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Placenta Percreta- Obstetric Hysterectomy with Internal Atery Ligation and Aortic Clamping-A Case Report

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Abstract:
Placenta percreta is an rare form of placenta accreta spectrum, a life-threatening complication. The increased frequency of placenta accreta spectrum has been associated with liberalised use of Cesarean section. This is a case report of 22 weeks pregnant women with previous two lscs presented with hematuria and diagnosed as placenta percreta and underwent hysterotomy with hysterectomy and cystostomy and internal artery ligation and aortic clamping was done to reduce the bleeding. A multidisciplinary approach was needed in successful management of this patient.

Key Words*: Placenta percreta, aortic clamping, internal artery ligation*

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I. Introduction

Placenta accreta spectrum is defined as abnormal trophoblast invasion of part or all of the placenta into the myometrium of the uterine wall. According to the degree of trophoblastic invasion through the myometrium and the uterine serosa, the variants are

Placenta accreta: the villi are attached to the myometrium (85%), is the most common

Placenta increta: the villi invade the myometrium (15%)

Placenta percreta: the villi penetrate the myometrium and to or through the serosa (5%) is the rare among placenta accreta.. It occurs due to the partial or total absence of the decidua basalis and the imperfect development of the fibrinoid or nitabuch layer. This decidual deficiency prevents the normal separation of the placenta after delivery that can cause massive postpartum hemorrhage.

With the increase in the number of cesarean section deliveries, placenta accreta spectrum now occurs as commonly as 1 in 2500 deliveries. **(1)**

SONOGRAPHIC FEATURES INCLUDE: (1)Placenta previa , (2) Loss of retro placental clear space (3)Bladder line interruption, (4) Placental lacunae ,(5) Tortuous confluent vessels crossing the placenta at wall ,(6) Hypervascularity of the uterine serosa -bladder wall interface ,(7)Thinning or disappearance of myometrium**(2)**

MRI FEATURES INCLUDE: (1) Placenta previa, (2) Disruption of interface between placenta and myometrium ,(3)Dark intraplacental bands on T2 weighted imaging, (4) Interruption of myometrial border, (5) Heterogenous signal intensity within the placenta ,(6)Invasion of pelvic organs ,(7)Tenting of bladder ,(8) Uterine bulging**(2)**

Clinically placenta accreta is diagnosed when the placenta does not entirely separate from the uterus and is followed by massive obstetric hemorrhage, leading to disseminated intravascular coagulopathy; the need of hysterectomy; surgical injury to the ureters, bladders, bowel, or neuromuscular structures; adult respiratory distress syndrome; acute transfusion reaction; electrolyte imbalance; and renal failure.

FIGURE 1- MRI FINDINGS SUGGESTIVE OF SMALL AREAS OF EXTENSION TO URINARY BLADDER.

II. Case Report

A 32 yr old female, G4P2L2A1, at 22weeks, prev 2 LSCS, LCB 5 years, came with complaints of blood stained urine for the past 2 weeks. Obstetric scan done showed a placenta previa with placenta percreta, prominent vessels protruding into the bladder wall. MRI done showed grade 3 placenta previa with features in favour of placenta accreta with small areas of extension into the bladder. Since patient had persistent hematuria, there was drop in hemoglobin and 1 unit PC was transfused and again patient had an episode of bout of hematuria and followed by further drop in haemoglobin. After explaining the risk involved to the patient and since patient had persistent hematuria planned for hysterotomy with hysterectomy and cystostomy. Adequate blood and blood products was reserved. Involving urologist, cardiothoracic surgeon proceeded for the procedure.

INTRAOPERATIVE FINDINGS

Abdomen was opened in layers using a lower midline laparotomy incision. Peritoneum was entered. Dilated vessels were noted in the surface of uterus and bladder. Uterus was opened in a vertical incision made over the uterine fundus. Foetus was delivered and placenta was left in-situ. Uterus was closed using 1 vicryl. Bilateral anterior divison of Internal iliac arteries were looped by Cardiothoracic surgeon. Proceeded with hysterectomy, bleeding from the placental bed was noted and secured. Placental bed vessels found adherent to posterosuperior wall of bladder, bladder bisected by urologist, bladder trigone was not involved, placental tissue not seen invading the bladder mucosa. Since diffuse ooze was noted, after giving inj.heparin, descending abdominal aorta was cross clamped by cardiothoracic surgeon by resecting posterior peritoneum and bleeding was controlled. Aortic clamp and internal iliac artery released. Bladder was closed by urologist and supra pubic catheter was placed. Intraoperatively 3 litres blood loss noted and 6 units PC, 7 units FFP, 2 units SDP transfusion done. Postoperatively 3 units PC was transfused in view of low hemoglobin.

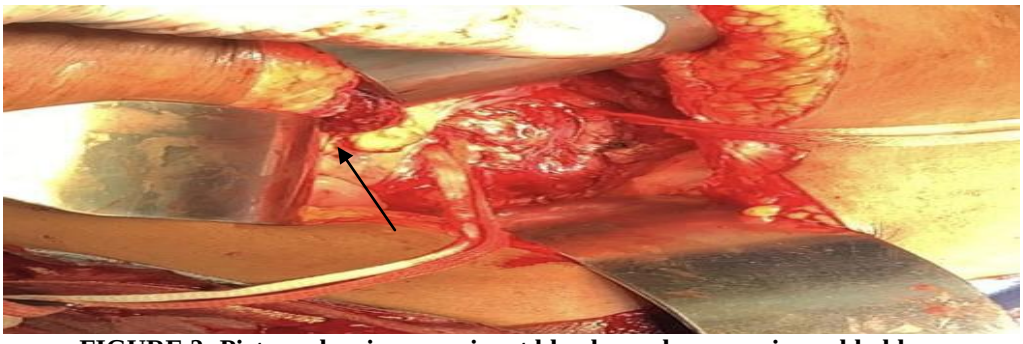

FIGURE 2- Picture showing prominent blood vessels over urinary bladder

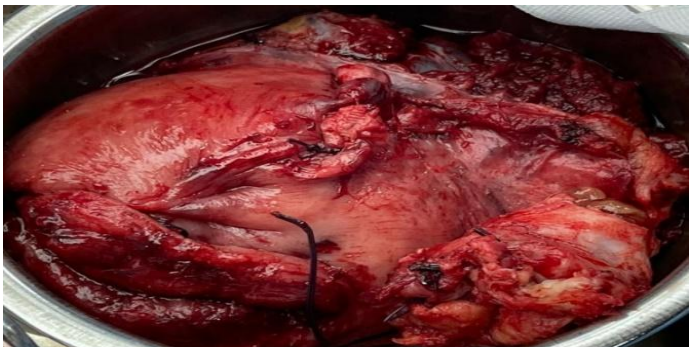

FIGURE-3- Specimen -uterus with cervix

III. Discussion:

Placenta accreta spectrum (PAS) is a general term used to describe abnormal trophoblast invasion into the myometrium, and sometimes to or beyond the serosa. It is clinically important because the placenta does not spontaneously separate at delivery and attempts at manual removal result in hemorrhage, which can be life-threatening and usually necessitates hysterectomy[(3)]

The most common theory is that defective decidualization (thin, poorly formed, partial, absent, or dysfunctional decidua) in an area of scarring caused by previous uterine surgery involving the endometrial-myometrial interface allows the anchoring villi of the placenta to attach directly to or invade the myometrium[(4)]

The most important risk factor for development of PAS is placenta previa after a prior cesarean delivery. Other risk factors include a history of uterine surgery (example, myomectomy entering the uterine cavity, hysteroscopic removal of intrauterine adhesions, cornual resection of ectopic pregnancy, dilation and curettage, endometrial ablation), maternal age greater than 35 years, multiparity, history of pelvic irradiation, manual removal of the placenta, postpartum endometritis, infertility and/or infertility procedures (example, especially transfer of cryopreserved embryos), and possibly multiple gestations**.**[(1)]

MANAGEMENT

Management of patients with placenta accreta spectrum (PAS; placenta accreta, increta, or percreta) varies widely. Although the impact of PAS on pregnancy outcomes is well described, no randomized trials and few studies have examined the management of pregnancies complicated by this disorder. As a result, recommendations for its management are based on case series and reports, personal experience, expert opinion, and good clinical judgment.

CONSERVATIVE MANAGEMENT OF PLACENTA ACCRETA

Potential candidates —Patients who wants to preserve fertility. Such patients should be counseled extensively regarding the risks of hemorrhage, infection, possible need for intra- or postoperative lifesaving hysterectomy, and even death, as well as suboptimal outcomes (including recurrence or hemorrhage in future pregnancies)

Uterine conservation with the placenta left in situ — In this approach (called expectant management), the placenta is left in situ after delivery of the newborn. The umbilical cord is ligated at its placental insertion site; the hysterotomy is closed in the standard way; and uterotonic drugs, compression sutures, intrauterine balloon tamponade, uterine artery embolization, and/or uterine artery ligation are variably used.

A literature review performed including 48 case reports describing the outcome of 60 women presenting with PAS disorders and managed by leaving the placenta in situ, found that of the 26 women managed without the use of additional therapies, 22 (85%) had a favorable outcome. Expectant management failed in 4 (15%) cases and secondary hysterectomy had to be performed owing to massive obstetric hemorrhage or infection[(5)]

Overall, these data suggest that leaving the placenta in situ may be an option for women who desire to preserve their fertility and agree to close follow-up in centers with adequate expertise.

The Triple-P procedure

A novel uterine-sparing procedure for PAS disorders called the "Triple-P procedure" was recently proposed.

The best candidates are women with clearly a delineated, focal area of involvement, and accessible border of healthy myometrium.

The main steps of this procedure include: (1) perioperative placental ultrasound localization of the superior edge of the placenta; (2) pelvic devascularization involving preoperative placement of intraarterial balloon catheters (anterior division of the internal iliac arteries); and 3) Placental non-separation with myometrial excision and reconstruction of the uterine wall.

The Triple-P procedure is an alternative to peripartum hysterectomy or conservative management of retaining the placenta for women with anterior placenta percreta where the placenta does not invade the parametrium**.** [(6)]

A study done by Pinas-Carrillo et al on 50 patients who underwent the Triple P Procedure, showed that mean operative blood loss was 2318 mL and incidence of bladder and ureteric injuries was 2% and median length of hospital stay was 4 days (range 2–8 days). Three women (6.0%) developed arterial thrombosis without any long-term complications and none of the patients required peripartum hysterectomy**.**[(7)] The Triple P Procedure is considered as a conservative treatment option to minimize complications.

Endovascular intervention for hemorrhage control — To control blood loss during cesarean and postoperatively - the uterine or iliac arteries ligation, bilateral uterine artery embolization (UAE), or balloon occlusion of the internal iliac arteries or aortic artery are done.
Prophylactic endovascular intervention with a balloon catheter in both internal iliac arteries, uterine artery embolization, or a combination of the two may be used to reduce bleeding during or after delivery**.**[(8)]
Prophylactic abdominal aortic balloon occlusion (PAABO) is also done to reduce blood loss. Preoperative prophylactic placement of an occlusion balloon in the abdominal aorta and inflation after cord clamping can reduce uterine arterial pressure and blood loss in parturients with placenta accreta, thereby providing a clear surgical field, reducing bleeding and decreasing the likelihood of hysterectomy**.**[(9)]
In a study done by D'Souza et al showed that in 6 women the placenta was left undisturbed in the uterus, 2 had partial removal of the placenta, and 2 had piecemeal removal of the whole placenta. Mean estimated blood loss during caesarean delivery was 1.2 L. Only 2 patients (20%) required blood transfusion. There were no intraoperative surgical complications, endovascular complications, maternal deaths, or perinatal deaths. Three women developed postpartum complications necessitating postpartum hysterectomy; the hysterectomy rate was therefore 30% and uterine preservation was successful in 70%.
This showed that combined bilateral internal iliac artery balloon occlusion and uterine artery embolization may be an effective strategy to control intraoperative blood loss and preserve the uterus in patients with invasive placenta undergoing caesarean delivery**.** [(10)]

Caesarean hysterectomy: The hysterectomy is performed when conservative management fails and when manual removal of placenta is attempted ,bleeding occurs so as a life saving measure hysterectomy is done.
After delivery of the infant, the cord is cut, the uterine incision is rapidly closed to decrease blood loss and hysterectomy is performed. Even in the absence of extra uterine involvement in a Placenta percreta, the procedure is often difficult because of extensive parametrial vascular engorgement and friable tissues.

AORTIC CLAMPING
The technique of aortic clamping is found to be safe and effective method to limit blood loss during cesarean hysterectomy for placenta percreta and thereby reduced transfusion requirements**.**[(11)]Problems with aortic clamping include ischemic injury and embolization. Clamping should be less than 60 mins.

In a study by vivek et al in India, fifteen women with placenta percreta underwent classical cesarean section followed by total hysterectomy with temporary clamping of the aorta. The procedure was associated with median estimated intra-operative blood loss of 650 ml. Aortic clamping for 28-70 min was not associated with any intra-operative vascular complications or post-operative ischemic lesions in the lower limbs, kidneys, or bowel**.**[(11)]

In a study done by M-M Chou et al in 31women with prophylactic infra-renal aortic cross-clamping was found to be relatively safe technique to control operative blood loss in patients diagnosed with PAS disorders who had underwent cesarean hysterectomy .The mean estimated blood loss was 2295.6 ± 2126.1 mL . The mean duration infrarenal aortic cross-clamping was 54.2 ± 8.6 minutes (range, 30–74 minutes). No thromboembolic events and no maternal or neonatal death were noted. And further they concluded that this study is based on a small number of patients, and therefore further investigation is needed to determine the effectiveness and safety of this technique**.**[(12)]

In a study done by Vakkanal Paily et al in India over 33 women using novel Paily Aorta Clamp (PAC) was applied just above the bifurcation of the abdominal aorta and found reduced blood loss during procedure**.**[(13)]

Matsubara et al[(14)] also said that irrespective of the use/non-use of aortic clamp/occlusion, and irrespective of occlusion inside/outside, caesarean hysterectomy for these three conditions may cause marked bleeding and lead to maternal mortality when,

- the placenta deeply invades the parametrium,
- the placenta invades the bladder trigone and
- several engorged abdominal-wall vessels supply blood flow to the uterus/bladder (PAS-site).

Once the diagnosis of placenta accreta spectrum is established and it is clear that placental removal will not occur with usual maneuvers, then rapid uterine closure and proceeding to hysterectomy as judiciously as possible should be considered.

IV. Conclusion

- The option of surgical management depends largely on need for fertility preservation, presence or absence of uncontrolled haemorrhage during surgery, patient's stability and the skills or expertise available. Conservative management or expectant management should be considered only for carefully selected cases of placenta accreta spectrum after detailed counseling about the risks, uncertain benefits, and efficacy and should be considered investigational. Aortic clamping safely and effectively limited blood loss during cesarean hysterectomy for placenta percreta and thereby reduced transfusion requirements, however Fox and Collins[(15)] state that a well-designed and high-quality studies are awaited on aortic clamping techniques.

Reference

[1]. Jauniaux, E., Ayres-de-Campos, D., Langhoff-Roos, J., Fox, K. A., Collins, S., & FIGO Placenta Accreta Diagnosis and Management Expert Consensus Panel (2019). FIGO classification for the clinical diagnosis of placenta accreta spectrum disorders. International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics, 146(1), 20–24.

[2]. Riteau, A. S., Tassin, M., Chambon, G., Le Vaillant, C., de Laveaucoupet, J., Quéré, M. P., Joubert, M., Prevot, S., Philippe, H. J., & Benachi, A. (2014). Accuracy of ultrasonography and magnetic resonance imaging in the diagnosis of placenta accreta. PloS one, 9(4), e94866. https://doi.org/10.1371/journal.pone.0094866

[3]. Author: Robert M Silver, MD, Section Editors: Deborah Levine, MD;Lynn L Simpson, MD, Deputy Editor: Vanessa A Barss, MD, FACOG https://www.uptodate.com/contents/placentaaccreta-spectrumclinical-features-diagnosis-and-potential-consequences?csi=a688506b713c-481a-9ba8-35d874f1fb81&source=contentShare

[4]. Baughman, W. C., Corteville, J. E., & Shah, R. R. (2008). Placenta accreta: spectrum of US and MR imaging findings. Radiographics : a review publication of the Radiological Society of North America, Inc, 28(7), 1905–1916. https://doi.org/10.1148/rg.287085060

[5]. Timmermans S, van Hof AC, Duvekot JJ. Conservative management of abnormally invasive placentation. Obstet Gynecol Surv. 2007;62:529–539.

[6]. Chandranharan E , Rao S , Belli AM , Arulkumaran S . The triple P procedure as a conservative surgical alternative to peripartum hysterectomy for placenta percreta.Int J Gynaecol Obstet 2021 ;

[7]. Pinas-Carrillo, Ana & Bhide, Amarnath & Moore, Jessica & Hartopp, Richard & Belli, Anna-Maria & Arulkumaran, Sabaratnam & Thilaganathan, Basky & Chandraharan, Edwin. (2019). Outcomes of the first 50 patients with abnormally invasive placenta managed using the "Triple P Procedure" conservative surgical approach. International Journal of Gynecology & Obstetrics. 148. 10.1002/ijgo.12990.

[8]. Shahin Y, Pang CL. Endovascular interventional modalities for haemorrhage control in abnormal placental implantation deliveries: a systematic review and meta-analysis. Eur Radiol. 2018 Jul;28(7):2713-2726. doi: 10.1007/s00330-017-5222-0. Epub 2018 Feb 5. PMID: 29404775.

[9]. Zhu, H., Wang, S., Shi, J. *et al*. Prophylactic endovascular balloon occlusion of the aorta in cases of placenta accreta spectrum during caesarean section: points from the anaesthesiologist's perspective. *BMC Pregnancy Childbirth* **20,** 446 (2020). https://doi.org/10.1186/s12884-020-03136-y

[10]. D'Souza DL, Kingdom JC, Amsalem H, Beecroft JR, Windrim RC, Kachura JR. Conservative Management of Invasive Placenta Using Combined Prophylactic Internal Iliac Artery Balloon Occlusion and Immediate Postoperative Uterine Artery Embolization. *Canadian Association of Radiologists Journal*. 2015;66(2):179-184. doi:10.1016/j.carj.2014.08.00

[11]. Joshi VM, Otiv SR, Sovani YB, Kulat PK. Aortic clamping for limiting blood loss at cesarean hysterectomy for placenta percreta: A case series. Int J Gynaecol Obstet. 2021 May 18. doi: 10.1002/ijgo.13746. Epub ahead of print. PMID: 34003498

[12]. Chou MM, Chen MJ, Su HW, Chan CW, Kung HF, Tseng JJ, Chen WC, Chen YF, Yuan JC. Vascular control by infrarenal aortic cross-clamping in placenta accreta spectrum disorders: description of technique. BJOG. 2021 May;128(6):1030-1034. doi: 10.1111/1471-0528.16605. Epub 2020 Dec

[13]. Vakkanal Paily , Afshana Sidhik , Raji Raj , Ajithakumari Sudhamma , Joshy Joseph , M.G Usha , Raymond George , Soumya Ramakrishnan , Sara Cheriyan , Teena John , and Manu Pradeep- MANAGING PLACENTA ACCRETA SPECTRUM IN LOW RESOURCE SETTING USING A NOVEL DISSECTION-FREE AORTA CLAMP: OPERATIVE TECHNIQUE ,Authorea November 2021

[14]. Matsubara S. Some concerns regarding aortic cross-clamping in caesarean hysterectomy for placenta accreta spectrum (Re: Vascular control by infrarenal aortic cross-clamping in placenta accreta spectrum disorders: description of technique; Something old, something new & something borrowed). BJOG. 2021 Aug;128(9):1556-1557. doi: 10.1111/1471-0528.16723. Epub 2021 May 9. PMID: 33966336.

[15]. Fox K, Collins SL. Something old, something new and something borrowed. BJOG. 2021 May;128(6):1035-1036. doi: 10.1111/1471-0528.16646. Epub 2021 Feb 1. PMID: 33393223

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