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## Diagnosis and Treatment of Intramyometrial Placental Tissue Invasion in Cesarean Scar: A Case Report

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### Abstract

Morbidly adherent placenta is one of the rare complications of Cesarean Section Pregnancy. This is the implantation (part or whole) of the placenta via the niche (dehiscence at the hysterotomy site) or scar of the prior cesarean section into the uterine wall. It is divided into placenta accreta, placenta increta or placenta percreta depending on the degree of placental tissue uterine invasion. It poses a high risk of maternal morbidity and mortality due to missed diagnosis and non-existence of clear treatment guidelines. We present a case of adherent placental tissue in cesarean scar pregnancy diagnosed with laparoscopy. We highlight the importance of early diagnosis and treatment of placental tissue uterine invasion in cesarean scar pregnancy.

### Introduction

Cesarean Scar Pregnancy is reported to range from 1 in 1,800 to 1 in 2,500 of all cesarean deliveries performed. Morbidly adherent placenta is one of the rare dangerous complications of cesarean scar pregnancy [3]. Depending on the degree of invasion in the uterine wall, placenta tissue invasion can be classified into accreta, increta and percreta. Over the last few decades, numbers of cesarean section deliveries have increased [1]. This has also led to the increase in the number of uterine scar placental tissue invasion complications like hemorrhage which often leads to many other complications including hypovolemic shock, disseminated intravascular coagulopathy, hysterectomy, and even morbidity. Increase in cesarean section delivery has led to reduced number of vaginal operative procedures [1,2]. ACOG has advocated for vaginal delivery in the trial of scar for appropriate candidates, the rate of repeat cesarean deliveries is now close to 91% [2].

Proposed pathogenesis of cesarean scar pregnancy is that the conceptus invades through a defect or microscopic dehiscence in the scar of previous hysterotomy. This is due to the poor vascularization with fibrosis of the lower uterine segment. There is also disruption of the endometrium and

myometrium that predisposes to improper implantation at the site of the prior hysterotomy [3,4]. The placental invasion is due to compromised decidua basalis, which normally is a barrier to trophoblastic invasion of myometrium.

It is important that early and accurate diagnosis is obtained in order to avoid complications. Though missed diagnoses of placental insertion disease (morbidly adherent placenta) have been reported, ultrasonography remains the main tool for diagnosis of morbidly adherent placenta, mostly with a sensitivity of 90.7% [95% confidence interval (CI), 87.2e93.6], specificity 96.9% (95% CI, 96.3e97.5), a positive likelihood ratio of 11 (95% CI, 6e20), and a negative likelihood ratio of 0.16 (95% CI, 0.11e0.23) from a meta-analysis in 2013 [4]. Ultrasonography clues on morbidly adherent placenta include abnormal vasculature, increased size and numbers of vascular sinus, absence of uterovesicle border or retroplacental hypoechoic zone, and invaded placenta insertion on myometrium [3,4].

### Case Presentation

We are presenting a female 32-year-old, G3P2, Chinese, Han tribe, initially presented to the local hospital with 3 months amenorrhea. She requested to terminate the pregnancy due to satisfied parity. Cesarean Scar Pregnancy

was confirmed at the local hospital with ultrasonography showing 15weeks gestational age. She had no history of bleeding, dizziness, abdominal pain, vaginal discharge, dysuria, diarrhoe, coughing or headache. A known polycystic ovarian syndrome patient, with history of appendectomy and cesarean section delivery 2 years and 8 years ago respectively prior to hospital presentation. According to ultrasound finding, the patient was commenced on medical abortion therapy on the same day of admission, followed by dilatation and curettage on day 2 post admission. During the procedure, patient developed hemorrhage due to retained products of conception (placenta) adherent to the anterior wall of the lower part of the uterine cavity. Estimated blood loss during the procedure

was 1500ml. The heavy bleeding in this cesarean scar pregnant patient was treated with uterine artery embolization interventional therapy, blood transfusion and IV fluids. The local hospital decided to refer the patient to our hospital for further evaluation and treatment on the same day she underwent the D&C procedure. Upon arrival in our hospital, patient was seen in the outpatient department with normal vitals and minimal vaginal bleeding noted on vaginal examination. Human chorionic gonadotropin (hCG) was 3562miU/  $\mu$ L, hemoglobin 81g/L.

Hysteroscopy examination revealed retained products of conception tissue in the anterior wall of the lower part of the uterine cavity measuring 5 \* 4cm diameter. Under the guidance of B-ultrasound, curettage was done and about 100g of retained products of conception were evacuated. Some of the tissues adhered tightly to the anterior wall of the uterus, and vaginal bleeding was more when scrapped. The procedure was successful and hemostasis was achieved with estimated blood loss of 100ml. Patient was treated with uterotonics to prevent further vaginal bleeding. She was treated as an outpatient to be followed up with a recheck ultrasonography after four days.

One week post curettage, patient was admitted to our hospital due to minor vaginal bleeding mixed with clots. Recheck B-ultrasound examination revealed that the anterior uterus was irregularly enlarged with a heterogeneous hyperechoic mass of 7.3\*4.9cm in the middle and lower part of the anterior uterine wall. The mass protruded outward reaching the serosa layer. Color blood flow was seen in and around the mass. There was no obvious abnormality in bilateral adnexa. At this time, placental tissue uterine cesarean scar invasion was suspected.

Discussions with the patient regarding her imaging

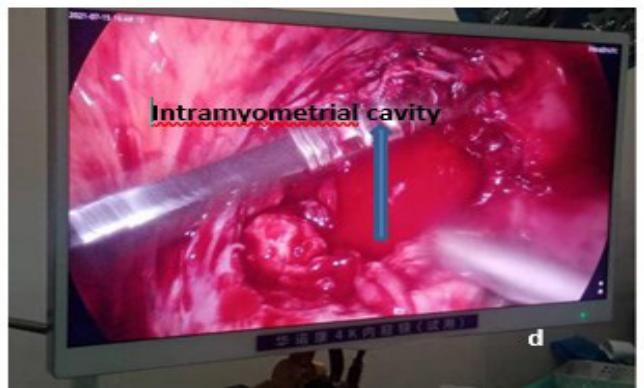
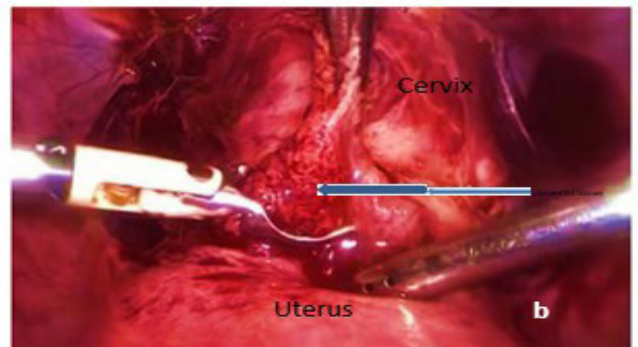
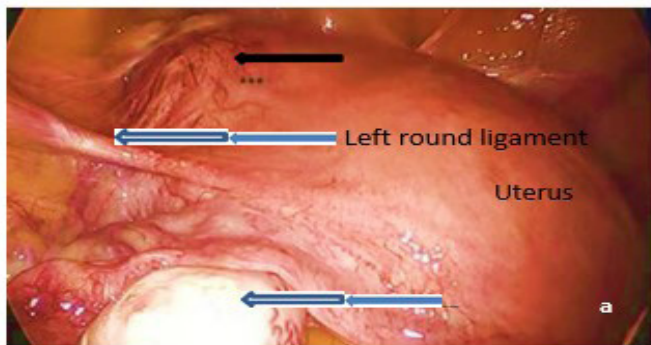


Figure 1: (a) Laparoscopic view of the pelvic cavity showing the intramyometrial subserosal mass (black arrows). (b) Opening and exploration of the intramyometrial mass review the adherent placenta tissue being evacuated. (c) Evacuated products of conception were sent for pathology examination. (d) View of the intramyometrial cavity after complete evacuation of the products of conception just before suturing it, the intramyometrial cavity did not communicate with the uterine cavity.

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findings, potential complications of continuation of cesarean scar placental tissue invasion and reproductive goals were done. The patient stated that she desired permanent sterilization. She was scheduled for an urgent laparoscopic removal of the adherent cesarean scar placental tissue and bilateral tubal ligation.

Intraoperatively, during laparoscopic abdominal and pelvic exploration, the uterus showed a subserosal 4\*5cm enlarged mass on the lower segment of the uterus as shown is (Figure 1a). The mass was noted to be enlarged with hyper vascularization. Incision on the mass was made to open the intramyometrial mass as observed in (Figure 1b). Access to the intramyometrial space was achieved and complete evacuation of the adherent placental tissue was done (Figure 1c & Figure 1d).

After the evacuation of the intramyometrial adherent placental tissue, the intramyometrial cavity was sutured; uterine scar repair and bilateral tubal ligation were successfully done. Hemostasis was achieved with estimated blood loss of 1000ml. Patient received 4 units of packed red blood cells, 1000ml crystalloid solution and intramyometrial injection of methotrexate. Retained products of conception were taken for pathological assessment which confirmed the presence of degenerated placenta villi and decidua, trophoblastic tissue implanted in an area of markedly attenuated myometrium. Post operatively, patient improved clinically. She had no vaginal bleeding, abdominal pain, dizziness, headache, fever or constipation. Laboratory results showed reduction in hCG levels i.e 558.26 miU/  $\mu$ L and 234.8 miU/  $\mu$ L on day 4 and day 7 post operation respectively compared to the hCG on admission of 3562miU/  $\mu$ L. After 10 days in the hospital, the patient was discharged to be followed up in the gynecology clinic for review.

## Discussion

Morbidly adherent placenta is one of the rare complications of Cesarean Section Pregnancy. This is implantation (part or whole) of the placenta via the niche (dehiscence at the hysterotomy site) or scar of the prior cesarean section into the uterine wall [5,6]. Morbidly adherent placenta is divided into placenta accreta, placenta increta or placenta percreta depending on the degree of placental tissue uterine invasion. Prevalence of Cesarean Scar Pregnancy is reported to range from 1 in 1,800 to 1 in 2,500 of all cesarean deliveries performed [6,7]. Research has shown that, in cesarean section pregnancy, conceptus invades through a defect or microscopic dehiscence in the scar of previous hysterotomy [7]. This is due to the poor vascularization with fibrosis of the lower uterine segment.

Cases of placental tissue cesarean scar invasion are on

the rise due to an increase in the number of cesarean sections being performed. Depth of placental invasion increase as the gestation advances. Some of the other risk factors for morbidly adherent placenta include placenta previa after a prior cesarean delivery, a history of uterine surgery (e.g., myomectomy entering the uterine cavity, hysteroscopic removal of intrauterine adhesions, cornual resection of ectopic pregnancy, dilatation and curettage, endometrial ablation), cesarean scar pregnancy, maternal age older than 35 years, history of pelvic irradiation, and infertility and/or infertility procedures (e.g., in vitro fertilization) [8].

Diagnosis of this placental insertion disease is by ultrasonography, mostly with a sensitivity of 90.7% [95% confidence interval (CI), 87.2e93.6], specificity 96.9% (95% CI, 96.3e97.5), a positive likelihood ratio of 11 (95% CI, 6e20), and a negative likelihood ratio of 0.16 (95% CI, 0.11e0.23) from a meta-analysis in 2013 [2,8]. Diagnosis is often difficult and missed by ultrasonography diagnosis. Magnetic Resonance Imaging has been used as an adjuvant to ultrasound as well as aid in preparation for surgery and intraoperative orientation but it is expensive and has low diagnostic value.

Our case highlights the importance of early diagnosis and management of adherent placental tissue in the cesarean scar to prevent catastrophic patient morbidity or death. If left untreated, patient can develop hemorrhagic shock which may lead to death. No clear treatment guidelines have been suggested for the treatment of Morbidly Adherent Placenta. It has been shown that if cesarean scar pregnancy is complicated with morbidly adherent placenta (cesarean scar adherent placental tissue invasion), the most frequently therapeutic approach is hysterectomy [9].

## Conclusion

Our case presentation demonstrates the importance of early diagnosis and treatment of cesarean scar pregnancy, especially if it is complicated with placental tissue uterine scar invasion. The following are highly recommended to prevent serious complications of this condition:

1. If cesarean scar pregnancy is suspected, dilatation and curettage can be done under the guidance of B-ultrasound or laparoscopy monitoring to avoid puncturing the thin uterine muscle on the scar.
2. A patient with suspected cesarean scar pregnancy with heavy vaginal bleeding can undergo uterine artery embolization interventional therapy to minimize blood loss.
3. If a patient does not respond to the 1st blinded dilatation and curettage procedure, a 2nd D&C can be

done under the guidance of hysteroscopy monitoring to make sure all products of conception are visualized and evacuated.

4. For patients with cesarean scar pregnancy and suspected placental tissue implantation, laparoscopy for diagnosis and surgical treatment can be done.

### Consent

Consent was obtained from the patient for publication of this paper and accompanying images.

### Conflicts Of Interest

There are no conflicts of interest regarding the publication of the paper.

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