



Insights into abdominal pregnancy

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Editor's note

This article provided a great deal of valuable evidence that was not mentioned in the Wikipedia article on abdominal pregnancy, and the Wikipedia article has subsequently been expanded with text from this publication. However, because of this purpose, it has never been the aim of this article in itself to be a complete review of the subject, and many aspects of abdominal pregnancy are not included herein.

This article also provides an example of how to contribute to Wikimedia projects such as Wikipedia by means of academic publishing.

Introduction

While rare, [abdominal pregnancies](#) have a higher chance of [maternal mortality](#), [perinatal mortality](#) and [morbidity](#) compared to normal and ectopic pregnancies, but on occasion a healthy viable infant can be delivered.^[1]

Because tubal, ovarian and broad ligament pregnancies are as difficult to [diagnose](#) and [treat](#) as abdominal pregnancies, their exclusion from the most common definition of abdominal pregnancy has been debated.^[2]

Others - in the minority - are of the view that abdominal pregnancy should be defined by a [placenta](#) implanted into the [peritoneum](#).^[3]

Symptoms and signs

Abdominal pregnancy does not have any specific [symptoms](#) and [signs](#) so much so that in about half of instances it is missed, only being discovered during [surgery](#); because of the "vague" yet serious nature of the [symptoms](#), [signs](#) and results of [medical tests](#) patients with abdominal pregnancy will generally have surgery at some point.^{[4][5][6]}

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Risk factors

Risk factors are similar to [tubal pregnancy](#) with [sexually transmitted disease](#) playing a major role.^[7] However, about half of those with ectopic pregnancy have no known risk factors - known risk factors include damage to the Fallopian tubes from [previous surgery](#) or from previous ectopic pregnancy and [tobacco smoking](#).^[8]

Mechanism

Typically an abdominal pregnancy is a secondary implantation which means that it originated from a tubal (less common an ovarian) pregnancy and re-implanted.^[9] Other mechanisms for secondary abdominal pregnancy include [uterine rupture](#), rupture of a [uterine rudimentary horn](#) and [fimbrial abortion](#).^[1]

Diagnosis

Suspicion of an abdominal pregnancy is raised when the baby's parts can be easily felt, or the [lie](#) is abnormal, the [cervix](#) is displaced, or there is failed [induction of labor](#).^[4] [X-rays](#) can be used to aid diagnosis.^[9]

To diagnose the rare primary abdominal pregnancy, Studdiford's 1942 criteria need to be fulfilled: tubes and ovaries should be normal, there is no abnormal connection ([fistula](#)) between the uterus and the abdominal cavity, and the pregnancy is related solely to the peritoneal surface without signs that there was a tubal pregnancy first.^[10] Studdiford's criteria were refined in 1968



Figure 1 | A 23-week abdominal pregnancy on ultrasound showing a normal fetus and amniotic fluid. Image by Dahab AA, Aburass R, Shawkat W, Babgi R, Essa O, Mujallid RH

by Friedrich and Rankin to include [microscopic findings](#).^[11] Keyhole ([laparoscopic surgery](#)) can also be used to diagnose abdominal pregnancy.^[12]

Differential diagnosis

Depending on [gestational age](#) the [differential diagnoses](#) for abdominal pregnancy include [miscarriage](#), [intra-uterine fetal death](#), [placental abruption](#), an [acute abdomen with an intra-uterine pregnancy](#) and a [fibroid uterus with an intra-uterine pregnancy](#).^[6]

Treatment

Ideally the management of abdominal pregnancy should be done by a team that has medical personnel from [multiple specialties](#).^[13]

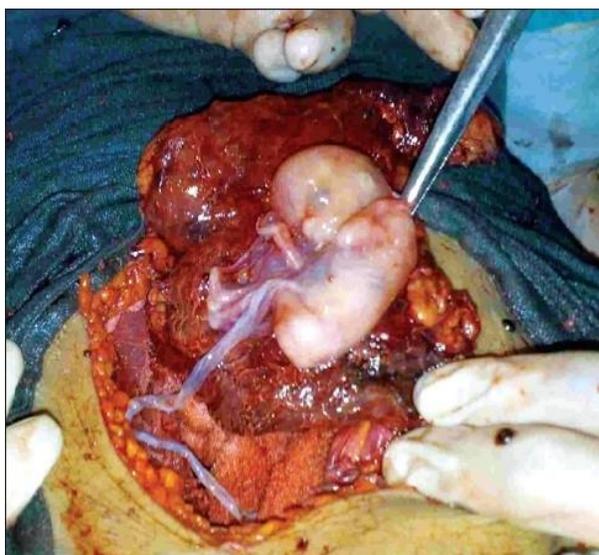


Figure 2 | Abdominal pregnancy being delivered. Image by Shafi SM, Malla MA, Salaam PA, Kirmani OS

Often, with advancement of the pregnancy the support for the fetus becomes compromised and the fetus dies.^[14] A patient may carry a dead fetus but will not go into labor. Over time, the fetus calcifies and becomes [alithopedion](#).^[15]

Babies of abdominal pregnancies are prone to [birth defects](#) due to compression in the absence of the [uterine wall](#) and the often reduced amount of [amniotic fluid](#) surrounding the unborn baby.^[16]

[Blood transfusion](#) is frequent in the management of patients with this kind of pregnancy, with others even using [tranexamic acid](#) and [recombinant factor VIIa](#), which both minimize blood loss.^{[4][17]}

[Mifepristone](#) has been used to promote placental regression.^[18]

Complications of leaving the placenta can include residual [bleeding](#), [infection](#), [bowel obstruction](#), [pre-eclampsia](#) (which may all necessitate further surgery)^{[19][18]} and failure to [breast feed](#) due to [placental hormones](#).^[20]

Epidemiology

Less than 1% of ectopic pregnancies in the United States are abdominal, or about 1 out of every 10,000 pregnancies.^[21] A report from [Nigeria](#) places the frequency in that country at 34 per 100,000 deliveries and a report from [Zimbabwe](#), 11 per 100,000 deliveries.^{[5][22][23]} The [maternal mortality](#) rate is estimated to be about 5 per 1,000 cases, about seven times the rate for ectopics in general, and about 90 times the rate for a delivery (1987 US data).^[21]

History

[Albucasis](#) (936–1013), an [Arab Muslim physician](#) is credited with first recognizing abdominal pregnancy which was apparently unknown to [Greek](#) and [Roman](#) physicians and was not mentioned in the writings of [Hippocrates](#); [Jacopo Berengario da Carpi](#) (1460–1530) the Italian physician is credited with the first detailed anatomical description of abdominal pregnancy.^[24]

Natural experiment

Because pregnancy is outside the uterus, abdominal pregnancy serves as a [model](#) of [human male pregnancy](#) or for females who lack a uterus, although such pregnancy would be dangerous.^{[25][26]} Abdominal pregnancy has served to further clarify the disease [pre-eclampsia](#)



which was previously thought (1980's) to require a uterus for it to occur, however pre-eclampsia's occurrence in abdominal pregnancy (with the **conceptus** outside the uterus) helped throw light on pre-eclampsia's **etiology**.^[27] The **ratio of live males to females at birth** (normal, 107 males to 100 females)^[28] is apparently reduced with abdominal pregnancy to as low as 60 males to 100 females (as reported by Masukume) because males are more likely to die in harsh environments (for example in abdominal pregnancy) compared to females.^[1]

Cases of combined simultaneous abdominal and intra-uterine pregnancy have been reported.^{[18][29]}

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