

Pathogenesis, Mechanism and Modern Clinical Diagnosis of Placenta Accreta in the Uterine Wall

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Annotation: The case report of successful conservative treatment of 2 patients with true placenta accreta is presented. Both patients had placenta previa and a cesarean scar on the uterus. Placenta accreta was diagnosed during pregnancy using ultrasound and magnetic resonance imaging. Given the diagnosis, a decision was made to perform a lower cesarean section with subsequent embolization of the uterine arteries. The placenta remained in place. In the postoperative period, delayed repeated embolization of the uterine arteries was performed. After partial expulsion of the placenta, the remaining placental tissue was removed by curettage and hysteroscopy. During dynamic follow-up, the patients experienced complete restoration of menstrual function.

Keywords: true placenta accreta, conservative therapy, methotrexate.

Introduction:

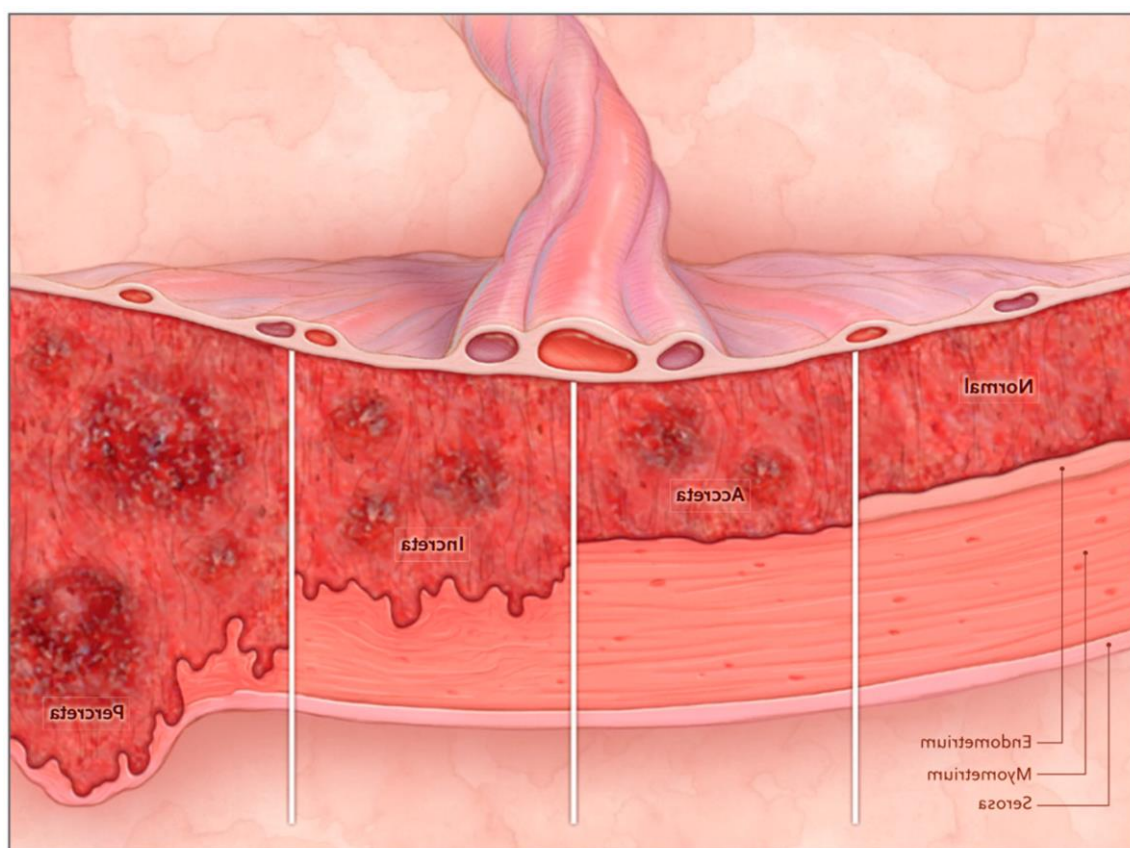
The problem of diagnosing true placenta accreta (TPA) and developing methods for treating patients with this pathology seems to be very urgent, because, on the one hand, such a pathology is associated with a high risk to a woman's life due to profuse bleeding during placental separation, and on the other hand, its prevalence has increased significantly with the increase in the number of cesarean sections.

There are different types of placental infiltrates, classified histologically according to the depth of penetration of the chorionic villi into the myometrium: placenta accreta (superficial invasion), placenta increta (deep invasion) and placenta percreta. Placenta accreta is the attachment of the placenta to the uterine wall, in which there is no spongy layer of decidua between the muscle layer and the chorionic villi, and the villi reach the muscle layer of the uterus and even penetrate it. The rarest and most severe form is

placenta percreta, which occurs in 5-7% of all variants of IVP. In Russia and abroad placenta percreta infiltration of the entire thickness of the myometrium with villi, interpreted as a disruption of the integrity of the serous membrane and damage to adjacent organs [18].

IVP occurs in 1 in 2500-7000 live births [16-18] and in Thailand in 1:540 live births, It ranges from 1:1000 births in South Africa to 1:93,000 births in the United States [9, 18]. Over the past 50 years

The number of patients with IVP has increased 10-fold [13, 18, 21, 22]. Many authors have noted a correlation between an increase in the number of placenta accreta and an increase in the number of cesarean sections [4, 5, 14, 17–19, 20].



The increase in the prevalence of IVP is due not only to the frequency, but also

The type of suture used during cesarean section also influences the outcome [17]. The traditional method was a 2-row suture in the lower uterine segment. However, since 1990, a single-row suture has gained clinical acceptance, reducing operative time and maternal morbidity. However, it can be assumed that changes in surgical technique will lead to an increase in the risk of uterine rupture and the number of patients with placental accreta.

It is known that the placenta

associated with significant blood loss (up to 3000-5500 ml) during separation.

The risk of uncontrolled bleeding increases when the posterior wall of the bladder is involved. Complications of attempted placental abruption and subsequent hysterectomy include disseminated intravascular coagulation syndrome, bladder and urethral injury, infectious complications, and fistula formation.

Previously, the diagnosis of placenta accreta was made during labor and during histological

examination of the removed uterus, which led to fatal consequences for patients. Currently, ultrasound, color Doppler, and magnetic resonance imaging data provide invaluable assistance in diagnosing this pathology.

Research methods and materials:

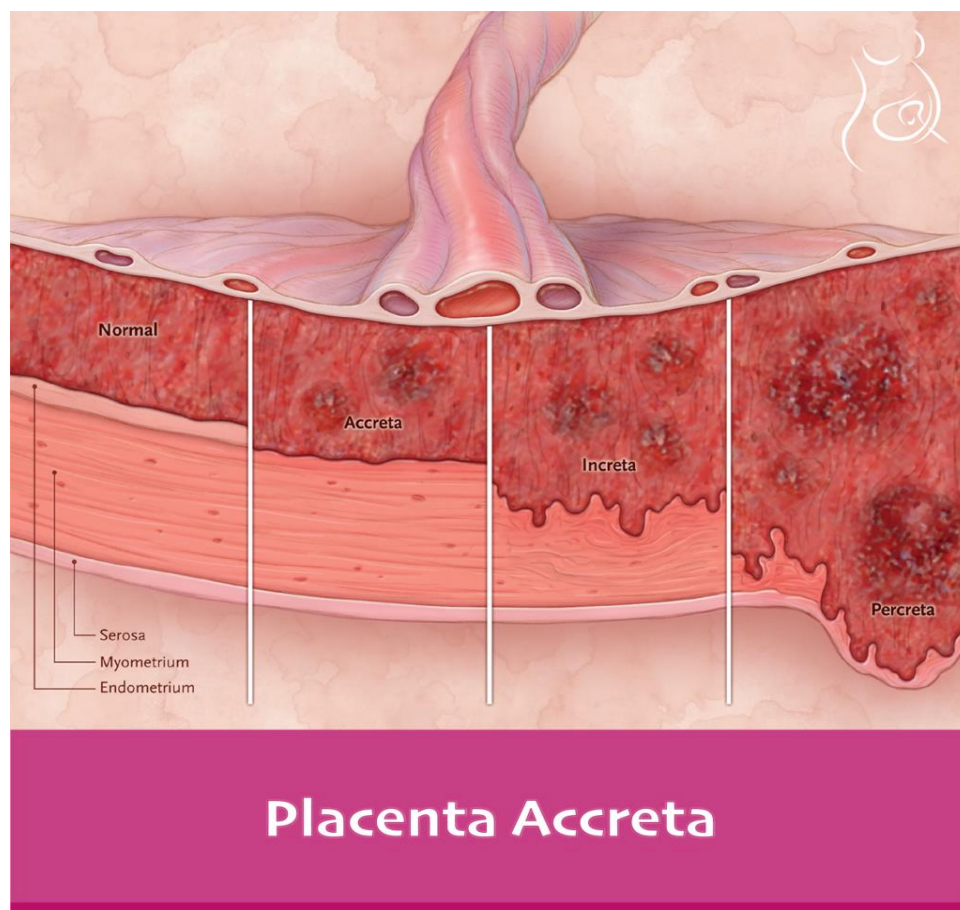
For a long time, the prevailing obstetric view was that the treatment of placenta accreta consisted of hysterectomy followed by cesarean section without any attempt to separate the placenta [1, 2, 6, 9, 23]. Since 1996, placenta accreta has become the leading indication for hysterectomy, surpassing the previously leading indications of uterine rupture and hemorrhage [6].

Over the past decade, the approach to treating patients with placenta accreta has changed: the old dogma of not leaving even a part of the placenta in the uterus has given way to conservative methods.

The first conservative method was described in 1986 [3] and consisted of leaving the placenta in the uterus during cesarean section and administering 50 mg of methotrexate intravenously. After 11 days, the placenta was delivered. In the literature, one can find various forms of alternative treatment for placenta accreta, which are represented by local resection of the placental bed and the use of methotrexate after leaving the placenta in situ [11, 12]. Many studies have been devoted to the diagnosis and study of conservative treatment methods for placenta accreta. The authors have proposed organ-preserving techniques based on various variants of metroplasty [8, 9, 15].

Conservative treatment includes cesarean section with placenta retained, uterine artery embolization, parenteral methotrexate, or both [4, 18-20].

An important point in the surgical tactics for IVP is the incision in the uterus. It is optimal to avoid damage to the placental tissue. The authors proposed a classic corpus and upper transverse incision. In recent years, a transverse incision in the fundus of the uterus has become increasingly popular, which minimizes blood loss, provides atraumatic extraction of the fetus and good visualization of the inner surface of the lower uterine segment [7, 10, 18].



Results:

In most cases, surgical intervention, including delayed (2 to 6 weeks) hysterectomy and manual removal of the placenta, is unavoidable [11]. A decrease in blood transfusion volume and a decrease in the frequency of hysterectomy have been reported with a conservative approach [8]. Conservative treatment reduces intraoperative blood loss by 2-fold (from 2989 to 1411 ml). A second surgical intervention is required in 1/3 of patients with conservative tactics.

A conservative approach is appropriate, especially in cases where placenta accreta is found intraoperatively, if the obstetrician is not confident in the technique of uterine removal or if there is no technical possibility of adequate and competent treatment of major blood loss.

Patient Sh, 26 years old, was transferred from one of the maternity hospitals in Moscow to the Pregnancy and Childbirth Center with suspected placenta previa accreta. Upon admission, she did not have any complaints. From the anamnesis it is known that the pregnant woman underwent tocolytic therapy for 4 weeks due to the threat of termination of pregnancy, which had a positive effect. Despite the fact that the patient was registered for pregnancy from the early stages and was treated in the hospital several times, placenta previa was diagnosed only at the 27th week.

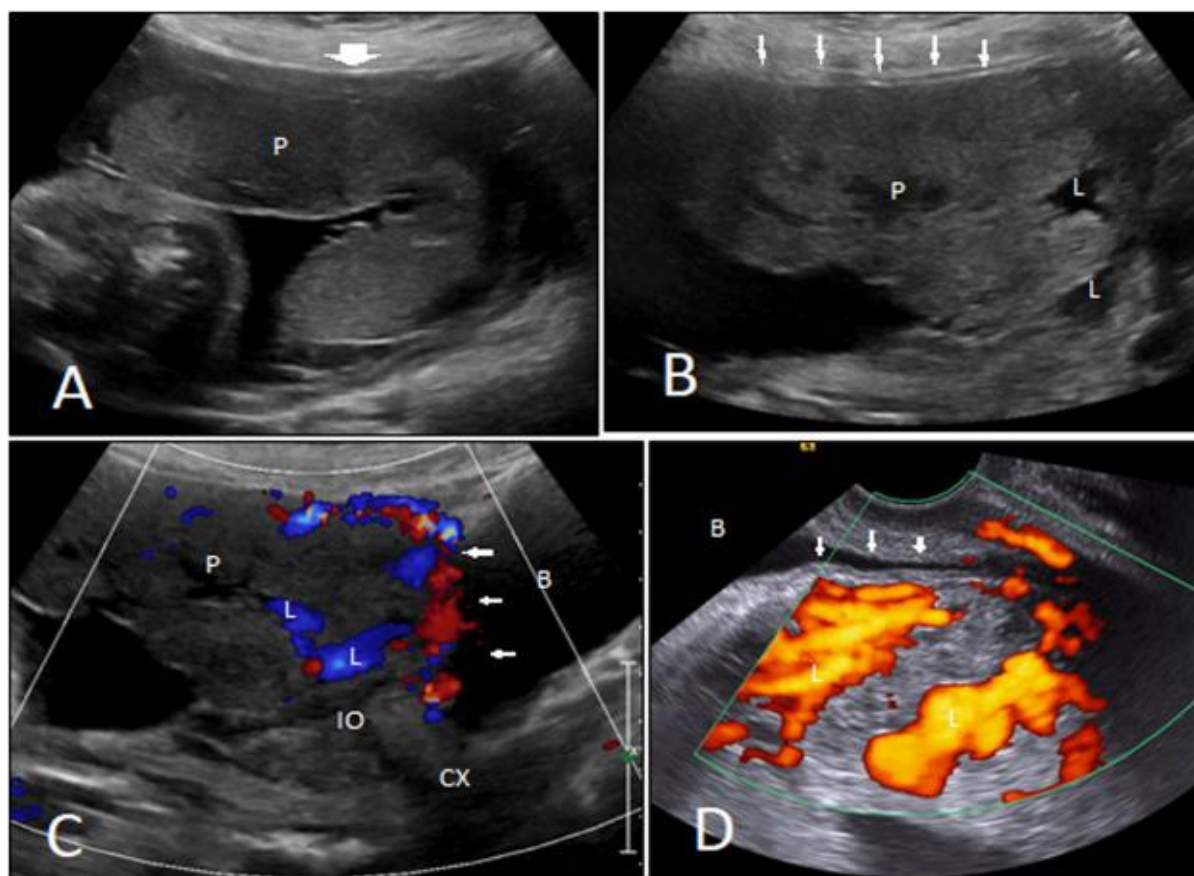
According to anamnestic data, menstruation from the age of 14, 5 days, every 30 days, moderate, painless, regular. Somatically healthy. Past gynecological diseases: chronic adnexitis, cervical ectopia, genital herpes, genital chlamydia. This is my fourth pregnancy, two induced abortions and the second birth. The first birth was operative, the child died due to a clinically narrow pelvis in the lower segment of the uterus.

Objective: The uterus is enlarged for 31 weeks of pregnancy, normal tone. The fetal position is longitudinal, the fetal head is higher than the entrance to the small pelvis. The scar area on the uterus is painless.

Ultrasound revealed placenta previa. The placenta was located along the anterior and lateral walls, covering the internal os and passing into the posterior wall of the uterus. There were numerous hypoechoic inclusions in the placental tissue, the myometrium of the anterior wall of the uterus was absent for 6 cm, and hypervascularization of the border of the serous membrane of the uterus with the bladder was noted.

Magnetic resonance imaging was performed to determine the extent of placental invasion. The anterior wall of the uterus in the lower segment was uniformly thinned (muscle fibers were almost invisible, in the middle segment the wall thickness was 7-8 mm), in the projection of the serous membrane there were several tortuous vascular structures with a diameter of up to 2-3 cm, there were no signs of growth into the bladder. Asymmetry of the cervix was revealed due to thickening of the posterior lip: posterior - 25 mm, anterior - 9 mm. The posterior lip had a heterogeneous structure due to numerous tortuous vessels extending into the isthmus sections of the posterior wall, detected in the lumen of the cervical canal and continuing into the placenta.

Diagnosis on admission: 31 weeks of gestation. Uterine scar after cesarean section. Complete placenta previa. Placenta accreta. History of postpartum death of the child.



The decision was made to prolong the pregnancy with careful monitoring of vaginal discharge. Urgent delivery was performed at 34-35 weeks due to 250 ml of blood loss from the genital tract. On the operating table, the femoral arteries were catheterized before an abdominal incision and guide wires were inserted into the uterine arteries. A midline laparotomy was performed under epidural anesthesia and a longitudinal incision was made in the uterine fundus. A live preterm girl weighing 2220 g, 46 cm long, with an Apgar score of 7/8 and a Silverman score of 2/3 was delivered. Uterine artery embolization was performed. The placenta was left in place and 50 mg of methotrexate was administered into the umbilical vein. The remnant of the umbilical cord was ligated and cut. The uterine incision was closed with 3 rows of vicryl sutures. Blood loss during surgery

400 ml, total - 650 ml. In the postoperative period, antibacterial therapy was carried out, enzaprost was used as a uterotonic, and methotrexate was administered intravenously at a dose of 50 mg on days 1, 8, and 15.

On day 6, magnetic resonance imaging showed an enlarged uterus, the placenta in its cavity covered the internal os, and numerous vessels were present in the lower parts of the uterine wall (Figure 1, see Appendix). The level of human chorionic gonadotropin (hCG) decreased from 12807 IU/ml on day 1 to 1284 IU/ml on day 18. The patient was discharged on day 18, with the placenta remaining in the uterus.

On day 23, ultrasound revealed clear vascularization of the placenta in the lower uterine segment, so repeat uterine artery embolization was performed and 50 mg of methotrexate was administered.

On day 66, the patient was admitted to the hospital due to the onset of lower abdominal pain and bloody discharge. Magnetic resonance imaging showed a reduced size of the uterus, smooth contours, and no significant deformation of the walls. The uterine cavity contained a heterogeneous fluid content, as well as a significantly reduced placenta of heterogeneous structure (Fig. 2, see Appendix).

Partial placental abruption occurred on day 69,

After embolization of the uterine arteries, the remnants of placental tissue were removed with a curette. Blood loss was 1000 ml.

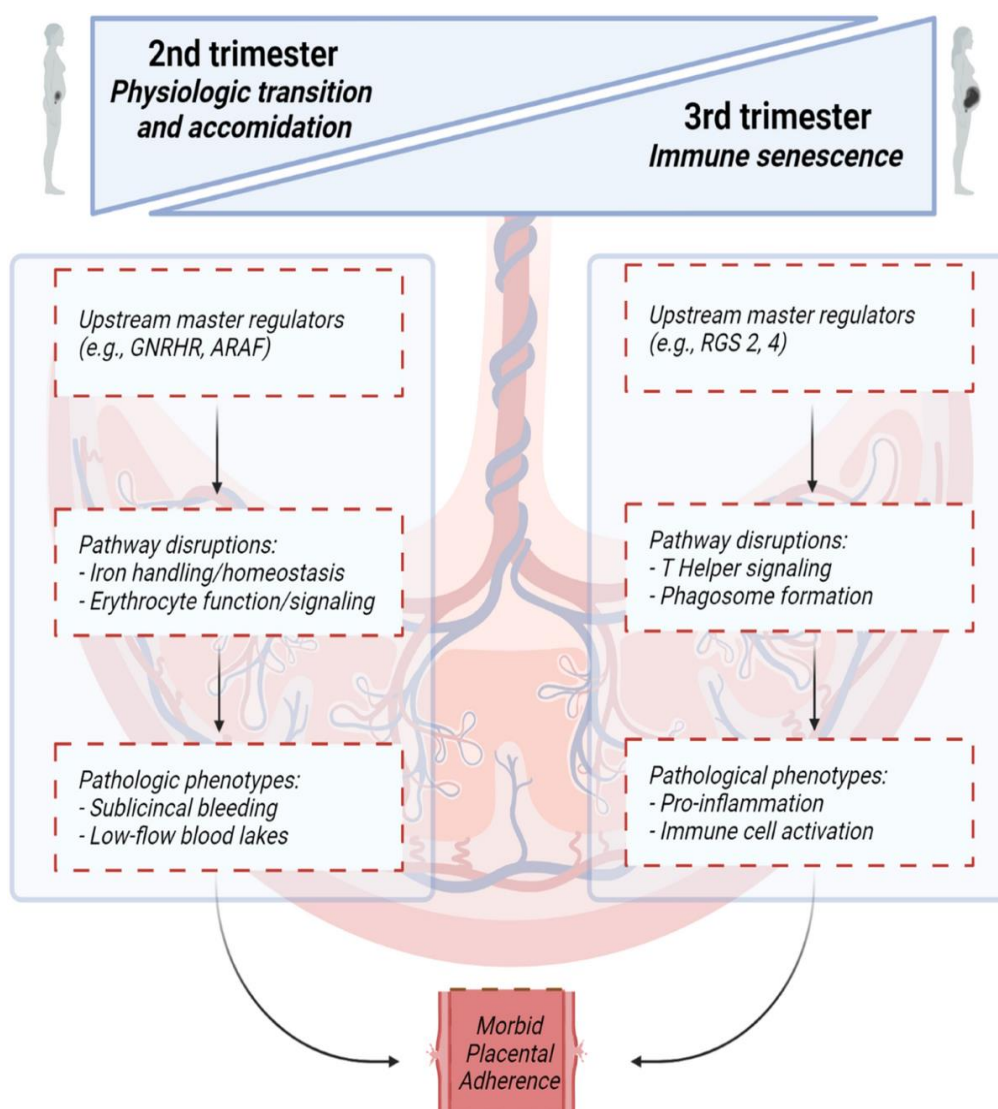
Histologically, the placental tissue was found to be in a state of necrosis, with numerous foci of petrification and leukocyte infiltration.

During the control magnetic resonance imaging on day 76: the uterine body was reduced to $80 \times 64 \times 67$ mm. Placental tissue was not reliably observed in the uterine cavity. Deformation of the myometrium was detected in the lower third of the anterior wall (thinning of the wall to 8-9 mm).

The patient is regularly monitored at the Social and Rehabilitation Center. His condition is satisfactory.

Patient M. , 32 years old, with suspected placenta previa and true placenta accreta, was transferred from the Moscow maternity hospital to the Center for Postpartum and Reproductive Health for planned operative delivery. Upon admission, she did not have any complaints. From the anamnesis, it is known that placenta previa was first diagnosed at 17 weeks. The pregnancy was complicated by the threat of abortion in the third trimester, so tocolytic therapy was carried out in the hospital. According to anamnestic data, menstruation has been occurring for 3 days, every 28 days, moderately, painlessly, regularly. Somatically healthy. This is my fourth pregnancy,

I have one unplanned pregnancy and am giving birth to my third child. The first birth ended in a cesarean section due to weak labor activity, the second - surgery, given the inoperable scar on the uterus.



Objective: the uterus is enlarged for a full-term pregnancy, with a normal tone. On palpation, the scar area is painless. The fetal position is longitudinal, the fetal head is higher than the entrance to the small pelvis.

Ultrasound examination at the maternity center confirmed placenta previa and a diagnosis of placenta accreta was made. The placenta was located on the anterior wall, covering the internal os. The absence of myometrium of the anterior uterine wall in the lower segment at a distance of 18-20 cm, as well as the pronounced vascularization of the placental tissue, is noteworthy.

Diagnosis on admission: gestational age 34-35 weeks. Uterine scar after 2 cesarean sections. Complete placenta previa. True placenta accreta.

The patient was delivered as planned at 36-37 weeks. After catheterization of the femoral arteries and placement of guidewires in the uterine arteries under epidural anesthesia, a midline laparotomy and a longitudinal incision in the uterine fundus were performed. A live, full-term male child weighing 3570 g, measuring 52 cm, with an Apgar score of 7/8 was delivered. Uterine artery embolization was performed. The placenta was left in place, and the uterine incision was sutured. Intraoperative blood loss was 700 ml. In the postoperative period, antibacterial therapy was performed to reduce the uterus.

Discussion:

On day 6, magnetic resonance imaging showed an enlarged uterus. The placenta was visible in the uterine cavity, covering the internal os.

The patient was discharged on day 14. The hCG level at discharge was 910 IU/ml.

On day 42, repeated embolization of the uterine arteries was performed due to revascularization of placental tissue.

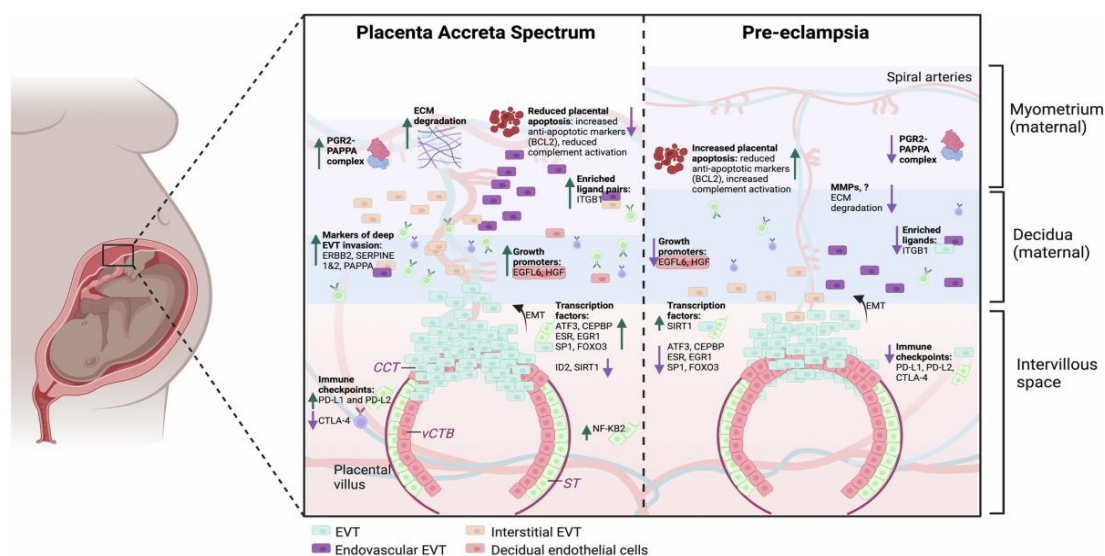
On day 52, the patient began to experience cramping pain and increased bleeding. Ultrasound examination revealed cervical dilatation, blood flow in the placental tissue along the anterior uterine wall. Partial placental abruption occurred, and the remnants of placental tissue were manually removed. Blood loss was 1500 ml. On day 59, magnetic resonance imaging showed a decrease in uterine volume.

A large amount of hemorrhagic contents was detected in the uterine cavity, the presence of placental tissue cannot be ruled out;

On day 63, hysteroscopy and resection of placental tissue were performed.

Histologically, the placental tissue and membranes are in a state of necrosis, and there is focal leukocyte infiltration in the decidual plate.

On day 81, a follow-up magnetic resonance imaging scan revealed a uterus measuring 65 × 73 × 65 mm. The uterine cavity was up to 36 mm wide, with a myometrial thinning of up to 4 mm in the lower third of the anterior wall due to fluid content and gas bubbles.



Conclusion: Thus, the examples given confirm the literature data on the possibility of leaving the placenta in the uterus during cesarean section if it grows. It is difficult to answer the question of whether leaving the placenta in place is a panacea or not, since we were able to cite only two observational data. But this is absolutely certain: 1) In patients with IVP, the uterine incision during cesarean section (most often in the fundus) should be made above the location of the placenta; 2) If the operating physician unexpectedly detects placenta accreta during cesarean section, it should not be attempted to remove it in order to avoid massive bleeding. Subsequently, a delayed hysterectomy or monitoring of the dynamics of placental involution is performed in a qualified institution. If indicated, the placenta can be removed later.

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