

Case report,

Intrahepatic Pregnancy - A Rare Form of Abdominal Pregnancy at Lira Regional Referral Hospital, Northern Uganda; a Case Report and Literature Review.

Andrew Odur¹, Tom Richard Okello², Richard Okii³, John Stephen Olwenyi Obbo⁴, Irene Pecorella⁵

¹Obstetrician and Gynecologist and Head of Department, Obstetrics and Gynecology, Lira Regional Referral Hospital.

²Senior Lecturer and Senior Consultant Surgeon, and Head of Surgery, Lira University.

³Medical Officer, Maternity ward, Lira Regional Referral Hospital.

⁴Senior Consultant Physician and Hospital Director, Lira Regional Referral Hospital

⁵Professor of pathology, Department of Radiological, Oncological and Anatomic Pathology Sciences, University Sapienza Viale Regina Elena, 324, 00161, Rome, Italy.

Abstract:

Primary intra-hepatic pregnancy is an extremely rare condition. The purpose of this study was to report a case of 24-year-old Gravida 2 para 1+0 who presented at 35 weeks of amenorrhea with vaginal bleeding and mild right upper abdominal tenderness. Ultrasonography revealed a non-viable extra-uterine fetus located around the right upper part of the abdomen with a bulky uterus. Laparotomy was preferred in view this clinical dilemma and a fetus free abdominal cavity and uterus was observed, a macerated female baby was delivered from inside the liver with birth weight of 2.7kilogram. Placenta was left in situ and methotrexate given to hasten its resorption. Maternal outcome during the 18 days of intense follow up was uneventful. This case is a rare occurrence in our setting and it has diagnostic challenges in low resource settings like ours, however intra-hepatic pregnancy can grow to considerable size and weight.

Key words: Intrahepatic pregnancy, abdominal pregnancy, ectopic pregnancy, case report and Uganda

Introduction:

Abdominal pregnancy is a rare form of ectopic pregnancy with very high morbidity and mortality for both the mother and the foetus¹. It is a rare type of ectopic pregnancy, with reported incidence ranging between 1: 10,000 and 1: 30,000 pregnancies². There are two types of abdominal pregnancy, the Primary type where a fertilized ovum implants itself initially on some abdominal organ, whereas secondary type occurs when the ovum first implants in the fallopian tube, ovary, or uterus and subsequently escapes through a rupture into the peritoneal cavity². Other studies have reported abdominal pregnancy to be a potentially life-threatening form of ectopic gestation with an incidence of 1% of all the ectopic pregnancies whose pregnancy rarely reach advanced gestation

and a viable fetal outcome since most of them are terminated earlier due to poor fetal prognosis and higher chances of maternal mortality³. Furthermore, advanced abdominal pregnancy, outside the context of assisted reproduction, is even more unusual and a perilous diagnosis with very few cases reported in the literature⁴. Whereas some studies have reported the incidence of abdominal pregnancy of 0.34 per 1,000 deliveries, there is a 50% rate of missed diagnosis hence the need for a high index of suspicion as the clinical features are varied and unreliable⁵. Symptoms of an abdominal pregnancy are very non-specific but often include abdominal pain, nausea, vomiting, palpable fetal parts, fetal malpresentation, pain on fetal movement, and displacement of the cervix⁶. However abdominal pain tends to be the most frequent symptom but other presenting symptoms may relate to placental site attachment, including

attachment to the bowel or bladder thus causing features of hemorrhage, disseminated intravascular coagulation, bowel or bladder obstruction⁷. The triad of persistent abdominal pain, weight loss and pallor in pregnancy should raise the suspicion of abdominal pregnancy⁸.

Since the clinical presentation may not be reliable, abdomino-pelvic ultrasound scan may be useful; it often reveals a slightly bulky uterus with empty endometrial cavity, extra-uterine foetus and thus sonography remains the imaging modality of choice for the evaluation of abdominal pregnancy⁷. However Magnetic Resonance Imaging (MRI) is valuable in accurately demonstrating the location of the placenta within the abdomen and the presence of placental adherence, which directly affects the decision whether to remove or leave the placenta in situ⁹. Aware that abdominal pregnancy is a rare condition, this case report therefore relates to an extremely rare case of intrahepatic abdominal pregnancy which has not been reported previous in our setting.

Case report:

A 24-year-old Gravida 4 Para 2+1 at 35 weeks of amenorrhea by dates was referred from lower level health facility to the Regional Referral Hospital for further assessment and ultrasound scanning. She was admitted with complaints of right upper quadrant pain radiating to the lower back associated with minimal on and off per vaginal bleeding which had lasted for 1 week.

General examination revealed a healthy woman not looking gravid, was afebrile on touch but she had mild Palor of mucous membrane. Her Blood pressure was 112/80mmHg with pulse rate of 101 beats per minute.

Abdominal examination found an abdomen of normal fullness, soft with non-palpable uterus, but the liver was tipping and mildly tender. Vaginal examination showed normal vulva and vagina with a closed cervix and a non-bulky uterus no masses in Pouch of Douglas. There was no blood on examining figure. Urgent scan done on 27/02/2020 revealed a bulky uterus measuring 9.9x3.75x5.47cm but there was a single extra-uterine pregnancy on the right side of the abdomen with no cardiac activity, with gas in the fetal abdomen and thickened fetal skin. Femoral length (FL) of 6.35cm and gestational age of 32 weeks 6 days was also discerned. No further investigation was done but she was then prepared for laparotomy as a standard of care after thorough counselling.

A day after admission, she had the first explorative

laparotomy during which the surgeons were not able to identify the location of the pregnancy abdomen was closed and patient sent back to the ward. Five days later the second explorative laparotomy was done by the gynecologist together with a general Surgeon and found an empty uterus and abdominal cavity. The Liver felt boggy and fluctuant. A coffee brown amniotic fluid was aspirated, and through a transverse incision on the inferior bulky aspect of the liver, the membrane bulged out and was ruptured and delivered a macerated stillborn baby girl with birth weight of 2.7kg (figure 1) The umbilical cord was cut as close to the placenta as possible and left the whole of the placenta insitu. Closed the Liver incision using vertical mattress suturing technique with absorbable sutures, lavaged the abdomen and closed the extended midline abdominal incision in layers with Nylon no. 2 sutures.

Figure 1: Macerated fetus and its intra-hepatic cavity



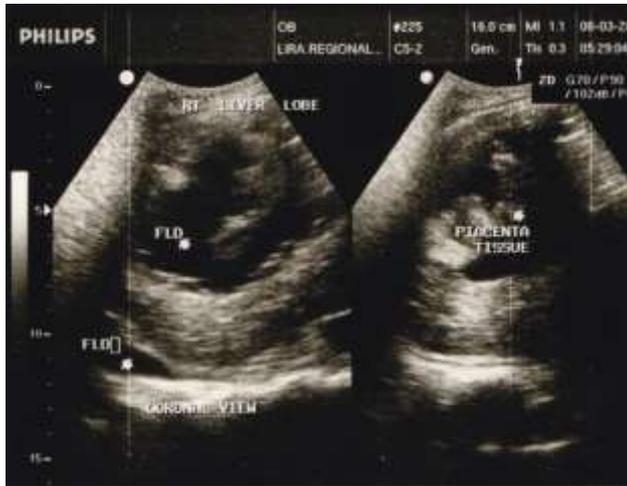
Postoperative follow up:

During the immediate postoperative period, the mother was returned from theatre with stable vitals to postnatal ward. She was maintained on intravenous fluids (IV) for 24 hours, given IV antibiotics for 3 days and analgesics. She was counselled on her condition.

The first postoperative day, she was in good condition with complains of mild pain at the incision site and mild right hypochondria pain. Baseline full blood count was essentially normal with mild anemia with hemoglobin level of 10g/dl. Intramuscular injection of Methotrexate 50mg/m² was given without any immediate complications. She was monitored for mucositis, hair loss and bone marrow suppression, all being side effects of methotrexate.

On the second postoperative day, an abdominal scan was done and revealed that the liver had normal tissue on the left lobe. The right lobe was filled with some hyperechoic area (placental tissue) measuring 6.12x2.76cm (figure 2). There was fluid collection in the right iliac fossa of about 2.77cm deep. The other solid organs were normal.

Figure 2: Post-operative sonography of the liver



During the third postoperative day, she was in good condition, had controlled pain, she was ambulating and feeding well orally. Repeat full blood count revealed the following: - WBC was normal $5.81 \times 10^3/\mu\text{L}$, Hemoglobin level of 9.8g/dl (mildly anemic), Hematocrit was 29.6% and Platelets of $404,000/\mu\text{L}$. There was no evidence of methotrexate adverse effects by this time. By the sixth postoperative day, she reported complaints of right sided chest pain on deep inspiration. Examination of the chest revealed clear air entry with no basal crepitation bilaterally. Second dose of IM methotrexate 50mg/m² was given.

Figure 3: Placenta detached from liver parenchyma following methotrexate use



Ninth postoperative day (9th POD), another scan was done and showed that the Liver was enlarged measuring about 16.0cm. The right liver lobe had fluid collection of depth 6.24cm with internal echoes of placental tissue floating in the fluid measuring 6.12x2.51cm (figure 3). There was no pleural effusion. Uterus was bulky with Pouch of Douglas filled with fluid of 1.27cm depth. She was discharged in stable condition by 18th day after admission. She was to return for review in post-natal clinic after 1 week. (Due to the Covid-19 pandemic lockdown, she was able to return for review).

Discussion:

Many researchers in the field of abdominal pregnancies do agree that it is a rare condition and is a variant of ectopic pregnancy which is difficult to diagnose yet it has high rate of poor fetal outcome^{1,2,3 & 10}. Being a rare condition, most authors have merely done case reports or case series just like in the case reported in this study^{2, 3, 5 & 11}. Whereas Patel, Feldman, and Ogedegbe (2016)¹¹ reported that age over 35 years possess a significant risk for abdominal pregnancy, the patient presented in this case report was only 24yrs old like previously also found by other authors separately^{8, 12&13}

The clinical presentation noted in the case reported in this study of amenorrhea, abdominal pain radiating to the lower back associated with minimal per vaginal bleeding is consistent with what other studies also reported^{1,7 & 8}. However, most authors contend that the clinical presentation of abdominal pregnancy varies and the diagnosis relies on high index of suspicion and that the ensuing complication may pose a diagnostic challenge^{1, 2, 3, 6 & 12}. Although the weeks of amenorrhea in the case reported in this study was found to be 35 weeks by dates, similar findings were also reported by Tajudeen, Guillermo, Boleslaw, Enyonam, and Magdy (2014)⁶, Other studies in same subject have report varying weeks of amenorrhea at presentation^{1, 2, 3, 8 and 11}, therefore it appears gestational age at presentation of abdominal pregnancy is non specific. Often investigations using radiological imaging techniques is very important both in the diagnosis and management of abdominal pregnancy. The patient in this case report had urgent abdominal sonography which demonstrated extra-uterine pregnancy on the right side of the abdomen with no cardiac activity, with gas in the fetal abdomen and thickened fetal skin at gestational age of 32

weeks 6 days. Sonography remains the imaging modality of choice for the evaluation of abdominal pregnancy and for examining abnormal relationships among the fetus, uterus, placenta and amniotic fluid⁷ and ⁸. However in other instances sonography may not be done before performing a laparotomy ¹³ and ¹⁴. However in centers where it is available, MRI has been reported to be more accurate in demonstrating the location of the placenta with its attachment⁹. Whilst it has been reported that the most common extrauterine location of abdominal pregnancies includes the fallopian tube, accounting for 98 % of all ectopic gestations, other possible sites of implantations include: cervical, interstitial (cornual), hysterotomy scar, intramural, ovarian, or abdominal ¹¹. The patient whose case is reported in this study had extra uterine macerated fetus located in the intra-hepatic space (figure 1). Intrahepatic pregnancy has been reported by Ye-Yu Cai, et al, (2017)¹⁵ and Shuqian He, et al (2019)¹⁶ in separate studies. Hepatic pregnancy is an extremely rare primary ectopic pregnancy, whose etiology and pathogenesis are not yet known¹⁶ and the diagnosis requires more elaborate investigation ¹⁵, ¹⁶ which is expensive for low resource countries like Uganda. The management of abdominal pregnancy depends on fetal viability, presence of fetal congenital abnormalities, fetal gestational age, maternal complications, placental location and adherence but surgical intervention is necessary regardless of fetal viability⁷. Abdominal pregnancy is associated with high morbidity and mortality for both fetus and mother⁶ and ¹¹, In this study, the patient had laparotomy and recovered uneventfully. She lost the fetus and the placenta was not removed but was treated with methotrexate post operatively. Other studies on abdominal pregnancy have also reported high rate of fetal demise ^{3,4,8}, and ¹³ and concur that where complete or partial removal of placenta is not possible ligation is advised ⁷, ⁹ and use of methotrexate to hasten placental involution and resorption has been reported ⁸.

Conclusion:

Abdominal pregnancy is very rare but primary intra-hepatic pregnancy is an extremely rare form of ectopic pregnancy whose management needs many specialties. Intra hepatic fetuses can grow to considerable size and weight. Ultrasonography is very important for the diagnosis of extrauterine pregnancies in our setting and when they are managed surgically by extracting the fetus and

leaving of the placenta insitu followed by post-operative methotrexate, the outcome for the mother is good even in centers where advanced investigation modalities are lacking.

Declarations:

Consent to participation:

Participation to this study was voluntary and the participant provided written informed consent after being given ample time and information about the study.

Consent for publication:

We do therefore tender our wish and consent to publish this work in part or whole.

Competing interests: The authors declare that there are no competing interests in this study.

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Authors' contributions:

AO conceptualized the study. AO, RO and TRO provided the clinical care and follow up. TRO being a general surgeon; was key during the explorative laparotomy during which the baby was delivered through the hepatic incision. AO, TRO, RO, JSOO and IP equally participated in the patient follow up and the production of the first draft, providing the overall guidance to layout of literature and their interpretation. AO, TRO, RO, JSOO and IP wrote the manuscript, proof read and approved the final copy for submission.

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References:

- [1.] Baffoe P, Fofie C, and Gandau B.N (2011). Term Abdominal Pregnancy with Healthy Newborn: A Case Report, *Ghana Med J*. 2011 Jun; 45(2): 81–83. doi: 10.4314/gmj.v45i2.68933
- [2.] Oluwaseyi I. O, Adebayo A A, Luther Agbonyegbeni A, and Sijuade Ayodele D (2019), Abdominal Pregnancy: A Case Report of a Viable Non-dysmorphic Fetus, *Niger Med J*. 2019 Jan-Feb; 60(1): 43–45, doi: 10.4103/nmj.NMJ_26_19
- [3.] Dubey S, Satodiya M, Garg P and Rani M² (2016) Primary Abdominal Pregnancy: A Case Report. *J Clin Diagn Res*. 2016 Nov; 10(11):QD04-QD06. Doi: 10.7860/JCDR/2016/23061.8859. Epub 2016 Nov 1.
- [4.] Maciel N, Lima A.F, Cruz R and Ponte C¹ (2017). Advanced abdominal pregnancy in a spontaneous heterotopic pregnancy. *BMJ Case Rep*. 2017 Dec 13; 2017. pii: bcr-2017-222098. doi: 10.1136/bcr-2017-222098.
- [5.] Sunday-Adeoye, I., Twomey, D., Egwuatu, E.V. et al. (2011) A 30-year review of advanced abdominal pregnancy at the Mater Misericordiae Hospital, Afikpo, southeastern Nigeria (1976–2006). *Arch Gynecol Obstet* 283, 19–24 (2011). <https://doi.org/10.1007/s00404-009-1260-4>
- [6.] Tajudeen D, Guillermo A. M, Boleslaw B, Enyonam A and Magdy M (2014) Advanced Extrauterine Pregnancy at 33 Weeks with a Healthy Newborn, *Biomed Research International*, Volume 2014 |Article ID 102479 | 3 pages | <https://doi.org/10.1155/2014/102479>
- [7.] Kalpana R (2015). Radiological Case: Intra-abdominal pregnancy *Appl Radiol* 2015, www.appliedradiology.com
- [8.] Nwobodo E. I. (2004). ABDOMINAL PREGNANCY: A CASE REPORT, *Annals of African Medicine Vol. 3, No. 4; 2004: 195 – 196*
- [9.] Lockhat F, P.Corr P Ramphal S and Moodley J (2006). The value of magnetic resonance imaging in the diagnosis and management of extra-uterine abdominal pregnancy, *Clinical Radiology*, Volume 61, Issue 3, March 2006, Pages 264-269
- [10.] Farquhar CM. Ectopic pregnancy. *Lancet*. 2005; 366(9485):583–91. Doi: 10.1016/S0140-6736(05)67103-6.
- [11.] Patel C, Feldman J, and Ogedegbe C (2016), complicated abdominal pregnancy with placenta feeding off sacral plexus and subsequent multiple ectopic pregnancies during a 4-year follow-up: a case report, *J Med Case Rep*. 2016; 10: 37. doi: 10.1186/s13256-016-0808-8
- [12.] Bohiltea R, Radoi V, Tufan C, Horhoianu I.A,* and Bohiltea C (2015). Abdominal pregnancy - Case presentation *J Med Life*. 2015 Jan-Mar; 8(1): 49–54.
- [13.] Sib SR, Ouédraogo I², Sanogo M², Kiemtoré S³, Sawadogo YA³, Zamané H³, Bonané B³ (2018). A full term abdominal pregnancy with an isthmic tubal implantation of the placenta *BMC Pregnancy Childbirth*. 2018 Nov 19;18(1):448. Doi: 10.1186/s12884-018-2071-z.
- [14.] Hailu, F.G., Yihunie, G.T., Essa, A.A. et al. (2017) Advanced abdominal pregnancy, with live fetus and severe preeclampsia, case report. *BMC Pregnancy Childbirth* 17, 243 (2017). <https://doi.org/10.1186/s12884-017-1437-y>
- [15.] Ye-Yu Cai,¹ En-Hua Xiao,¹ Quan-Liang Shang,¹ and Li-Zhi Xiao (2017) Ectopic pregnancy in the liver incidentally diagnosed by imaging: A case report *Exp Ther Med*. 2017 Jul; 14(1): 373–376, doi: 10.3892/etm.2017.4478
- [16.] Shuqian He, Yuxia Cheng, Guihui Zhang, Huangpeng Qi, and Qing Sun (2019). Primary hepatic pregnancy: a case report with a history of cesarean section and oral contraceptives, with review of literature *Int J Clin Exp Pathol*. 2019; 12(12): 4344–4348.