

## The surgical management and outcome in 36 cases of morbidly adherent placenta .

Rani Reddy, L. Lavanaya

### Abstract :

*Background :* The morbidly adherent placenta (MAP), once a rare occurrence, is now an increasingly common complication of pregnancy secondary to the increase in cesarean delivery rates.

*The massive haemorrhage associated with this condition leads to severe maternal morbidity and mortality. There are various surgical methods in use to control bleeding from the placental bed, but MAP has replaced atonic post partum haemorrhage as the leading cause of Cesarean hysterectomy.*

*Aim:* to analyse the surgical management of the morbidly adherent placenta with the objective of reducing maternal morbidity and mortality, by studying the various surgical methods used to achieve haemostasis.

*Results :* 36 cases of MAP managed between January to December 2017 were analysed. The average age of the cases was 24 years, with average gravidity 2. All patients had undergone previous cesarean delivery with average of 2 previous LSCS. 22 cases were diagnosed in the antenatal period and the rest during cesarean section. 17 cases were delivered between 32 to 38 weeks of gestation. 3 cases were managed by hysterectomy with placenta in situ. In the 18 cases where uterine sparing surgery was undertaken 10 cases had to undergo hysterectomy and bilateral hypogastric artery ligation for control of bleeding. Average blood and component therapy was 6 and 8 units. Inotropic support was required in 13 cases and ventilator support in 9 cases. Bladder injury occurred in 6 cases and ureteric injury in 2. There was maternal mortality in 3 cases -8.3%.

*Conclusion:* Patients diagnosed in the antenatal period undergoing planned surgery had better outcomes with fewer blood transfusions and shorter hospital stay. Uterine sparing surgery was associated with significant maternal morbidity and was not successful in 54 % of cases. Compression sutures, with bilateral hypogastric artery ligation was the most common surgical technique used to control bleeding from the placental bed.

Date of Submission: 25-07-2018

Date of acceptance: 12-08-2018

### I. Introduction :

The morbidly adherent placenta (MAP), once a rare occurrence, is now an increasingly common complication of pregnancy. This rising incidence parallels the increase in cesarean delivery rates[1,2]. Placenta accreta has overtaken uterine atony as the leading indication for peripartum hysterectomy[3].

Any condition resulting in endometrial tissue damage followed by a secondary collagen repair, such as previous cesarean delivery, previous myomectomy for submucous fibroids, vigorous curettage, previous manual removal of placenta and septal implantation promotes placental adherence[4,5]. As a result there is no plane of cleavage between the placenta and the underlying uterine wall. Depending on the extent of adherence the condition is classified as placenta accreta (reaching the myometrium), placenta increta (into the myometrium) and placenta percreta (right through the myometrium to reach the serosa and beyond)[5].

The incidence has increased 10-fold in the past 50 years and is now reported to occur with a frequency of 1 in 2500 deliveries worldwide[5].

The most important risk factor for MAP is placenta previa after a prior cesarean section[3].

The frequency of MAP increases with an increasing number of sections

One previous cesarean birth – 11 to 25 %

Two previous cesarean births – 35 to 47%

Three previous cesarean births – 40%

[7]

There is also a significant increase in preterm birth (11 vs 5% of controls) and fetal growth restriction (27 vs 14% of controls)[8].

Transabdominal and transvaginal ultrasound should be considered the primary diagnostic approach. Intraplacental sonolucent areas (6 or more placental lacunae) and loss of bladder line are the most reliable findings. Color Doppler findings of turbulent flow and intraplacental bridging help to confirm the diagnosis[9,10].

If USG findings are ambiguous or inconclusive, MRI may be used but increased accuracy beyond that noted for USG is not proven[11].

The optimum gestational age for planned delivery is controversial, with recommendations ranging between 34 to 37 weeks of pregnancy. Most women remain stable through 36 weeks with no vaginal bleeding, preterm rupture of membranes or onset of contractions [12, 13, 14]. Delivery in a tertiary care facility and management by a multidisciplinary team including, apart from an experienced trained obstetrician an anaesthesiologist, urologist or surgical oncologist, paediatrician, and intensivist. Support services from an adequately stocked blood bank and post operative care in intensive care unit are required. Delivery should be scheduled for optimal availability of necessary personnel and facilities. Having a protocol in place to rapidly arrange for blood and component therapy and assembly of multidisciplinary team helps to handle the situation if the patient sets into labour and requires an emergency surgery [14]. Adequate cross matched packed red blood cells (6 units), fresh frozen plasma, cryoprecipitate, and platelets should be available in the operating room as a median estimated blood loss is 2.5 to 2.8 liters has been reported. The ACOG recommends hysterectomy with placenta left in situ. No attempt is made to remove the placenta after delivery of the baby and hysterectomy is carried out [17]. In cases where the adherent placenta has been disturbed at delivery and is bleeding, conservative measures are rarely effective and delay in deciding on hysterectomy may cause profuse bleeding [15, 18]. Prophylactic pre-cesarean catheterisation of the hypogastric arteries with balloon occlusion or arterial embolization has been described. Balloon occlusion is reversible and it takes only a few minutes to inflate the balloons and achieve haemostasis intraoperatively. It is however, an expensive procedure and is associated in 7% of cases with complications, which include inability to position the catheters properly, vessel injury needing stenting or arterial bypass, pelvic infection, bladder ischaemia and thrombo embolism [19, 20, 21]. MAP is often seen in young women in whom uterine sparing surgery is requested with a view to preserve fertility or for psychological wellbeing of the patient [23, 24].

### **Conservative management includes**

1. Leaving the placenta undisturbed after delivery of the fetus and administration of post operative methotrexate under close supervision. After administration of methotrexate the placenta is left to resorb or expel spontaneously. If significant bleeding develops manual removal is attempted. Interval removal of placenta may be associated with heavy bleeding. Many reports do not describe any attempts at removal of placenta.

Prolonged use of antibiotics while the resolution process is being monitored may be required. There is no convincing evidence that methotrexate administration improves the outcome, and clear evidence of harm with nephrotoxicity, pancytopenia is present. According to Robert Resnick et al. it should not be used [22, 25].

2. Attempt is made to remove the placenta after fetal delivery and various surgical techniques are used to control bleeding from the placental bed, such as:

- balloon tamponade of the placental bed (Bakri balloon)
- lower segment transmurular compression sutures (Cho sutures, horizontal B-Lynch brace sutures)
- pelvic devascularisation by bilateral uterine artery and internal iliac ligation (IIL). Following ligation, there is a reduction in pulse pressure, mean arterial pressure by (25 to 50%), and blood flow upto 50% - If the area of placental attachment is focal, and majority of the placenta has been removed, wedge resection and repair or over sewing of the implantation site can be performed (placenta myometrial en bloc excision and repair) [26].

E. Chandharan et al. described the triple -P procedure which involves

- Perioperative placental localization using USG transabdominally to delineate upper border of placenta.
- Pelvic devascularisation by inflation of prepositioned hypogastric artery occlusion balloons to reduce blood supply to the uterus
- placental non separation and myometrial excision and repair [29]

Methods:

36 cases admitted to Gandhi Hospital, a tertiary teaching hospital, between January to December 2017 were studied for incidence, antenatal management, diagnosis, surgical management, maternal morbidity and mortality.

## **II. Results:**

Age of the patients ranged from 21 to 30 years and gravidity 2 to 5.

Diagnosis: 22 cases were diagnosed in the antenatal period by Ultrasonography and Doppler study, 13 cases were diagnosed at the time of caesarean delivery and one case following vaginal delivery.

All patients had placenta previa type 3 and 4.

Premature onset of labour occurred in 14 cases (19.4%). There were 3 stillbirths and 2 growth restricted fetuses.

The average gestational age at elective surgery was 35 wks (32 wks to term). There were 3 maternal deaths.

### **Table 1: Clinical Features – n= 36**

Gestational age at admission 26 wks to term pregnancy

Presented with bleeding per vaginum 12 cases (40%)

Presented with rupture uterus 1 case

Presented with haematuria 1 case  
 Gestational age at which antepartum h'ge occurred  
 26 wks One case  
 28 wks 3 cases  
 28 – 34 wks 6 cases  
 34 – term pregnancy 2 cases  
 Number of previous C.sections  
 One previous section 11 cases  
 Two previous sections 16 cases  
 Three previous sections 8 cases  
 Preoperative blood transfusion for correction of anemia 6 cases

**Table 2: Diagnosis**

Antenatal USG + Doppler study 22 cases  
 Antenatal USG + MRI 8 cases  
 Placenta accreta 15 cases (85%)  
 Placenta percreta 3 cases

In 18 cases there was concurrence between USG diagnosis and operative findings. However in 4 cases the finding of placental adherence was missed on USG and was diagnosed preoperatively.

**Table 3: Treatment modality**

Elective Caeserean hysterectomy with placenta in situ 4 cases  
 Emergency hysterectomy with placenta in situ 3 cases (percreta)  
 A.Uterine incision  
 1.High transverse 18  
 2.Classical incision 4 cases  
 Compression sutures with bilateral uterine artery ligation 11 cases  
 Compression sutures,+ internal iliac artery ligation + uterine artery ligation 5 cases  
 Failed conservative measures leading to hysterectomy 10 cases  
 Re laparotomy for intraperitoneal bleeding 1 case  
 Hysterectomy for secondary haemorrhage 1 case

**Table 4 : Complications at surgery**

1.Adhesions between uterus and parietal peritoneum and adnexa 9 cases  
 2.Bladder serosal injury 3 cases  
 3.Partial bladder resection 2 cases.  
 4.Dense bladder adhesion to lower segment 4 cases  
 5.Broad ligament haematoma 2 cases  
 6.rupture uterus 1 case

**Table 5: blood loss and operative time by treatment modality**

Technique	blood loss	time for operation
Elective Caeserean hysterectomy with placenta in situ	800 – 1200ml	1hr --1 hr 20 min
Emergency hysterectomy with placenta in situ	800 – 1200ml	1hr to 1hr 30 min
Compression sutures with bilateral uterine artery ligation	1200 – 1800ml	>2 hrs
Compression sutures +IIAL	1200 – 2.5 lts	>2hrs
Failed conservative measures leading to hysterectomy	1500 to 3,500 lts	2 – 3 hrs.
Hysterectomy with bladder /ureteric repair	1800 – 4lts.	>3hrs.

**Table 6 : Maternal outcome**

1.	Average blood loss	2.2 lts.
2.	Average operative time	2hrs
3	Average blood transfusion units	6
4	Bladder injury	7 (19.4%)
5	Partial cystectomy	2
6.	ICU care	9
7	Ionotropic support	21 (58%)
8	Average hospital stay	8 days
9	dialysis	3 cases

10.	mortality	3 (8.3%)
-----	-----------	----------

### III. Discussion

**The overall incidence of M AP in this study for a period of one year was 0.4%,that is one in 300 deliveries.**

In 2012 the American College of Obstetricians and Gynaecologists stated the incidence to be as high as 1 in 533 deliveries[1,2]. The most important risk factor for MAP is placenta previa after a prior cesarean section[3]. 67% of the cases were asymptomatic till 34 wks of gestation and in patients who presented between 28 to 32 wks.conservative management with prolongation of pregnancy from 1 wk to 3 wks was possible in 8 cases.. HK Chaudhari, PK Shah et al who studied 30 cases of MAP reported 53% of cases presenting after 36 wks of pregnancy[30].Elective surgery for most patients can be taken up after 37 wks of pregnancy. The ACOG recommends hysterectomy with placenta left in situ. No attempt is made to remove the placenta after delivery of the baby and hysterectomy is carried out.Even with this approach significant risk of profuse bleeding exists from abundant neovascularisation and rich collaterals which may not be amenable to current surgical techniques. In our series attempt at placental removal with a view to preserve the uterus resulted in profuse bleeding .Measures such as CHO compression sutures of the lower uterine segment,bilateral uterine artery ligation and in 5 cases IIAL were used to control the bleeding effectively in 8 of 18 cases.All obstetricians must train in identification and rapid ligation of the hypogastric arteries.The decision to proceed to hysterectomy must be made early in order to avoid severe maternal morbidity[.Post operative intensive care was required in 8 patients,three of them were on ventilator support for transfusion associated lung injury.Prolonged hypotension with acute kidney injury requiring dialysis was seen in 3 cases,who recovered.The three maternal deaths and occurred in the emergency setting were due to the poor general condition of the patients at presentation. Pre-operative measures to reduce surgical bleeding have been described.Prophylactic pre-cesarean catheterisation of the hypogastric arteries with balloon occlusion or arterial embolization may be used to control bleeding . Hoda salah, Darwish et al. in their review compared outcomes in 32 cases of MAP who underwent preoperative balloon occlusion with 12 cases who underwent caserean section without balloon occlusion of hypogastric arteries. They concluded that there was significantly less blood loss in the balloon occlusion cases (2.8 l) as compared to the non occluded group (4.7l). There was no statistical difference in mean volume of replaced blood products,operative time or hospital stay[32]. Involvement of the urinary tract is described in upto 40% of cases with placenta percreta.Pre-operative cystoscopy and with stenting of the ureters may help reduce injury to the ureters[27,28]. In this series there were 6 cases of bladder injury due to dense adhesions to lower segment .In 2 cases the placenta had invaded the bladder base and required partial cystectomy, stenting of the ureteric orifices and bladder closure.Ureteric transection required reimplantation into the bladder in one case. Waschecka et al., reported urological sequelae in women with placenta percreta including bladder laceration in 26%,urinary fistula in 13% ureteric transection in 6% and reduced bladder capacity. Partial cystectomy may be required in 40% of cases of placenta percreta[31]. Conclusion :The rising incidence of MAP makes it mandatory that every case of previous caesarean delivery undergoing sonography be viewed with a high index of suspicion for MAP and a diligent search made. All patients with suspected adherent placenta should be counseled regarding the diagnosis, the associated maternal morbidity, transfer to a facility specialized in management of placenta accreta, need for multiple blood transfusions and that prolonged hospitalization may be required. Abdominal delivery of the fetus followed by hysterectomy with placenta undisturbed is the only recommended treatment for MAP. Uterine sparing surgery should only be done rarely and in fully informed patients.In such patients pre-operative measures such as balloon occlusion of the hypogastric arteries or arterial embolisation maybe of use in controlling bleeding from the placental bed. A multidisciplinary approach and. support services from an adequately stocked blood bank and post operative care in intensive care unit are required.

### References:

- [1]. Morlando M1, Sarno L, Napolitano R, Capone A, Tessitore G, Maruotti GM, Martinelli Placenta accreta:incidence and risk factors in an area with a particularly high rate of cesarean section. *Acta Obstet GynecolScand.* 2013 Apr;92(4):457-60.
- [2]. Serena Wu, MD, Masha Kocherginsky, PhDJudith U. Hibbard, MD.Abnormal placentation: Twenty-yearanalysis *American Journal of Obstetrics and Gynecology* Volume 192, Issue 5, May 2005, Pages 1458–1461.
- [3]. Mehrabadi A, Hutcheon JA, Liu S, et al. Contribution of placenta accreta to the incidence of postpartumhemorrhage and severe postpartum hemorrhage. *Obstet Gynecol* 2015; 125:814.
- [4]. Clark, Steven I. MD; koonings, Paul P. MD; phelan, jeffrey p. MD Placenta Previa/Accreta and Prior CesareanSection *Obstetrics & Gynecology: July*
- [5]. Khong TY. The pathology of placenta accreta, a worldwide epidemic. *J Clin Pathol* 2008; 61:1243.
- [6]. Placenta accreta. Committee Opinion No. 529. American College of Obstetricians and Gynecologists. *ObstetGynecol.* 2012;120:207-
- [7]. Maternal Morbidity Associated With Multiple Repeat Cesarean Deliveries Silver, Robert M. MD1; Landon,
- [8]. Gielchinsky Y, Mankuta D, Rojansky N, et al. Perinatal outcome of pregnancies complicated by placentaaccreta. *Obstet Gynecol* 2004; 104:527.
- [9]. Comstock CH, Love JJ Jr, Bronsteen RA, Lee W, Vettraino IM, Huang RR, et al. Sonographic detection ofplacenta accreta in the second and third trimesters of pregnancy. *Am J Obstet Gynecol* 2004;190:1135–40.

- [10]. Chou MM, Ho ES, Lee YH. Prenatal diagnosis of placenta previa accreta by transabdominal color Dopplerultrasound. *Ultrasound Obstet Gynecol* 2000;15:28–35.
- [11]. Palacios Jaraquemada JM, Bruno CH. Magnetic resonance imaging in 300 cases of placenta accreta: surgicalcorrelation of new findings. *Acta Obstet Gynecol Scand* 2005;84:716–24. [PubMed] [Full Text] Acog committeeopinion #529.Placenta accrete.Obstet Gynecol 2012;120:207
- [12]. Robert Resnik, MD, Robert M Silver, MD Clinical features and diagnosis of the morbidly adherent placenta(placenta accreta, increta, and percreta)
- [13]. Read JA, Cotton DB, Miller FC. Placenta accreta: changing clinical aspects and outcome. *Obstet Gynecol*Warshak CR, Eskander R, Hull AD, Scioscia AL, Mattrey RF, Benirschke K, et al. Accuracy of ultrasonographyand magnetic resonance imaging in the diagnosis of placenta accreta. *Obstet Gynecol* 2006;108:573
- [14]. Morbidly Adherent Placenta: A Critical Review Richa Aggarwal, 1,3 Amita Suneja,1 Neelam Bala Vaid,1 PonamYadav,1 Abha Sharma,1 and Kiran Mishra2J *Obstet Gynaecol India*. 2012 Feb; 62(1): 57–61.
- [15]. Grosvenor, A, Silver, R, Porter, TF, Zempolich, K. Optimal Management of Placenta Accreta. *Am J ObsteGynecol* 2007; 195. Abstr No. 238.
- [16]. Robinson BK, Grobman WA. Effectiveness of timing strategies for delivery of individuals with placenta previaand accreta. *Obstet Gynecol*. 2010;116(4):835-842.
- [17]. Placenta accreta. Committee Opinion No. 529. American College of Obstetricians and Gynecologists. *ObstetGynecol*. 2012;120:207
- [18]. Eller AG, Porter TF, Soisson P, Silver RM. Optimal management strategies for placenta accreta. *BJOG*2009
- [19]. Tan CH, Tay KH, Sheah K, Kwek K, Wong K, Tan HK, et al. Perioperative endovascular internal iliac arteryocclusion balloonplacement in management of placenta accreta. *AJR Am J Roentgenol* 2007;189:1158–63
- [20]. Shrivastava V, Nageotte M, Major C, Haydon M, Wing D. Case-control comparison of cesarean hysterectomywith and without prophylactic placement of intravascular balloon catheters for placenta accreta. *Am J ObstetGynecol* 2007; 197:402.
- [21]. Bishop S, Butler K, Monaghan S, Chan K, Murphy G, Edozien L. Multiple complications following the use ofprophylactic internal iliac artery balloon catheterisation in a patient with placenta percreta. *Int J ObstetAnesth* 2011;
- [22]. Timmermans S, van Hof AC, Duvekot JJ. Conservative management of abnormally invasive placentation. *ObstetGynecol Surv*. 2007;62:529–39. [PubMed]
- [23]. Kayem G, Davy C, Goffinet F, Thomas C, Clement D, Cabrol D. Conservative versus extirpative managementin cases of placenta accreta. *Obstet Gynecol*. 2004;104:531–6
- [24]. O'Brien JM1, Barton JR, Donaldson ES. The management of placenta percreta: conservative and operative strategies *Am J Obstet Gynecol*. 2015 Feb;212(2):218.
- [25]. Nijman RGW, Mantigh A, Aanoudse JG. Persistent retained placenta percreta: methotrexate treatment andDoppler flow characteristics. *BJOG* 2002;109:587-58
- [26]. Angstmann T1, Gard G, Harrington T, Ward E, Thomson A Surgical management of placenta accreta: a cohortseries and suggested approach. *Obstet Gynecol*. 2010 Oct;116(4):835-42.
- [27]. Parva M, Chamchad D, Keegan J, et al. Placenta percreta with invasion of the bladder wall: management witha multidisciplinary approach. *J Clin Anesth*. 2010;22:209-212
- [28]. Bakri YN, Sundin T. Cystotomy for placenta previa percreta with bladder invasion.*Am J Obstet Gynecol*. 2015Dec;213(6):755-60. .
- [29]. Chandraharan E1, Rao S, Belli AM, Arulkumaran S The Triple-P procedure as a conservative surgical alternativeto peripartum hysterectomy for placenta percreta.*Int J Gynaecol Obstet*. 2012 May;117(2):191-4
- [30]. Chaudhari HK1, Shah PK2, D'Souza N2. Morbidly Adherent Placenta: Its Management and Maternal andPerinatal Outcome.*J Obstet Gynaecol India*. 2017 Feb;67(1):42-47.
- [31]. Washecka R, Behling A. Urologic complications of placenta percreta invading the urinary bladder: a case reportand review of the literature. *Hawaii Med J* 20
- [32]. Hoda SalahDarwishaHossam AbdelhafizZaytounbHanaa AhmedKamelbYasser HassanHabashcProphylactic preoperative balloon occlusion of hypogastric arteries in abnormal placentation; 5 years experience *The Egyptian Journal of Radiology and Nuclear Medicine* Volume 45, Issue 3, September 2014, Pages 751-759

Rani Reddy, L. Lavanaya" The Surgical Management And Outcome In 36 Cases Of Morbidly Adherent Placenta ."*IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 17, no. 8, 2018, pp 10-14.