Prevention of the First Cesarean Delivery

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KEYWORDS

• Prevention • Cesarean • Vaginal delivery • Maternal and fetal health

KEY POINTS

- Prevention of the first cesarean is a major driver to reducing overall cesarean rates.
- There are numerous obstetric, fetal, and maternal factors that are modifiable and impact cesarean delivery rates.
- Patience is necessary to allow normal labor; recent data demonstrate that the labor course is longer than previously taught.

INTRODUCTION

Cesarean childbirth began as a practice to remove the infant from a dead or dying mother, it was a measure of last resort and was not intended to preserve the mother's life.[1] From these origins, cesarean delivery has moved in the twenty-first century to become one of the most common major abdominal surgeries performed, and has a variety of obstetric and medical indications.

Of the almost 4 million births in the United States in 2012, 32.8% were delivered by cesarean, a rate unchanged since 2010. From 1996 to 2010 the rate had steadily increased from 20.7% in 1996 to the current 32%.[2] In parallel with the rise in total cesarean births from 1996 to 2010 is a rise in primary cesarean deliveries. Before 1996, the rate was flat or declining from the mid-1980s, in part because of the increasing use of vaginal birth after cesarean; however, the vaginal birth after cesarean rate peaked in the mid-1990s and now accounts for less than 10% of deliveries despite evidence supporting the method.[3]

Internationally, rates of cesarean vary dramatically ranging from less than 20% in northwestern European countries to 50% in southeastern Europe and more than 60% in some Latin-American countries.[4]

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Although overall cesarean is considered safe, it is generally accepted that there are increases in morbidity and mortality with cesarean[5–9]:

- Two-fold increase in maternal mortality
- Greater blood loss
- Impaired neonatal respiratory function
- Increased incidence of maternal postpartum infections
- Fetal lacerations
- Affects maternal-infant interaction
- Longer recovery
- Rehospitalization

Fetal risks include 1% to 2% risk of laceration, 1% to 4% risk of respiratory morbidity in those delivered by cesarean, and 1% to 2% risk of shoulder dystocia in those delivered vaginally. Although the initial cesarean is associated with increases in maternal morbidity and mortality, such as a rate of severe morbidity of 9.2% versus 8.6% in vaginal deliveries and mortality of 2.7% versus 0.9%, respectively, the downstream effects are even greater because of the risks of repeat cesareans in subsequent pregnancies, and associated placentation complications.[10] Multiple repeat cesareans are associated with a dose-dependent increase in placenta accreta, placenta previa, hysterectomy, transfusion of greater than or equal to four units, and maternal intensive care unit admission.[11]

Solheim and colleagues[12] performed a decision analysis model of the downstream consequences of rising cesarean rates and if they continue at current rates, by 2020 there will be a cesarean section rate of 56.2%, an additional 6236 previas per year, an additional 4504 accretas per year, and an additional 130 maternal deaths per year.

Given the fall in vaginal birth after cesarean, the risks associated with multiple cesareans, and the current trends, the most effective approach to reducing the overall cesarean delivery rate is to prevent the first cesarean. Major indications for primary cesarean include those occurring before labor and those during labor. Before labor the major cause is malpresentation and during labor first-stage and second-stage arrest.[13]

To identify points for intervention, obstetric, fetal, and maternal factors can be considered to identify those that are modifiable and may impact the overall cesarean rate. An expert panel convened to evaluate these factors and bin them into their diagnostic accuracy, the size of the effect if it were to be successful, and preventative strategies for each factor.[14] Of these many had limited diagnostic accuracy and small overall effects.

Failed induction and arrest of labor had the greatest potential effect, although the diagnostic accuracy was considered limited. Other obstetric factors with smaller impact include the use of external cephalic version for malpresentation; efforts to limit maternal weight gain to impact suspected macrosomia; and education for preeclampsia, cardiovascular disease, maternal request, and inadequate pelvis.

The definitions of failed induction and arrest of labor were reviewed and rethought based on current information to provide practitioners guidance. Failed induction should be diagnosed only after an adequate attempt, which is defined as least 24 hours of oxytocin with artificial membrane rupture (if feasible) with the failure to generate regular contractions and cervical change. Limiting the use of induction of labor to avoid elective inductions, recognizing the association of cesarean with cervical status (less favorable cervix = higher risk of cesarean), and the importance of allowing the induction sufficient time to progress all may result in lower cesarean rates.[14] The obstetric care consensus went even further than the expert panel recommendations stating that induction of labor should only be used for maternal or fetal indications before 41 weeks of gestation.[10]