



(REVIEW ARTICLE)



Pregnancy complications

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Abstract

A normal pregnancy is generally considered to be a healthy and uncomplicated pregnancy. It typically lasts around 40 weeks and is divided into three trimesters. During a normal pregnancy, the fertilized egg implants in the lining of the uterus, and the baby develops and grows inside the uterus. Throughout the pregnancy, there are several important milestones and changes that occur. These include regular prenatal check-ups, monitoring the baby's growth, and ensuring the mother's overall health. Common symptoms during pregnancy may include nausea or morning sickness, fatigue, increased urination, breast tenderness, and mood swings.

Keywords: Pregnancy Complications; Pregnancy loss; Miscarriage; Normal Pregnancy

1. Introduction

1.1. Normal pregnancy

Pregnancy is period of reproduction during which a woman carries one or more live offspring from implantation of a fertilized zygote in the uterus throughout gestation. Childbirth usually occurs about 38 weeks after conception; in women who have a menstrual cycle length of four weeks, this is approximately 40 weeks from the start of the last normal menstrual period [1]. The normal menstrual cycle is 28 days long; with ovulation usually occurring on day fourteen. Implantation of the fertilized zygote occurs 7 days after conception, which is day 21 of the cycle. A normal pregnancy is 40 weeks long (plus or minus two weeks), counted from the date of the last menstruation, which is two weeks longer than the age of the fetus [2]. About once every 28 days, in the middle of a woman's menstrual cycle, an ovum bursts from one of her ovaries, and is drawn into one of two fallopian tubes that lead to the hollow uterus. While the ovum is traveling, the spot on the ovary from which it was released, now called the corpus luteum, secretes hormones that prepare the lining of the uterus to receive a fertilized ovum. If pregnancy does not occur, the corpus luteum shrinks, and the lining of the uterus is discarded two weeks later with menstruation [3]. After sexual intercourse, sperms are transported upward from the vagina and through the uterus and fallopian tube, where fertilization usually takes place. One spermatozoon out of hundreds of millions ejaculated by the man may penetrate the outside layer of the ovum and fertilize it. Through fertilization, the egg is activated to begin its developmental process, and the haploid nuclei of the two gametes come together to form the genome of a new diploid organism. The fertilized egg, known as a zygote, then moves toward the uterus, a journey that can take up to a week to complete. Cell division begins approximately 24 to 36 hours after the male and female cells unite. Cell division continues at a rapid rate and the cells then develop into what is known as a blastocyst which arrives at the uterus and attaches to the uterine wall, a process known as implantation. The mass of cells is now known as an embryo [4].

Pregnancy is typically divided into three periods, or trimesters, each of about three months. In medicine, pregnancy is often defined as beginning when the developing embryo becomes implanted in the endometrial lining of a woman's uterus. The first 12 weeks of pregnancy are considered to make up the first trimester [5]. According to the American

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Pregnancy Association, by the end of the first trimester, the fetus will be about 3 inches (76 mm) long and will weigh approximately 1 ounce (28 gm) By the end of the second trimester, the expanding uterus has created a visible "baby bump". The third trimester of pregnancy spans from week 28 to the birth. The woman's belly will transform in shape as the belly drops due to the fetus turning in a downward position ready for birth. The fetus has a good chance of survival if born during this time. Size increases. Lungs mature. Rapid brain development causes sensory and behavioral capacities to expand. In the middle of this period, a layer of fat is added under the skin. Antibodies are transmitted from mother to fetus to protect against disease. Finally, fetus becomes 50 cm length and 3.4 kg in weight. Most fetuses rotate into an upside-down position in preparation for birth Successful outcome of pregnancy requires frequent monitoring of biochemical and haematological parameters to avoid complications throughout the trimesters of pregnancy [6].

2. Abnormal Pregnancy

Sometimes a pregnancy ends unhappily, but it is not technically a miscarriage. There are four main types of abnormal pregnancies. These include an early pregnancy failure, an ectopic pregnancy, a blighted ovum, and a molar pregnancy. It is important to know the signs and symptoms of abnormal pregnancies, so that you can seek our medical attention, if you believe you are at risk [7].

2.1. Ectopic pregnancy

Is a normal fertilized egg that gets stuck in the fallopian tube or fall into the abdominal cavity and implants there. This type of pregnancy cannot survive to term and increases risk for severe hemorrhage and possibly even death to pregnant women [8]. When the ectopic is discovered, it is essential to surgically and immediately remove the baby. Symptoms associated with this situation include sharp, intense pain in abdomen or possibly in shoulders; a pregnancy test that is positive, then turns negative a few days later; and spotty red bleeding that continues. With rare exceptions, ectopic pregnancies are not viable. Furthermore, they are dangerous for the mother, since internal hemorrhage is a life-threatening complication. Most ectopic pregnancies (93-97%) occur in the distal Fallopian tube (so-called tubal pregnancies), but implantation can also occur in the cervix, ovaries, and abdomen [9].

Ectopic are usually caused by scar tissue in the fallopian tubes that could have been caused by previous surgery in the pelvic region, uterus, tubes; a pelvic infection such as Chlamydia or pelvic inflammatory disease; or endometriosis that blocks the entrance to the tubes [10].

2.2. A Molar Pregnancy

A Molar Pregnancy is a very rare type of pregnancy, is an abnormal form of pregnancy in which a non-viable fertilized egg implants in the uterus and will fail to come to term. A molar pregnancy is a gestational trophoblast disease [11].

The baby usually does not form, but the uterus is filled with big bubble clusters. A molar pregnancy is caused when a sperm fertilizes an empty egg (called a complete molar pregnancy) and no baby grows, or when two sperm fertilize an egg, and both the baby grows a little as well as an abnormal placenta (called a partial molar.) Even if a baby does grow, it cannot survive. The longest documented molar pregnancy which has seen was a 24-week stillbirth. Molar pregnancies usually present with painless vaginal bleeding in the fourth to fifth month of pregnancy. The uterus may be larger than expected, or the ovaries may be enlarged. The most common symptom is vaginal bleeding, especially between the 6th and 16th weeks of pregnancy. Another symptom is bleeding that continues for a long time after delivery. Small amounts of bleeding can show up as a watery brown discharge from the vagina, there may also be more vomiting than would be expected (hyperemesis). Sometimes there is an increase in blood pressure along with protein in the urine. Blood tests will show very high levels of human chorionic gonadotropin (HCG) [12].

2.3. A stillbirth

According to the National Stillbirth Society, stillbirth is defined as the intrauterine death and subsequent delivery of a developing infant that occurs beyond 20 completed weeks of gestation. A stillbirth is technically any pregnancy that ends after the 20th week and the baby does not survive. Some babies die in utero and are discovered when the heartbeat is not found. A stillbirth occurs when a fetus dies in the uterus [13,14]. A wide variety of definitions exist. The most common causes of this are uterine abnormalities, a knot or other umbilical cord accident, infections of the lining of the gestational sac or cord, and placental abruptions that cause the placenta to pull away from the uterine wall. These babies are usually born through the induction of labor. Other babies are lost through early labor. The causes of early labor are Premature Rupture of Membranes, uterine abnormalities that make the uterus too small to hold the baby, and an incompetent cervix, which opens up and lets the baby out. It is unknown how much time is needed for a fetus to die. Behavior is consistent and a change in the fetus' movements or sleep wake cycles can indicate fetal distress [15,16].

2.4. An embryonic gestation

Early pregnancy failure (also known as blighted ovum or an embryonic gestation) is a common cause of miscarriage. An embryonic gestation (also known as a blighted ovum) is a pregnancy in which the very early pregnancy appears normal on an ultrasound scan, but as the pregnancy progresses a visible embryo never develops or develops and is resorbed. A blighted ovum causes about one out of two miscarriages in the first trimester of pregnancy. A miscarriage is when a pregnancy ends on its own within the first 20 weeks. The bleeding, if that happens before the blighted ovum is found via ultrasound, is slow and brown. Your pregnancy symptoms will seem to go away. A blighted ovum is believed to be caused by an egg or sperm with poor genetic material. When the egg is fertilized, instead of creating both a sac and a baby, the part that should be a baby never grows. Some women do experience more than one blighted ovum, but most women go on to later have a baby [17,18].

The criteria depend on the type of ultrasound exam performed. A pregnancy is an embryonic if a transvaginal ultrasound reveals a sac with a mean gestational sac diameter (MGD) greater than 25 mm and no yolk sac, or an MGD >25 mm with no embryo. Transabdominal imaging without transvaginal scanning may be sufficient for diagnosing early pregnancy failure when an embryo whose crown–rump length is 15 mm or more has no visible cardiac activity. [19].

2.5. Pregnancy complications

Pregnancy complications can include a range of health issues that may arise during pregnancy, affecting the health of both the woman and the fetus [20,21]. Here are some common pregnancy complications, along with their potential causes and references for further information:

- Gestational Diabetes: Cause: Hormonal changes during pregnancy can lead to insulin resistance.
- Pre-eclampsia: Cause: Exact cause unknown, but it involves problems with the placenta.
- Gestational Hypertension: Cause: High blood pressure that develops during pregnancy.
- Miscarriage: Cause: Various factors such as genetic abnormalities, hormonal problems, or maternal health issues.
- Ectopic Pregnancy: Cause: When a fertilized egg implants outside the uterus, mainly in the fallopian tube.
- Placenta Previa: Cause: When the placenta partially or wholly covers the cervix.
- Preterm Labor: Cause: Various factors, including infections, multiple pregnancies, or certain maternal conditions.
- Fetal Growth Restriction: Cause: Inadequate growth of the fetus, sometimes due to problems with the placenta or maternal health issues.

It's important to consult with healthcare professionals for accurate diagnosis, management, and treatment of any pregnancy complications.

3. Recurrent pregnancy loss (RPL)

Recurrent pregnancy loss (RPL), also known as recurrent miscarriage, refers to the occurrence of three or more consecutive pregnancy losses before 20 weeks of gestation. The causes of RPL can vary and may involve a combination of genetic, hormonal, anatomical, immunological, or lifestyle factors [22,23]. Here are some potential causes and management options:

3.1. Causes of Recurrent Pregnancy Loss

- Chromosomal Abnormalities: Genetic abnormalities in the embryo or fetus are a common cause of early pregnancy loss.
- Hormonal Imbalances: Conditions such as polycystic ovary syndrome (PCOS) or thyroid disorders can contribute to RPL.
- Uterine Abnormalities: Structural issues in the uterus, such as fibroids or a uterine septum, can increase the risk of miscarriage.
- Immunological Factors: Certain autoimmune conditions, such as antiphospholipid syndrome, can lead to RPL.
- Blood Clotting Disorders: Some clotting disorders, like Factor V Leiden mutation, can increase the risk of recurrent miscarriage.
- Infections: Certain infections, including bacterial, viral, or parasitic, can contribute to pregnancy loss.
- Lifestyle Factors: Factors like smoking, excessive alcohol consumption, or illicit drug use can increase the risk of miscarriage.

3.2. Management of Recurrent Pregnancy Loss

- **Medical Evaluation:** Consult with a healthcare professional to investigate potential causes through a series of tests, including blood work, ultrasound, genetic testing, and examination of the uterine cavity.
- **Treatment of Underlying Conditions:** Depending on the identified cause, treatment may involve hormone supplementation, surgical management of uterine abnormalities, or medication to address blood clotting disorders.
- **Lifestyle Modifications:** Making positive lifestyle changes like quitting smoking, limiting alcohol intake, maintaining a healthy weight, and managing existing health conditions can help reduce the risk of further pregnancy loss.
- **Emotional Support:** Dealing with recurrent pregnancy loss can be emotionally challenging, so seeking support from healthcare providers, therapists, support groups, or loved ones is vital.

4. Coagulation disorders during pregnancy:

It's important to work closely with a healthcare professional specializing in reproductive medicine or obstetrics to diagnose the underlying cause and create an individualized management plan based on your specific situation [24].

Coagulation disorders, also known as blood clotting disorders, can contribute to pregnancy loss or complications. Here's some information regarding coagulation disorders and their relation to pregnancy loss [25,9].

- **Antiphospholipid syndrome (APS):** APS is an autoimmune disorder where the immune system mistakenly produces antibodies that attack the phospholipids in cell membranes, including those within blood vessels. APS is associated with an increased risk of recurrent pregnancy loss, preeclampsia, intrauterine growth restriction, and premature birth.
- **Factor V Leiden Mutation:** Factor V Leiden is a genetic mutation that affects a specific clotting factor in the blood. Women who carry this mutation have an increased risk of blood clots, and in pregnancy, it can lead to complications such as recurrent miscarriage, stillbirth, or placental abruption.
- **Protein S and Protein C Deficiencies:** Protein S and Protein C are natural anticoagulant proteins that help regulate blood clotting. Deficiencies in these proteins can increase the risk of blood clots, potentially leading to pregnancy loss or other complications.
- **Prothrombin Gene Mutation:** The prothrombin gene mutation, also known as the Factor II mutation, is another genetic mutation that affects blood clotting. Women with this mutation may have a slightly higher risk of blood clots, which can impact pregnancy outcomes.

If you suspect a coagulation disorder or have a history of recurrent pregnancy loss, it's essential to consult with a healthcare professional specializing in reproductive medicine or hematology. They can perform appropriate tests to diagnose the specific coagulation disorder and work with you to develop a management plan.

Management typically involves measures to prevent blood clots during pregnancy, such as the use of anticoagulant medications like low-molecular-weight heparin (LMWH) or aspirin. Treatment plans are individualized based on the specific disorder, medical history, and other risk factors. It's important to have regular monitoring and close medical supervision throughout pregnancy to manage and reduce potential complications associated with coagulation disorders [26,27,28].

5. Environmental factors implicated in pregnancy outcome

Several environmental factors can potentially impact pregnancy outcomes. These factors can include:

- **Air pollution:** Exposure to air pollutants, such as particulate matter and nitrogen dioxide, has been associated with adverse pregnancy outcomes, including preterm birth, low birth weight, and developmental issues in children.
- **Chemical exposure:** Exposure to certain chemicals, such as lead, mercury, pesticides, and certain solvents, can pose risks to fetal development and increase the likelihood of complications during pregnancy.
- **Smoking and secondhand smoke:** Smoking during pregnancy is strongly linked to an increased risk of preterm birth, low birth weight, and other complications. Exposure to secondhand smoke can also have similar effects.

- Alcohol and drug use: Heavy alcohol consumption during pregnancy can lead to fetal alcohol spectrum disorders, causing a range of physical, cognitive, and behavioral abnormalities. Illicit drug use, such as cocaine or opioids, can also have detrimental effects on pregnancy outcomes.
- Maternal nutrition: Poor maternal nutrition, including deficiencies in key nutrients like folic acid, iron, and certain vitamins, can impact fetal growth and development.
- Occupational hazards: Certain occupational exposures, such as radiation, chemicals, heavy lifting, or prolonged standing, can potentially contribute to pregnancy complications or adverse outcomes.
- Stress: Chronic or excessive stress during pregnancy has been associated with an increased risk of preterm birth, low birth weight, and developmental issues.

It is crucial for pregnant individuals to be mindful of these environmental factors and take steps to minimize their exposure whenever possible. Maintaining a healthy lifestyle, following appropriate safety guidelines, avoiding risky substances, and seeking prenatal care can help reduce potential risks and improve pregnancy outcomes. It's always recommended to consult with healthcare providers for personalized advice and guidance based on individual circumstances [29].

6. Conclusion

In conclusion, every pregnancy is unique, and while complications can arise, most pregnancies are healthy and uncomplicated. Regular prenatal care is essential to monitor the health of both the mother and baby and to address any potential issues as early as possible. It's important to follow the guidance of your healthcare provider and seek their advice if you have any concerns or questions throughout your pregnancy. It is important to note that this is not an exhaustive list, and there are other complications that can occur during pregnancy. It's always best to consult with a healthcare professional if you have any concerns or suspect any complications.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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