Abdominal pregnancy in broad ligament resulting in live birth

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**Article history:**
Received 31 October 2014
Accepted 25 April 2015

**Keywords:**
Primary abdominal pregnancy
Ectopic gestation
Secondary abdominal pregnancy
Studdiford’s criteria

**Abstract**

Abdominal pregnancy is an extremely rare form of extrauterine gestation. Broad ligament pregnancy is a rare type of secondary abdominal pregnancy accounting for about 1% of ectopic pregnancy [1]. Newer advances like use of magnetic resonance imaging (MRI) complement ultrasound in the diagnosis of abdominal pregnancy. Its management is one of laparotomy with varying complications including poor perinatal outcome and increased maternal morbidity and mortality. There is no accepted consensus for the complete removal of the placenta at laparotomy. This case report is special in two manners—one is the live birth of a normal baby girl and second one being complete removal of placenta.

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1. Introduction

Abdominal pregnancy has historically been defined as an implantation in the peritoneal cavity exclusive of tubal and ovarian implantation. It is a rare form of ectopic pregnancy with an incidence of one in 8099 hospital deliveries [2] and accounts for 1 to 4% of all ectopic gestations.

It has been observed that it can occur at any age and is usually diagnosed in advanced stage of pregnancy. It can occur in any part of the abdomen – pouch of Douglas is the commonest. The placenta can be attached to the uterine wall, bowel, mesentery, liver, spleen, bladder and ligaments.

Abdominal pregnancy can be primary where the fertilized ovum implants itself on an abdominal organ but majority are secondary where fertilized ovum first implants in the uterus, ovary or fallopian tube, then subsequently implants on a peritoneal surface following tubal abortion or uterine scar rupture.

Maternal mortality is 7.7 times higher than tubal ectopic pregnancy and 90 times higher than the intrauterine pregnancy due to catastrophic hemorrhage from placental separation [3]. The chance of survival of a newborn are very low with the perinatal mortality rate being 40 to 95%. Here, we present a case of term abdominal ectopic pregnancy with a live fetus.

2. Case history

A 27 years old G2P1L1 was referred to our hospital with pain abdomen and bleeding per vaginum. She was 37 weeks 4 days period of gestation by dates and her 2nd trimester scan was also corresponding. Her routine investigations and ultrasound done in 2nd trimester were normal.

She complained that she had dull aching pain throughout her gestation and she had mild bleeding per vaginum since 2 days. Her pulse rate was 90/minute, blood pressure was 130/80 mm Hg. Per abdomen examination revealed a size of around 34 weeks. Fetal heart rate was 130/minute and presentation appeared to be cephalic. There was a distinct supra pubic bulge around 18 weeks size. On per vaginum examination, we found that the cervix was long, closed, uneffaced. There was mild bloody discharge. A remarkable finding was the fetal head which was felt in posterior fornix.

Ultrasound examination in our outpatient department revealed a single live fetus of gestational age of about 36 weeks. Placenta appeared to be mature with signs of calcification. Liquor pockets were almost absent. The uterus was seen to be separate and big in size (Fig. 1). The fetus and placenta were lying outside the uterus but since fetal heart was seen, and the patient’s vitals were stable, rupture uterus was ruled out and the diagnosis was made to be abdominal pregnancy. MRI was done which was confirmatory (Fig. 2).

Now, the patient was sent to a senior radiologist where it was confirmed by ultrasound and magnetic resonance imaging (MRI) to be abdominal pregnancy. Routine investigations were done which were normal.

Since the fetus was almost 37 weeks and was live, there was no point waiting for fetal maturity, so the patient was put up for laparotomy after bringing two pints of blood transfusion and keeping two more pints of blood arranged. A senior anesthetist and a surgeon were called. The abdominal was opened by midline vertical incision. A 20 weeks size uterus was seen displaced to the left, and a gestational sac formed by the layers of right broad ligament and extending to the pouch of Douglas were seen (Figs 3 and 4). Incision was given on the gestational sac and a live-term female baby smeared with thick meconium was delivered by breech and handed over to the pediatrician (Fig. 5). The baby cried after resuscitation and weighed 2.4 kg. The baby was admitted to NICU for 48 hours, then handed over to the mother.

Now, the pelvic anatomy was carefully examined (Fig. 6). There were some adhesions to omentum and mesentery, so adhesiolysis was done (Fig. 7). Luckily the placenta was not adherent to any vital structures like mesentery, gut, liver, etc. but it was deriving its blood supply from the omentum. So, infracolic omentectomy was done thus removing the placenta in toto. Some portion of membranes were left behind as it was densely adherent to the rectum. Hemostasis was checked, then the abdomen was closed after giving an intraperitoneal drain. Postoperative period was uneventful, and the patient was discharged on 10th postoperative day.
3. Discussion

Abdominal pregnancy beyond 20 weeks gestation and with a viable fetus is a rare condition. In primary abdominal pregnancy, the fallopian tubes and ovaries are intact. There were only 24 cases of primary abdominal pregnancy reported up to 2007 [4]. In contrast, secondary abdominal pregnancy accounts for most cases of advanced extrauterine pregnancy and there is evidence of tubal or ovarian damage. In our case, the tubes and ovaries were found to be normal, so the possibility that it was a primary abdominal pregnancy cannot be ruled out. The diagnosis of primary abdominal pregnancy was confirmed according to Studdiford’s [5] criteria:

- Normal tubes and ovaries
- Absence of uteroplacental fistula
• Attachment exclusively to a peritoneal surface early enough in gestation to eliminate the likelihood of secondary implantation.

Documented risk factors, such as previous ectopic pregnancy, tubal corrective surgery, IUCD, progesterone only pills usage, pelvic inflammatory disease, endometriosis, assisted reproductive technology, history of secondary infertility, sexually transmitted disease, prior cesarean delivery, smoking, cocaine abuse, were not associated with our patient.

The presentation of patients with an abdominal pregnancy varies and depends on gestational age. In first trimester, symptoms mimic those of ectopic pregnancy though a dull lower abdominal pain goes more in favor of broad ligament ectopic. In advanced cases, the patients complain of painful fetal movement, sudden cessation of fetal movement and perception of fetal movement high in the abdomen. Physical examination will reveal easy palpation of fetal parts, palpation of uterus separate from the gestational sac, persistent abnormal fetal positioning, abdominal tenderness and a displaced uterine cervix [6,7]. There should be a high index of suspicion if there is perception on the part of the mother or the physician that ‘something is not right’. There can also be a history of failed induction.

In our case, there was mild bleeding per vaginum which has been reported due to breakdown of decidual cast.

Ultrasound examination is the first line diagnostic procedure. Magnetic resonance imaging [8] provides additional information regarding surgical planning by evaluating the anatomical relationship between the placenta and invasion area. Features of intra-abdominal pregnancy on MRI are the absence of uterine wall between the fetus and maternal abdominal wall, unusual fetal position, oligohydramnios, extrauterine fetus and placenta, enlarged uterus and close relationship between the placenta and maternal bowel.

About 21% of babies born after an extrauterine abdominal pregnancy have birth defects, like limb defects, craniofacial asymmetry, torticollis, plagiocephaly, etc. presumably due to compression of the fetus in lack of amniotic fluid [9]. The massive bleeding that occurs, when the placenta is removed, is due to adherence of the placenta to the broad ligament which unlike the uterus does not contract. Early diagnosis of intra-abdominal pregnancy is important to plan delivery and achieve good results. If undiagnosed, it carries the risk of hemorrhage secondary to placental separation, hypophysirinogenemia following fetal demise and abscess formation.

The mainstay of management is laparotomy but there is controversy regarding the optimal time to operate. For less than 24 weeks of gestation, early laparotomy is recommended. In rare cases with a fetus near viability, it is justified to postpone the operation in view of saving a baby provided as there is:

• Absence of fetal malformation
• Absence of maternal decompensation
• Continued surveillance of fetal well-being

• Placental implantation away from liver or spleen
• Continuous hospitalization in appropriate center
• Informed consent of the patient

Successful treatment using laparoscopy in early cases has been reported. Preoperatively, we can take the help of angiography to identify all feeding vessels to the placenta and to embolize vessels that could be difficult to ligate like hypogastric artery.

In our case since the patient was already in her 36th week of gestation with a live fetus, urgent laparotomy was planned.

The principal controversy concerning the management of ‘Advanced Abdominal Pregnancy’ (AAP) is whether or not to remove the placenta. Complete removal of the placenta should be done only when the blood supply can be identified and careful ligation performed. If the placenta is not removed completely, it has been estimated that the remnant can remain functional for approximately 50 days after the operation and total regression of placental function is usually complete within 4 months. The risks associated with leaving the placenta in situ include bowel obstruction, fistula formation and sepsis as the placental tissue degenerates [10]. Use of methotrexate [11] or actinomycin D has been advocated by some.

4. Conclusion

Advanced abdominal pregnancy (AAP) with a healthy newborn is very rare and challenging diagnostically and therapeutically. High index of suspicion, careful clinical and ultrasound examination is the key to diagnosis though MRI can be very useful.

Since the overall incidence of advanced abdominal pregnancy is one in 8,099 hospital deliveries, a medical officer responsible for a population of 100000 might expect to encounter an AAP every few years; hence, this case report is aimed at creating awareness on the part of the doctors catering to peripheral population and thus reducing the maternal mortality.

5. Abbreviations

MRI: Magnetic resonance imaging
AAP: Advanced abdominal pregnancy

Acknowledgment

The author would like to thank, Department of Radiodiagnosis, Alam Hospital and Research Centre, for its help in diagnosis of the rare condition.

References