherence involves a **single** cotyledon

Placenta accreta occurs when all or part of the placenta attaches abnormally to the myometrium. Three grades of abnormal placental attachment are defined according to the depth of invasion: Accreta. Chorionic villi attach to the myometrium, rather than being restricted within the decidua basalis. Increta. Chorionic villi invade into the myometrium. Percreta. Chorionic villi invade through the myometrium. In this document, the general term "placenta accreta" will refer to all 3 grades of abnormal placental attachment (placenta accreta, increta, and percreta) unless otherwise specified. Because of abnormal attachment to the myometrium, placenta accreta is associated with an increased risk of heavy bleeding at the time of attempted placental delivery. The need for transfusion of blood products is frequent, and hysterectomy is commonly required to control life-threatening hemorrhage. Examples of complications associated with placenta accreta include: (i) damage to local organs (eg, bowel, bladder, ureters) and neurovascular structures in the retroperitoneum and lateral pelvic sidewalls from placental implantation and its removal; (ii) postoperative bleeding requiring repeated surgery; (iii) amniotic fluid embolism; (iv) complications (eg, dilutional coagulopathy, consumptive coagulopathy, acute transfusion reactions, transfusion-associated lung injury, acute respiratory distress syndrome, and electrolyte abnormalities) from transfusion of large volumes of blood products, crystalloid, and other volume expanders; and (v) postoperative thromboembolism, infection, multisystem organ failure, and maternal death.

Ultrasound findings - In the second and third trimesters, the following transabdominal and transvaginal sonographic findings have been associated with PAS; all of the findings need not be present.

- **Placental lacunae** – Multiple large, irregular intra-placental sonolucent spaces (placental lacunae) in the center of a lobule or cotyledon adjacent to the involved myometrium replace normal placental homogeneity that give the placenta a "moth-eaten" appearance.
- **Disruption of the bladder line** – Loss or disruption of the normally continuous white line representing the bladder wall-uterine serosa interface (termed the "bladder line") can be caused by placenta percreta or neovascularity related to placenta accreta or increta.
- **Loss of the clear zone** – The normal hypoechoic area behind the placenta (termed the "clear space" or "clear zone") may be missing or irregular. This sign can be obscured by direct pressure from the ultrasound probe and bladder filling[7]. It can also be obscured with advancing gestational age and posterior placental location.
- **Myometrial thinning** – The myometrium can be thin either due to a prior hysterotomy scar or due to placental invasion. When the placenta overlies the region of thinning, then it is important to look for other signs of PAS.
- **Abnormal vascularity** – Vessels that extend from the placenta

through the myometrium either into the bladder or through the serosa elsewhere are a clear sign of placenta percreta.
- **Placental bulge** – A portion of the uterus attached to the abnormally adherent placenta can balloon into the bladder due to weakness of the underlying thin myometrium.
- **Exophytic mass** – A focal mass that breaks through the uterine serosa, usually extending into the bladder, is a sign of placenta percreta.

Color Doppler — Color Doppler is useful for confirming the diagnosis of PAS when used in conjunction with the other ultrasound findings described above. Specific findings on color Doppler ultrasonography that suggest this diagnosis include

- Diffuse or focal intraparenchymal lacunar flow
- Vascular lakes with turbulent flow
- Hypervascularity of serosa-bladder interface
- Prominent subplacental venous complex

Magnetic resonance imaging — MRI may be more useful than ultrasound in two clinical scenarios: (1) evaluation of a possible posterior PAS because the bladder cannot be used to help clarify the placental-myometrial interface, and (2) assessment of the depth of myometrial and parametrial involvement, and, if the placenta is anterior, bladder involvement. However, increased accuracy beyond that noted with ultrasound is unproven. If performed, one group considers 24 to 30 weeks the ideal gestational age for imaging invasive placentation with MRI as false positives and negatives are more likely earlier and later in gestation.

Magnetic resonance findings in placenta accreta include
- Uterine bulging into the bladder
- Heterogeneous signal intensity within the placenta
- Presence of intraplacental bands on the T2-W imaging
- Abnormal placental vascularity
- Focal interruption of the myometrium[1]

Risk factors
- Prior cesarean delivery
- Placenta previa
- MSAFP levels >2.5 MoM -8 fold risk
- Free β-HCG >2.5 MoM- 4 fold risk
- Previous myometrial tissue damage
- Advanced maternal age > 35
- Multiparity
- Infertility procedures (IVF)[6]

Clinical presentation — Ideally, PAS is first suspected because of findings on obstetrical ultrasound examination while the patient is asymptomatic. It is often diagnosed during prenatal sonographic screening of women with a placenta previa or a low anterior placenta and prior uterine surgery. In women with less prominent risk factors for abnormal placental attachment, it may be an incidental finding during routine ultrasound examination.

- The first clinical manifestation of PAS is usually profuse, life-threatening hemorrhage that occurs at the time of attempted manual placental separation. In contrast to a simple retained placenta, part or all of the placenta remains strongly attached to the uterine cavity, and no plane of separation can be developed. However, it also may present as antenatal bleeding in the setting of placenta previa.

Materials and methods
- Retrospective observational study
- Case series
- 2 years
- 20 cases (15 referral, 5 own cases)
- Risk factors noted
- Diagnosis made with the help of investigations
- Treated as inpatients
- Observed the outcome

Work up
- History noted
- Physical examination
- Investigations (antenatal, USG, MRI)
- Diagnosis
- Antenatal corticosteroids
- Delivery scheduled
- Preoperative investigations
- Blood and blood products arranged and informed consent for cesarean hysterectomy
- Multidisciplinary team informed
- Treatment given

Table 1

Risk factors and diagnosis	No. of Cases
	14
	6
	20
• Multiple pregnancy	1
• Previous 1 cesarean • Previous 2 cesarean • Infertility treatment • Previous myomectomy	7 13 2 3 4
• Antenatal diagnosis • Placenta accreta • Placenta increta	20 11 5 4
• Placenta previa	20
• Diagnosis confirmed by radiology	20 19
• Previous Operative notes availability	5

Table 2

Intra-operative outcome	No. of cases
• Classical cesarean without hysterectomy	2
• Classical CS +Total hysterectomy • Classical CS +Subtotal hysterectomy	10 8
• Stenting required	2
	2
• B lynch sutures • Common iliac clamps at the onset of surgery	2 16
• Internal iliac artery ligation	2 2
• Bladder injury	3

Table 3

Maternal and perinatal outcome	No. of cases
• Primary PPH • PRBC • FFP	17 17 14 14
• ICU admission • Prolonged stay at hospital • Post-operative fever • MODS • Sepsis	18 20 10 1 2 1
• Maternal mortality	0
• **Perinatal outcome** • Respiratory distress • Hypocalcemia • Hypoglycemia	2 1 2 0
• Need of relaparotomy following • classical CS without hysterectomy	1

Consequences — When removal of the placenta is attempted after delivery, the lack of a normal plane of cleavage between the placental basal plate and the uterine wall results in major hemorrhage. The severity of hemorrhage is especially severe with more invasive placentation because of hypervascularity of the placental bed (local neovascularization and vasodilatation) and is a common indication for peripartum hysterectomy[5], Additional potential sequelae of massive hemorrhage include disseminated intravascular coagulopathy, adult

respiratory distress syndrome, renal failure, unplanned surgery, and death.

Information on neonatal outcome in pregnancies complicated by PAS is limited. One case-control study including 310 patients reported a significant increase in preterm birth (11 versus 1 percent in controls) and small for gestational age infants (27 versus 14 percent in controls)[8]. Neonatal outcome does not appear to be significantly affected by depth of placental invasion (accreta versus percreta)[9] but is strongly related to gestational age at delivery.

In contrast, adverse maternal outcome may increase with placenta percreta versus accreta since extrauterine anatomic structures, including blood vessels in the pelvis, may be invaded by the placenta and complicate hysterectomy. If an accreta rather than a percreta was suspected before delivery, preoperative preparation for delivery may be inadequate. The integrity of the previous hysterotomy scar may be compromised by a percreta, predisposing to uterine rupture. A review including 109 cases of placenta percreta reported the following types and frequencies of complications: transfusion of over 10 units (44 cases), infection (31 cases), maternal death (8 cases), ureteral ligation or fistula formation (5 cases each), and spontaneous uterine rupture (3 cases)[10]. These cases were derived from a questionnaire issued to members of the Society for Maternal-Fetal Medicine and a retrospective study at one institution; therefore, the complication rates may be higher than those that would be observed from a prospective consecutive series.

Maternal and perinatal death are uncommon in case series from tertiary care centers where multispecialty expertise is usually available; however, these reports are prone to selection bias.

- Planned delivery at 34 weeks at multidisciplinary centre with senior obstetrician prove to be beneficial
- **ICU** admission and prolonged hospital stay becomes inevitable.

- **Limitations**
- Small sample size
- Lot of referred cases were there so lack of proper details of previous uterine closure

Conclusion

- Prenatal diagnosis improves outcome.
- The most important risk factor is placenta previa after prior cesarean delivery, so all such cases should have a high index of suspicion.
- First suspected on obstetric ultrasound while patient is asympt omatic
- MRI is an adjunctive diagnostic tool
- Life threatening hemorrhage at the time of attempted placental separation should be anticipated and prior ureteric stenting, use of common iliac clamps for 40 minutes with intermittent release is very useful.

Recommendation

- Decrease primary cesarean rates
- Once diagnosed we can only intensively monitor
- them and prevent life threatening consequences
- Scheduled preterm delivery at 34 weeks.
- Consent for cesarean hysterectomy should be taken.
- Massive transfusion protocol.
- Use of common iliac clamps or aortic clamp during surgery.
- Multidisciplinary centre with senior obstetrician in a tertiary care centre for expert management.

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