

Strategies to Avoid Unnecessary Cesarean Sections

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Because there is a 35 to 50 percent incidence of false-positive prediction of fetal compromise on fetal heart-rate monitoring patterns, many unnecessary cesarean sections are performed. To reduce the number of unnecessary cesarean sections, the physician is urged to consider the following: (1) fetal heart-rate monitoring is associated with higher rates of cesarean sections than in those not monitored; (2) only high-risk patients should be monitored provided the low-risk patient is at term, with a normal-sized infant, and does not convert to a high-risk patient while in labor; (3) maintenance of variability is a better predictor of absence of acidosis than is fetal scalp pH; (4) fetal scalp stimulation by firm digital pressure or gentle nontraumatic clamping of scalp tissue or acoustic stimulation obviates the need for fetal scalp pH confirmation of acidosis in 50 percent of cases; (5) monetary considerations may unconsciously lead to increased cesarean sections, since insurance companies remunerate at a higher level for those as compared with vaginal deliveries; and (6) more patients with prior cesarean section should be given a trial of labor, since the initial reason for cesarean section often is not a recurring one and many could successfully be delivered vaginally.

Ultimately there is a risk inherent in any decision regarding method of delivery. The patient must understand this risk and share in the decision-making process as a knowledgeable person, aware of the limitations of her physician.

Each time an obstetric patient is put on a fetal monitor, the possibility, or even likelihood, is raised that some abnormality will become apparent over the course of her labor. When this occurs, the physician must answer the nurses' questions, assuage their fears, deal with the pressure to intervene that is thereby imposed, and ultimately make a decision as to the seriousness of such an abnormality. Is it benign or potentially serious?

It is not always easy to answer these questions. Even cardiac monitoring in adult medicine has its dilemmas and areas of controversy. Cardiac monitoring of a fetus, however, especially if done externally, is undoubtedly less specific than adult monitoring. Experts can agree on what is a normal pattern with good consensus. The accuracy of predicting an infant with an Apgar score > 7 with electronic fetal heart-rate monitoring is as high as 99 percent.¹ But what about abnormal patterns?

In one study, five experts agreed on abnormal patterns (eg, late decelerations, change in variability) between 3 percent and 43 percent of the time.² It is no wonder that

there is disagreement concerning the significance of abnormal patterns of fetal heart-rate monitoring, since the incidence of false-positive heart-rate patterns is quite high.

Reports by several authorities show that even the most ominous fetal heart-rate patterns are associated with newborn depression only 50 to 65 percent of the time³; that is, there is 35 to 50 percent false prediction of fetal compromise. A recent large study showed that even in severely acidotic fetuses with an umbilical artery pH of < 7.10 at birth, 73 percent of the infants had one-minute Apgar scores of > 7 .⁴ In 86 percent of these infants, the five-minute Apgar score was > 7 .

Clearly, alarms are sounded a good deal of the time unnecessarily because of false-positive fetal heart-rate patterns. If the experts cannot agree on the severity of abnormal fetal heart-rate patterns, how are attending physicians to make rational decisions when faced with similar sets of circumstances?

Many physicians react to this dilemma by resorting to cesarean section, often before it becomes imperative. Cesarean section is a way to resolve the problem and relieves the physician of the stress of continuing with a labor that may or may not turn out well. In a day of strict peer review, legal considerations, and patient expectations of always having a healthy baby, cesarean sections are per-

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formed with increasing frequency (up to 22 percent in some large centers).⁵

If the experts cannot agree more than 50 percent of the time as to what is nonreassuring or ominous in fetal monitoring,¹ and if prestigious hospitals perform cesarean sections up to 22 percent of the time, how can the average physician practicing obstetrics not connected with universities or large hospitals go against the trend without being criticized or sued?

For the objective physician, there is already enough in the literature to help in making rational decisions that would reduce the number of cesarean sections now performed without jeopardizing the fetus. At the same time, it is impossible to avoid risk of error by any decision, including the decision for cesarean section, which carries with it an increase in maternal mortality, as well as the decision not to perform one when it is clearly indicated, thereby jeopardizing the fetus.

CONSIDERATIONS CONCERNING INDICATIONS FOR CESAREAN SECTION

The following are various aids for the physician to consider that may help to reduce the number of unnecessary cesarean sections.

Does Monitoring in Itself Increase the Cesarean Section Rate?

Most studies have shown that with the advent of fetal monitoring the incidence of cesarean sections has likewise increased.⁶ There are some that minimize the role of fetal monitoring and instead blame the increased cesarean section rate on technology itself, cesarean sections being a form of technology.⁷

There have been five controlled studies to determine whether patient outcome is better when labor is monitored.⁸⁻¹² None of these studies was able to show the benefits of monitoring to fetal outcome. The studies by Haverkamp et al.^{8,11} dealt with high-risk patients, making it even more surprising that no difference could be found.

In another study, although not controlled, Neutra et al.¹³ reported on 16,000 deliveries and found an overall crude neonatal death rate to be 1.7 times higher in unmonitored infants than in monitored ones. When patients were divided into five risk categories, however, it was found that the unmonitored lowest risk group (infants at term with no risk factors) had the same neonatal morbidity and mortality as the monitored group. The low-risk group comprised 76 percent of all births in the study. A definite advantage was demonstrated for fetal monitoring in high-risk pregnancies, however. High risk has been defined by

the National Institutes of Health publication¹⁴ as follows: (1) low estimated fetal weight, (2) prematurity, postmaturity, or suspected intrauterine growth retardation, (3) medical complications of pregnancy, (4) meconium staining, (5) intrapartum obstetric complication, (6) use of oxytocin in labor, and (7) presence of abnormal auscultatory findings.

The consensus in the literature is that monitoring of high-risk patients yields a better fetal outcome than if not monitored, even though controlled studies have not borne this out. Monitoring of low-risk patients does not yield improved fetal outcome but nevertheless carries with it an increased cesarean section rate, as does the high-risk monitored group. The answer to the question of whether monitoring in itself is associated with higher cesarean section rates appears to be yes.

Should Only High Risk Patients Be Monitored?

Some experts warn against relying too heavily on whether the patient was low risk or high risk at the onset of labor, since up to 30 percent of low-risk patients will become high risk while in labor.¹⁵ Other experts, such as Haverkamp et al.,^{8,11} place much importance on low- or high-risk categories. Indeed, a group of practicing obstetricians, when asked to comment on various fetal monitor readings, were heavily influenced by the low-risk or high-risk categories into which the mothers fell.¹⁶

That there are higher rates of complications from high-risk mothers than from low-risk mothers is supported in the literature. Even if 30 percent of low-risk mothers convert to high risk in labor, the overall group of low-risk patients will have fewer complications and fewer fetal monitoring abnormalities. In addition, the type of monitoring abnormality seen should be less severe and presumably more reversible than with high-risk patients. Thus, one's tolerance for dealing with monitoring deviations in low-risk patients would be high, since the fetus tends to be more resilient than in high-risk patients.

There is ample justification for the idea that only high-risk patients should be monitored, provided the low-risk patient is at term, has a normal-sized fetus, and does not convert to high risk while in labor.¹⁷

Some Useful Monitoring Aids

The usual methods of treating early fetal asphyxic stress manifested by bradycardia, variable decelerations, and late decelerations include laying the patient on her left side, giving oxygen and fluids if necessary, and discontinuing oxytocin administration. If these methods fail, and if the asphyxic stress is severe or prolonged, decreased fetal heart-rate variability (beat-to-beat variation in fetal heart rate) will be observed. The lack of fetal heart-rate vari-

ability probably signifies loss of oxygenation to the central nervous system of the fetus. It is a signal that the fetus has lost its ability to compensate under stress (unless the loss of variability is due to pharmacologic agents such as narcotic analgesics).

Before one sees the loss of variability, there should be intervening "ominous" signs that could lead to rapid cesarean section by some criteria, but by other criteria may merely indicate that a fetus is compensating for stress. Severe variable decelerations or late decelerations of short duration can still be compatible with oxygenation of vital organs. The important feature is that fetal heart-rate variability is maintained. Preferably this rate should be monitored internally, on the fetal scalp, since external monitoring can give false-positive (reassuring) variability readings.¹⁸

In his excellent article on fetal heart monitoring, Parer¹⁹ states that fetal heart-rate variability is a more important predictor of fetal well-being than blood pH. Fetal heart-rate variability predicts vigor (Apgar score > 7 at five minutes) with greater than 99 percent reliability. In a series of over 10,000 deliveries over a six-year period, no baby had an Apgar score < 7 if the fetal heart-rate variability was normal within five minutes of delivery, no matter what periodic changes were present (provided there was not a traumatic delivery or congenital disorder).

Only 85 to 90 percent of fetuses with a scalp blood pH > 7.20 will have five-minute Apgar scores of > 7.²⁰ Thus, fetal heart-rate variability seems to be a more reliable predictor of fetal well-being. Fetal scalp pH testing is used mainly by large teaching hospitals and only in 3 percent of their laboring patients. Fewer than 2 percent of practicing private physicians ever use this method.²¹ In addition, without continuous practice, fetal scalp blood pH monitoring is a cumbersome procedure and may be unreliable in inexperienced hands.

Even though maintenance of variability carries with it a good prediction of fetal well-being, Parer is quick to point out that one should not wait for the disappearance of variability before resorting to cesarean section if other signs of distress are prolonged or severe. Clinical judgment cannot be replaced by any one test. Maintenance of variability remains, however, one of the most important signs in evaluating fetal well-being.

Scalp Stimulation

Scalp stimulation by firm digital pressure and gentle non-traumatic clamping of scalp tissue can cause fetal tachycardia and help to evaluate whether a fetus with patterns of asphyxia suggesting fetal acidosis is in fact acidotic. In Clark's study,²² response to scalp stimulation with an acceleration of fetal heart rate of 15 beats per minute lasting at least 15 seconds was always associated with a scalp

blood pH of > 7.19. Of a total of 100 fetuses, there were 51 that responded with an acceleration, while the remaining fetuses that did not respond included 19 with a scalp pH of < 7.19 and 30 with a scalp pH of > 7.19.

Thus, out of 100 fetuses with patterns of asphyxia suggesting acidosis, only 19 percent were truly acidotic with a pH < 7.19. Fifty percent could be identified as nonacidotic on scalp stimulation tests alone, obviating the need for scalp pH confirmation. Loud acoustic stimulation is an alternative to tactile scalp stimulation and equally successful in causing fetal tachycardia.

Remuneration for Performing Cesarean Section vs Vaginal Delivery

An unspoken and potentially unconsidered ingredient when deciding whether to perform a cesarean section is the issue of remuneration. In the state of Connecticut, in 1986, the CMS Insurance Company paid \$1,050 for a cesarean section but only \$890 for a vaginal delivery. While this 18 percent difference is probably not an important conscious consideration in decision making, it might be playing more of a role on an unconscious level than is thought.

Monetary considerations can work both ways, influencing obstetricians and family physicians differently: obstetricians receive more for cesarean sections than for vaginal delivery (and usually devote far less time to cesarean section than to labor and delivery by vaginal means); family physicians, if they do not perform cesarean sections themselves, usually lose all their labor and delivery fees to the obstetric surgeon when their patient fails to deliver vaginally and gets a cesarean section instead.

Most babies born in the United States, however, are currently delivered by obstetrician-gynecologist specialists rather than family physicians, and it is the obstetricians who are setting the standard of obstetric care. The attrition rate of family physicians practicing obstetrics coincides with increasing national cesarean section rates. With the loss of family physicians delivering patients vaginally, there is probably a concomitant loss of monetary (and time) incentives on the part of obstetrician specialists to perform vaginal deliveries. If the current rate of increase in cesarean sections continues, vaginal deliveries could vanish by the year 2010. It is interesting to speculate how the current trend toward more cesarean sections might be affected if cesarean sections were reimbursed at a level of payment substantially lower than that of vaginal deliveries.

COMMENTS

The dilemma regarding whether to intervene by cesarean section revolves around two major issues: (1) Will the

outcome be helped by doing it, and (2) if the outcome is poor, can the physician be criticized or sued for not doing it, or for not doing it soon enough.

At a recent grand rounds conference, a case was presented in which an experienced, busy, board-certified obstetrician had failed to diagnose fetal distress, based on the monitor tracing, sufficiently early to avoid severely compromising the infant by the time it was delivered by cesarean section. The ensuing discussion was not simply about the issue of whether the obstetrician should have recognized fetal distress sooner and acted more quickly; the reasons for not acting faster were more to the point.

Since up to 40 percent of monitored labors have non-reassuring and ominous patterns,^{18,23} and since only 3 to 25 percent of this 40 percent require cesarean section, it is easy to see how a physician can be lulled into a false sense of complacency. If the majority of these patients do not require cesarean sections, and the physician's average of good results is high, then the likelihood of resorting to cesarean section in the face of abnormal monitor patterns may be low. Most physicians tend to believe in their own experience in medicine more than in statistics. Reluctance to act more quickly with abnormal monitor patterns is further reinforced by the fact that to prevent one hypoxic death it is necessary to monitor between 1,000 and 10,000 labors.²⁴

Thus, if the physician's own memories of good outcomes, in spite of poor tracings, is strong, the answer to the question of whether the outcome will be helped by cesarean section might understandably be no.

On the other hand, it might not take more than a case or two when cesarean section was delayed with a poor outcome to lead the physician to change his or her mind on this issue. Being summoned for peer review or being brought to court in a suit can quickly change one's approach. Even learning about a colleague's plight can make one trigger-happy, so that cesarean sections are resorted to prematurely or unnecessarily. The physician can thereby be led to believe that the outcome can be helped by cesarean section and that criticism and potential suits may be avoided as well.

The answers to these dilemmas are not simple, but there are answers. In addition to the foregoing approaches, there are philosophical considerations that can be helpful. Perhaps the rush toward cesarean sections is the result of wanting to defend oneself. The best defense, however, does not necessarily lie with more tests, better technology, and higher costs; it rests on the relationship between two people: the patient and her physician. The mother should understand that no machine and no amount of testing or money can erase the inherent risks of delivery. A healthy infant simply cannot be guaranteed, a fact the mother and her mate have to accept. They need to know that legitimate reasons exist for resorting to cesarean section,

but that for every 172 infants saved by this procedure (in the case of 5,206 breech and low-weight vertex deliveries), three mothers will die as a result of it.⁶ Perhaps informed consent should include statistics such as these. With this knowledge, more patients might opt for a trial of labor after having had a previous cesarean section. Even though the rate of trial labor for such patients has risen from 2.1 percent in 1979 to 8.0 percent in 1984, this increase so far has not been large enough to stem the rising cesarean rate.²⁵ The rates of trial of labor ranged from 2 percent in small hospitals to 25 percent in larger ones.²⁵ Many hospitals (54 percent) still do not engage in trials of labor, however, in spite of 50 percent success rates in those hospitals that do.

No amount of defensive medicine can prevent a physician from being sued. But short of tort reform, risk can be minimized by maintaining an open, honest relationship between physicians and their patients. Having patients share in decision-making processes by knowing the risks attached to various therapies can establish a trust relationship. There is no place in medicine for blind faith in the infallibility of the physician. Such beliefs lead to unrealistic expectations and ultimately to disappointment and a sense of betrayal when all does not go well. Instead, a reassuring trust relationship can be built upon the knowledge that the physician cares about the patient and her child and will act responsibly, not out of fear or peer pressure, but out of genuine concern. The knowledge that her physician is dedicated to delivering as healthy an infant as is humanly possible is all that a patient can reasonably hope for—or expect.

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