

## CASE REPORT

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# Advanced Abdominal Pregnancy Case Series Successfully Treated with Laparotomy

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**ABSTRACT** Abdominal pregnancy is a rare ectopic pregnancy with high maternal morbidity and mortality. Usually, a detailed ultrasound examination and high clinical suspicion lead to the diagnosis. This disease is frequently encountered in low-income source countries such as Sub-Saharan and Syria. We aimed to share our experiences regarding the management of two cases that applied to our clinic, a tertiary care center, with the diagnosis of advanced abdominal pregnancy. Laparotomy was successfully performed in our cases, complaining of abdominal pain, nausea, and vomiting. A life-threatening complication in abdominal pregnancies is usually severe bleeding resulting from abruption of the placenta. Surgery performed in the early weeks will significantly contribute to morbidity and mortality. Since the management of advanced abdominal pregnancy is quite complex and requires a multidisciplinary approach, it should not be forgotten that early diagnosis is primarily made with suspicion.

**Keywords:** Abdominal pregnancy; diagnostic imaging; laparotomy

Abdominal pregnancy is the abnormal implantation of the embryo into the peritoneal cavity, which is defined as primary or secondary depending on how it occurs. Primary abdominal pregnancy accounts for 1% of all ectopic pregnancies, but maternal mortality rates are approximately eight times higher than tubal pregnancies.<sup>1</sup> It occurs when the embryo is implanted directly into some abdominal organ. Most cases of abdominal pregnancy are secondary, as the embryo escapes into the fallopian tube, ovary, and uterus, first implants there, and then ruptures into the peritoneal cavity.<sup>2</sup> Although the incidence of abdominal pregnancy is reported to be 1:10,000 in developed countries such as Nigeria, it is seen with a frequency of 1:654 in different geographical regions.<sup>3</sup> This is due to multiple births and inadequate prenatal follow-up.

## CASE REPORTS

We aimed to convey our experience with two cases diagnosed in our clinic as advanced abdominal pregnancy based on the literature. The written informed consent form was obtained from the patients.

### CASE 1

A 25-year-old gravida 2 para 0 pregnant woman applied to the emergency department with a complaint of abdominal pain. On vaginal examination, the cervix was closed, in a posterior position, and intact. Ultrasonography revealed a single live fetus in the longitudinal position at the 20<sup>th</sup> week of gestation, oligohydramnios, and an empty endometrial cavity with a uterus measuring 9×10 cm. The fetal heart rate was 140 times per minute.

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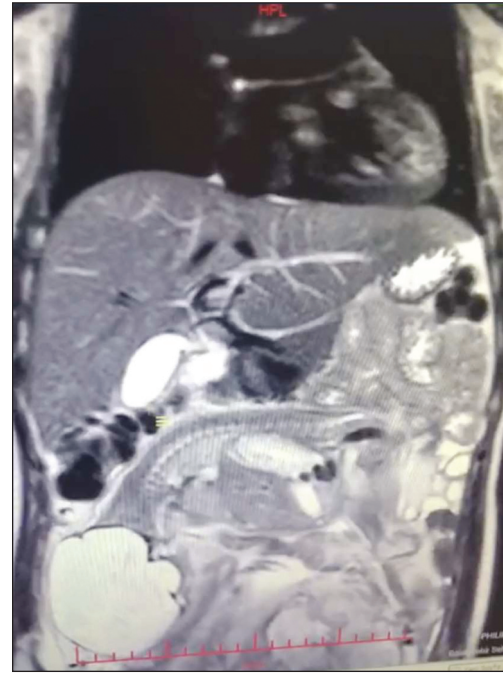
Abdominopelvic magnetic resonance imaging (MRI) confirmed the diagnosis and evaluated the placenta's relationship with the main vessels and neighboring organs (Figure 1). The imaging revealed a longitudinal live fetus, oligohydramnios, and surrounding organs to which the placenta was attached (Figure 2). MRI angiography showed that the left uterine artery was the primary source of the placenta. A laparotomy was performed with a midline incision below the umbilicus. The live newborn was removed from the parietal peritoneum. The placenta was observed to be attached to the uterine fundus, left ligament, left lateral abdominal wall of the pelvic cavity, and gastrocolic omentum. The placenta and adhesion bridges were dissected. The average blood loss during the operation was 1,500 mL, and six blood and blood product replacement units were performed in intensive care conditions. The patient was taken to the ward during follow-up and discharged on the seventh postoperative day.

## CASE 2

A 23-year-old primigravida female patient with an unknown last menstrual period and no prenatal fol-



**FIGURE 1:** Image of the empty cavity of the uterus with the placenta adjacent to the uterine serosa.



**FIGURE 2:** Magnetic resonance imaging coronal section of abdominal pregnancy: presence of oligohydramnios with longitudinally extending fetus.

low-up was brought to the emergency room via 112. She had sudden onset abdominal pain and vomiting. Her skin was pale, hypotensive, and tachycardic during the clinical examination. Ultrasonography revealed a live singleton pregnancy compatible with 29 weeks, and the fetal heart rate was approximately 134/min. The cervix was closed on vaginal examination, but there was spotting. Emergency laparotomy was decided for the patient whose clinical condition worsened.

Under general anesthesia, a laparotomy was performed with a midline incision below the umbilicus. Exploration revealed widespread adhesions in the abdomen; no hemoperitoneum was detected. After dissection, a placenta with extensive invasion of the rudimentary horn and surrounding intestines was observed on the left side of the uterus. A live 29-week active fetus was removed from the intestines. The left ligamentum ovarii proprium was ligated, and the rudimentary horn and placenta were removed. A unicorn uterus was observed. The average blood loss during the operation was measured as 1,450 mL. Considering the vitality and week of the fetus, the fact that hemoperitoneum was not observed at the abdominal inlet and that the majority of the bleeding

during the operation occurred due to the separation of the placenta from the surrounding tissues it invaded made us think that a fetus originating from the rudimentary horn had migrated into the abdomen long before and that the case could be a secondary abdominal pregnancy. MRI would be very helpful in cases where the diagnosis is difficult. However, pre-operative imaging could not be performed since the patient was taken under emergency conditions. The patient, who was intubated in the intensive care unit, received a total of 10 units of blood and blood product replacement. The patient, who had no complications, was discharged on the 10<sup>th</sup> postoperative day.

## DISCUSSION

Advanced abdominal pregnancy is a rare form of ectopic pregnancy in which the fetus reaches the 20<sup>th</sup> week of gestation in the peritoneal cavity.<sup>4</sup> The first case in history was reported during an autopsy in 1708.<sup>5</sup> It is defined as primary or secondary according to how it occurs. Studdiford criteria are often used to diagnose primary abdominal pregnancy: (i) normal adnexa, (ii) absence of uteroplacental fistula, and (iii) early diagnosis to prevent the possibility of secondary implantation.<sup>6</sup> However, most cases are secondary and are followed as a result of ruptured ectopic pregnancy or tubal abortion.<sup>7</sup>

Abdominal pregnancy may not be detected until delivery and may continue until advanced gestational age, increasing the risk of morbidity and mortality and requiring greater management skills.<sup>8</sup> The most common symptom is usually persistent abdominal or suprapubic pain, followed by vaginal spotting, nausea, vomiting, and general malaise.<sup>9</sup> In our cases, the first symptom was abdominal pain, and patients specifically stated that the pain was persistent from the beginning of pregnancy. Although ultrasonography and other imaging methods are the first choice for diagnosis, laboratory tests generally do not help with diagnosis except in cases of positive pregnancy. In societies such as Sub-Saharan countries where ultrasonography is used insufficiently or not at all in antenatal follow-ups, and irregular migration and wars are common, rare but diagnosable diseases such as abdominal pregnancy can be overlooked. Although very rare in the literature, there is also a case of ad-

vanced abdominal pregnancy that was only detected during laparotomy at 41 weeks of gestation after serial ultrasonography follow-up. Considering the morbidity and mortality risks for the mother and the fetus, it is essential to remind clinicians of information that will raise suspicion and ensure that it remains in mind.<sup>10</sup>

In the study by Allibone et al., some criteria were determined for the ultrasonographic diagnosis of abdominal pregnancy.<sup>11</sup> These criteria include the observation of the fetus outside the uterus, the loss of the uterine wall between the fetus and the bladder, the placenta being outside the uterine cavity, or an empty uterus image. MRI provides essential information to confirm the diagnosis, implantation site, and vascular connections. Surgical treatment is planned for approximately 90% of the cases due to the mortality risk. In a study examining ten advanced abdominal pregnancy cases, it was stated that the maternal mortality risk was between 0.5% and 20%.<sup>12</sup> In some publications, this risk was as high as 26.9%.<sup>13</sup> Although severe bleeding is mainly responsible for mortality, intestinal obstruction, perforation, or disseminated intravascular coagulation may also be observed.<sup>14</sup> Bleeding from the placental bed is the most critical factor that increases the risk of morbidity and mortality. It requires a multidisciplinary approach. The placenta in situ technique is also used in its management. Still, it has been stated that the method may increase the risk of morbidity.<sup>14</sup> A placenta that does not spontaneously resorb leads to conditions such as infection, necrosis, and the need for a second surgery. As a result, there is no clear consensus on removing the placenta during surgery. It is often recommended that the placenta be removed by detecting and tying off the blood flow without damaging other organs. In this way, possible complications are partially prevented. However, close monitoring is required for early diagnosis and intervention of complications.

A high index of suspicion and correlation of the patient's symptoms with ultrasound findings are crucial for early diagnosis of abdominal pregnancy. Management of abdominal pregnancy should be determined by gestational age at diagnosis and the mother's hemodynamic status. Management options for both early and advanced abdominal pregnancy in-

clude expectant management, laparoscopy, and laparotomy.<sup>15</sup> In our cases, laparotomy was preferred over laparoscopy, considering hemodynamic instability and advanced pregnancy risk. However, laparoscopy is a safe and feasible option for surgical management of early abdominal pregnancy.

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*No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.*

### Authorship Contributions

*This study is entirely author's own work and no other author contribution.*

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