Elective robotic hysterectomy for placenta accreta spectrum in the second trimester: Case report

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ABSTRACT

BACKGROUND: A scheduled pre-viable hysterectomy is a treatment option for women with early diagnosed placenta accreta spectrum who do not wish future fertility. A minimally invasive hysterectomy with pregnancy in situ for placenta accreta spectrum has not been previously reported.

CASE: A patient with evidence of placenta accreta spectrum on prenatal imaging underwent an elective robot-assisted laparoscopic hysterectomy at 16 weeks of gestation. The procedure was uncomplicated and she was discharged on postoperative day 1. Pathology was consistent with placenta percreta.

CONCLUSION: Robot-assisted laparoscopic hysterectomy with pregnancy in situ is feasible in a patient with placenta accreta spectrum in the second trimester.

TEACHING POINTS: 1. Early diagnosis of placenta accreta spectrum is important for surgical planning and management. 2. We present a technique for minimally invasive hysterectomy in a patient with placenta accreta spectrum diagnosed before viability.

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1. Introduction

The work has been reported in line with the SCARE criteria [1]. The term placenta accreta spectrum encompasses all 3 types of abnormal placentation (placenta accreta, placenta increta, and placenta percreta) that result from abnormal trophoblast invasion into the uterine wall. Maternal morbidity and mortality can occur as a result of severe, intractable hemorrhage. Established risk factors for this life-threatening condition include prior cesarean delivery, advanced maternal age, and placenta previa [2]. The increased prevalence of abnormal placentation is most likely due to the increased rate of cesarean delivery [2,3]. Expert prenatal imaging allows identification of features of placenta accreta spectrum as early as the first trimester; however, most women are diagnosed in the second and third trimesters [4]. Multiple reports described second trimester emergent or scheduled open hysterectomy as a treatment option for placenta accreta spectrum [5]. A minimally invasive hysterectomy is superior to open hysterectomy in multiple aspects, including decreased pain and blood loss, shorter hospital stay, and faster recovery. One case report has described a postpartum robot-assisted laparoscopic hysterectomy after delivery of a second trimester pregnancy loss with placenta increta [6]. Unplanned hysterectomy for the management of hemorrhage in the setting of placenta accreta spectrum is associated with a higher complication rate as compared to scheduled hysterectomy. Elective minimally invasive hysterectomy for placenta percreta in the second trimester has not been previously reported.

Here, we present a case of a scheduled robot-assisted laparoscopic hysterectomy for placenta percreta at 16 weeks of gestation, in a patient that has completed childbearing.

2. Case

A 40-year-old patient, Gravida 4 Para 3, at 16 weeks of gestational age had an obstetrical ultrasound showing a complete placenta previa and findings concerning for abnormal placentation. Magnetic resonance imaging showed loss of myometrium at uterine-bladder interface and presence of prominent vasculature, findings concerning for placenta accreta spectrum (Fig. 1). Her BMI was 31 kg/m² and her obstetrical history was significant for three prior cesarean deliveries. Her medical history was significant for preeclampsia with her third pregnancy. After discussing the radiologic findings and associated risks, the patient elected to terminate the pregnancy and had no desire for future fertility. Options of surgical management were discussed and she elected to proceed with a minimally invasive hysterectomy.

The patient was counseled regarding the surgical risks, benefits, and alternatives and was consented for a robot-assisted laparoscopic total hysterectomy with bilateral salpingectomy. The Da Vinci Xi robotic surgical platform was docked on the patient’s left side. To avoid disruption of the pregnancy and bleeding, a uterine manipulator was not inserted. A Veress needle was inserted...
Fig. 1. MRI showing loss of the myometrium at uterine-bladder interface.

Fig. 2. Robot Port Placement: Monopolar Scissors in Port A, Robotic Camera in port C, Fenestrated Bipolar in port D, Prograsper in port E, and the unlabeled port is the accessory 11 mm port.

at the umbilicus and pneumoperitoneum of 15 mm Hg was established. An 8-mm incision was made 5 cm above the umbilicus and a robotic port was placed. The robotic camera was inserted and an 11-mm assistant port was placed in the right upper quadrant. A second 8-mm port was placed in the right upper quadrant and another two robotic ports were placed in the left upper quadrant, as detailed in Fig. 2. The following robotic instruments were used: monopolar scissors (placed in port A), fenestrated bipolar (port D), and prograsper (port E). The camera was placed in port C. Intraoperatively, dense adhesions of the uterus to the anterior abdominal wall and the bladder were noted. There was no gross involvement of adjacent organs by the placenta.

The hysterectomy was completed in the following steps. First, the vascular pedicles to the uterus (uterovarian ligaments and uterine vessels) were isolated, coagulated, and transected (Video 1). Second, lysis of the adhesions to the anterior abdominal wall and the bladder was performed. Engorged vessels in the uterovesicular space were coagulated with the fenestrated bipolar and transected with monopolar scissors (Video 2). Lastly, a metal end to end anastomosis sizer was used to delineate the upper vagina and perform
a colpotomy below the placental site (Video 3). The specimen was exteriorized intact vaginally. The estimated blood loss was 300 mL and time from trocar placement to vaginal cuff closure was 1 h. The procedure was uncomplicated and the patient was discharged on postoperative day 1. Pathology showed placenta percreta in the lower uterine segment both anteriorly and posteriorly. The weight of the specimen was 670 g.

3. Discussion

The prevalence of placenta accreta spectrum is increasing primarily due to the increasing rate of cesarean delivery worldwide [7]. Antenatal diagnosis and early planning are crucial to avoid the risks of emergent surgery such as excessive blood loss, need for transfusion, and even death. Given the significant risk for maternal morbidity and mortality, counseling about the possibility of pregnancy termination is warranted when the diagnosis of placenta accreta spectrum is made in the pre-viable period.

Dilation and evacuation in the setting of placenta accreta spectrum is a morbid procedure that may result in immediate or delayed hemorrhage. The risk for acute hemorrhage requiring emergency hysterectomy exists even after uterine artery embolization [8,9]. Therefore, a planned hysterectomy to prevent acute, life-threatening hemorrhage is an option for the patients that have completed childbearing.

The Obstetric Care Consensus published by ACOG addressing placenta accreta spectrum, reports minimally invasive hysterectomy as a possible option for delayed interval hysterectomy after cesarean delivery, specifically in patients with placenta percreta, given the increased risks of immediate hysterectomy post-cesarean delivery [10]. Twenty-three percent of delayed interval hysterec-

tomies (3/13) were performed minimally invasively, two using robotic approach, and one using laparoscopic approach [11]. Elet-
tive open hysterectomy for placenta accreta spectrum in the second trimester has been previously described. Here, we present the first reported case of elective minimally invasive hysterectomy with pregnancy in situ performed for placenta accreta spectrum in the second trimester. Our technique is summarized in the following 4 steps:

1. Laparoscopic evaluation for gross involvement of adjacent organs that would preclude resection.
2. Isolation and transection of the main vascular pedicles of the uterus (uterovarian ligaments, and uterine vessels).
3. Dissection of the adhesions to the bladder and anterior abdominal wall with coagulation and transection of the prominent vessels in the uterine-bladder interface.
4. Use of a metal end to end anastomosis sizer to delineate the upper vagina, perform the colpotomy below the placenta site, and deliver the uterus vaginally with the pregnancy in situ.

Evidence-based guidelines for the management of patients with placenta accreta spectrum seeking termination of pregnancy in the first or second trimester are lacking. With the high risk for maternal morbidity and mortality, an elective hysterectomy is an option for patients that have completed childbearing. Our case demonstrates that robot-assisted laparoscopic hysterectomy is an option for select patients with placenta accreta spectrum in the second trimester.

Declaration of Competing Interest

All authors declare no conflict of interest.

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Ethical approval

Exempted per internal IRB guidelines.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Amro Elfeky: writing - original draft. Mary Ann Son: Conceptualization, visualization. Camila Paiva: investigation, writing-review and editing. Ioannis Alagkiozidis: writing - review and editing, Resources, Supervision.

Registration of research studies

1. Name of the registry: case report N/A.
2. Unique identifying number or registration ID: case report N/A.
3. Hyperlink to your specific registration (must be publicly accessible and will be checked): case report N/A.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at https://doi.org/10.1016/j.ijscr.2020.06.024.

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