



## X-Plain C-Section

### Reference Summary

#### Introduction

A Cesarean section, or C-section, is the surgical delivery of a baby through an incision in the abdomen.

About 1 out of 4 women in the United States deliver their babies via C-sections. That is around a million deliveries a year!

This reference summary is about C-sections. It discusses why they are needed, how they are performed, the risks and what to expect after the procedure. If your doctor recommends C-Section, the decision to have this procedure is also yours.

#### Anatomy

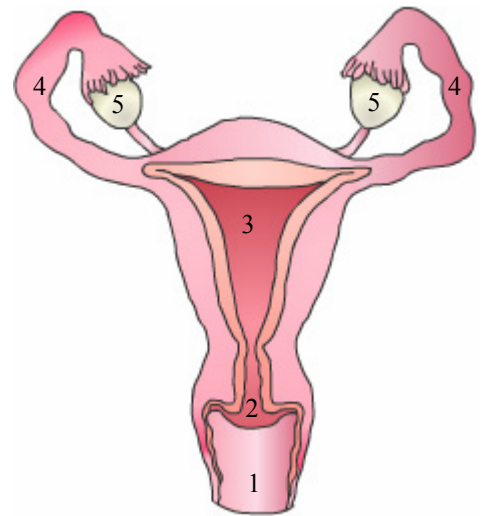
In order to understand C-sections, it is important to know about the female reproductive organs. They are located in the pelvis, between the urinary bladder and the rectum.

The female reproductive organs include:

1. The vagina
2. The cervix
3. The uterus
4. The fallopian tubes
5. The ovaries

When an ovary releases an egg, the egg goes down the fallopian tube to the uterus. It can become fertilized along the way.

If a woman gets pregnant, the fetus stays in the uterus until delivery. The uterus is able to expand a lot.



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The lowest part of the uterus is called the cervix. It opens into the vagina, which opens to the outside of the body between the urethra (the urinary bladder opening) and the rectum.

## Pregnancy

During pregnancy, the baby floats in a special fluid called amniotic fluid. Both the baby and amniotic fluid are in a bag called the “amniotic sac.”

The baby gets nutrition from the placenta. During pregnancy, the placenta grows and attaches to the inside of the uterus.

The mother’s blood enters the placenta and delivers oxygen and nutrients to the baby’s blood. The mother’s blood also picks up waste from the baby’s blood.

The baby’s blood travels from the baby’s body to the placenta through the umbilical cord. The mother’s blood does NOT go into the baby’s body.

When it is almost time to deliver the baby, the baby’s head drops down into the mother’s pelvis. This causes the mother’s belly to appear slightly smaller. This is called lightening.

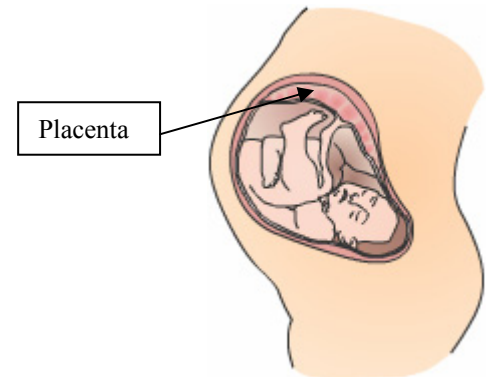
## Labor

Labor starts when the mother feels cramps in her abdomen. These are contractions of the uterus muscles. When contractions happen every 5 minutes, the body is ready to push the baby out.

Sometimes the amniotic sac opens before the actual delivery and amniotic fluid seeps out through the vagina. When this happens, we say the “water broke.” Labor can start when the water breaks.

There are 3 stages of labor.

1. Dilation and effacement stage
2. Baby delivery stage
3. Placenta delivery stage



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During the dilation and effacement stage, the cervix slowly becomes 10 cm wide. This is called dilation. The cervix also becomes thinner which is called effacement. The mother is only asked to push when the uterus is fully effaced and dilated.

When the cervix is 10 centimeters wide, the baby delivery stage starts. This is when the baby moves through the cervix and vagina to the outside world! The path the baby travels through is called the birth canal. This is when the mother is asked to push during contractions.

After the baby is delivered, the placenta delivery stage starts. This is when the placenta is delivered.

## Indications

A doctor performs a Cesarean section if he or she thinks it is safer for the mother or her baby than vaginal birth. Most C-sections are done if unexpected problems happen during delivery.

The most common reasons for a C-Section are:

1. The baby is not tolerating labor
2. The baby is not in the right position
3. There is not enough room for the baby to go through the vagina
4. The cervix does not dilate completely
5. There are medical emergencies

The baby is monitored during labor. If the baby does not get enough oxygen for a long time, it could suffer brain damage or die. This could happen if the umbilical cord is pinched or the placenta stops working.

For normal vaginal delivery, the baby's head comes out first. If the baby is positioned so its buttocks or feet will come out before its head it is called a breech position. A breech position can make vaginal delivery impossible, requiring a C-section. Breech position is more likely with twins or triplets.



The baby's head might be too large or the mother's birth canal too small to allow for safe vaginal delivery.

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Sometimes the cervix does not completely dilate to 10 centimeters. The baby may not have enough room to pass through the birth canal. Long labor is very exhausting and risky for the mother and baby. The doctor may try other solutions to dilate the cervix, but if these fail a C-section might be the recommended option.

There are medical emergencies that make a C-section necessary. For instance, the placenta could break away from the uterus before delivery. This is called “placenta abruptio.” Another medical emergency is if the umbilical cord comes out before the baby during labor.

Sometimes the doctor knows ahead of time that a C-section is best. For example, if a woman has had a C-section before, the doctor may recommend it for her next baby. However, it is possible for a woman to give vaginal birth even if she has had a C-section before.

Sometimes the placenta is too low in the uterus and it covers the cervix. This is called “placenta previa.” In this case, the placenta blocks the birth canal and vaginal delivery would be very risky. Usually the doctor can tell if there is placenta previa from ultrasounds weeks before the delivery.

If the mother has a medical condition such as diabetes, heart disease, lung disease or infectious diseases of the genital area the doctor may suggest a C-section.

The doctor could suggest a C-section for various reasons. However, in some of these cases, a normal vaginal delivery might still be possible.

## **Procedure**

A C-section takes place in an operating room. If the mother is in the delivery room when a C-section is needed, she is moved to the operating room.

The anesthesiologist gives the mother anesthesia. Regional anesthesia is usually used but general anesthesia is sometimes needed. For general anesthesia the mother is asleep and cannot see, feel, hear or remember the surgery.

Regional anesthesia can be given through an epidural or a spinal block. If the mother has regional anesthesia, she will still be able to feel the baby being pulled out but she will not feel pain.

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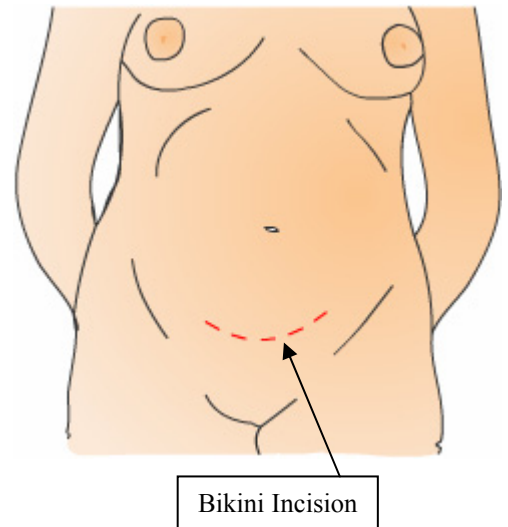
With epidural anesthesia, a needle or catheter delivers pain medication near the spinal cord. The mother can still feel the pushing but has much less pain. If needed, more medication can be given through the needle or catheter to provide pain relief.

For a spinal block, a needle or catheter delivers medication into the fluid-filled space surrounding the spinal cord. The mother does not feel any pain in the abdomen or legs

After anesthesia, the doctor makes 2 incisions. The first incision is through the skin and abdominal wall. The second one is through the uterus.

The incision through the abdominal wall is about 6 inches long. The incision goes through the skin, fat and muscles. It does not go through the peritoneum, the lining around the intestines and other digestive organs. This incision can be vertical or horizontal.

If the incision is horizontal it is called a bikini incision. It is made across the lower abdomen, near the pubic hairline. Bikini incisions are used in most C-sections because they usually heal well and can cause less discomfort after surgery.



Vertical incisions start just below the navel and go to just above the pubic bone. When a large, fast incision is needed so the baby can be removed quickly, a vertical incision is used. The doctor usually decides the type of incision.

After making the abdominal incision the doctor opens the uterus. There are several factors that determine the type of uterine incision. These include position of the baby and urgency of delivery. The 3 common uterine incisions are:

- Low horizontal incision
- High vertical incision
- Low vertical incision

Low horizontal incisions are the most common. They go across the lower part of the uterus. They usually bleed less than incisions made higher on the uterus. Low horizontal incisions form strong scars, which result in less risk of the incision breaking open if the woman has more babies.

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High vertical incisions used to be used for all C-sections. Now it is only used in emergencies because it has the highest risk of bleeding. There is also more risk of this type of incision breaking open if the woman is ever in labor again.

Low vertical incisions are like high vertical incisions, but lower on the uterus. A low vertical incision helps deliver babies who are in an awkward position in the uterus.

After the baby is removed from the uterus, the doctor clamps and cuts the umbilical cord.

While the nurses clean the baby, the doctor removes the placenta from the uterus.

Finally, the doctor closes each incision. Internal stitches dissolve and do not need to be taken out. Stitches on the outside may be dissolving stitches or staples that have to be taken out.

## Risks & Complications

A C-section is a very safe procedure. However, it is a major surgery. Like any surgery it has risks and complications. Knowing about them may help you prevent or detect complications early if they happen. If general anesthesia is used, its risks include nausea, vomiting, urinary retention, cut lips, chipped teeth, sore throat, and headache. More serious and rare risks of general anesthesia include heart attacks, strokes, pneumonia, and death.

Risks and complications related to any surgical procedure include

- Infection
- Bleeding
- Scarring

Infections could occur on the skin or deep in the abdomen and pelvis. Antibiotics and sometimes surgery are needed to clear up infections.

If there is a lot of bleeding, sometimes a blood transfusion is needed after a C-section.

Scarring may occur. It is rare for the outer scar of a C-section to be unsightly. However, internal and external scarring may be painful.



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There is a risk that organs near the uterus could be injured during a C-section. This might require another operation to fix the possible damage.

After healing, a uterine incision could leave a weak spot in the uterine wall. This might cause problems if the woman tries to deliver another baby vaginally.

Rarely, the bowel slows down for several days after surgery, resulting in distention, bloating and discomfort. This is called “ileus.”

A baby’s lungs are normally filled with fluid before birth. When a baby is born vaginally, movement through the birth canal naturally squeezes the baby’s chest and pushes the fluid out of the lungs. During a C-section, the baby does not experience that squeezing effect, so his or her lungs may still be wet after birth.



The main risk for the baby is a mild respiratory difficulty called “transient tachypnea.” This rapid breathing occurs when the baby’s lungs are too wet. The doctors and nurses can give the baby extra oxygen. They may use oxygen under pressure to force fluid out of the baby’s lungs. Transient tachypnea typically goes away within a few hours or days.

The baby may be less likely to be breastfed because of the difficulty of caring for the baby while recovering from surgery.

### **After a C-Section**

The hospital stay after a C-section is 3 to 5 days. It is a little longer than the 1- or 2-day stay for vaginal delivery. Recovering after a C-section takes longer, too.

After a C-section, the mother might need pain medicine for a few days. She will also feel weak or tired. It is important for her to walk. This helps prevent blood clots in the veins of the legs and pelvis. It also prevents fluid buildup in the lungs.

It is normal for a woman to feel “blue” after a delivery, whether it was vaginal or Cesarian. Those feelings usually go away. Even so, it is important to tell the doctor about them. He or she may recommend a support group or prescribe medication.

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## Conclusion

A C-section is the surgical delivery of a baby through an incision in the abdomen. It is a common procedure, used for about one million deliveries every year in the United States.

Most C-sections are done when unexpected problems happen during delivery, such as:

- The baby is not tolerating labor
- The baby is not in the proper position
- There is not enough room for the baby to go through the vagina
- There are emergency problems with the placenta
- The cervix does not dilate completely

A C-section is a relatively safe procedure for the mother and baby. However, it is a major surgery. Like any surgery it has risks and complications that include infection, bleeding, and scarring.

After healing, a uterine incision may leave a weak spot in the uterine wall. This could cause problems with future attempts at vaginal birth. However, up to 60% of women who have a C-section can give vaginal birth if they have another baby.

A long time ago, childbirth was very risky for the mother and the baby. Thanks to advances in medical technology, C-section is now a very safe procedure that saves millions of lives every year.



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