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# Hemoperitoneum during removal of the placenta in advanced abdominal pregnancy with live fetus delivered at 37 weeks of gestation. A case report in a low-resource setting and literature review

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## ABSTRACT

**INTRODUCTION AND IMPORTANCE:** Advanced abdominal pregnancy (> 20 weeks gestation) is a rare condition life-threatening for mother and fetus.

**CASE PRESENTATION:** A 31-years-old African woman presented from a rural district to Mutoyi Hospital for first gynecological evaluation after 37 weeks of amenorrhea, abdominal pain and vaginal bleeding. An ultrasound revealed an extra-uterine fetus. Laparotomy was done and a live fetus weighing 1980 g was delivered. Removal of the placenta, triggered massive bleeding (5000 mL) with shock. After re-laparotomy for post-operative ileus and hemoperitoneum, the mother and infant were discharged in good health.

**CLINICAL DISCUSSION:** Viable fetus can be delivered after an advanced abdominal pregnancy. Removal of the placenta is controversial. We review currently medical literature on advanced abdominal pregnancy and propose a management of the placenta in these patients.

**CONCLUSION:** We recommended to leave the placenta in situ, to avoid intraoperative bleeding. Placenta involution during follow-up can be revealed by ultrasound, color Doppler and  $\beta$ -hCG serum level decrease.

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## 1. Introduction

Advanced abdominal pregnancy is a very rare condition and is defined as a pregnancy > of 20 weeks of gestation inside the peritoneal cavity. It is a life-threatening for mother and newborn due to hemorrhagic risk and fetal complications. In developing countries the incidence of advanced abdominal pregnancy is higher compared with industrialized countries. In fact, worldwide incidence varies with geographic areas, medical facilities, pelvic and genital infections [1–3]. Advanced abdominal pregnancy is estimated to be less frequent than one case in 30,000 pregnancies [4]. Management of the placenta is controversial. There is not a common medical opinion and consensus about to leave in situ or to remove the placenta.

We present a case of an advanced abdominal pregnancy with a live fetus at 37 weeks of gestation in a woman with recent history of abdominal pain and vaginal bleeding, observed at Mutoyi Hospital in Burundi. The case was treated by laparotomy and removal of the placenta with mother and newborn survival.

This manuscript was written in line with the SCARE 2020 criteria [5].

## 2. Case presentation

A 31-year-old African woman, gravida 2 Para 0 (left tubal pregnancy in 2011), farmer, was presented from a rural district of Burundi to Mutoyi Hospital at 37 weeks gestation for a first gynecological examination. She suffered from abdominal pain in lower abdomen and painful fetal movements. The abdomen was distended and there were no areas of tenderness and fetal parts were not palpable. She was hospitalized, and at admission, obstetrical examination and trans-abdominal ultrasonography revealed severe oligohydramnios and a fetus who appeared to be extra-uterine with no uterine wall visible surrounding the pregnancy. The fetus was in the right abdomen and the femur was visualized clearly. A little amount of amniotic fluid surrounded the fetus. The head was not visualized by ultrasound but there was a regular fetal heart rate. The patient reported recent vaginal bleeding but maternal vital signs were stable with 150/90 mmHg blood pressure and regular pulse with 90 beats per minutes. The weight was 54.5 kilos with a height of 1.48 m. and the body mass index was 20. Blood analysis showed a hemoglobin level of 11, 5 g/dl. Clinical status of the patient revealed no emergency condition, so a decision to perform a close observation and an elective laparotomy was made.

The past medical history revealed no medical pathologies and no allergies. Anesthesiologist evaluated the patient for surgical procedure and its anesthetic classification was ASA 1.

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**Fig. 1.** Intra-operative photograph showing female live baby delivered by breech.



**Fig. 2.** Congenital abnormalities: neck webbing, torticollis, kyphosis, lumbar skin lesion, talipes equinovarus, facial asymmetry.

A laparotomy was performed at our rural district general hospital by a midline incision. Surgical team was composed by two gynecologists and a general surgeon. Meconium stained liquor was found in the peritoneal cavity due to the rupture of the placenta. A female live baby was delivered by breech (Fig. 1) with an Apgar score of 6 and 7 at 1 and 5 min, weighing 1980 g. There were congenital abnormalities: facial asymmetry, neck webbing, torticollis, kyphosis, talipes equinovarus, lumbar skin lesion (Figs. 2 and 3). The newborn was admitted to the neonatal unit after mask resuscitation for specific therapy. Glucose 10% 100 cc, hydrocortisone 20 mg, vitamin K an half ampoule and ampicillin 100 mg was administered. During 5th post-operative day gentamycin 6 mg was added after fever at 38,2 °C.

The placenta had implantation into the pouch of Douglas and, to remove it, we performed a dissection that caused suddenly a massive and dramatic bleeding with blood loss of 4800 cc and a hemorrhagic shock. Blood pressure failed at 70 /40 mmHg. The patient was resuscitated by crystalloids and four units of packed red blood cells was transfused intra-operatively. The placenta was extracted and hemostasis was performed by absorbable suture stitches and topical hemostatic agents application.

The patient developed a paralytic ileus due to an hemoperitoneum. No flatus appeared on the fifth postoperative day and a re-laparotomy was performed: one liter of blood and clots were removed. The patient was finally discharged on 18th postoperative day in a good conditions.

The newborn started breast feeding on 5th day weighing 1810 g. after five days from birth. She was discharged from neonatal unit after 39 days. The weight was 2500 g. A plaster was applied to treat foot deformities and removed after one month. Follow-up at 3 months showed the baby and mother in good conditions.

Unfortunately, the baby died at the age of eight months due to cerebral malaria infection.



**Fig. 3.** Congenital abnormalities: neck webbing, torticollis, kyphosis, lumbar skin lesion, talipes equinovarus, facial asymmetry.

### 3. Discussion

Abdominal pregnancy is an extremely rare condition with high perinatal and maternal mortality ranging from 75 to 95% and from 2 to 18% respectively. Only 1.6% of all ectopic pregnancies are found to be abdominal. The incidence of congenital malformations due to the pregnancy abdominal location, is estimated to be 30–90% [4].

Stevens in a literature review of malformations and deformations in abdominal pregnancy [6] reported that infant survival, when only live born infants of 30 or more weeks gestation were considered, overall survival rate was 63%. The overall maternal mortality rate was 18.2%. He described that the overall rate of malformations in the infants was 21.4% with most frequent deformations seen were cranial and/or facial asymmetry, neck webbing, torticollis, and various joint abnormalities like talipes equinovarus and scoliosis/kyphosis. We observed all of these deformations in the newborn described in our clinical case (Figs. 2 and 3). The etiology of these defects may be due to double mechanism of extrinsic compression and vascular flow reduction [6].

Hymel et al. in a review from 1965 to 2012 identified in English literature overall 31 cases of late abdominal pregnancies with average gestational age at the time of diagnosis and average time of delivery 30.4 and 33 weeks, respectively [7]. He documented 23 surviving infants (88,5%) and fetal complications in 18 cases. About maternal outcomes, documented in 26 cases, he reported 19 mothers (73,1%) survived. Maternal deaths were due mainly to massive bleeding, septic shock, pulmonary embolism. After 2012 we have identified other 14 cases of advanced abdominal pregnancies with newborns survival [8–19,25].

There are many cases of advanced abdominal pregnancies described from Africa but our report is the first case of the literature about an advanced abdominal pregnancy with live fetus from Burundi, and the report is a complete article with photos of the intervention, newborn malformations and follow-up of the mother and child. In Sub Saharan Africa, the high incidence of pelvic inflammatory disease, sexually transmitted infections with secondary tubal damage, limited diagnostic facilities for detection of tubal pregnancies before rupture and peritoneal implantation, limited antenatal care in rural areas, may explain the increasing prevalence of abdominal pregnancies. Recently, Mutarambirwa described one case of viable term abdominal pregnancy in a HIV patient [19]. In our case, the patient's history indicated that she had a prior left tubal pregnancy and we postulated that this abdominal pregnancy developed by previous scar rupture.

Diagnosis of advanced abdominal pregnancy is difficult. Symptoms and clinical manifestations are unspecific including abdominal pain, vaginal bleeding, painful fetal movements, abdominal tenderness on palpation, palpation fetal parts, serum high levels of maternal alpha-fetoprotein. Thus, this rare condition remains undiagnosed [15,24], or diagnosis is often delayed and made during laparotomy.

Pre-operative diagnosis confirmation requires abdominal ultrasound examination. Diagnostic findings of abdominal pregnancies are the presence of an empty uterine cavity separate from the fetus and an abdominal ectopic placenta. Other ultrasound findings are oligohydramnios, fetal parts like femur, spinal cord and/or head, the presence of maternal peritoneal fluid due sac rupture [26,27]. In our reported case, on the ultrasound examination, the fetal femur length was in keeping with 37 weeks of gestation and the fetal head could not be visualized.

MRI is a useful imaging study to confirm abdominal pregnancy and to identify the site of placenta attachment and vascular supply. MRI is an effective method to evaluate the integrity of gestational sac [9,27].

There is not standard treatment procedure for the placenta management in abdominal pregnancy [30]. The controversial question

is: to remove or not to remove the placenta? The partial or complete removal of the placenta have been reported with successful outcome [15,16,20]. By our literature search, the management of the placenta was described in 37 of the 43 reported cases. In 19 cases (52%) the placenta was left in abdominal cavity. In other 18 of the 36 cases (48%) it was surgically removed. Three of these cases required total hysterectomy and 3 required unilateral salpingectomy [7,12]. Blood loss during delivery was documented in 7 cases with estimated bleeding from 900 to 5500 mL. Oneko et al. [29] suggest that removal of the placenta is related to important blood loss and is associated with an increase need for intra-operatively blood transfusion.

Often, like in our clinical report, placenta's blood supply is unidentifiable and removal attempts can cause massive bleeding. We have extracted the placenta, attached to the Douglas pouch, with a dramatic blood loss. We have performed a difficult hemostasis by absorbable suture stitches, prolonged pressure and topical hemostatic agents application until to the hemodynamic stability of the patient. She was transfused intra-operatively with 4 units of whole blood. So, we suggest to keep ectopic placenta in situ and perform post-operatively serial ultrasound and color-doppler examinations, to check the progressive reduction of placental blood flow. During regression of placental volume there is a reduction in vascularization and at 5 years, the placenta may represent a small residual echogenic mass without vascularization [31]. Spontaneous placental reabsorption occurred in 75% of cases managed conservatively by leaving placenta in situ with a median delay from delivery of 13.5 weeks, ranging from 4 to 60 weeks [21]. Involution of the placenta is revealed also by decreasing serum level of human chorionic gonadotropin. Five or more weeks are required to have a normal range [22,23].

Some authors has been recommended postoperative methotrexate administration when the placenta was left in abdominal cavity [28,29]. Other authors reported rapid placental degradation and increasing risk of sepsis due to accumulation of necrotic tissue following use of this drug [24].

### 4. Conclusion

Our reported case of an advanced abdominal pregnancy showed that even at an advanced stage of gestation, the fetus may survive. About surgical management, removal of the ectopic placenta can be associated with a life-threatening complications such as massive bleeding, hypovolemic shock of the patient, need of intra-operative blood transfusions. Based on the our experience and intra-operative surgical complications of the case, we suggest to prefer a conservative approach. To leave the placenta in situ after removal of the fetus, may be a safe option.

### Declaration of Competing Interest

The authors report no declarations of interest.

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None.

### Ethical approval

This case report is exempt from ethical approval in our country.

### 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

Mirko Muroi: study concept, data analysis, literature search, writing the paper.

Mimico Mulemangabo: literature search.

Joel Nkurunziza: literature search and intraoperative photos.

Jean Marie Vianney Butoyi: literature search, data analysis.

Mwajuma Shimirimana: child follow-up, data analysis.

Paola Caravaggi: literature search, data analysis.

### Registration of Research Studies

Not applicable.

### Guarantor

Mirko Muroi is the guarantor.

### Provenance and peer review

Not commissioned, externally peer-reviewed.

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