

# Miscarriage

## What is a miscarriage?

Miscarriage is the spontaneous loss of a pregnancy before the period of viability (before the 20 weeks, as per the WHO) or if the fetus weighs less than 500 g.

## Why do they occur?

15% of pregnancies in total result in miscarriages, out of which 80% occur in the first trimester of pregnancy.

### Fetal causes are due to;

- Genetic abnormalities in the chromosomes (in the form of extra or missing chromosomes) which may cause absence of embryo formation, intrauterine fetal death, molar pregnancy/partial molar pregnancy or ectopic pregnancies.
- Multiple pregnancies at the same time

### Maternal causes of miscarriage are;

- **Age of the pregnant woman-**

There is a bimodal incidence in teenage/early pregnancies and in pregnancies beyond the age of 35 years. The risk of miscarriage is also doubled after the age of 40 years and tripled after the age of 45 years.

- **Underweight or overweight of the mother-**

Women with low BMI are prone to have a miscarriage in the first trimester, but the risk is usually reduced by 50% by the intake of the recommended vitamin and folic acid supplementation.

Women with higher BMI (overweight or obese) are also at increased risk of miscarriage as it causes insulin resistance which leads to diabetes, hormonal imbalances of estrogen and androgens and polycystic ovarian disease.

- **Uncontrolled diabetes-**

Insulin resistance seen in gestational or overt diabetes type-2 leads to increased insulin in the circulation, which is found to be toxic for placental cells. This leads to a higher chance of miscarriage if blood sugar level is not controlled with oral metformin, an antihyperglycaemic drug that is safe during pregnancy.

- **Uterine or cervical problems-**

1. Uterine structural defects like presence of an uterine septum, bicornuate uterus, unicornuate uterus, T-shaped uterus or didelphic uterus may cause miscarriage as the placenta is unable to grow properly due to implanting at an inconvenient site or preterm delivery.

2. Incompetent cervix

Cervical insufficiency is the condition when the cervix opens too early during pregnancy without any pain or contractions. It occurs due to previous history of difficult birth or cervical procedures like excision or ablation etc.

### 3. Uterine cavity fibroids

Submucous or intracavity fibroids project into the uterine cavity and change the shape of the cavity and can cause placental abruption as the fetus grows in size.

- **Smoking, drugs and/or alcohol-**

Nicotine exposure due to smoking or second-hand smoking causes miscarriage by causing placental problems or causes chromosomal defects in the baby. Smoking by the father also increases the incidence of sperms with chromosomal abnormalities.

Alcohol can also cause miscarriage by affecting the quality implantation or increasing oxidative stress, but the exact mechanism is not known.

- **Infections in the reproductive tract-**

If the mother is infected with “TORCH” organisms which include: Toxoplasmosis, Other (Syphilis, Varicella-Zoster Virus, Parvovirus), Rubella, Cytomegalovirus or Herpes virus, it can lead to miscarriage if the fetus is exposed to the pathogens.

- **Hormonal diseases-**

Endocrinological abnormalities such as polycystic ovarian syndrome, hyperprolactinemia/hypoprolactinemia, luteal phase defect, thyroid dysfunction, diabetes, or hyperandrogenism can cause miscarriages and recurrent spontaneous abortions.

PCOD (Polycystic ovarian disease) is an anovulatory condition caused due to increased androgen production in the body, which results in multiple ova forming cysts in the ovary. This causes difficulty in conceiving and even when the patient

does, increased levels of testosterone and other androgens in the body causes recurrent miscarriages as they affect endometrial function. PCOS is also associated with obesity and GDM, which are also risk factors for miscarriage.

Low basal serum prolactin concentration (hypoprolactinemia) is associated with an increased risk of miscarriage in women with recurrent miscarriages. On the other hand, high prolactin in early follicular growth may inhibit progesterone secretion, which results in luteal phase defects which also leads to miscarriage.

Women with thyroid problems such as hypothyroidism are treated with thyroid hormone replacement therapy, which raises TSH levels in the body. If the TSH levels are above 2.5 mU/L in early pregnancy, this results in increase risk of miscarriage.

- **Previous history of miscarriages or induced abortions-**

An elective abortion performed by an experienced professional does not cause an increased risk for miscarriages in the future. But, if performed by inexperienced professionals or quacks can lead to increased hemorrhage, infection, scarring of uterus or fertility issues which may lead to miscarriage in the future.

- **Invasive prenatal tests (chorionic villus sampling, amniocentesis)-**

Invasive prenatal tests such as chorionic villus sampling, amniocentesis etc. can lead to miscarriage due to potential damage to the chorionic villi, amniotic membranes causing loss of amniotic fluid, bleeding or infection. But the risk is negligible when the procedure is done by an experienced professional.

- **Prior exposure to radiation-**

The mother can be exposed to radiation in her professional setting (radiology technician, research, nuclear power or waste management etc.) or due to testing such as x-ray, CT, mammogram etc. Radiation-related effects are a great concern of pregnancy loss in the first few weeks as damage to the embryo can occur even before the mother becomes aware of the pregnancy and can lead to miscarriage.

Apart from the above mentioned causes, there are a few factors which are thought to cause miscarriage but are false. Those are high-intensity exercise (within reason), working during pregnancy or sexual intercourse.

### **What are the types of miscarriages?**

- ***Threatened abortion/ miscarriage:*** Threatened abortion can either resolve on its own and continue as a healthy pregnancy or worsen leading to abortion. Treatment does not alter the course of the condition.
- ***Missed abortion/miscarriage:*** Dead fetus passively remains in the uterus and signs of pregnancy slowly disappear - perform medical abortion or evacuation of fetus.
- ***Inevitable abortion/ miscarriage:*** the miscarriage has progressed and cannot be reversed.
- ***Incomplete abortion/ miscarriage:*** Process of miscarriage has occurred, but the products of pregnancy are only partially expelled.
- ***Complete abortion/ miscarriage:*** Miscarriage has occurred and products of conception are completely expelled, leaving an empty cavity.
- ***Septic abortion/ miscarriage with infection:*** This is due to infection of the products of conception due to unsafe abortions performed by untrained professionals for unwanted pregnancies.
- ***Recurrent miscarriages:*** Recurrent abortion refers to a history of repeated miscarriage, defined as three or more successive pregnancy losses.

## **What are the symptoms of a miscarriage?**

- Fever
- Vomiting or diarrhea
- Lower abdominal pain
- Vaginal bleeding
- Smelly, purulent discharge
- Hypotension and weak pulse

## **What are the complications?**

- Septic shock due to widespread infection
- Adult respiratory distress syndrome
- Diffuse abdominal infection
- DIC (Disseminated intravascular coagulation)
  - which results in rapid blood clots in the veins and travel to other parts
- Acute renal failure

## **What to do next?**

Try to prevent the above mentioned maternal risk factors. In case miscarriage does occur due to other causes, it may not be preventable in some cases. When the symptoms of miscarriage are noted, immediately consult your obstetrician or any healthcare professional available as lack of appropriate care in some cases may be life-threatening to the mother.

Current hospital management is infusion of electrolytes, blood transfusion, broad-spectrum antibiotics and evacuation of the uterus of the products of conception to prevent sepsis. In case of a previous miscarriage, have a strong support system of family and friends, undergo regular prenatal care for the next pregnancy and avoid known risk factors of miscarriage.

## Can you get pregnant again after miscarriage?

Yes, it is possible to get pregnant again after miscarriage! Studies have even shown that it is possible and more beneficial to get pregnant again within 1-3 months of miscarriage.

But make sure that the mother is emotionally and physically prepared before planning for the next pregnancy. Then consult the doctor for genetic counselling and to treat any underlying maternal conditions which may have caused the miscarriage. If all of those are resolved, the patient can go ahead and plan the next pregnancy.

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