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Couvelaire-Uterus: literature review and case report

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Abstract: *Uteroplacental apoplexy or Couvelaire uterus is a rare complication in the spectrum of the life-threatening placental abruption.*

We report a 29-year-old pregnant woman who had a placental abruption complicated with the rare condition of Couvelaire uterus, with an delivery per uterus-sparring cesarean section.

The early diagnosis and proper medical management of placental abruption through uterus-sparring cesarean section present the best outcome for mother and child.

Keywords: *uterus Couvelaire, placental abruption, uteroplacental apoplexy*

INTRODUCTION

Utreroplacental apoplexy or Couvelaire uterus is a rare manifestation which complicates aprox. 5% of placenta abruptions and was described for the first time in 1911 by French obstetrician Dr. Alexandre Couvelaire [1, 2]. The placenta abruption complicates ~1% of pregnancies [3] and the maternal mortality can reach up to 5%. The uteroplacental apoplexy is a rare, nonfatal complication of the placenta abruption [4].

A literature search for the last 10 years was conducted on 25.11.2020 using the PubMed database and having the key words 'Couvelaire uterus'. This resulted in 27 articles published in the last 10 years. The Couvelaire uterus is often underreported and underestimated. The etiology is unknown and the diagnosis is done through inspection or histological examination [4].

This mechanism of placenta abruption can be seen as physiological after the fetus delivery and as pathological in the pregnancy with the fetus still in uterus. The acute condition of placenta abruption is the result of a compromise of the vascular structures supporting the placenta, having as outcome a retroplacental hematoma. This process may represent the starting point for Couvelaire uterus. The hemorrhage from pathologic vascular damage within the placenta seeps into the decidua basalis causing a separation of the placenta. Before the second stage of labour is finished, the blood created by bleeding resulting from the early placenta abruption infiltrates into the myometrium finding its way into the peritoneal cavity. Occasionally, such effusions of blood extend in the parametrium. As a result of the described mechanism we notice the macroscopic aspect of Couvelaire uterus which displays lesions characterized by violet to black ecchymoses [5, 6, 7]. The Couvelaire uterus sometimes loses its contractile power but usually responds well to intravenous oxytocin [6, 8]. The uterine ability to contract is preserved, particularly after amniotomy and decompression to allow constriction of spiral arteries [9].

Among the risk factors for placenta abruption are early

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pregnancy bleeding, hypertension or thrombophilia, or abdominal trauma [10]. The diagnose of placenta abruption is made clinical and is completed by the ultrasound scan and CTG. The patients present a painful, tender and rigid uterus, may have uterine contractions, vaginal bleeding is also common. The finding of a retroplacental clot on ultrasound scan is a risk factor for placenta abruption, the ultrasound scan plays an important role correlated to the clinical situation in the diagnose of the placenta abruption [3, 10, 11].

The delay of the diagnose of placenta abruption increase the risk of intrauterine fetal death, hypoxic brain injury, bleeding, coagulopathy with increased maternal and fetal morbidity and mortality [12, 13]. The incidence of coagulopathy in placenta abruption is reported to be 5.8% [3]. In the case of Couvelaire uterus the disseminated intravascular coagulation can be induced through the infusion of thromboplastic material in maternal circulation [14].

Couvelaire uterus was associated in different reports with placenta abruption, placenta previa, amniotic fluid embolism, and preeclampsia [4, 15]. Cesarean section in the patient's history is a risk factor for uterine rupture, abnormal placental implantation, placental abruption and uterine scar dehiscence in subsequent pregnancies [16]. Some authors consider that the incidence of Couvelaire uterus is increased by the increase in cesarean deliveries [4].

The management of the antenatal and postpartum hemorrhage plays a key role, on one side in the control of the bleeding and blood transfusion, and on the other side aims to reduce fetal and maternal morbidity and mortality [4].

In the past hysterectomy was performed as a routine therapy of Couvelaire uterus. Nowadays, is recommended to opt for the conservative management [4, 8]. The proper management of this pathology reduces the high maternal and fetal risks. The literature reports cases of fetal demise, but also hysterectomy as a result of severe disseminated intravascular coagulopathy [3, 4, 17]. The early decision to perform a hysterectomy taken before the patient's condition is extreme serious is required in order to minimize the morbidity and mortality [18, 19]. On the other hand, before deciding for more aggressive procedures, like hysterectomy, B-Lynch technique should be taken into consideration in cases of postpartum haemorrhage as a result of abruptio placentae followed by development of Couvelaire uterus [19, 20].

In a study on placenta abruption poor perinatal outcome associated with Couvelaire uterus, pregnancy induced hypertension and disseminated intravascular coagulopathy is reported [18].

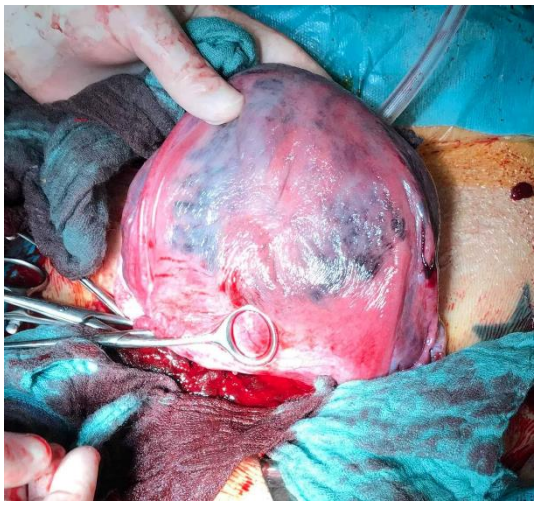
CLINICAL EXAMPLE

A 29-year-old gravida two, para one, in the 37th (36+6) week of an uncomplicated pregnancy, with a history of an uneventful spontaneous delivery, was admitted to the obstetric ward with symptoms of nephrolithiasis and urinary infection for further therapy. The obstetrical check-up was uneventful. The admission symptoms were alleviated, discharge could have been possible but she developed irregular and poorly coordinated uterine contractions. She developed uterine tenderness without relaxation between contractions, with wooden hardness by palpation. Vaginal examination revealed acute hemorrhage from the uterine cavity. The patient was hemodynamically stable. The cervix was 2 cm long and 1 cm dilated. CTG was normal. Cesarean delivery was indicated by suspicion of placental abruption. Intraoperatively massive hemoperitoneum and the diagnose of placenta abruption with Couvelaire uterus was confirmed (Figure 1).

A healthy boy was delivered. Uterus-sparring surgery was performed.

Postoperative recovery was uneventful.

Figure 1: Couvelaire uterus as a result of acute intradecidual hemorrhage produced by the rupture of the uterus–placental spiral arterioles which produces ecchymosis discoloration, secondary to extravasation of blood into the myometrium and serosa, can lead to hemoperitoneum.



DISCUSSION AND CONCLUSION

Placental abruption represents the early separation of the placenta from the uterus wall developing a retroplacental hematoma which is an acute intradecidual hemorrhage

produced by the rupture of the uterus–placental spiral arterioles. Couvelaire uterus or uteroplacental apoplexy is the result of blood extravasations in the tissues, occasionally the infiltrations which reach the peritoneal cavity creating hemoperitoneum [1, 2, 5].

In our case, the first intraoperative view after opening the peritoneal cavity was the massive hemoperitoneum and Couvelaire uterus with dark purple and copper color patches with ecchymosis discoloration and hemorrhagic infiltration in the lateral portions of the uterus.

Diagnosis is made through direct inspection or histological examination [2]. The management of this complication of the placenta abruption is conservative through uterus-sparring surgery, hysterectomy is usually not required and should be discouraged [2, 6]. Couvelaire uterus is a rare complication of placental abruption, with an underreported incidence and it is often associated with placenta previa, amniotic fluid embolism, and preeclampsia [4, 15] .

Often Couvelaire uterus is reported with massive placenta abruption requiring blood transfusion [4]. In our reported case blood transfusion was not required. Antenatal fetal and maternal monitoring, but also the delivery on time, plays an important role in the delivery outcome, otherwise due to bleeding it can come to fetal demise [15, 21]. Placental abruption has an increased maternal morbidity risk of haemorrhage, hysterectomy and consumptive coagulopathy [3]. The life-threatening condition of disseminated intravascular coagulation should not be underestimated [3, 18] .

In the reported case the patient was in the hospital under monitoring and the prompt medical decisions reduced the maternal and fetal risks.

The early diagnosis and proper medical management of placental abruption through the uterus-sparring cesarean section provide the best outcome for mother and child.

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