

Elective Cesarean Delivery on Maternal Request

Jeffrey Ecker, MD, Discussant

DR REYNOLDS: Ms A is a 38-year-old woman who is pregnant for the first time. Because of her perception that vaginal delivery confers high risk to the fetus, she has requested a cesarean delivery in the absence of a maternal or fetal indication. Ms A is healthy and has had an uncomplicated pregnancy; at the time of her interview her due date was in 5 days. She has a history of mild depression but takes no medications other than prenatal vitamins; she is married and works full time as a paralegal in a law office that focuses on malpractice cases.

MS A: HER VIEW

I've had a lot of friends who have had C-sections and a lot of friends who have had natural births. My mother is probably the first person I learned from, and her birth with me was not easy; it was horrible and by the end of it she was probably praying for death. I've just known a lot of people who have gone through wanting to have a natural birth and going through labor for hours and ending up needing emergency C-sections. I also know a lot of people who have just chosen the C-section, so I weighed both my options. The decision to have a C-section was made 100% for the health of the child. I've seen a lot of things go wrong in a natural childbirth. I work in an industry with birth injuries and I've read medical records many times and asked, why didn't they just get her a C-section? Why didn't they just take the baby out? And why take the chance of something going wrong with the baby? I feel like there's a lot more that can go wrong in a natural birth for the baby than can go wrong in the C-section for the mom, and I feel like I'm more willing to take something happening to me than something happening to my baby.

I don't really know a lot of benefits for the baby other than from what I know from personal experience. I've seen nerve palsies, brachial plexus palsies, forceps injuries, vacuum extractor injuries, and I've never seen those with a C-section. I've only seen one problem around C-section and it was a cut to the baby's face and I've worked in the business for 18 years.

 CME available online at www.jamanetworkcme.com and questions on p 1941.

Author Video Interview available at www.jama.com.

Importance Some pregnant women prefer cesarean delivery and request it without maternal or fetal indication rather than proceeding with a plan for vaginal delivery.

Objective To review approaches for counseling women who ask for cesarean delivery without maternal or fetal indication (known as cesarean delivery on maternal request [CDMR]).

Evidence Review An Agency for Healthcare Research and Quality evidence report of studies published after 1990, a 2006 National Institutes of Health state-of-the-science conference report, and published literature were examined.

Findings The prevalence of CDMR in the United States is not precisely known but probably occurs in less than 3% of all deliveries. Most practicing obstetricians have received requests for CDMR from patients. Compared with a plan for vaginal delivery, CDMR may be associated with lower rates of hemorrhage, maternal incontinence, and rare but serious neonatal outcomes. However, CDMR is associated with a higher risk of neonatal respiratory morbidity. Adverse consequences of CDMR may be manifested only in future pregnancies. Repeated cesarean deliveries have higher rates of operative complications, placental abnormalities such as placenta previa and accreta, and consequent gravid hysterectomy.

Conclusions and Relevance There is no immediate expectation for CDMR to reduce the health risks of mothers or infants. Accordingly, counseling and decisions regarding CDMR should be made after considering a woman's full reproductive plans.

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I expect the recovery for me after C-section to be more painful and more difficult than a natural birth and I'm willing to do that. I feel like I can take it, she's a baby and I don't want to do anything that's going to squish her or hurt her. I feel like if they just take her out it's going to be better for her.

I was talking to my doctor about childbirth and going through the steps for that and I just said to her, "How do

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you feel about a scheduled C-section?" And she said "I'll do it if you want to." That was great for me. I didn't want for her to be hesitant and tell me, "No, you don't want that" and try to talk me out of it.

I'm happy to come here so I can explain it to people that I'm not doing this for selfish reasons, and it's for the health of my baby. I don't like having to explain that to everybody all the time. I do think all women should be offered the opportunity to be able to choose between a C-section and a natural birth because it's their body and it's their baby.

AT THE CROSSROADS: QUESTIONS FOR DR ECKER

What is cesarean delivery on maternal request (CDMR)? How common is CDMR? What are the potential risks, benefits, and data supporting CDMR? What are the ethics of CDMR? Can CDMR be studied? What should physicians do when asked about CDMR? What do you recommend for Ms A?

CESAREAN DELIVERY ON MATERNAL REQUEST

DR ECKER: Cesarean delivery on maternal request is a term adopted and endorsed by a 2006 National Institutes of Health (NIH) state-of-the-science conference.¹ It refers to cesarean delivery performed without maternal or fetal indication; ie, with no expectation of improving the physical health of the mother or neonate.

Evaluating the merits of CDMR is more complex than simply comparing the spectrum of outcomes from cesarean deliveries to vaginal deliveries. Cesarean delivery on maternal request must be thought of in the context of the various outcomes from a planned vaginal delivery. Planned vaginal delivery can result in an array of outcomes, including an uncomplicated, spontaneous vaginal delivery; an operative vaginal delivery assisted by vacuum or forceps; or a cesarean delivery required by the presence of a variety of clinical conditions, including arrest of labor or protraction of progress of labor, fetal heart rate abnormalities, etc. Risks associated with performing an unplanned cesarean delivery during active labor must also be considered.

PREVALENCE OF CDMR

Most vital statistics systems do not have codes or designations specific to CDMR. Consequently, the frequency of CDMR is unknown. The NIH state-of-the-science conference could not determine the incidence of CDMR, and the panel indicated that they had little confidence in available estimates.¹ One review of changing cesarean delivery rates at a single institution found CDMR rates of less than 1%.² The Listening to Mothers Project interviewed more than 1500 mothers regarding delivery choices and found that 1 in 252 (0.40%) had a CDMR.³ The CDMR estimates from administrative data range from less than 1% to 2% of all deliveries in the United States. However, these estimates are based on the absence of certain diagnostic codes when codes are present for cesarean delivery. Because CDMR is not

specifically encoded, these estimates cannot be considered reliable.⁴

Four percent of nulliparous and 7.3% of multiparous Norwegian parturients "agreed completely" or "agreed" with the statement, "If I could choose, I would have a cesarean."⁵ Eighteen percent of obstetricians responding to a 2006 survey from the American College of Obstetricians and Gynecologists indicated that they would prefer CDMR if they or their spouse were delivering an uncomplicated, cephalic, singleton pregnancy at term.⁶ Similar data from Britain describes preference for CDMR in 10% of midwives, 21% of obstetricians, 50% of urogynecologists, and 50% of colorectal surgeons.⁷ Reasons cited for preferring CDMR included fear of labor, prior poor experiences with labor, or concern about specific outcomes including anal and urinary incontinence, fetal injury, and need for emergent cesarean or operative vaginal delivery.

POTENTIAL RISKS, BENEFITS, AND DATA SUPPORTING CDMR

Reasons for considering CDMR include fear of specific elements of labor and concern for fetal or maternal morbidities attributable to vaginal delivery (BOX 1). In contrast, CDMR may be associated with iatrogenic prematurity if planned delivery is undertaken too soon and complications in future pregnancies from cesarean-related scarring and/or repeated cesarean deliveries.

An exhaustive review of CDMR risks and benefits was published in a technical report by the Agency for Healthcare Research and Quality⁸ and in other published reviews.⁹ As noted in the technical report, however, "virtually no studies exist on CDMR, so the knowledge base rests chiefly on indirect evidence from proxies possessing unique and significant limitations."⁸ The Term Breech Trial,¹⁰ an international multicenter trial comparing planned cesarean delivery with planned vaginal delivery among women with singletons in breech presentation, was a randomized clinical trial that is often used as a proxy for CDMR outcomes. It is the only proxy cited in the NIH evidence-based review, and it is difficult to disagree with the NIH conclusion that "more evidence is needed."¹ Recognizing these important limitations of the evidence, I briefly review a few outcomes with reference to CDMR.

No differences in short-term maternal outcomes for planned cesarean delivery compared with planned vaginal birth were found in the Term Breech Trial except for a longer length of stay in the planned cesarean delivery group.¹⁰ Synthesizing the data from many other studies, the NIH state-of-the-science panel came to a slightly different conclusion and indicated that CDMR may be associated with a lower risk of hemorrhage or need for transfusion and a lower risk of trauma/organ injury when both injuries to the perineum and injuries to intraperitoneal organs at risk of cesarean-associated damage were considered together.¹ Importantly, these evaluations consider only the index preg-

Box 1. Possible Reasons to Seek Out or Object to Cesarean Delivery on Maternal Request (CDMR)

Possible Reasons Underlying CDMR

- Desire to avoid elements of vaginal delivery
 - Pain
 - Perineal trauma
- Desire to plan/time delivery
- Desire to avoid unplanned cesarean delivery (and attendant morbidities)
- Desire to avoid later maternal morbidity
 - Incontinence
 - Pelvic organ prolapse
- Desire to avoid rare neonatal outcomes
 - Intrauterine (including intrapartum) fetal demise
 - Hypoxic ischemic encephalopathy
 - Birth trauma
 - Neonatal infection
- Fear of vaginal delivery

Possible Objections to CDMR

- Potential increased maternal morbidity/mortality
 - Anesthetic complications
 - Infection
 - Organ injury
 - Pain
 - Delay in return to sexual activity
- Short-term neonatal morbidity
 - Respiratory morbidity
 - Potential separation of mother and infant during care of such morbidity
- Iatrogenic prematurity/early-term delivery
- Potential effect on breastfeeding
 - Decreased initiation
 - Decreased duration
- Effect on future pregnancies
 - Abnormal placentation
 - Placenta previa
 - Placenta accreta
 - Difficult repeat cesarean delivery
- Use of resources
 - Length of stay
 - Cost

nancy and not outcomes in future pregnancies in which prior cesarean delivery may lead to increased complication rates.

The effect of CDMR on long-term maternal outcomes such as pelvic organ prolapse and anal or urinary incontinence is unknown.¹¹ Data from cohort studies suggest that vaginal delivery, particularly operative vaginal delivery, is associated with an increased risk of these outcomes. A 2011

Baltimore-area study recruited 1000 women 5 to 10 years after delivery and compared outcomes between 200 women who had had cesarean deliveries without labor, 400 who had had cesarean deliveries in labor, and 400 who had had various types of vaginal delivery. There was an increase in pelvic organ prolapse and stress urinary incontinence (SUI) associated with vaginal birth relative to cesarean delivery without labor, and odds ratios were higher when vaginal births included at least 1 operative vaginal delivery (forceps or vacuum). Adjusted odds ratios (ORs) for the outcome of stress incontinence were 2.87 (95% CI, 1.15-4.02) and 4.45 (95% CI, 2.14-9.27) comparing women with only cesarean deliveries before labor with those with a history of vaginal births without and with at least 1 operative vaginal birth, respectively. For the outcome of pelvic organ prolapse, adjusted ORs were 5.64 (95% CI, 2.16-14.70) and 7.50 (95% CI, 2.70-20.87) for the same comparison groups.¹² The authors reported that in their analysis, 9 vaginal deliveries were needed to result in 1 case of pelvic organ prolapse. In contrast to the findings from the Baltimore study, data from the Term Breech Trial showed that although when evaluated 3 months after delivery, urinary incontinence was associated with planned vaginal delivery vs planned cesarean delivery (7.3% vs 4.5%; $P < .02$), there were no differences between those who planned cesarean delivery and those who planned vaginal breech delivery when patients were questioned about symptoms 2 years after delivery (17.8% of those with planned cesarean delivery vs 21.8% with planned vaginal delivery; $P = .14$).^{13,14}

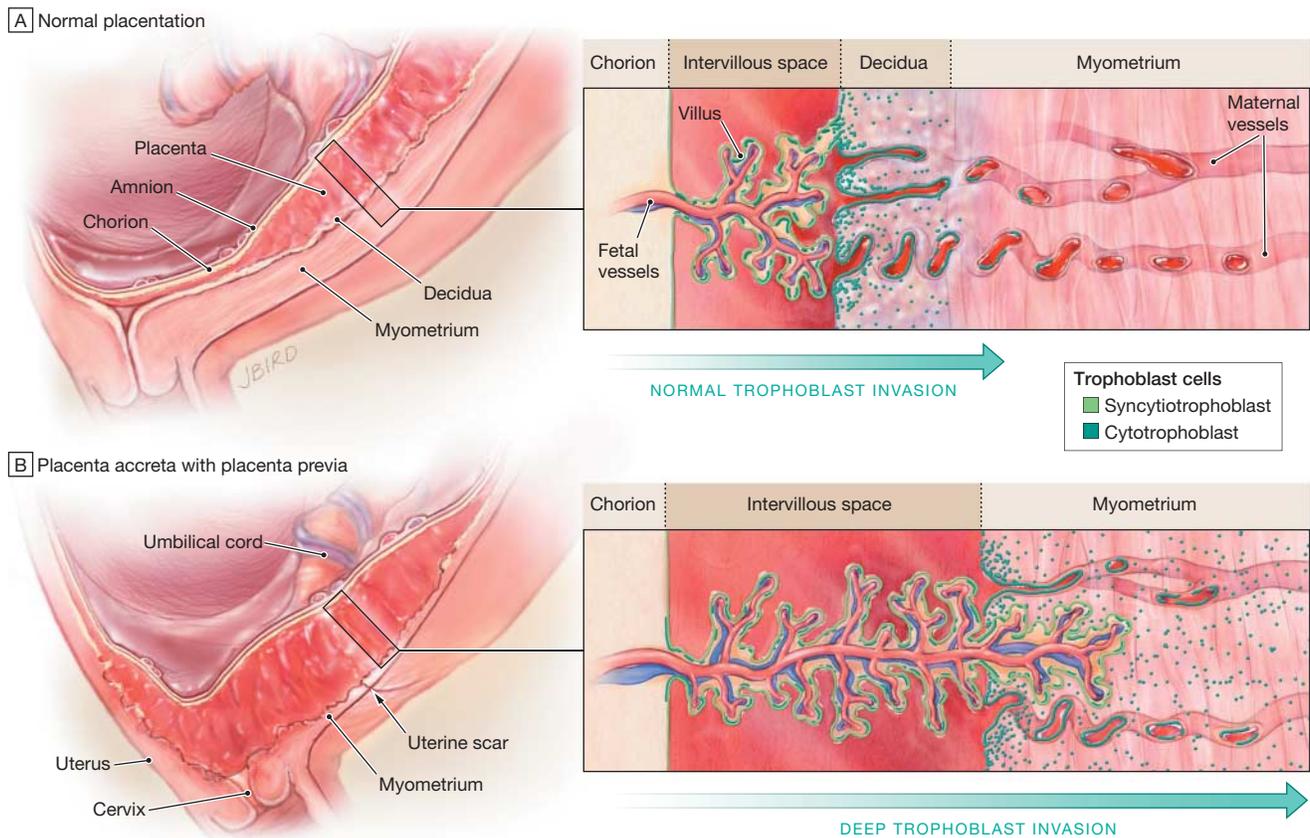
Cesarean delivery without labor is associated with an increased risk of neonatal respiratory complications including transient tachypnea of the newborn. When this occurs, nursery admission, oxygen therapy, or ventilatory support may be necessary.¹⁵ Differences in respiratory outcomes between delivery methods may be attributed in part to gestational age at birth. The difference in neonatal respiratory complications for different delivery modes narrows as gestational age advances. Consequently, women considering CDMR should plan their deliveries after 39 weeks of gestation.¹⁶ In contrast, Cesarean delivery can protect against infrequent complications such as birth injuries resulting in Erb palsy from shoulder dystocia.¹⁷ In addition to nerve injuries, a recent Spanish study highlighted that unusual complications of labor such as uterine rupture, cord prolapse, and placental abruption—events avoided by undergoing CDMR and other cesarean deliveries without labor—are associated with devastating complications such as hypoxic ischemic encephalopathy and intrapartum death.¹⁸ An analysis of a California discharge database for delivery methods and subsequent neonatal diagnoses for 500 000 term nulliparous singleton pregnancies identified an association between operative vaginal delivery and cesarean delivery in labor and subdural and cerebral hemorrhage and, in the case of cesarean delivery in labor, intracranial hemorrhage.¹⁹ Avoiding labor with CDMR could potentially reduce the risk

of such rare outcomes. Finally, the NIH state-of-the-science panel recognized the consequences of management plans truncating pregnancy near 39 weeks: a small number of stillbirths are avoided if women undergo CDMR and thus do not remain pregnant awaiting spontaneous labor or recognized indications for induction.¹ The number of CDMRs needed to prevent 1 of these adverse outcomes is, in almost all cases, quite large, and clinicians and patients should consider absolute risk as well as relative risk. For example, data from an examination of California birth certificates showed 1284 stillbirths among a cohort of 1 653 809 pregnancies delivered between 39 and 42 weeks of gestation (0.07764%), suggesting that 1288 CDMRs might have prevented 1 stillbirth in this group.²⁰

Obstetricians recognize that many risks of CDMR are not related to the index pregnancy but are deferred to future pregnancies and any future cesarean deliveries. Results from a large NIH-funded observational study conducted through the

Maternal-Fetal Medicine Units Network²¹ showed that the risks of placenta accreta (growth and invasion of trophoblasts into the underlying uterine myometrium that prevents the usual separation and delivery of the placenta) and gravid hysterectomy (hysterectomy performed at the time of delivery or in the immediate postpartum period when the uterus is still enlarged and receiving much greater blood supply than the nonpregnant uterus) along with maternal blood loss and surgical complications, increase with an increasing number of cesarean deliveries (FIGURE). Complication rates increase from 0.2% to 2.1% for placenta accreta and 0.7% to 2.4% for gravid hysterectomy in a first compared with a fourth cesarean delivery, respectively. Placenta accreta is a life-threatening condition. Together with obstetric hemorrhage, it is a cause of increasing maternal mortality in the United States.²² The findings from the Maternal-Fetal Medicine Units Network study were mirrored in a Danish cohort examining outcomes following nearly 25 000 first births

Figure. Schematic Comparison of Normal Placentation and Placenta Accreta



A, With normal placentation, chorionic villi invade to the decidual layer and do not invade the myometrium, allowing placental separation after delivery. B, Abnormalities of trophoblast invasion and placental attachment, generally referred to as placenta accreta, include 3 levels of placental invasion into the uterine wall: accreta—attachment to the myometrium; increta (shown)—attachment within the myometrium; and percreta—invasion through the myometrium and serosa. Areas of placenta where villi are embedded in the myometrial layer are adherent to the uterine wall and fail to separate after delivery. Risk for placenta accreta is increased in areas of uterine scarring, such as from a prior cesarean delivery, and in association with placenta previa because implantation occurs over the cervix and lower uterine segment where the decidual layer is thin.

Table. Selected Maternal and Neonatal Outcomes With Reference to CDMR^a

Improved With CDMR	No Change With CDMR	Worse With CDMR
	Maternal Outcomes	
Infection (planned vs unplanned cesarean) (III) Operative or perineal injury (III) Hemorrhage (II) Anal and urinary incontinence (III)	Maternal mortality (III) Breastfeeding (III) Pain (III)	Infection (cesarean vs vaginal delivery overall) (III) Length of stay (II) Uterine rupture, placenta previa/accreta in subsequent pregnancies (II)
	Neonatal Outcomes	
Asphyxia, hypoxic ischemic encephalopathy (III) Brachial plexus injury (III)		Respiratory morbidity (II) Length of stay (III)

Abbreviation: CDMR, cesarean delivery on maternal request.
^aAdapted from Visco et al.¹⁹ Levels of evidence (indicated in parentheses): I=strong; II=moderate; III=weak.²⁵

and noted significantly increased ORs for placental abruption (OR, 2.3; 95% CI, 1.5-3.6), uterine rupture (OR, 268; 95% CI, 65.6-999), hysterectomy (95% CI, 29.8; 95% CI, 3.1-263.8), and anemia (2.8; 95% CI, 2.3-3.4) among future pregnancies in the 3340 women whose first births were cesarean deliveries.²³ The Danish study did not note an increase in the risk of subsequent stillbirth (OR, 0.7; 95% CI, 0.2-2.2), but a Scottish cohort of nearly 120 000 women with 2 pregnancies concluded that “women whose first birth was by cesarean section were at a significantly increased risk for having an antepartum stillbirth in their second pregnancy,” even after adjustment for maternal characteristics and complications occurring in the first pregnancy.²⁴ Collectively, these findings demonstrate a need for counseling for women considering requesting cesarean delivery, including taking into account a woman’s full reproductive plans. In practice, this can be difficult because the patient’s attention is generally focused on the pregnancy at hand. Future pregnancies are, literally, unconceived and, therefore, for many, inconceivable.

In summary, the best, albeit very limited, evidence suggests that there are few short-term differences in maternal outcomes when CDMR is compared with planned vaginal delivery. Short-term differences in urinary incontinence rates are not seen with longer follow-up of women undergoing the various delivery routes. These complications should be balanced against risks related to operative complications and the increased rate of abnormal placentation associated with increasing number of cesarean deliveries. Fetal respiratory outcomes are more common after CDMR, but these outcomes may be offset by serious neonatal morbidities and mortalities more frequently associated with planned vaginal delivery (TABLE).^{1,16}

ETHICAL CONSIDERATIONS OF CDMR

Whether it is right and ethical to offer CDMR is a contentious issue that has been extensively debated. Patients’ autonomous decision making requires that they be offered the information needed to make informed decisions. Information regarding the limitations of data to support any specific delivery mode should be provided to women considering CDMR. An ethical approach to informed counseling recognizes not only alternate delivery options but alternate

management options for issues or concerns that lead to the request for cesarean delivery. For example, if a patient indicates an interest in planned cesarean delivery as a result of her fear of pain in labor, clinicians should discuss using epidural anesthesia and/or other options for managing pain in labor. It is the opinion of many ethicists and professional groups, including the American Congress of Obstetricians and Gynecologists (ACOG),²⁶ that obstetricians may accede to a patient’s request for CDMR. However, obstetricians are not obliged ethically or professionally to do so, and if the patient and clinician cannot agree on an intended route of delivery, ACOG indicates that referral to another health care practitioner is appropriate.

CAN CDMR BE STUDIED?

Seeking to address the topic of “cesarean delivery for non-medical reasons at term,” a Cochrane review identified no studies that met their inclusion criteria, which included that the studies be randomized trials among women with “no clear clinical indication for [cesarean] section.”²⁷ The data summarized above demonstrate equipoise around the question of CDMR. Effect sizes of previous studies suggest that the number of women needed for enrollment in studies to answer questions regarding CDMR are not prohibitive.²⁸ Equipoise and sample size analysis, together with public and professional interest in the issue, indicate that appropriate studies should be organized, but it is not clear how many patients would be willing to enroll in such a trial.²⁹

PHYSICIAN RESPONSE TO CDMR

Because data are limited and recommendations are uncertain, CDMR need not be discussed with all patients.^{30,31} It is ethically and professionally correct when asked about CDMR for obstetricians to provide a balanced discussion about CDMR. Given the complexities regarding CDMR and the decision to pursue it, discussions with patients about this are best continued over several clinic visits. Discussions should emphasize patients’ values, fears, or concerns central to their request. Counseling can help correct any misinformation or misperception and can help patients understand physicians’ concerns regarding CDMR. The clinician, patient, and, if appropriate, the patient’s partner, family, or other support should consider the potential effects of

CDMR on future health, including future reproductive health. It is essential to discuss absolute risks as well as relative risks; a “higher” risk of a particular outcome with one option does not indicate a “high” risk of an undesired outcome. For example, the risk of neonatal hypoxic ischemic encephalopathy may be higher with planned vaginal delivery, but the outcome itself is rare in groups of patients who plan such delivery. Often, following counseling and explanation of all risks and benefits of CDMR, patients choose not to have the planned cesarean delivery.

RECOMMENDATIONS FOR MS A

For Ms A, I would recommend a plan for vaginal delivery. In response to her request, I would initiate a series of conversations to better understand her request and plans, to help her understand my concerns, and to educate her about what absolute level she might expect for the risks and benefits of CDMR. Ms A indicated that she worked as a paralegal in the “birth injury industry,” and in this role, she is likely both to collect cases that are unusual outliers and to perhaps unduly ascribe a protective benefit to cesarean delivery. As she considers her own care, I would make sure that in addition to the cases that she evaluates for potential claims—the numerator—she was aware of the denominator—the great many cases in which a plan for labor is undertaken most often without any morbidity at all or, in other cases, any morbidity readily prevented by planned cesarean delivery before labor. Understanding the number needed to treat—in this case the number of CDMRs needed to avoid 1 undesired maternal or neonatal outcome—is an important part of counseling. I would also emphasize the importance of considering her choice in the context of future pregnancies. If, in the end, she remained certain of her desire for CDMR, I would, as the physician involved in her care did, accede to her request. Surveys indicate that many obstetricians would similarly assent to performing CDMR.⁶ For those unwilling to accede, facilitating referral to another practitioner is best. For those planning to undertake CDMR, ACOG³² and the NIH¹ state-of-the-science panel offer specific advice (BOX 2). I would undertake all of these conversations and make all plans in a collaborative spirit designed to make the patient comfortable with rather than distance her from the care we can offer.

QUESTIONS AND DISCUSSION

QUESTION: I know this is an obvious question, but why are we only concentrating on cesarean delivery? What about plastic surgery operations? What about circumcisions? Why do we only concentrate on cesarean delivery when these other issues involve the same principles and are probably as important?

DR ECKER: You are right: similar dilemmas and issues arise as patients request other treatments and procedures both in our field and in other areas of medicine. Imagine someone who approaches a general surgeon and says, “I live in fear of my appendix bursting. Please go ahead and take it out.” We

Box 2. Recommendations From National Institutes of Health Consensus Conference and American Congress of Obstetricians and Gynecologists for Planning of Cesarean Delivery on Maternal Request (CDMR)

1. CDMR should not be planned before a gestational age of 39 weeks has been accurately determined.
2. CDMR should not be motivated by the unavailability of effective pain management.
3. CDMR is not recommended for women desiring several children given the risks of placenta previa, placenta accreta, and gravid hysterectomy that accumulate with each cesarean delivery.

live in an age where patients have access to many sources of information and, as a result, perhaps can worry about or request many more things than in times past. When someone who is in your care says, “Dr Smith, I want you to do X for me,” and you feel that perhaps there is no clear indication for X, how do you approach that in a way that is not dismissive and addresses the patient’s concerns and values? Providing a framework for managing those requests is the focus of the ACOG ethics committee opinion I referred to.²⁴

QUESTION: What is the role of culture and society in influencing women’s sense of empowerment and trust in the technology and science of childbirth? Is it our responsibility to shape that conversation as well?

DR ECKER: Of course, culture and community influence choices and values. However, I’ve tried to show some surveys and data that argue that interest in CDMR crosses geographical and cultural boundaries. Sociologists and others will need to determine what specific characteristics of a society influence the variation in interest. Whatever the patient’s culture or background, I do think it is the job of physicians to put these questions and requests in context, and some of that context is the number needed to treat and how small the numerator, the absolute risk, often is. So for Ms A, I would help her understand that as a paralegal in a practice that looks at claims of birth injury, she sees very unusual cases. The job of clinicians is to help this and all such patients think about the next pregnancy, because they may not have thought about the possibility of blood transfusion, placenta accreta, or cesarean hysterectomy. We need to understand what is driving a patient’s request, what is important to them, and consider if we can address the issue differently. In the case of a patient who has to know when she is going to deliver, there are other ways of addressing that need short of planning cesarean delivery, which is a blunt tool for addressing a lot of delivery-related concerns. I want to make it clear that I am not advocating elective delivery or induction but recognizing that CDMR seems an extreme way of organizing such.

Conflict of Interest Disclosures: The author has completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none were reported.

Online-Only Material: The Author Video Interview is available at <http://www.jama.com>.

Additional Contributions: We thank the patient for sharing her story and for providing permission to publish it.

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