ORIGINAL ARTICLE

MANAGEMENT AND MATERNAL OUTCOME IN MORBIDLY ADHERENT PLACENTA

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Background: Morbidly adherent placenta (MAP) with its variants is one of the most feared complications causing high morbidity and mortality in obstetrics. The objective of this study was to analyse different management options and maternal outcome in diagnosed cases of morbidly adherent placenta. **Methods:** Descriptive case series was carried out in Obstetrics and Gynaecology Department, Combined Military Hospital, Rawalpindi and one private hospital from Jan 2008 to Dec 2010. During this period all cases of morbidly adherent placenta diagnosed by colour flow Doppler and MRI were analysed. Operative delivery was carried out in all patients. Three different surgical managements namely total abdominal hysterectomy with non separation of placenta, subtotal hysterectomy and trial haemostasis with uterine sparing surgery were carried out on when and where required basis. The outcome like total blood loss, blood transfused, Intensive unit care, postnatal complications including febrile morbidity, hospital stay and prolonged follow ups, were recorded. **Results:** Total 32 cases of morbidly adherent placenta diagnosed by colour Doppler ultrasound/MRI (magnetic resonance imaging) were identified. In this study the frequency of morbidly adherent placenta found to be 1/274.8 deliveries and 1/122.6 caesarean sections. Initially total caesarean hysterectomy was performed in 16 patients, while subtotal hysterectomy in 9 and Trial haemostasis with uterine sparing in 7 cases out of which two cases underwent total hysterectomy due to massive postpartum haemorrhage same day. One case in subtotal hysterectomy for placenta percreta with bladder invasion had re-laparotomy for bladder fistula, while two for severe postpartum haemorrhage. Two needed ventilator support. Maternal morbidity was greater in subtotal hysterectomy and uterine sparing group. One patient died in this study. **Conclusion:** Antenatal diagnosis of morbidly adherent placenta followed by well-planned total abdominal hysterectomy with non-separation of placenta adapting multidisciplinary approach is the best surgical option to reduce maternal morbidity/mortality.
Keywords: morbidly adherent placenta, total abdominal hysterectomy, Trial haemostasis

INTRODUCTION

Morbidly adherent placenta (MAP) with its variants is one of the most feared complications causing high morbidity and mortality in obstetrics. Its incidence is 1in 200–2,500 deliveries in USA[1], and 1 in 800 deliveries in UK. The marked increase in incidence has been attributed to the increased rate of caesarean sections in recent years. Morbidly adherent placenta occurs when there is abnormally firm attachment of placental villi to the uterine wall with the absence of the normal intervening decidua basalis and Nitabuch's layer.

There are three variants of this condition: 1) *accreta*: the placenta is attached to the myometrium 75%; 2) *increta*: the placenta extends into the myometrium 17%; and 3) *percreta*: the placenta extends through the entire myometrium and uterine serosa 7%.

During pregnancy it may be asymptomatic or may present with antepartum haemorrhage, abdominal pain, whereas when intra partum it may be retained associated with postpartum haemorrhage, uterine rupture. The MAP remains the greatest challenge in modern obstetrics.[2] Maternal risk is the greatest on attempts to separate the placenta, resulting torrential haemorrhage, Disseminated intravascular coagulation, massive blood transfusion, hysterectomy, need for intensive care and even death.[3] Risk also increases in cases dealt in emergency without proper planning and multidisciplinary liaison.

The risk factors for MAP, include previous uterine surgery, e.g., myomectomy, dilatation and curettage, and placenta previa following previous caesarean section. During antenatal period such women should be identified carefully. A diagnosis of MAP can be confirmed with tissue histology; however, medical imaging can be an effective diagnostic tool. Antenatal diagnosis has brought a revolution in the management of such cases. Ultrasound can detect the presence of accreta (80% sensitivity) and absence of accreta (95% specificity).[4,5] Warshak *et al*. reported that in inconclusive ultrasonography MRI accurately predicted placenta accreta with 88% sensitivity and 100% specificity.[6] The most severe category is placenta percreta with bladder invasion. Such cases require proper prior preparation and multidisciplinary approach to reduce the morbidity and mortality.

The present study was aimed to analyse the maternal outcome in antenatally diagnosed cases of morbidly adherent placenta with different management options.

MATERIAL AND METHODS

This prospective study was conducted in Obs/Gynae Department of Combined Military Hospital Rawalpindi, a tertiary care teaching hospital and one private hospital from Jan 2008 to Dec 2011.

All pregnant women with history of previous caesarean section with major placenta previa, or anteriorly placed placenta underlying the scar were included. All those with normally sited placenta delivering vaginally or by caesarean section were excluded. Non probability convenience sampling was carried out. A comprehensive Performa included all information regarding age, parity, gestational period, social status, education, past and family history, signs and symptoms and relevant investigations.

All patients who had low lying placenta on USG in 2nd trimester, further confirmed in 3rd trimester by repeat colour flow Doppler and MRI if Doppler was inconclusive. These patients were admitted at 34 weeks or earlier in case of any complication. They had complete investigations. Foetal surveillance carried out by ultrasound examination and cardio tocography.

Management included achievement of optimal health status and extensive counselling of patient regarding the condition and its potential intra / postoperative complications well in advance of their estimated due date. Patients were counselled for increased risk of haemorrhage, multiple blood transfusions, bladder/ureteral damage, prolonged catheterization, infections, need for intubation, prolonged hospitalization, ICU care, need for reoperation, thromboembolic events and death. Discussion involved relative likelihood of caesarean hysterectomy and subsequent infertility and additional procedures like internal iliac artery ligation.

A multidisciplinary approach involving senior obstetrician, advanced surgical colleagues, urologist, anaesthesiologist, consultant haematologist, and paediatrician was adopted. Elective delivery was planned at 35/36 weeks or earlier in case of any complication after prior corticosteroids for lung maturity. Patients were kept first in the list in main OT with six units of blood, FFPs and platelets in hand along with prophylactic antibiotics. Majority received general anaesthesia, in liaison with senior anaesthetist. Midline subumbilical incision was made. At the time of caesarean hysterotomy made away from the location of placenta to deliver the baby .Then quickly total hysterectomy with non-separation of placenta performed in those with no future fertility desire. However subtotal hysterectomy performed in cases with extensive adhesions surrounding lower uterine segment and one with placenta previa percreta with extensive bladder invasion so as to leave the placenta in situ followed by methotrexate therapy. Further procedures like internal iliac artery ligation, ureteric stenting, and bladder repair were undertaken as and when required. In cases with desired fertility and partial placental separation spontaneously, conservative approach with trial haemostasis after removal of placenta completely or partially, multiple uterine compression sutures were applied. All patients were kept in intensive care postoperatively .Patients were observed for immediate and delayed complications.

Outcome measures included blood loss (intraoperative and postoperative vaginal, in drains, massive obstetric haemorrhage >2,500 ml), total number of blood transfusions, febrile morbidity, 3–5 units of RCC blood transfused in total caesarean hysterectomy cases, while 4–16 units RCC. In other two groups. Patients having good recovery were discharged to follow up to identify any long term complication. Readmissions and methotrexate administration were carried out in patients with conservative surgery. The SPSS version 14.0 was used for statistical analysis. Mean and SD were calculated for numerical data and percentages for categorical data.

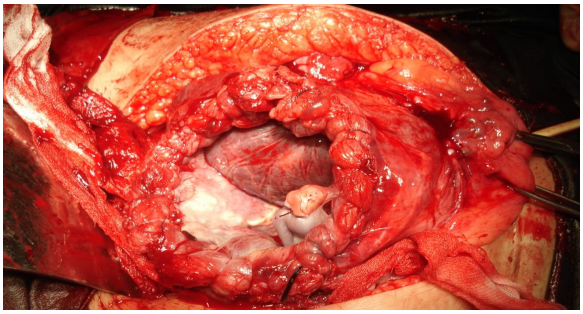

Figure-1: Subtotal Hysterectomy with Placenta *in situ* in a case of Placenta Percreta with extensive bladder invasion

Figure-2: Total caesarean hysterectomy with intact placenta in a case of MAP

RESULTS

Total of 32 cases diagnosed by colour Doppler/MRI were studied. Total of 8794 women were delivered, 3924 caesarean deliveries performed. The frequency of MAP found to be 32/8794 (1/274.8) deliveries and 32/3924 (1/122.6) caesareans. All patients had history of previous caesarean sections. Total caesarean hysterectomies were performed in 16 cases initially and

subtotal hysterectomies in 9 cases out of which three later had re-laparotomy; two developed post partum haemorrhage and one with placenta percreta with bladder invasion had a bladder fistula. Trial haemostasis with uterine sparing was done in 7 cases .Two out of which underwent TAH due to severe postpartum bleeding same day. One of them had cardiac arrest on the table and required TAH there and then with additional ventilator support post operatively; whereas the other one underwent TAH after eight hours of surgery. Six cases sustained bladder and ureteric injuries, three from TAH, two from subtotal hysterectomy and one from trial haemostasis groups respectively. Internal iliac artery ligation was done in 6 cases of TAH, 6 cases of Subtotal hysterectomy and 5 cases of trial haemostasis groups.

Table-1: Patients' demographic characteristics

Ages of Patients	Frequency	Mean±SD
Maternal age	25–37	33.30±3.20
Gravidity	2–6	4.00±1.15
Gestational age	35–36	35.50±0.53

Table-2: Estimated blood loss and frequency of blood transfusions

Groups	Estimated blood loss (ml)	Blood Transfusion (pints)
Total Caesarean Hysterectomy	1500–2000	3–5
Sub total Caesarean Hysterectomy	2300–2800	4–10
Trial Haemostasis	2500–6600	4–16

Table-3: Maternal morbidity outcomes

Intra-operative and postoperative complications	n (%)	Cases in each group n (%)	
Need for internal iliac artery ligation	17 (53.1)	TCH STCH TH	6 (18.75) 6 (18.75) 5 (15.6)
Bladder/ureteric injuries	6 (18.75)	TCH STCH TH	3 (9.3) 2 (6.2) 1 (3.1)
Re laparotomy	5 (15.6)	STCH TH	3 (9.3) 2(6.2)
Recurrent haemorrhages	5 (15.6)	STCH TH	3 (9.3 2 (6.2)
Admission to ICU	28 (87.5)	TCH STCH TH	12(37.5) 9 (28.1) 7 (21.8)
Fever	12 (37.5)	TCH STCH TH	3 (9.3) 6 (18.75) 3 (9.3)
Prolonged catheterisation	9 (28.1)	TCH STCH TH	6 (18.75) 2 (6.2) 1(3.1)
Inj Methotrexate	2 (6.2)	STCH TH	1 (3.1) 1 (3.1)
Bladder Fistula	1 (10)	STCH	1 (3.1)
Prolonged hospitalization	16 (50)	TCH STCH TH	1 (3.1) 8 (25) 7 (21.8)

TCH=Total Caesarean Hysterectomy, **STCH**=Subtotal Caesarean Hysterectomy, **TH**=Trial Haemostasis

Total blood loss was less in total hysterectomy group, 3–5 units of Rcc blood transfusions, maximum in trial haemostasis and subtotal group, 4–16 units Rcc blood transfusions were given to these patients. Both repeated admissions and prolonged follow-ups due to fever, recurrent haemorrhage, administration of methotrexate were increased in subtotal and trial haemostasis group (Table-3). Histologically proven 14 cases had accreta, 4 increta, and 3 percreta. One patient died in the Trial haemostasis group of the study who developed disseminated intra vascular coagulation along with acute renal failure and was put on ventilator support. She underwent total hysterectomy but could not be revived and died on 5th postoperative day.

DISCUSSION

The epidemic of placental invasion is escalating due to rising rate of caesarean sections. It has risen to 10 fold in past 50 years.[7] The frequency of MAP in our study is 1 in 274.8 deliveries which corroborate the studies from United States.

Clark *et al* observed an increased incidence of placenta previa after caesarean section from 0.26% in women with a normal uterus to 0.65% after one and up to 10% after 4 or more caesarean sections.[8] Some studies reported that risk of placenta accreta increased to 39% for those who had previous 2 caesarean sections.[9] About 75% cases of morbidly adherent placenta are associated with placenta previa. In the presence of the risk factors, previous caesarean section and placenta previa, obstetricians must have a high index of suspicion for placenta accreta. All of our patients had one or more caesareans with different degrees of placenta previa as well. In view of the rising incidence of this complication there is a need to diagnose it in the antepartum period.[10] The imaging modalities of ultrasonography and MRI plays an important role especially in patients who have the above mentioned risk factors.[11] Colour Doppler ultrasound is useful in demonstrating placental blood flow into the bladder interface. The most common site for placenta accreta is anterior lower uterine segment. This allows ultrasound transducer to evaluate this area with optimal resolution due to its superficial location.[12] We screened the high risk population with placenta previa and previous caesarean sections by colour Doppler ultrasonography/MRI and subsequently confirmed it on clinical grounds and histopathology.

Morbidly adherent placenta is associated with significant maternal morbidity, including massive haemorrhage, DIC, hysterectomy, bladder and ureteric trauma, ARDS and acute tubular necrosis.[13] Recognition of the high morbidity and mortality associated with morbidly adherent placenta and a multidisciplinary approach is recommended. The interventional radiologist, the anaesthetist, the haematologist, the neonatologist and an experienced consultant obstetrician play crucial role. Particular considerations should be given to the anticipation and management of massive haemorrhage, including availability of pack cells, platelets, fresh frozen plasma,

and cryoprecipitate. The most influential variable on maternal outcome is not attempting to remove the placenta. A retrospective study by Yap *et al* showed placental removal before hysterectomy resulted in increased maternal morbidity.[14,15] A recent review also advised against attempts at placenta removal before hysterectomy.[16]

Antenatal diagnosis, adequately planned caesarean hysterectomy without attempts at placental removal, reduce maternal morbidity as seen in our study. We noticed the maximum blood loss and increased morbidity in subtotal hysterectomy and uterine sparing surgery, which is similar to the study by SY Chew. All efforts should be made to control intra/postoperative haemorrhage .Internal iliac artery, uterine artery ligation performed in some cases to control haemorrhage. Ting-Kai Leng used prophylactic uterine artery embolization to reduce intraoperative blood loss for placenta percreta with bladder invasion, however, the success rate is lower.[17] There was one mortality in our study, although maternal mortality as high as 7–10% in reported cases.[18] Hysterectomy has traditionally been advised in the management of placenta accreta but there has been a recent movement towards conservative management and preservation of fertility. Strategies include leaving the placenta after caesarean delivery with surgical uterine devascularisation, embolisation of the uterine vessels, uterine compression sutures and/or over sewing of the placental vascular bed.[19] A conservative approach was first described by Arulkumarran and colleagues in 1986 by using systemic methotrexate.[20] Severe intrauterine infection and life threatening haemorrhage can occur requiring emergency hysterectomy, thus such patients should be carefully monitored and extensively counselled regarding risks.[21] Methotrexate has an important role in conservative management of placenta percreta with bladder invasion and it has been used in many patients.[22] We used methotrexate in one patient after subtotal hysterectomy with placenta in situ, who required prolonged follow up and ended up in re laparotomy for bladder fistula and successful repair. Methotrexate was also used successfully in one case with uterine sparing surgery.

CONCLUSION

Antenatal diagnosis of morbidly adherent placenta followed by well-planned total caesarean hysterectomy with non-separation of placenta adopting multidisciplinary approach is the best surgical option to reduce maternal morbidity and mortality.

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