A surgical procedure in which one or more incisions are made through a mother's abdomen and uterus to deliver one or more babies.

Risk factor: Female

About Cesarean section

A cesarean delivery (Pic. 1) is the birth of the baby through surgical incision made in both the wall of the mother’s abdomen and her uterus. Worldwide, cesarean delivery (CD) is the most frequent major operation performed, and of course, the commonest surgery performed in obstetrics.

Conventionally, caesarean sections are classified as being either an elective surgery or an emergency surgery. Classification is used to note a strategy for using anesthesia, as in emergencies general anesthesia must be used but when time is available, it is preferable to use regional anesthesia.

A planned caesarean (or elective/scheduled caesarean), arranged ahead of time, is most commonly arranged for medical reasons and ideally as close to the due date as possible. A crash/emergent/emergency caesarean section is performed in an obstetric emergency, where complications of pregnancy onset suddenly during the process of labour, and swift action is required to prevent the deaths of mother, child(ren) or both.

A planned caesarean section is an elective surgery, meaning that it is scheduled in advance rather than performed because of an unscheduled emergency. This confers the ability to perform the delivery at a time when hospital resources are optimal, such as at daytime rather than what might otherwise turn out to be at night. The cost to the patient and the baby for unnecessary surgery may be substantial.

Elective caesareans at 38 weeks showed increased health complications in the newborn. For this reason, planned caesarean sections should not be scheduled before 39 weeks gestation unless there is medical reason to do so.
Many birth complications today can be attributed to modern lifestyles and technology. Bipedalism (a form of terrestrial locomotion where an organism moves by means of its two rear limbs or legs) restructured the pelvis, altering the birth mechanism so that the infant usually emerges occiput anterior (the occiput is back and lower part of the skull), making it advantageous to have assistance.

In case of a previous Caesarean section a subsequent pregnancy can be planned beforehand to be delivered by either of the following two main methods:

- Vaginal birth after Caesarean section (VBAC)
- Elective repeat Caesarean section (ERCS)

Where the woman is labouring with a previous section scar (i.e. a planned VBAC in labour), depending on the provider, special precautions may be recommended. These include intravenous access (a cannula into the vein) and continuous fetal monitoring (cardiotocography or CTG monitoring of the fetal heart rate with transducers on the mother's abdomen). Other intrapartum management options, including analgesia/anesthesia, are identical to those of any labour and vaginal delivery.

For ERCS, the choice of skin incision should determined by what seems to be most beneficial for the present operation, regardless of the choice of the previous location as seen by its scar, although the vast majority of surgeons will incise through the previous scar to optimise the cosmetic result. Hypertrophic (very thick or unsightly) scars are best excised because it gives a better cosmetic result and is associated with improved wound healing. On the other hand, keloid scars should have their margins left without any incision because of risk of tissue reaction in the subsequent scar.

**Symptoms**

Some main indication for Cesarean section are:

- abnormal presentation (breech or transverse positions)
- prolonged labour or a failure to progress
- fetal distress
- cord prolapse
- uterine rupture or an elevated risk thereof
- hypertension (high blood pressure) in the mother or baby after amniotic rupture (the waters breaking)
- tachycardia (high heart rate) in the mother or baby after amniotic rupture
- placenta problems
- failed labour induction
- failed instrumental delivery (by forceps)
- large baby weighing >4,000 g (macrosomia)
- umbilical cord abnormalities

Other complications of pregnancy, pre-existing conditions and concomitant disease, such as:

- pre-eclampsia (a disorder of pregnancy characterized by the onset of high
blood pressure and often a significant amount of protein in the urine)
- previous (high risk) fetus
- HIV infection of the mother with a high viral load (HIV with a low maternal viral load is not necessarily an indication for caesarean section)
- sexually transmitted diseases, such as a first outbreak of genital herpes very recently before the onset of labor (which can cause infection in the baby if the baby is born vaginally)
- previous classical (longitudinal) Caesarean section
- previous uterine rupture
- prior problems with the healing of the perineum (from previous childbirth or Crohn’s disease)
- bicornuate uterus
- rare cases of posthumous birth after the death of the mother

Associated diseases

- pre-eclampsia
- sexually transmitted diseases (HIV)
- macrosomia
- Crohn’s disease (a type of inflammatory bowel disease)

Complications

Because of the extent of the abdominal incision, there is a increased loss of blood with a cesarean delivery. When the incision is made, there is an increased risk of damage to other internal organs especially the urinary bladder and uterine blood vessels. If the fetus is large, there is a risk of tearing the uterine incision causing more trauma to uterine tissue.

Women who have a cesarean birth have a significantly increased risk of rehospitalization for uterine infection, complications from surgical wound (infection, and so on) (Pic. 2, 3), anesthesia complications, and cardiopulmonary and thromboembolic complications. Risk of maternal mortality after cesarean birth from anesthesia complications, and puerperal infections.

In cases of intractable bleeding or when the placenta cannot be separated from the uterus a Caesarean section is followed by the removal of the uterus, which is called a Caesarean hysterectomy.

Complications from elective cesarean before 39 weeks include: newborn mortality at 37 weeks may be 2.5 times the number at 40 weeks, and was elevated compared to 38 weeks of gestation. These “early term” births were also associated with increased death during infancy, compared to those occurring at 39 to 41 weeks ("full term").

For otherwise healthy twin pregnancies where both twins are head down a trial of vaginal delivery is recommended at between 37 and 38 weeks. Vaginal delivery in this case does not worsen the outcome for the infant as compared with Caesarean section. There is controversy on the best method of delivery were the first twin is head first and the second is not. When the first twin is not head down a C-section is often recommended.
Risk factors

Risk factors may include obstructed labour, twin pregnancy, high blood pressure in the mother, breech birth, problems with the placenta, umbilical cord or shape of the pelvis, and previous C-section.

Prevention

It is generally agreed that the prevalence of caesarean section is higher than needed in many countries and physicians are encouraged to actively lower the rate, as a caesarean rate higher than 10-15% is not associated with reductions in maternal or infant mortality rates.

Physical exercise during pregnancy decreases the risk of Cesarean section.

How it can affect fertility

A lot of women subjected to CD (Caesarian delivery) can easily get pregnant even within 2 months after the operation. There is a general consensus among obstetricians and women that CS has little compromise of future fertility. Unfortunately, this consensus is not based on respectable studies.

Surgery may cause tissue ischemia (a restriction in blood supply to tissues) which is a predisposing factor for adhesion (fibrous bands that form between tissues and organs) formation. Subsequently, suppression of fibrinolysis (a process that prevents blood clots from growing and becoming problematic) and persistence of fibrin protein involved in the clotting of blood) follow. Infertility may end when adhesions distort the tissues of the ovaries and tubes, impeding the normal passage of the egg (ovum) from the ovary to the uterus.

Prognosis

Vagina birth after caesarean section and elective repeat caesarean section have higher risks than a vaginal birth with no previous caesarean section. A vaginal birth after caesarean section (VBAC) confers a higher risk of uterine rupture (5 per 1,000), blood transfusion or endometritis (10 per 1,000), and perinatal death of the child (0.25 per 1,000). Furthermore, 20% to 40% of planned VBAC attempts end in caesarean section being needed, with greater risks of complications in an emergency repeat caesarean section than in an elective repeat caesarean section. On the other hand, VBAC confers less maternal morbidity and a decreased risk of complications in future pregnancies than elective repeat caesarean section.
Find more about related issues

Diagnoses

Asherman’s syndrome
A medical condition, where the walls of the uterus stick to one another due to bands of scar tissue.
Learn more at: www.fertilitypedia.org/therapy/diag/asherman-s-syndrome

Fallopian tube blockage
An obstruction prevents the egg or sperm from traveling down the tube, thus making fertilization impossible.
Learn more at: www.fertilitypedia.org/therapy/diag/fallopian-tube-blockage

Tubal ligation
A permanent form of female sterilization, in which the fallopian tubes are severed and sealed or "pinched shut", in order to prevent fertilization.
Learn more at: www.fertilitypedia.org/therapy/diag/tubal-ligation

Gallery

Pic
Pulling out the baby.

Pic
A 7-week old Caesarean section scar and linea nigra visible on a 31-year-old mother.
Suturing of the uterus after extraction.

Sources

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