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Review Article

Uterine sparing approaches in management of placenta accreta: a summarized review

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ABSTRACT

Placenta accreta is a potentially life-threatening obstetric condition that required multidisciplinary approach to management. Placenta accreta occurs in complete absence of the decidua basalis. Women with previous cesarean section delivery or placenta previa are known to be at greater risk of placenta accreta. A previous study reported that 24% & 67% increase in the incidence of placenta accreta in women 1 versus 3 or more previous cesarean deliveries respectively. Antenatal diagnosis of placental invasion has the potential to improve maternal and fetal outcomes. In practice, incomplete non-separation of the placenta at delivery leads to massive obstetric hemorrhage resulting in maternal morbidities such as massive blood transfusion, DIC, injury to the bladder and intestines and the need for hysterectomy. Sonographic examination with gray scale and color doppler imaging is the recommended first line modality for diagnosis of morbidly adherent placenta. Techniques developed for conservative management are techniques developed to preserve uterus and future fertility which is crucially linked to societal status and self-esteem.

Keywords: Conservative, Hemorrhage, Maternal morbidity, Placenta accreta

INTRODUCTION

Placenta accreta is one of the most common causes of maternal morbidity and mortality nowadays. Uterine sparing approaches in management of placenta accreta are numerous. These could effectively substitute hysterectomy which is the definitive treatment of this condition in well selected cases. These are techniques developed to preserve uterus and future fertility which is crucially linked to societal status and self-esteem.

Conservative management

It is the expectant management by leaving placenta in situ for spontaneous resorption and autolysis. It consumes cutting cord close to the placenta and closure of uterus over placenta followed with or without methotrexate

treatment.¹ No large studies have compared methotrexate with no methotrexate in the treatment of placenta accreta, and at the present time, there are no convincing data for or against the use of Methotrexate in cases of placenta accreta.² Follow up is made by β -HCG level and Ultrasound or MRI.³ The time required for spontaneous resolution ranges from 4 weeks to 12 months with a mean 6 months.^{4,5}

Conservative method requires aggressive antibiotic therapy to combat infection and many adjuvant approaches to minimize bleeding like oxytocin, compression sutures, or intervention radiology methods like embolization.⁶

Although some cases succeeded, and placenta was expelled spontaneously, the great majority had

hysterectomy either promptly or later on due to hemorrhage or infection. Infectious complications of conservative method include septic shock, sepsis, infection, endometritis, wound infection, peritonitis, pyelonephritis, vesicouterine fistula and uterine necrosis.⁷ Other rare morbidities like choriocarcinoma and uterocutaneous fistula were also reported.⁴

Additional procedures were required in majority (65%) of cases, including pelvic artery embolization, hypogastric artery ligation, and uterine compression sutures. Postpartum hemorrhage occurred in (51%) and (22%) of those patients required subsequent hysterectomy.

Intervention radiology methods

In these methods either Balloon-tipped catheters are placed in a retrograde fashion through the femoral arteries immediately before surgery and be inflated during the dissection in attempt to decrease the morbidity associated with placenta accreta or intervention radiologist is preoperatively place a femoral catheter with selective embolization of the uterine vessels at the time of delivery.^{8,9}

Current evidence is insufficient to make a firm recommendation on the use of balloon catheter occlusion or embolization to reduce blood loss and improve surgical outcome. Despite initial enthusiasm about the utility of balloon catheter occlusion, available data are unclear regarding its efficacy.¹⁰ In addition, some studies have reported an increased risk of vessel thrombosis/dissection, insertion site hematoma, abscess, necrosis, and pseudo aneurysms.¹¹

Local resection of placental implantation site

Placenta accreta and placenta increta can be safely and successfully treated, in some well selected cases, by resection of the placental implantation site and repair of uterine defect.

This method provides immediate therapy, reduces blood loss and preserves fertility. Local resection seems to be associated with fewer complications within 24 hours postoperatively compared with hysterectomy or leaving the placenta in situ.¹²

The Triple-P procedure involves perioperative placental localization and delivery of the fetus via transverse uterine incision above the upper border of the placenta; pelvic devascularization; and placental non-separation with myometrial excision and reconstruction of the uterine wall.

It is considered a safe and effective alternative to conservative management or peripartum hysterectomy.¹³

The authors of Triple-P procedure reported remarkably low blood loss, ranging from 800 to 1500 mL per patient.

A follow up cohort study by the same group showed reduction in estimated blood loss, the need for delayed hysterectomy, and length of hospital stay when compared to leaving the placenta in situ plus arterial occlusion.¹⁴

Systematic pelvic devascularization

Uterine artery ligation (UAL)

Uterine artery ligation is crucial step for success of uterine preservation in many patients, with a total success rate of 78.9%. The reported success rate varies from 80% to 96%.¹⁵ A new study done at Tanta University Hospitals (Egypt) which reported 100% success of double uterine artery ligation in management of PA.¹⁶

Uterine and Ovarian arteries ligation

Salvat et al. stated that stepwise procedure with progressive ligation of the uterine and ovarian arteries is a good solution with 100% success compared to bilateral ligation of the hypogastrics which provided success in only 66% of cases.¹⁷

Kelekci et al performed bilateral ligation of the 2 hypogastric arteries and utero-ovarian anastomosis branches were also ligated.¹⁸ The clamped cord was released, and hydro dissection was performed by heated saline at 37°C. If placenta was not sufficiently dissected from the uterus, placental curettage or excision was performed. After homeostasis is secured, a balloon of 3-ways 20F Foley catheter was inflated by 80 cc saline and placed into the intrauterine cavity and they reported success in 11 cases with preservation of their uteri.

On the other hand some authors reported severe complications such as gluteal necrosis, bladder necrosis, uterine gangrene and occasionally leg ischemia if external iliac artery is ligated by mistake.¹⁹

COMPRESSION SUTURES

The principle is mainly the compression of the uterine body and is basically the same for all types of compression sutures. The main differences being the figure at which the suture is applied, the numbers of longitudinal and/or transverse sutures used, and whether or not the uterine cavity is penetrated. The success rate for uterine compression sutures ranging from 68% to 100% with an overall success rate of 92%.²⁰

Vertical sutures

Hwu et al. conducted a study on fourteen women with placenta previa (including one who also had placenta accreta) undergoing caesarean section had massive bleeding after removal of the placenta. In order to preserve the uterus, two parallel vertical compression sutures were placed in the lower segment to compress the anterior and posterior walls of the lower uterine segment.

The hemorrhage from the lower segment stopped immediately after the knots were tightened. All women later resumed normal menstrual flow with no apparent complications.

This parallel vertical compression suturing technique is simple, easy and effective for controlling bleeding in women with placenta previa or accreta. The authors suggest that this technique should be tried first before other more complex procedures are undertaken.²¹

Makino et al also tried compression sutures as 'double vertical compression sutures' because it has dual actions: haemostatic compression of the bleeding surface and reduced uterine blood flow.²²

Transverse B-lynch sutures

Shahin et al. reported 24 of 26 women in whom homeostasis was secured with compression sutures, namely B Lynch sutures, following bilateral uterine artery ligation. The procedure is simple and less time consuming; however, two women had disseminated intra vascular coagulopathy and died shortly after admission to the intensive care unit.²³

Other sutures

- Cho suture which is a haemostatic multiple square suture to approximate the anterior and posterior uterine wall.²⁴
- Hayman suture which involved two vertical apposition sutures together with two transverse horizontal cervico-isthmus sutures.²⁵
- Pereira suture was reported in 2005, which consisted of longitudinal and transverse sutures applied with superficial intra myometrial bites only.²⁶
- Bhal suture which entailed two sutures instead of one, with the knots tied in the anterior-inferior margin of the lower uterine segment, without any difference in the compression effects compared to the original B-Lynch suture.²⁷
- Modified suture: An observational study was conducted in China, among patients with placenta previa centralis (with or without placenta accreta). During surgery, a Foley catheter balloon containing 60-120 mL of water was used to compress the hemorrhage site and an absorbable suture was placed around the lower uterus segment to provide extra pressure on the balloon.²⁸

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