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SURGICAL COMPLICATIONS AND UROLOGICAL INTERVENTION IN PATIENTS WITH PLACENTA ACCRETA SPECTRUM

Urology

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ABSTRACT

Objective: To evaluate urological interventions in patients with Placenta accreta spectrum in our collaborative experience at a tertiary centre. **Patients and Methods:** Retrospective analysis of a prospectively collected data set, consisting of all women who presented with Placenta accreta spectrum at Amrita Hospital from August 2010 and July 2020. Patients who underwent urological intervention were identified and perioperative details were retrieved. **Results:** Between August 2010 and July 2020, 24 women presented with Placenta accreta spectrum and 16 (66.6%) patients required urological interventions. The median maternal age was 35 years. Of the 16 patients, 11 were managed electively and 5 required emergency Caesarean delivery + hysterectomy. Antenatal imaging suggested placental invasion through the bladder wall on MRI in 5 cases (31.2%). Of the five cases with undiagnosed Placenta accreta spectrum, three were noted to have bladder involvement requiring repair at the time of Caesarean hysterectomy. **Conclusion:** Patients with Placenta accreta spectrum frequently require urological intervention to prevent or repair injury to the urinary tract. Antenatally diagnosed cases were managed in a multidisciplinary fashion involving a team of specialties including obstetrics, gynaecology, anaesthesiology, haematology, urology, interventional radiology.

KEYWORDS

placenta percreta, placenta increta, placenta accreta, bladder injury, ureteric injury, caesarean hysterectomy

INTRODUCTION

Placenta accreta spectrum represent potentially fatal conditions for pregnant women. Branching villi of the placenta are most important for exchange of nutrients between mother and fetus. The classification of Placenta accreta spectrum is based on the degree of invasion and it includes: accreta, in which placental villi are attached to the myometrium; increta, with invasion of placental villi into the myometrium; and percreta, where placental villi fully penetrate the myometrium, breaching the serosa[1].The incidence of Placenta accreta spectrum is rising with the reported incidence varying from one in 533 deliveries to one in 2500. The increased incidence is associated with higher Caesarean section delivery rates and increasing maternal age [2,3].

Placenta percreta, is the most severe form in the spectrum. These patients are at risk of massive haemorrhage requiring large volume blood products transfusion at delivery, with maternal mortality up to 7% [4]. In placenta percreta, chorionic villi breach the uterine serosa and adhere to surrounding organs (bladder, ureters, or rectum). Techniques for management of placenta percreta remain controversial due to lack of studies on treatment and outcomes of this condition. It highlights the importance of early detection of Placenta accreta spectrum in avoiding complications, adoption of multidisciplinary surgical teams and patient counselling, and preservation of the bladder integrity during hysterectomy. Damage to the bladder during surgery results in urinary and sexual dysfunction, which can significantly reduce the patient's quality of life.

Most of the placenta percreta cases report the presence of bladder wall invasion. It is important to note that, in a situation where uterine bleeding is uncontrolled, every attempt to be madeto preserve bladder integrity. If placenta invades the bladder wall, then opening of the bladder for a caesarean hysterectomy is recommended. The bladder wall should not be separated as it can cause severe blood loss. As bladder function requires an intact neural axis, all efforts should be made to preserve its integrity. Potential long-term consequences of bladder damage include urinary incontinence and sexual dysfunction. The posterior bladder wall, i.e. the trigone, the detrusor muscle and the ureter orifices, should remain intact. It is highly recommended that a urologist specialized in pelvic reconstruction to be present during hysterectomy. The surgeon must use discretion in times of severe loss of blood accounting for the appropriate steps for the preservation of the bladder. Bladder cystotomy is recommended as it can detail the extent of the invading placenta and to aid the surgeon in defining dissecting patterns recommended for optimal therapeutic benefit.

PATIENTS AND METHODS

We retrospectively analysed the medical records of all women who presented with Placenta accreta spectrum at AIMS, KOCHI. Cases of placental adhesive disorders were diagnosed either antenatally using Doppler-enhanced ultrasound, MRI, or intraoperatively at the time of Caesarean section. Antenatally diagnosed cases were managed in a multidisciplinary fashion.

RESULTS

Between August 2010 and July 2020, 24 women presented with Placenta accreta spectrum and 16 (66.6%) patients required urological interventions. Preoperative and perioperative characteristics are summarised in Table 1. The median maternal agewas 35 years. Of the 16 patients, 11 patients were managed electively and 5 patients required emergency Caesarean delivery + hysterectomy. Antenatal imaging suggested placental invasion through the bladder wall on MRI in 5 cases (31.2%). There was no maternal mortality.

For further analysis, the patients were divided into three groups: planned Caesarean hysterectomy (15), planned conservative management (4) where the intention was to leave the uterus and adherent part of placenta in situ with clinical and radiological follow-up, and undiagnosed placenta percreta (5), where placenta percreta was recognised at the time of Caesarean section. In 5 patients(31.2%), the placenta partially invaded the bladder and/orureter, needing urological intervention with bladder wall excision with repair. In the planned conservative management group (4),four patients underwent preoperative cystoscopy and ureteric catheter insertion. Methotrexate administration was not used in any of the conservatively managed cases. Of the five cases with undiagnosed placenta percreta, three were noted to have bladder involvement requiring excision and repair at the

time of Caesarean hysterectomy. One patient returned to theatre due to postoperative haemorrhage. 14 patients required blood transfusions, of which 10 were in the planned hysterectomy group and 4 were in the undiagnosed group.

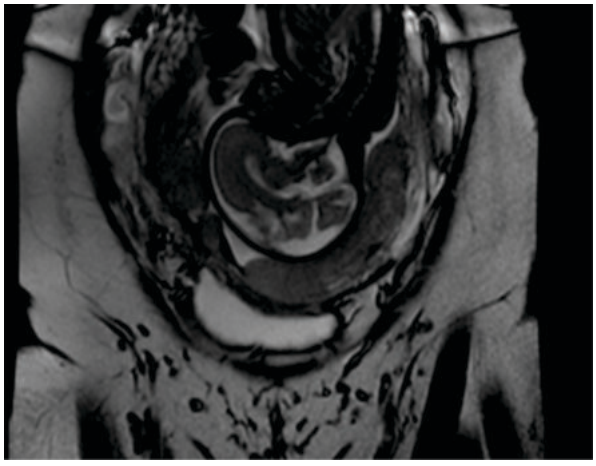

Fig1: MRI Image Showing An Exophytic Nodule Superior To The Urinary Bladder, Extending Upto The Serosal Surface-placenta Percreta

Table 1: Patient Characteristics, And Perioperative Data.

	Total	Planned hysterectomy	Planned conservative	Un-diagnosed
Number of patients	24	15	4	5
Preoperative characteristics				
Number requiring urological intervention	16	9	4	3
Median age, years	35	35	35	33
Preoperative bladder involvement	5	5	0	0
Perioperative data				
Number of patients requiring blood transfusions	14	10	0	4
Ureteric catheter placement	9	5	4	0
Bladder wall excision with repair	8	5	0	3
Ureteric reimplantation	1	0	0	1
Hysterectomy	20	15	0	5
Postoperative complications				
Return to theatre for bleeding	1	0	0	1

DISCUSSION

Placenta accreta spectrum are associated with increased adverse maternal and neonatal outcomes and there is a risk of significant intrapartum haemorrhage and massive transfusion, often requiring hysterectomy after delivery to ensure removal of all abnormal placental tissue completely.With such challenging surgery, addition to dealing with placental invasion of adjacent structures, distorted anatomy and abnormal vasculature, thereis a very significant risk of inadvertent genitourinary injuries.

The major risk factors for women developing Placenta accreta spectrum is the existence of a uterine scar from previous Caesarean delivery, especially those with a history of placenta praevia. These risks steadily increasewith advancing maternal age. Women aged >35 yearsof age accounted for 57% of patients with Placenta accreta spectrum compared with only 43% of women aged <35 years. The incidence of Placenta accreta spectrum increases with each subsequent Caesarean delivery, In 1997, a meta-analysis of the association of placenta praevia with history of caesarean delivery found a dose-response pattern for the relative risk (RR) of placenta praevia of 4.5 (95% CI 3.6–5.5) for one, 7.4 (95% CI 7.1–7.7) for two, 6.5 (95% CI 3.6–11.6) for three, and 44.9 (95% CI 13.5–149.5) for four or more prior caesarean deliveries compared with vaginal delivery.

Diagnosis is usually with antenatal imaging, using modalities such as ultrasound and MRI, but in a minority it will not be made until during a caesarean section or even postpartum. Ultrasound has a sensitivity andspecificity of 83% and 95% respectively, and MRI comparing well with a sensitivity of 82% and specificity of 88% [5].

In our centre, when antenatal imaging (MRI,USG) suggests Placenta accreta spectrum, a multidisciplinary meeting is scheduled. In view of the potential for life threatening bleeding and catastrophic complications, such meetings are crucial for the optimal management of each individual case. Reasons for undiagnosed Placenta accreta spectrum include patients whose antenatal evaluation is done elsewhere and failed to either diagnose or had underestimated the degree of adhesion, or the patient had present to emergency department requiring urgent C-Section. If placental adhesion is suspected on USG imaging done elsewhere, MRI is performed at our institution and reviewed by radiologists, in order to reduce undiagnosed Placenta accreta spectrum.

The management decision to proceed with Caesarean hysterectomy or attempted conservative approach is made ona case-by-case basis after multidisciplinary meet. Previouslythe folate antagonist- methotrexate, has been prescribed in the conservative approach to help with placental involution, but its use is not recommended. The serious risks of bone marrow suppression, nephrotoxicity, failure to improve outcomes and reports of maternal death are reasons that we do not advocate its use [6]. No patients in our conservativegroup received methotrexate.

Our institutional multidisciplinary team is comprised of obstetricians, anaesthetists, intensive care physicians, interventional radiologists, haematologists, and urologists. Images reviewed and a full perioperative plan is prepared to reduce morbidity. This plan includes the availability of an ICU bed. In a retrospective review by Al-Khan et al[7], the use of team-managed care resulted in improved maternal outcomes. In our present series, antenatal diagnosed cases of Placenta accreta spectrum allowed for imaging review with the radiologist and prompt and effective management plans, utilising the expertise of all services involved with the aim of minimising morbidity and genitourinary tract injuries. To reduce intraoperative blood loss, bilateral internal ileac artery occlusion is practised. All patients with suspected Placenta accreta spectrum should be managed in a tertiary referral centre with intensive care support.

The incidence of unintentional genitourinary injuries with Placenta accreta spectrum is reported to be 29%[8]. In ourpresent series, 8 patients (33.3%) required bladder wall excision with repair which is comparable to published reported rates. A systematic review of all measures used to prevent unintentional genitourinary issues, concluded that preoperative placement of ureteric stents or catheters was the only statistically significant intervention.

Placenta accreta spectrum, especially placenta percreta, are rare, but life-threatening obstetric conditions that need to be managed in a multidisciplinary fashion. Urologists play an important role in prevention of bladder and ureteric injuries and in reconstruction of the bladder and ureter, which is required in up to a third of these patients. All centres should have guidelines to manage these cases tailored to the local situation and resources.

CONCLUSION

Patients with Placenta accreta spectrum frequently require urological intervention to prevent or repair injury to the urinary tract. Antenatallydiagnosed cases were managed in a multidisciplinary fashion involving a team of specialties including obstetrics, gynaecology, anaesthesiology, haematology, urology, interventional radiology.

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