



**Indian College of
Obstetricians & Gynaecologists**



ICOG Campus

Operative Birth

Recent Developments and Current Practice

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Risks and Benefits of Cesarean Births

Abha Rani Sinha, Vinita Kumari

■ INTRODUCTION

Cesarean delivery is considered as one of the most common and safe surgical procedures, typically performed where vaginal delivery is likely to pose greater risk either due to fetal or maternal indication. Also on maternal request, planned cesarean birth is an alternative to planned vaginal birth without any specific medical indication.¹

With modern, safe anesthesia tailored to the individual and specific needs, more and more women are opting for elective cesarean deliveries.

“Cesarean sections are absolutely critical to save lives in situations where vaginal deliveries would pose risks, so all health systems must ensure timely access for all women when needed,” said Dr Ian Askew, Director of World Health Organization’s (WHO), Department of Sexual and Reproductive Health and Research and the UN joint program, Human Reproduction Program (HRP). *“But not all the cesarean sections carried out at the moment are needed for medical reasons. Unnecessary surgical procedures can be harmful, both for a woman and her baby.”*²

Nowadays, cesarean section is steadily on the rise due to extremely liberal approach toward cesarean delivery, exceeding 20% in some institutions.³ Such high rates have become a source of concern globally.

Many studies that have been done to raise the question “How justified is it, medically and ethically, to perform a cesarean section exclusively at the request of a pregnant woman?”

Though medical indications may be the main indication, but even paramedical reasons cannot be overlooked as a contributory factor such as avoiding even the slightest risk, fear of lawsuits, and court processes.

Differences in neonatal physiology following cesarean delivery and vaginal delivery are thought to have implications for the infant, with cesarean section potentially increasing the risk of compromised health in both the short and long term.⁴

According to the WHO, the use of cesarean sections is rising globally and now accounts for over one in five (21%) childbirths. This trend is expected to continue over the next decade, with nearly a third (29%) of all births projected to occur via cesarean section by 2030.⁵

In 1985, the international healthcare community established that the ideal rate for cesarean sections should be between 10 and 15%. The WHO clearly indicates that a cesarean section rate of up to 10% leads to a reduction in maternal and newborn mortality. However, once this rate exceeds 10%, there is no evidence to support any further enhancement in mortality rates.⁶

In view of the prevailing trend, the risk and benefits of cesarean section are crucial to decision-making.

The National Institute for Health and Care Excellence (NICE) reviewed several studies for analyzing the risks and benefits of both modes of delivery. After careful consideration of the available evidence, the risk and benefits recommendations were made by NICE, NG192. This evidence review was developed using the methods and process described in Developing NICE Guidelines: The manual (2014).¹

The following section summarizes the Population, Intervention, Comparison, and Outcome (PICO) protocol of the review of NICE 192 guidelines where:

- *Population:* Pregnant women at or near term with singleton pregnancy and lower segment cesarean section
- *Intervention:* Short- and long-term outcomes of planned or actual cesarean delivery
- *Comparison* was of cesarean delivery to long- and short-term outcomes of planned or actual vaginal delivery.
- *Outcome* was assessed in terms of complications.
 - Maternal outcomes were assessed in terms of both short- (up to 6 weeks of delivery) and long-term outcomes (any time after 6 weeks postdelivery).
 - Whereas infant outcome was short-term outcome, assessed in early neonatal period (up to 7 days of life) and long-term were assessed in children which was from 7 days of life to 18 years.

These outcomes can be divided into groups for better understanding.

In all the outcomes, vaginal delivery was compared with planned cesarean section.

■ MATERNAL OUTCOMES

- *No evidence group:*
 - *Organ injury:* Evidence was not available for either bladder, bowel, or ureteric injury.
 - *Post-traumatic stress disorder:* No evidence was available for either long- or short-term post-traumatic stress disorder.
- *No difference group when vaginal delivery was compared to planned cesarean:*
 - *Postnatal depression, intensive therapy unit (ITU)/high-dependency unit (HDU) admission, and thromboembolic disorders:* Though the

evidence is of low quality, on the basis of review of observational studies, no clinically important difference was found in postnatal depression, ITU/HDU admission, and thromboembolic disorders after elective cesarean compared to vaginal delivery.

- *Variables that increased in cesarean compared to vaginal delivery:*
 - Short-term increase was seen in hemorrhage and bleeding, though the evidence was not very strong.
 - Also, there was low-quality evidence of increase in *maternal death and peripartum hysterectomy*.
 - If long-term outcomes are to be considered, then low-quality evidence from observational studies show clinically increased incidence of *placenta accreta* in future pregnancies in case of prior cesarean deliveries compared to vaginal birth.

Also, there is clinically increased incidence of *rupture uterus* in future pregnancies after cesarean deliveries compared to vaginal delivery, though the evidence is of low quality.

Pregnancy after a cesarean delivery poses significant risks due to the presence of a scar on the uterus. It is crucial to recognize and manage potential complications as they can arise during all three trimesters and lead to serious outcomes. The long-term consequences of cesarean deliveries, such as placenta previa and placenta accreta, have been acknowledged since ancient times. However, the obstetric community has only recently established a clear connection between placenta accreta and pregnancies that involve a cesarean scar. Furthermore, one rare but critical complication that can occur in subsequent pregnancies after a cesarean delivery is uterine rupture, which can be life-threatening. It is imperative for healthcare providers and patients to be aware of these risks and ensure proper monitoring and care.

Stillbirth

There was mixed evidence on *stillbirth* in subsequent pregnancies based on different observational studies. Ten observational studies showed low-quality evidence of increase in stillbirth rate in any future pregnancies. One study showed low-quality evidence of no increase in stillbirth rate in second pregnancy. Another study showed decrease in stillbirth in subsequent pregnancy after cesarean birth as compared to vaginal birth.

Benefits

If we consider the benefits of elective cesarean over vaginal delivery, two important factors were:

1. Urinary incontinence
2. Fecal incontinence

Urinary Incontinence

Two observational studies with very low-quality evidence, comparing cesarean birth with unassisted vaginal delivery, showed clinically important decrease in *urinary incontinence* after >1 year postpartum of cesarean birth and similar was the observation of another two studies after >1 year postpartum of assisted vaginal birth compared to cesarean birth.

Fecal Incontinence

In case of fecal incontinence after 1 year postpartum, two observational studies found low-quality evidence of no difference, whether it was cesarean birth or unassisted vaginal birth. But the observation was different when compared to assisted vaginal birth where low-quality evidence showed decrease incidence of fetal incontinence in case of cesarean birth after 1 year postpartum.

In modern obstetric practice, the focus on the relative safety of cesarean delivery tends to prioritize short-term outcomes for the mother over long-term effects. Following a cesarean section, women face an increased risk of various chronic gynecological conditions. These conditions may include surgical adhesions, pain, infertility, irregular bleeding, painful intercourse, painful periods, and endometriosis.³

Research articles on the etiology of placenta previa have shown a parallel increase in placenta previa incidence with cesarean section. In these cases, there is increased incidence of blood and fresh frozen plasma transfusion, uterine compression sutures, uterine artery ligation, injury to adjacent viscera, hysterectomy, and increased hospital stay compared to placenta previa in nonscarred uterus.⁷⁻⁹

Cesarean section is also identified as a risk factor for placenta accreta. The rising rate of placenta accreta incidence over the past decades parallels the rise in cesarean section rates. The more the prior number of cesarean sections, the more is the risk of placenta accreta.¹⁰

Systematic reviews of studies have shown that placenta accreta was observed in approximately 6.7% of patients with five prior cesarean sections compared to 0.3% in patients with one prior cesarean section.¹¹

■ INFANT OUTCOMES

No Evidence

After review of several studies comparing planned cesarean birth to vaginal birth, no evidence was available for moderate or severe hypoxic ischemic encephalopathy, nerve injury (including brachial plexus injury, phrenic nerve injury, or facial nerve injury), and intracranial or extracranial hemorrhage.¹

Increased Incidence

- *Neonatal mortality*: There was low-quality evidence of important increase in neonatal mortality in planned cesarean birth babies compared to vaginal birth.
- *Respiratory distress syndrome*: There was very low-quality evidence of important increase in respiratory distress in a newborn of planned cesarean compared to planned vaginal birth.
- *Childhood obesity*: Observational studies provided low-quality evidence of clinically important increase in childhood obesity in babies born by cesarean compared to vaginal birth.
- *Asthma*: Eight observational studies provided low-quality evidence of increase in asthma in babies born through cesarean compared to vaginal birth.
- *Type 1 diabetes*: Observational studies provided low-quality evidence of increase in type 1 diabetes in babies of planned cesarean birth compared to planned vaginal delivery, but a study of sibling control analysis observed no clinically appreciable difference defined by different modes of delivery.
- *Autism spectrum condition*: Observational studies provided low-quality evidence of increase in autism spectrum in babies born by elective cesarean compared to those born by planned vaginal delivery, but a Sibling Control Analysis observational study found nonsignificant difference between the two modes of delivery.

No Clinically Important Difference

- *Admission to neonatal unit*: Low-quality evidence showed no clinically important difference in observational studies in admission to neonatal unit.
- *Respiratory morbidity*: Very low-quality evidence was present from observational studies, which showed no clinically important difference regarding respiratory morbidity defined as transitory tachypnea, respiratory distress, meconium aspiration, use of respirator, and continuous positive airway pressure when both modes of birth were considered.
- *Infectious morbidity*: Low-quality evidence provided no clinically appreciable difference in babies born through either route of delivery.
- *Infant mortality up to 1 year of age (long or short term)*: Observational study provided very low-quality evidence regarding infant mortality both in short and long term, which showed no clinically appreciable difference according to the mode of delivery.
- *Persistent verbal delay (long term)*: Very low-quality evidence was provided by observational studies regarding no clinical difference in persistent

verbal delay in babies born by elective cesarean section compared to babies born by vaginal mode.

- *Childhood obesity (long term)*: There was no clinically important evidence regarding childhood obesity provided by observational studies varying with either route of delivery, may it be cesarean or vaginal.

Decreased Incidence

There was low-quality evidence from observational studies that showed decrease in incidence of *cerebral palsy* in babies born of planned cesarean rather than vaginal route of delivery.

There are other risks that might be relevant to their individual circumstances (for example, placental adherence problems from multiple cesarean births, fetal lacerations in cesarean birth, and term birth injuries with vaginal birth or cesarean birth).

Cesarean sections in cases of emergency situations can be lifesaving for the mother and baby.

Few such conditions are fetal distress, placenta previa, maternal bleeding, obstructed labor, certain cases of pregnancy-induced hypertension (PIH) and eclampsia, and a few more.

CONCLUSION

Cesarean sections are crucial for saving lives in situations where vaginal deliveries pose significant risks. The rising trend of elective cesarean sections requested by expectant mothers reflects a clear demand for this option.

Planned cesarean deliveries allow couples to choose a suitable time, enabling them to avoid the immediate discomfort of labor pains and the potential complications associated with vaginal delivery. Many mothers find this choice to be the most comfortable and beneficial for their specific circumstances.

It is important to recognize that both vaginal and cesarean births have distinct benefits and risks. While some risks are minimal, others can have substantial implications, requiring a thorough evaluation of what is acceptable for each couple. Additionally, cesarean deliveries are linked to a higher likelihood of complications, some of which can impact a woman's future reproductive health. Therefore, comprehensive counseling and direct discussions about the risks and benefits tailored to each woman's unique circumstances are imperative. This process empowers expectant mothers to make informed and confident decisions regarding their childbirth options.

KEY POINTS

- Cesarean delivery is considered one of the most common and safe surgical procedure, and often are absolutely critical to save lives in situations

where vaginal deliveries would pose risks. But unnecessary surgical procedures can be harmful, both for a woman and her baby.

- Recent trend of extremely liberal approach towards cesarean delivery, exceeding 20% in some institutions have become a source of concern globally
- According to WHO clearly cesarean section rate of up to 10% leads to a reduction in maternal and newborn mortality, beyond which there is no evidence of benefit.
- When assessing risk of cesarean vs vaginal birth, organ injury, post-traumatic stress disorder, ITU/HDU admission were not of concern. What causes concern is the scar on uterus and risks related to it in subsequent pregnancies.
- Incontinence relief takes an edge in caesarean over vaginal birth.
- Regarding fetus, increase was found in cases of neonatal mortality, respiratory distress syndrome, obesity, autism, type 1 diabetes and asthma in cesarean births.
- Decrease was seen in cases of cerebral palsy though evidence was low quality.

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