Conservative management of placenta accreta: review of three cases

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ABSTRACT

Placenta accreta occurs when the placenta is abnormally adherent to the uterus, often resulting in complications in the peripartum period such as severe haemorrhage, a possible need for caesarean hysterectomy, and even severe injuries to pelvic organs. There has been a gradual shift towards conservative management of placenta accreta, involving uterine and placental conservation, with the main aim being to reduce pelvic injury and haemostasis with the aid of intervention radiology by means of insertion of occluding balloons into the internal iliac arteries. This strategy has previously been shown to reduce morbidity and mortality in carefully selected cases of placenta accreta. We review three cases of successful uterine conservation performed in our institution.

Keywords: balloon occlusion, placenta accreta, placenta increta, placenta percreta, placental conservation, placental diseases

Singapore Med J 2008;49(6):e156-e159

INTRODUCTION

Placenta accreta is one of the most feared complications in obstetrics; it occurs when the placenta is abnormally adherent to the uterus (Fig.1). The most severe form of the condition is placenta percreta, in which the placenta penetrates through the full thickness of the myometrium, through the serosa, and may invade adjacent pelvic organs such as the bladder. If limited to myometrial invasion, it is known as placenta increta. The aetiology of placenta accreta has been thought to be due to the absence of the spongiosus layer of the decidua and the histology correspondingly shows the trophoblast invasion into the myometrium without intervening decidua. Placenta accreta can involve the entire placenta or fractions of it making the separation of placenta difficult at delivery. An all too common end-result is massive haemorrhage, and the need for caesarean hysterectomy. The associated risks of injury to the urinary tract and other abdominal viscera contribute to maternal morbidity and mortality.

The incidence of placenta accreta is variable, and has been reported to be as high as one in 533 pregnancies,

Fig. 1 US image shows the placenta covering the cervical os with features suggestive of placenta accreta—presence of irregularly shaped placental lacunae within the placenta, thinning of myometrium overlying the placenta.

in a study by Wu et al.[1] Risk factors of placenta accreta include previous uterine scarring from caesarean sections, myomectomies, uterine curettages and infections. With increasing numbers of caesarean sections being done nowadays, it is postulated that the incidence of placenta accreta would be on the rise. A high index of suspicion is required for diagnosis, and ultrasonographic features suggestive of accreta must be sought in cases with risk factors.[2] These include the presence of irregularly-shaped placental lacunae within the placenta, thinning of myometrium overlying the placenta, loss of retroplacental "sonolucent line", protrusion of the placenta into the bladder, increased vascularity of the uterine serosa-bladder interface and turbulent blood flow through the lacunae on Doppler ultrasonography (US). Magnetic resonance imaging is currently being studied as an imaging modality for placenta accreta to better define the topography and area of placental invasion to aid planning of surgery.

Various methods of managing placenta accreta has been described, ranging from conservative methods to extirpative management.[3,4] There has been a paradigm shift in terms of treatment, from the historical caesarean hysterectomy to more conservative methods of management involving uterine conservation and leaving the placenta *in situ* with adjuvant treatment of methotrexate in some cases, or simply awaiting spontaneous resorption of the placenta. The conservative method was first described by

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Arulkumaran et al in 1986 in which systemic methotrexate was administered postnatally, and the placental mass was expelled 11 days postnatally.[5] Since then, a number of cases treated conservatively have been reported.[6] Surgical methods for uterine conservation have been described by Palacios Jaraquemada et al, which was successfully carried out in 50 out of 68 cases, and of the 42 successful cases that were followed-up over a three-year period, ten subsequently became pregnant and underwent uneventful caesarean sections.[7] The paradigm shift is facilitated by development of methods of controlling blood loss during surgery, such as embolisation, ligation or balloon occlusion of the arterial supplies, as well as the enhanced availability and safety of blood transfusions, either from autologous or donor sources, and good modern intensive care support.[8]

In our institution, we have encountered several cases in which cannulation of bilateral internal iliac arteries were performed prior to surgery and inflation of occluding balloons postdelivery were done to facilitate haemostasis and planning of optimal surgery. This was followed by embolisation of the uterine arteries in some cases. We describe below, three cases of uterine conservation that took place in our institution over a three-year period.

CASE REPORTS

Case 1

A healthy 33-year-old woman, with one previous emergency lower segment caesarean section (LSCS) for non-reassuring foetal status in her previous pregnancy, was booked at six weeks of pregnancy. Screening US performed at 19 weeks was unremarkable, except for a placenta in the lower uterine segment. She was antenatally well except for an episode of antepartum haemorrhage which resolved spontaneously. Placenta accreta was discovered during US at 33 weeks when the placenta was noted to be in the lower uterine segment, covering the cervical os. Multiple cystic areas were noticed in the placenta and the foetus was in a transverse lie. She was counselled on the condition and advised to be admitted for bed rest and observation, but she declined. An elective caesarean section was planned at term.

The patient was counselled extensively regarding the surgery and interventional radiology procedures. Preoperatively, bilateral occlusion balloons were inserted into the internal iliac arteries under fluoroscopy. A classical incision was made and the baby delivered with good Apgar scores. Immediately upon delivery of the baby, the occlusion balloons were inflated and the cord clamped. Minimal bleeding was observed and the decision was made to leave the placenta *in situ*. Two drains were inserted in the pouch of Douglas and against the uterovesical fold, while intravenous

oxytocin, duratocin, and ergometrine were admininstered to ensure good uterine contraction. The abdominal wound was closed and the patient transferred back to the angiography suite where her uterine arteries were selectively cannulated with balloon occlusion catheters and embolisation performed with gel foam slurries. This was a prophylactic procedure to minimise the risk of subsequent postpartum haemorrhage. The total blood loss was 500 ml and intraoperatively 2 L of crystalloid, 500 ml of colloids, and 500 ml of fresh frozen plasma were given.

Postoperatively, she was transferred to the intensive care unit (ICU). Her haemoglobin (Hb) level was 9.8 g/dL on the first postoperative day, compared to the preoperative level of 11.6 g/dL. She recovered uneventfully and was discharged on the fourth postoperative day. About a month postdelivery, US showed the placental mass measuring 8.9 cm × 6 cm × 4 cm in the anterior wall, 10.3 cm × 8.6 cm × 4.1 cm in the uterine posterior wall with blood flow seen on colour Doppler US. She was admitted thrice for fever and per vaginal bleeding, at three months, four months and six months postdelivery, and each time she was treated conservatively with parenteral antibiotics. She was followed-up monthly with regular pelvic US and after seven months, the placental mass had shrunk to 3 cm with no colour flow on Doppler studies. She has remained clinically well and resumed her normal menstrual cycles about three months after the delivery.

Case 2

A healthy 31-year-old woman, gravida 5 para 1, had an eventful past history of one LSCS, a previous right salphingectomy for tubal ectopic pregnancy, a previous right cornual resection for ectopic pregnancy and one termination of pregnancy. She booked at our hospital at seven weeks gestation. US at 18 weeks was essentially unremarkable except that the placenta was noted to be low. A repeat scan at 29 weeks showed central placenta praevia with cystic spaces in placenta, suggestive of placenta accreta. Her antenatal course was complicated by recurrent episodes of mild antepartum haemorrhage. She was admitted from 29 weeks till delivery at 35 + 6 weeks of gestation.

Prior to the elective surgery, occlusion balloons were placed in proximal internal iliac arteries bilaterally. Intraoperatively the lower uterine segment was noted to be thin, bulging and placental cotelydons were visible through the intact serosa. The area was covered by engorged blood vessels which extended over the bladder. A classical caesarean section was performed, and a healthy baby was delivered by breech extraction with good Apgar scores. The occlusion balloons were inflated upon delivery of the baby and clamping of the cord. The decision was made to

leave the placenta *in situ* in view of the complete placental adherence and good haemostasis. Postoperative embolisation of uterine arteries was performed in the angiography suite and completion angiograms confirmed marked reduction in the internal placenta vascularity. She was started on intravenous syntocinon infusion and intramuscular duratocin postoperatively to ensure good uterine contraction. The total blood loss was estimated at 500 ml and intraoperatively she received 2.5 L of crystalloids and 683 ml of blood. Her Hb was 12.9 g/dL on the first postoperative day. She was given one dose of intramuscular methotrexate and was discharged well on the eighth postoperative day with prophylactic antibiotics for another week. She required three admissions to the hospital at one, two and four months postdelivery for episodes of *Escherichia coli* septicaemia and heavy vaginal bleeding, which were treated with intravenous antibiotics, blood transfusions and more doses of intramuscular methotrexate. Regular postnatal follow-up with pelvic US showed that she remained well with resumption of regular menstrual cycles after three months. The last pelvic US a year after delivery revealed that the placental mass had totally resolved, with only an echogenic area in the anterior myometrium, corresponding to the previous uterine scar.

Case 3

A healthy 38-year-old woman, gravida 3 para 2, with two previous LSCS, was booked at our hospital at 33 weeks gestation. She was referred by a colleague, who noted a posterior placenta with the edge covering the cervical os at a screening scan at about 20 weeks, and persisting at 30 weeks. She had remained asymptomatic. Her Hb was 8.8 g/dL (Hb 11.6 g/dL at first trimester), and US showed posterior placenta covering the os, with cystic areas within, suggestive of placenta accreta. At 34 weeks, she had an episode of threatened preterm labour, which was successfully aborted with intravenous salbutamol. She was counselled and scheduled for elective caesarean section at 37 weeks gestation.

Preoperatively, balloon occlusion catheters were inserted into bilateral internal iliac arteries. Thick adhesions between lower segment and anterior abdominal wall were noted intraoperatively. A transverse incision was made over the thin lower segment and breech extraction of the foetus was done. Balloon catheters were inflated after delivery of the foetus. The placenta separated early except for one focal area of accreta in the lower segment. This focal area of accreta subsequently separated during attempts at haemostasis. Oozing from the placental bed was controlled with under-running sutures, sterilisation done according to the patient's wishes and two drains were placed. The balloons were deflated after closure of the uterus and removed prior to skin closure. She

was put on intravenous syntocinon and sent to ICU for monitoring. The estimated blood loss was 1,400 ml, and intraoperatively, she received 3,000 ml of crystalloids and 1,070 ml of blood. Postoperative Hb level was 11.9 g/dL, compared to the preoperative Hb level of 10.4 g/dL. She had an uneventful recovery and was discharged well on the fourth postoperative day. She was reviewed one month after delivery and was found to be well.

DISCUSSION

The above three cases illustrate that uterine conservation and placental retention is feasible in carefully-selected cases, avoiding the complications associated with caesarean hysterectomy, and the associated risk of causing severe injuries to the involved pelvic organs in placental accreta and percreta. Early diagnosis is important so that the patient can be prepared and adequately counselled with regard to treatment options and their possible consequences. This includes obtaining consent for caesarean hysterectomy and informing the patient of the risks of sepsis and delayed haemorrhage that may result in situations where the uterus is conserved and the placenta is left *in situ*. Uterine conservation also requires multidisciplinary efforts, including the obstetrician, intervention radiologist, anaesthetist, and the urologist/ general surgeon in certain cases.

The ability to secure haemostasis intraoperatively is the main determining factor as to whether uterine conservation can be considered. This is aided by balloon occlusion of internal iliac arteries with or without subsequent embolisation of uterine arteries postoperatively. Potential complications of balloon occlusion and subsequent embolisation of the arterial supply of the uterus include failure of procedure to control bleeding, especially in the presence of extensive vascular anastomoses, thromboembolism and ischaemic/reperfusion injuries of lower extremeties, especially with prolonged occlusion of the internal iliac arteries and unexpected embolisation of nontargeted pelvic organs leading to ovarian necrosis, chronic pelvic pain, sexual dysfunction, and bladder ischaemia.[8] There is also a need for close surveillance of the patients postdelivery to ensure prompt identification of complicated cases. In our hospital, the patients are given outpatient appointments with regular pelvic US, and are advised to attend the 24-hour walk-in clinic service that is available, should there be any complications such as fever, bleeding or malodorous vaginal discharge. In the abovementioned cases, morbidity associated with leaving the placenta *in situ* mainly included vaginal bleeding and sepsis; these were treated promptly and successfully with conservative measures.

The above results mirror those reported in the study by Kayem et al, which studied the impact of conservative and extirpative strategies for placenta accreta on maternal mortality and morbidity comparing two protocols of

treatment, one of which was to leave the placenta *in situ* (20 cases), as compared to systematic manual removal of the placenta (13 cases).[3] It was found that there was a reduction in the hysterectomy rate from 84% to 15% when placental retention was allowed. However, there were three cases of sepsis in patients which had the placenta left *in situ,* compared to one in the other group, and at least two cases of women with conservative management with subsequent successful pregnancies.

In contrast to earlier studies of uterine conservation which adjuvant therapy of methotrexate was used, our first cases illustrated that use of methotrexate may not be necessary in conservative management of placenta accreta as the placenta appears to be capable of undergoing spontaneous involution once the vascular supply is interrupted, hence avoiding the potential side effects of methotrexate. In conclusion, conservative management of placenta accreta with uterine conservation has proven to be successful in carefully-selected patients.

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