

# Once a Cesarean, Always a Cesarean?

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THE DICTUM, "Once a cesarean, always a cesarean," was accepted as a sound medical principle 25 years ago, whereas today it is not only questioned but is challenged by many.<sup>1,2</sup> One of the great fears brought about by this turn of events is that trial of labor after previous cesarean section will be overused. In spite of this trend, it must be realized that the thinking is not universal. Harris<sup>3</sup> states that it is not beyond the realm of possibility that the day will come when all women will be delivered by cesarean section. Others believe that the rate of cesarean section will increase until anything but the most simple operative vaginal deliveries will become completely obsolete. With the advances in surgical techniques, changes in administration of anesthesia, and improvement in post-operative care, one cannot help but speculate about the care of this type of patient 50 years hence.

Significant progress has been made in cesarean sections since the days of mythology when, as it has been reported, Aesculapius was delivered through the abdomen of his mortal mother by his father—God Apollo—at the funeral pyre. Significant progress has been made since the time when cesarean sections were reserved as a procedure to be performed on the dead rather than on the living. It must again be pointed out that Julius Caesar was probably delivered vaginally since letters written to his mother document the fact that she was alive at the time of his birth. Significant progress has been made since the Thirteenth Century when a decree was handed down from the Council of Cologne stating that a woman's mouth after death must be kept open during the cesarean section so that the child would not suffocate. Historically speaking, it was not until the Sixteenth Century that cesarean sections were performed on the living, however, the maternal mortality following this procedure was so high the procedure was quickly abandoned and forbidden by law in many countries in Europe.

During the first half of the Twentieth Century, the maternal and fetal mortality associated with cesarean section dropped precipitously, and the attending physician became satisfied with the exist-

ing philosophy of once a section always a section. The conservative approach was accepted, since the incidence of ruptured uterus was thought to be significant and the resultant consequences were alarming. It was taught that if the uterus ruptured at the site of a previous cesarean section scar, most times the fetus would be sacrificed, often times the uterus would be sacrificed, and some times the mother would be sacrificed.

In the last decade or so, the philosophy throughout the country has changed in many respects. What this change of tradition means when applied to the principles regarding repeat cesarean section can probably best be answered by discussing several questions:

*What are we trying to prove?* Are we trying to determine what the uterine scar can withstand during labor? Are we trying to prove how fast an emergency cesarean section can be performed—a so-called fire drill? Are we trying to determine how much the coronary arteries of the attending physician can tolerate since it has often been stated that as the uterus contracts, the coronary arteries of the physician constrict. No, this is not the aim, but we are trying to determine what is safe and what is best for the individual patient.

*What is the issue?* As stated above what is best for

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the mother and offspring under the existing circumstances is the first thing being sought. Secondly, patients with a history of previous cesarean section have on occasion been admitted to the labor room in active and advanced labor at which time the question whether or not to perform a repeat cesarean section has arisen. It has seemed unwise to employ emergency procedures at this time to extract the infant abdominally because of previous teachings. Thirdly, and most importantly, it has been reported that the prematurity rate in a large series of repeat elective cesarean sections is significantly elevated when compared to over-all prematurity statistics. In view of these experiences, reevaluation of the existing therapeutic methods seems justified.

1. What is the incidence of ruptured uterus, maternal mortality, and fetal mortality under various situations? It is summarily estimated that the incidence of uterine rupture through a classical cesarean section scar is approximately 2 to 4 per cent. However, 50 per cent of these ruptures occur prior to the onset of labor. A rupture of the uterus through a low segment cesarean section scar occurs in only 0.25% of the cases. This type of rupture not only occurs more often when the patient is in active labor, but is frequently an incomplete type of rupture. In considering the maternal and fetal mortality in association with a classical cesarean section scar rupture, it is estimated that the maternal loss is approximately 2 to 3 per cent, whereas the fetal loss is 50 to 70 per cent. The maternal mortality associated with a lower uterine segment cesarean section scar dehiscence, however, is significantly decreased and occurs in less than 0.1 of 1 per cent, whereas the fetal mortality under the same condition is approximately 7 per cent. These statistics suggest that vaginal delivery may be considered under certain circumstances when one excludes patients that have had previous classical cesarean sections. The significantly low incidence of rupture of the uterus through a lower uterine segment cesarean section scar gives support to the proponents of subsequent vaginal delivery. Conversely, however, the maternal mortality in cesarean sections itself is less than 0.1 of 1 per cent, and the fetal mortality under the same condition is 0.2%. These statistics tend to support the proponents of repeat cesarean section. No one disputes the fact that vaginal delivery following previous cesarean section can usually be executed with a wide margin of safety, but it must be remembered that the excellent results from this type of therapy are attributed to the fact that there have been no compromises, that specific criteria have been met, and that the medical coverage for the patient has been proper.

2. What are the criteria to be considered? First

torically documented either by the patient herself or by information obtained from the previous attending physician. If a low segment cesarean section was performed previously, then this criterion is met. If the patient has had a previous classical cesarean section, then irrespective of the primary indication, all subsequent pregnancies should be terminated abdominally. Secondly, vaginal delivery may be considered if the first cesarean section was for a temporary indication such as placenta previa, abruptio placentae, or prolapsed umbilical cord. Thirdly, it is desirable that the patient have had some form of labor prior to the first cesarean section, and the estimated size of the child should be comparable to that of its siblings. Lastly, many people consider infection or fever following the previous cesarean section, tenderness in the region of the uterine scar, and placental implantation in the scarred area as contraindications to subsequent vaginal delivery. It is difficult to evaluate this correlation.

Collectively, the above criteria are equalled in importance by the last criterion, which necessitates the availability of proper facilities and adequate personnel. It should be mandatory that the attending physician or other designated personnel be present at all times, that a full complement of nurses be available, that at least 2 units of type-specific blood be refrigerated in the delivery room area, and that the surgical team including the anesthesiologist be on stand-by status throughout the entire labor and delivery of this patient. If these criteria cannot be met, then repeat elective cesarean section should be given serious consideration.

3. What type of medical coverage is available to obstetrical patients in the United States? Ideally, it would be desirable for the attending physician to be present at all times, irrespective of the time of day or night and without consideration for the other professional demands on his time. Since this is not feasible or possible, the medical coverage afforded these patients by the house staff must therefore be considered. A recent report<sup>1</sup> listed 3,600 hospitals with accreditation by the Joint Committee on Accreditation of Hospitals in the United States. Of these, only 473 hospitals, or approximately 13 per cent, listed obstetrics and gynecology residency programs, with 2,654 residency positions.\* Unfortunately, over 50 per cent of these positions are available in only 110 of the hospitals with residency programs. Again, can this criterion be properly met?

My opinion is that the most serious threat caused by repeat elective cesarean section is the increased incidence of prematurity reported by others.\*\* Recently, 215 consecutive cases of repeat elective cesarean section were reviewed at the University of Michigan Medical Center. It must be remembered that a comparative study is



sidered, since the primary indication for the original cesarean section may itself have added to the maternal mortality and morbidity, the fetal mortality and morbidity, and the abnormally high incidence of prematurity. In the series reviewed, there was no maternal mortality. Two hundred and twenty infants were delivered of the 215 patients (Table 1). Six of them died in the perinatal period, a 2.7% uncorrected incidence of fetal mortality.<sup>11</sup>

Table 1.—Fetal Mortality in 215 Repeated Elective Cesarean Sections

Total no. of infants .....	220
Total no. of fetal deaths .....	6
Uncorrected Fetal Mortality Rate .....	2.7%
<b>Causes of Fetal Mortality</b>	
Severe erythroblastosis fetalis .....	2
Gross congenital anomalies .....	1
Placental insufficiency .....	1
Atelectasis .....	2
Corrected Fetal Mortality .....	0.9%

Two of these infants died of severe erythroblastosis fetalis. One infant had gross congenital anomalies which were incompatible with life. One infant died of prematurity by weight following cesarean section at term, probably because of placental insufficiency. The mother of this infant had recurrent uncontrolled toxemia of pregnancy which shortly thereafter proved to be persistent essential hypertension. Two of the 6 infants died of atelectasis in the immediate postpartum period. This gives a 0.9% corrected incidence of fetal mortality in the repeat elective cesarean section group, which is well within the corrected national averages for all births.

In regard to prematurity in this group of 220 babies (215 mothers), there were 14 infants delivered by repeat cesarean section who weighed less than 5 lb., 8 oz., a 6 per cent uncorrected incidence of prematurity (Table 2). This compares favorably with the 7 per cent over-all uncorrected incidence of prematurity quoted by Mitchell and Nelson for all births.<sup>12</sup> If, however, one corrects these figures, the incidence of prematurity in repeat elective cesarean section becomes negligible. Of the 14 premature infants in this study, 10 were delivered abdominally as an emergency procedure at a time antecedent to the anticipated time of repeat cesarean section. In 4 of the patients (6 infants), the membranes ruptured spontaneously at between 33 and 36 weeks' gestation, and active labor ensued. Since all efforts to stop labor failed and the threat of uterine rupture increased, the decision to perform emergency surgery seemed indicated. In 2 patients (1 with twins) the pregnancy was terminated earlier than desired because severe erythroblastosis fetalis existed. One mother developed severe toxemia of pregnancy which could not be controlled medically, and 1 mother experienced a repeat abruptio of the placenta sufficiently severe to require immediate

intervention. Two Negro mothers were sectioned at a history of 40 weeks' gestation. The birth weights were 5 lb., 3 oz. and 5 lb., 7 oz., weights somewhat comparable to the weights of their siblings. Prematurity in the Negro race is often considered to be 5 lb. or less.

Of the entire group of 14 infants, 2 were premature for no apparent medical reason. One infant (Negro) weighed 5 lb., 3 oz. and the other, 5 lb., 7 oz., and by history they were delivered at 38 and 39 weeks' gestation, respectively. Both were alive and well and were discharged from the hospital with the mother in 6 to 7 days. Therefore, the corrected prematurity rate for repeat elective cesarean section in this institution is 0.4% to 0.9%, depending upon the definition accepted for prematurity for the various races.

These figures are impressive enough to suggest the question, why not repeat cesarean section? If prematurity is the greatest threat to this question, then every precaution to prevent its occurrence must be taken. The patient's obstetrical history must be accurate whenever possible, and the estimated date of confinement must be carefully calculated. The patient should not be given a bed reservation far in advance of the anticipated time for elective cesarean section, but preferably a date for reevaluation should be given. At that time, the history should again be reviewed and the estimation of the over-all size of the infant by abdominal palpation and mensuration should be given undivided attention. Roentgenographic evaluation should never be avoided, since much information regarding the maturity of the offspring can be gleaned from this examination. The salient features of the radiologic study are the over-all size of the fetus, the presence or absence of the distal femoral epiphyses, the presence or absence of the proximal tibial epiphyses, the width of the fetal subcutaneous fat line, and the degree of cranial density or calcification. If this type of investigation fails to support your impression of maturity, then the onset of labor before performing a repeat cesarean

Table 2.—Prematurity in 215 Repeated Elective Cesarean Sections

Total no. of infants .....	220
Total no. of premature infants .....	14
Uncorrected Prematurity Rate .....	6%
<b>Unavoidable Causes of Prematurity</b>	
Premature onset of labor .....	6
Severe erythroblastosis fetalis .....	2
Uncontrolled toxemia of pregnancy .....	1
Severe abruptio placentae .....	1
Birth weight greater than 2 lb. and less than 5½ lb. (Negroes) .....	3
Corrected Prematurity Rate .....	0.4%

section can be awaited. One would seldom be confronted with rupture of the uterus during the early phases of labor.

The importance of close scrutiny and observation

of patients on whom primary cesarean section is being considered cannot be overemphasized. Unnecessary primary cesarean sections are still done today in cases in which incomplete evaluation of the existing problem has occurred, in which inotropic apprehension has arisen, and in which relatives and patient have influenced medical decisions. We must continue to guard against these forces.

Accordingly, in evaluating patients who have had a cesarean section previously, each one must be individualized. If there was a temporary indication for the first cesarean section and a low segment cesarean section was performed, if the patient has had a previous labor and the infant is of normal size, and if the physician is in constant attendance with blood readily available and the nursing personnel is alerted with the surgical team on stand-by status, then a trial of labor followed by vaginal delivery cannot be criticized. If any one of these "ifs" cannot be satisfied, then erase the question mark and repeat the cesarean section. *There are no compromises!* Recently, a patient in a nearby community lost her infant, her uterus, and finally her life because her physician had allowed her an unattended trial of labor, although she had had no previous labor, had had a classical cesarean section previously, and proper facilities were not readily available. This patient was compromised!

#### Conclusion

A comparative study of repeat elective cesarean section and subsequent vaginal delivery could not be undertaken since these philosophies do not coexist in our institution. Ideally, if all the criteria mentioned above could be fulfilled, then each case could be individualized. Since this cannot be accomplished today in over 85 per cent of the hospitals in this country that care for obstetrical patients; the wisdom, safety, and advisability of changing the philosophy toward repeat elective cesarean section seems questionable. If a concerted effort is made to avoid prematurity by an accurate

interrogation of the patient, by proper physical examination, and by adequate roentgenologic evaluation, the one major problem about repeat cesarean section can almost be eliminated.

In a review of 215 consecutive cases of repeat cesarean section, the corrected fetal mortality of 0.9% and the corrected prematurity rate of 0.4% compared favorably with statistics presented by proponents of subsequent vaginal delivery following primary cesarean section. In addition, since arbitrary limitation of the number of cesarean sections per patient no longer seems justified, it is recommended that repeat elective cesarean section be considered the treatment of choice for these patients.

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