When Is Primary Cesarean Appropriate: Maternal and Obstetrical Indications

Alan Thevenet N. Tita, MD, PhD

To describe appropriate maternal and obstetrical indications for primary cesarean delivery. The list of potential indications is long. Among all maternal and obstetrical indications, labor dystocia is the most common; multifetal pregnancy and malpresentation are not infrequent. Maternal indications, including human immunodeficiency virus (with high viral load) and herpes simplex virus (with active lesions), are rare. Preeclampsia alone typically is not an appropriate indication for cesarean delivery. Although the need for a cesarean is absolute for some conditions, such as complete placenta previa or placenta accreta, minimum criteria for a cesarean are variable and subjective for many indications, including dystocia. The subjective diagnosis of labor dystocia provides the best opportunity to prevent the first cesarean.

KEYWORDS primary cesarean, cesarean indications, dystocia, mode of delivery

Initiatives to reduce the high rates of cesarean delivery in the United States and elsewhere naturally focus on the indications for cesarean—to eliminate inappropriate indications and prevent the occurrence of true indications. As early as the 1970's, the National Institutes of Health cesarean delivery birth task force reviewed indications to address the dramatic increase in cesarean delivery at the time: the top 4 indications were dystocia, prior cesarean, breech or other malpresentation, and fetal distress. Dystocia accounted for 31% of cesarean deliveries overall and contributed 30% of the ongoing increase. Prior cesarean also accounted for 31% of cesareans, contributing 25% of the increase. Breech or other malpresentations accounted for 12% and contributed 10%-15% to the ongoing increase, whereas fetal distress accounted for only 5% but contributed 10%-15% to the ongoing increase.

The purpose of this review is to list potential maternal and obstetrical indications for the first cesarean delivery and describe the circumstances under which they are appropriate. The focus is on those indications that are related to the mother; fetal indications (addressed by other articles in the series) and prior cesareans are out of our scope. To gather information, targeted PubMed searches supplemented by a review of relevant American College of Obstetricians and Gynecologists (ACOG) bulletins and major obstetrical textbooks were undertaken.

Maternal and Obstetrical Indications

The indications for cesarean are numerous, and the lists provided are not exhaustive. There is considerable overlap between maternal/obstetrical indications (eg, malpresentation) and fetal or other indications discussed elsewhere. Many indications for cesarean delivery are not absolute—minimum criteria required for the indication to be appropriate either are not clearly defined or are variable. These subjective indications, such as labor dystocia, account for a disproportionate share of increasing cesarean rates.

Obstetrical Indications

A list of obstetrical indications for cesarean identified in a large contemporary study involving a consortium of centers in the United States is presented in Table 1. Labor dystocia was the most common indication for cesarean delivery overall (excluding fetal indications and prior cesareans), and fetal malpresentation was the next most common indication. Of note, a non-negligible proportion of cesareans was performed because of hypertensive disorders, which alone, typ-
Dystocia

Dystocia (failure to progress or cephalopelvic disproportion) is involved in approximately 40%-50% of primary cesarean deliveries.9 The majority of cesarean deliveries performed for dystocia occur intrapartum. In a contemporary multicenter US cohort, 47% of all intrapartum cesareans were due to dystocia compared with 2% done before labor, most likely for presumed cephalopelvic disproportion.3 Dystocia is not an absolute indication for cesarean delivery, as its diagnosis is susceptible to subjectivity, and there is a paucity of good quality data on outcomes to support a specific minimum threshold for labor progress. Therefore, a focus on dystocia has a high potential impact for preventing the first cesarean. According to ACOG, for dystocia to be an appropriate indication for cesarean, there must be (1) evidence of abnormal labor, defined as a protraction or arrest, and (2) evidence of an adequate trial of labor (including augmentation as needed) for a sufficient duration.4

Criteria sufficient for a diagnosis of dystocia in the latent and active phases of the first stage of labor are covered in detail elsewhere in this series. Briefly, diagnosis of latent phase dystocia warrants induction or augmentation and membrane rupture for at least 12 hours.4-7 Dystocia diagnosis in the active phase of the first stage warrants (1) adequate contractions (defined as 3-5 contractions per 10 minutes averaged over 30 minutes with external monitoring or at least 200 Montevideo units with internal monitoring), (2) at least 2-4 hours without cervical change (up to 6 hours if <200 Montevideo units), and (3) use of oxytocin as needed for augmentation.4,8 Minimum criteria for dystocia in the second stage vary by parity: no progress for 2 hours without epidural and 3 hours with epidural for nulliparous women versus 1 hour with no epidural and 2 hours with epidural for multiparous women.4 The use of these minimum criteria should take into account the patient’s tolerance, staff expectations, and new information from contemporary labor curves (discussed elsewhere).9

Maternal Obstetrical Indications for Cesarean Delivery

<table>
<thead>
<tr>
<th>Indication</th>
<th>Prior to Labor (%)</th>
<th>Intrapartum (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dystocia (CPD/FTP)</td>
<td>2</td>
<td>47</td>
</tr>
<tr>
<td>Malpresentation</td>
<td>17</td>
<td>7.5</td>
</tr>
<tr>
<td>Hypertensive disorders</td>
<td>3.1</td>
<td>1.6</td>
</tr>
<tr>
<td>Macrosomia</td>
<td>3.3</td>
<td>1.2</td>
</tr>
<tr>
<td>Multiple pregnancy</td>
<td>2.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Others</td>
<td>&lt;2</td>
<td>&lt;2</td>
</tr>
<tr>
<td>Placenta previa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vasa previa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Placenta accrete</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abruption</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CPD, cephalopelvic disproportion; FTP, failure to progress.

Table 1 Maternal Obstetrical Indications for Cesarean Delivery

Malpresentation

Malpresentation, including breech, transverse, oblique, brow, and face presentation, can also be considered a fetal indication. Malpresentation accounts for a significant proportion of prelabor cesareans. In a large multicenter US study, malpresentation was involved in 17% of prelabor cesareans compared with 7.5% of intrapartum cesareans.3 In general, although vaginal delivery may be considered in selected cases, malpresentation is an objective diagnosis and an appropriate indication in term women with singleton pregnancies, especially if an external cephalic version has been attempted or declined.10,11

Multifetal Pregnancies

Multiples account for a relatively small proportion of cesareans: 2.8% of prelabor and 0.8% of intrapartum cesareans.3 When grouped together, pregnancies with malpresentation or multiple fetuses make up 6.7% of births, but account for a high proportion (18.8%) of cesareans.3 Although the diagnosis is objective, a multifetal pregnancy is not an absolute indication for cesarean delivery. In general, most twin pregnancies with a vertex presenting twin are candidates for vaginal delivery, and a triplet pregnancy is not an absolute contraindication to an attempt at vaginal delivery.12

Preeclampsia

Preeclampsia accounted for 3.1% of prelabor cesareans and 1.2% of laboring cesareans in 1 large US cohort.4 However, preeclampsia alone, in general, is not an appropriate indication for cesarean delivery, as 50% of patients with severe preeclampsia before 34 weeks, and 1 in 3 before 28 weeks will successfully deliver vaginally.13 Rapidly worsening preeclampsia (eg, progressive acute renal failure) remote from delivery is advanced as an indication for cesarean, but this clinical situation is exceedingly rare, and there are few data to suggest that outcomes are better compared with waiting 24-48 hours for vaginal delivery.

Other Indications

Macrosomia, defined alternatively as estimated fetal weight >4000 or 4500 g, and nonreassuring fetal heart tones, or abnormal antepartum testing, are mainly fetal indications (discussed elsewhere in the series). Other obstetrical indications are rare. They include placenta previa, vasa previa, cord prolapse, and placenta accrete. In general, those problems are objective diagnoses and absolute indications for cesarean delivery. Placental abruption is also an indication for cesarean delivery when complicated by persistent profuse or life-threatening bleeding or when associated with nonreassuring fetal heart tones.

Maternal Indications

These indications generally are rare nonobstetrical conditions or factors that are coincident with pregnancy but lead to cesarean delivery (Table 2). Examples include specific infections; genital tract abnormalities (eg, masses, such as myoma, prior myomectomy, and cancer of the cervix); pelvic diseases, such as a displaced pelvic fracture; and other medical
Table 2 Maternal Medical Indications for Cesarean

<table>
<thead>
<tr>
<th>Perinatal infections (near time of delivery)</th>
<th>HIV—viral load &gt;1000 copies/mL or unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSV—active genital lesions or prodrome</td>
<td>Prior myomectomy</td>
</tr>
<tr>
<td>Pelvic or genital tract disorders</td>
<td>Obstructing fibroids</td>
</tr>
<tr>
<td>Cancer of the cervix</td>
<td>Vaginal or cervical HPV infection (florid or obstructing)</td>
</tr>
<tr>
<td>Displaced pelvic fractures</td>
<td>Other indications</td>
</tr>
<tr>
<td>Abdominal cerclage</td>
<td>Unrepaired cerebral aneurysm</td>
</tr>
<tr>
<td>Aortic dilatation (eg, &gt;4 cm with Marfan syndrome)</td>
<td>Aortic dissection</td>
</tr>
</tbody>
</table>

HIV, human immunodeficiency virus; HSV, herpes simplex virus.

Other Indications

Other rare indications for cesarean delivery include abdominal cerclage, unrepaired cerebral aneurysm, aortic root dilatation, and aortic dissection. Vaginal delivery is a consideration for aneurysms and aortic dilation if the patient is allowed to labor down and the second stage shortened by operative delivery.

Conclusions

Among maternal obstetrical and medical indications for cesarean, the relatively subjective diagnosis of dystocia is the most common and presents a high-yield opportunity for preventing the first cesarean. Many indications for cesarean delivery are not absolute—patients should be counseled appropriately about the risks and benefits of a vaginal delivery in these instances. Specifically, preeclampsia alone is not an appropriate indication for cesarean delivery.

References


