

Comprehensive Management of Placenta Accreta Spectrum in the Setting of a Tertiary Healthcare Centre in India: A Case Series

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Abstract: ***Aim:** Management of placenta accrete Spectrum case with guidelines. 1) A 26-year-old with placenta accreta underwent Obstetric hysterectomy, bladder repair and massive transfusion after severe hemorrhage with post op morbidity mitigation. 2) A 32-year-old with placenta percreta underwent Obstetric hysterectomy, bladder repair, ureteric reimplantation, and massive transfusion. 3) A 24yrs partially adherent placenta foleys catheter tourniquet followed by obstetric hysterectomy. **Conclusion:** A multidisciplinary approach having surgical expertise at tertiary care centre is necessary for management of placenta accreta spectrum.*

Keywords: Placenta accreta spectrum, Obstetric hysterectomy, Multidisciplinary management, Maternal hemorrhage, Tertiary care approach.

1. Case Series

Case 1

26 years old, Gravida 3 Para 2 Living 2 previous 2 lower segment Cesarean sections with 31+ 5 weeks of gestation with complete placenta previa, MRI suggestive of suspicion of placenta accreta got admitted with USG suggestive of complete Placenta Previa. Patient was previously admitted twice in ANC ward for 2 episodes of bleeding. Steroid cover with Inj. betamethasone 12 mg 24 hrs apart was given. Patient was taken for planned LSCS followed by obstetric Hysterectomy at 31+ 5 weeks. Pfannenstiel incision taken, baby delivered cephalic presentation and handed over to neonatologist. Intraoperatively posterior wall of bladder was adhered to uterus along with dilated blood vessels over bladder. Urosurgery assistance taken intraoperatively, plane dissection found along with repair of bladder serosa. Obstetric Hysterectomy done along with removal of posterior serosal layer of bladder. A total 9 units PCV, 10 units FFP, 6 units RDP and 4 units cryoprecipitate transfused. Total blood loss of 2.5 litres. Patient was shifted to ICU, put on mechanical Ventilation with central line. Post op had hyponatremia along with right upper limb cephalic vein thrombophlebitis. Low molecular weight Heparin and Sodium correction given.



Figure 1: Case 1



Figure 2: Case 2

Case 2

33 years old, Gravida 3 Para 2 Living 2 previous Full term normal vaginal delivery followed by lower segment Cesarean section with 34 + 2 weeks of gestation with USG suggestive of complete Placenta Previa with Placenta percreta with bladder wall irregularity with Breech presentation. Patient was previously admitted thrice for PV bleeding. MRI pelvis was suggestive of Placenta previa with placenta percreta with focal invasion into bladder in anterior lower uterine segment. Invasion of placenta into posterior wall of bladder for area of 3.3 *3.5 cm. Steroid cover with Inj. betamethasone 12 mg 24 hrs apart was given. Urosurgery reference for preoperative stenting of ureter was discussed advised intraoperative assistance would benefit. Patient was taken for planned LSCS followed by obstetric Hysterectomy at 36 weeks. Midline vertical incision taken LSCS was done baby delivered and handed over to neonatologist. Intraoperatively posterior wall of bladder was adhered to uterus. Urosurgery assistance taken intraoperatively –Bladder was opened longitudinally and B/L DJ stenting done. Obstetric Hysterectomy done along with removal of posterior wall of bladder. Left ureteric injury traced intraoperatively 2 cm proximal to let Vesicoureteric Junction. Left ureteric reimplantation done and bladder wall closed in two layers. Suprapubic and per urethral foleys catheter inserted. There was intraop falling BP up to 80/50

mm hg, started on colloid and noradrenaline 2 mg in 50 cc NS @10ml per hour. A total of 11 units RL, 8 units colloid, 8 units PCV, 1-unit whole blood, 8 units FFP, 8 units RDP transfused. Total blood loss of 3500 ml. Patient was shifted to ICU, put on mechanical Ventilation with central line.

Case 3

24-year-old, G2P1L1 with previous LSCS, was admitted at 35+3 weeks with USG suggestive of complete placenta previa along with fetal congenital heart disease underwent emergency LSCS under spinal anesthesia. Abdomen opened with Pfannenstiel incision, and transverse incision was given on uterus above the placental margin. live male child weighing 2.6 kg was delivered. Intraoperatively, complete placenta previa was confirmed with partial adherence near the internal cervical os. Partial separation leading to torrential hemorrhage. Placenta was partially separated placenta was cut and removed to reduce dimensions of lower segment, a Foleys catheter tourniquet tied helped in compressing uterine vessels. Due to uncontrolled bleeding, an obstetric hysterectomy was performed. Foleys catheter tourniquet was removed at step of tying uterine vessels. Hemostasis achieved and abdominal drain inserted. Estimated blood loss was 1.8 litres. Transfused 4 units PCV and 4 units FFP. Patient was shifted to ICU for observation, remained hemodynamically stable with adequate urine output.

2. Discussion

With certain contributory factors like, the increase in rates of C-Section, uterine surgery and advanced maternal age, the incidence of Placenta Accreta Spectrum has increased worldwide over the past few decades. Exact pathophysiology for the same is not yet established.

The history of previous uterine surgeries with low lying placenta or placenta previa needs evaluation by multi-modal ultrasound after the diagnosis of placenta accreta. It is managed by multi-disciplinary approach with blood transfusion, availability of surgical expertise & NICU availability as per ACOG guidelines.[1]

Recommendation on use of pre-operative stenting of ureters, moreover hysterectomy following delivery of fetus, expectant management with placenta left in situ & conservative

management in case of focal adhesions & desired fertility are all considered correct treatment. Methotrexate is not suggested for after-care.[2]

Guidelines to reduce blood loss

Standard treatment is Peripartum Hysterectomy.

Conservative measures include procedures like Intentional Retention of Placenta or partial myometrial excision as per literature.

Indicated in women who are interested future childbearing, or whose fertility is inseparably linked with social status and self-worth. During surgery findings of steps of hysterectomy may be complicated involving excessive blood loss and damage to nearby tissue, this can be reduced by keeping placenta inside. Comparing delayed hysterectomy with immediate cesarean hysterectomy. According to a study conducted at Vanderbilt University Medical Centre, there was 43.33% less incidence of blood loss as well as an 84% less requirement of blood transfusion when Delayed Hysterectomy was performed as compared to Immediate Cesarean Hysterectomy. [3.7]

Myometrial resection is done when superficial placenta adherent less than 50 percent is attached to one of uterine wall either anterior or posterior wall. The IS AIP specialist suggested to rule out cases without invading uterine cervix and /or parametrium performing local resection. More research is needed so as to benefit from this method of treatment. [4]

"Alternative Conservative Approach is the Triple P procedure, consisting of: -

- 1) Peri-operative localization of upper placental edge.
- 2) Pelvic devascularization.
- 3) Placental Non-Separation with Myometrial excision followed by repair of myometrial defect."

Aims of the Triple P procedure is -->

- 1) To reduce peri-operative surgical complications
- 2) To reduce the time taken for surgery.
- 3) To minimize some common sequelae of placental retention like, infection, sepsis, secondary Post Partum Hemorrhage and coagulopathy. [5.6]

Summary of steps to control hemorrhage

Plan	Steps applicable	Risk associated
Intra uterine ballon tamponade	First measure control bleeding	No complication
Uterine devascularization	After tamponade fails placenta left in situ	in combination with Uterine sutures
Internal iliac artery ligation	Last Method	More risk for surgical complications
Immediate hysterectomy	Shock severe hemorrhage	Accurate quick control
Iliac /aortic compression	Temporary measures	Time is obtained for doing surgery
Pelvic artery embolization	Bleeding after obstetric hysterectomy. placenta retained	Necrosis of bladder uterus rectum

These recommendations current surgical guidelines for PAS management adapting treatment to the patient stability and available surgical expertise valuing safety and lowering complications [8,9].

Hysterotomy was done using linear cutter and bladder was brought down using Vessel Sealing System (VSS) then clamping the uterine arteries leads to a significant reduction

in blood loss thereby, requiring less need of blood transfusion. On studying cases it was observed included both elective as well as emergency cases, only 50% of cases bleeding encountered needed one blood transfusion.[4]

The Canadian committee members in 2019 suggested

Newer surgical approaches have aimed to minimize blood loss during surgery.

- 1) Less data or evidence to recommend either approach (preoperative balloon placement or intraoperative ligation) designed to arrest blood flow from the internal iliac arteries prior to hysterectomy (II-1C).
- 2) On comparison of balloon at level below renal artery with distal level near aorta divided into common iliac arteries. After adjusting for relevant risk factors, multivariate analysis revealed that distal occlusion was associated with a 45.9% decrease in estimated blood loss, decrease in red blood cell transfusion volume, and 44.9% reduction in total transfusion volume. There was no vascular access-related complications in either group. This study marks the safety of prophylactic REBOA in planned cesarean hysterectomy for PAS and provides a rationale for use .8
- 3) Classical cesarean section and non-removal placenta. Wedge myometrial resection can for focal disease present
 - There is advantage of Regional Anesthesia compared to General Anesthesia.
 - If required, massive transfusion should be given.
 - Giving intra-venous tranexamic acid before surgery will decrease blood loss.

Preferred position is modified lithotomy and midline abdominal incision; after doing USG an incision is taken above placenta will reduce bleeding. Not to separate placenta if it is found adherent.

Surgical Ligation of Anterior division of internal iliac artery is useful in PAS disorders. However, effectiveness is limited due to development of collaterals from External Iliac Arteries and the Aorta. [9]

Balloon Occlusion Comparison: Distal occlusion (near aorta dividing common iliac arteries) was associated with a 45.9% decrease in estimated blood loss, 41.5% decrease in red blood transfusion volume, and a 44.9% reduction in total transfusion volume compared to occlusion below the renal artery.

Safety of Prophylactic REBOA: The study suggests prophylactic Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) is safe in planned cesarean hysterectomy for PAS. 11

Case 2 Discussion

Another option to potentially prevent intra-op ureteric injury and early morbidity is the Placement of Stents in the Ureter via Pre-Operative Cystoscopy. Additionally, Cystoscopy can also be used to assess the invasion and involvement of the bladder wall. However, Routine Ureteric stenting is not recommended for all cases of PAS, as it has not been demonstrated to lead to significant changes in the post-op outcome. Pre-op Ureteric Stenting via Cystoscopy can be performed in cases of difficult anatomy and where Hysterectomy is anticipated to be highly complex. There is also a minimal diagnostic value for Cystoscopy to assess for bladder wall involvement, hence its use is also not recommended routinely. [10]

Case 3 Discussion

Abdelaziz et al. mentioned use of well-designed Foley's Tourniquet for tying the uterus to reduce blood loss, had better outcome, however details were not mentioned. [13]

Meng et al. suggested use of two successive tourniquets for better outcome over single tourniquet.[14]

Huang et al. advocated for the concurrent utilization both Mechanical interventions, i.e. tourniquet as well as Manual intervention, i.e. Forceps for the minimization of hemorrhage, with potential drawbacks like tissue trauma and prolongation of the surgical time.[15]

Altal et al.'s pilot study talks about the use of a cervical tourniquet to manage blood loss in case of morbidly adherent placenta. However, it being a pilot study, more research is needed for the safety and efficacy of its use.[16].

Brazill study suggest uterus preservation is done upper area, called the S1 genital vascular region, includes the uterine fundus and body. This has blood supply uterine and ovarian arteries, steps needed uterine devascularization techniques and uterine compression sutures. The lower area, called the S2 genital vascular region, is formed by the lower uterine segment, cervix and upper part of the vagina. In PAS, this region receives blood supply from the internal pudendal, inferior vesical, and middle, superior and inferior vaginal arteries, and an anastomotic system is present between the vaginal and uterine arteries. traditional hemostatic may not give desired effect mechanisms in the S2 region and hemorrhagic control is done with Circular Isthmic Cervical Sutures or Transverse figure of 8 sutures in the lower segment in continuous manner taken over the whole length or Cho Compression Sutures. [16,17,18 ,19]

For the management of extremely complicated PAS cases like the presence of placental invasion of the vesical fundus, i.e. Placenta Percreta, one option is to perform a procedure known as Pelosi Technique which includes performing partial cystectomy followed by hysterectomy as a single unit. Eventually, the reimplantation of the ureters is necessary to reduce post-op complications and morbidity.[19]

3. Conclusion

Placenta Accreta is a rare but life-threatening cause of massive obstetric hemorrhage that often necessitates obstetric hysterectomy to save the mother's life. Antenatal diagnosis through appropriate imaging allows for timely planning and optimization of care. A multidisciplinary approach involving obstetricians, anesthesiologists, neonatologists, interventional radiologists, and critical care specialists like urologists is crucial to ensure favourable maternal and neonatal outcomes, minimize complications, and manage intraoperative and postoperative challenges effectively. Early recognition and coordinated management remain the cornerstone of successful outcomes in such high-risk pregnancies

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