

Revisiting the Jewish Ethical Approach Toward Perimortem Cesarean Section in Light of Emerging Medical Evidence

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ABSTRACT: **Background:** Maternal cardiac arrest during gestation constitutes a devastating event. Training and anticipant preparedness for prompt action in such cases may save the lives of both the woman and her fetus.

Objectives: To address a previous Jewish guideline that a woman in advanced pregnancy should not undergo any medical procedure to save the fetus until her condition is stabilized.

Methods: Current evidence on perimortal cesarean section shows that immediate section during resuscitation provides restoration of the integrity of the mother's vascular compartment and increases her probability of survival. We analyzed Jewish scriptures from the Talmud and verdicts of the oral law and revealed that the Jewish ethical approach toward late gestational resuscitation was discouraged since it may jeopardize the mother.

Results: We discuss the pertinent Jewish principles and their application in light of emerging scientific literature on this topic. An example case that led to an early perimortem cesarean delivery and brought about a gratifying, albeit only partially satisfying outcome, is presented. The arguments that were raised are relevant to such cases and suggest that previous judgments should be reconsidered.

Conclusions: The Jewish perspective can guide medical personnel to modify and adapt the concrete rules to diverse clinical scenarios in light of current medical knowledge. With scientific data showing that both mother and fetus can prosper from immediate surgical extrication of the baby during resuscitation of the advanced pregnant woman, these morals should dictate training and practice in urgent perimortal cesarean sections whenever feasible.

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among Jews for a mother to recover from a cesarean section. Nevertheless, for most of human history, cesarean sections were likely performed in the hope of extracting a living fetus from a moribund or recently deceased pregnant woman [2]. In modern clinical settings, the situation is different. Today the decision to proceed with a cesarean section does not usually involve concerns that the procedure will be detrimental to either the mother or the fetus. Performing the procedure to save the fetus at the expense of the mother's life has not been, and is not now, an option.

An ethical challenge arises when the mother is in cardiopulmonary arrest. Such events are not as rare as they may seem. On the basis of weighted analysis, among 56,900,512 hospitalizations in the United States for delivery between 1998 and 2011, there were 4843 cases of cardiopulmonary arrest, corresponding to an event rate of 8.5 cardiac arrests per 100,000 hospitalizations for delivery [3]. It is often a challenge to clarify preferences and determine an appropriate plan of action when dealing with a single patient in immediate danger. Decisions regarding the resuscitation of a woman with an advanced pregnancy are complicated by the involvement of the fetus. A decision to carry out resuscitation efforts for the benefit of one cannot ignore the effect it will have on the other. Any decision must conform to fundamental moral and ethical principles since any choice will affect both individuals.

PATIENTS AND METHODS

We analyzed Jewish scriptures since the time of the Talmud (a central text of Rabbinic Judaism and body of Jewish civil and ceremonial law and legend that dates from the from about the second to the seventh centuries century CE) and verdicts of the oral law. These texts revealed that the Jewish ethical approach toward late gestational resuscitation denounced the provision of care for the fetus since it may jeopardize its mother. An updated Medline search of perimortal cesarean sections disclosed evidence that immediate cesarean section during resuscitation provides restoration of the integrity of the mother's vascular compartment and increases her probability of survival. In this article, we elaborate on these sources separately.

To evaluate the optimal considerations according to Jewish medical ethics, it is important to describe each of the issues and examine each principle separately, thus arriving at a well-

Currently, the overwhelming majority of cesarean sections are performed to resolve a difficult or prolonged labor with a healthy mother and baby as the expectant result. An ongoing dispute continues over whether cesarean sections are justified for routine delivery purely for the sake of convenience [1]; however, in the distant past the death or near death of the mother was a prime cause for such a procedure. There is evidence from rabbinic reports from the second century CE, and perhaps even earlier, showing that during the Roman period it was common

informed decision. The process must also consider the best scientific evidence regarding the risk-benefit tradeoff of any procedure. In the case of perimortem cesarean delivery (PCD), one must pay particular attention to whether the procedure intended to save the fetus will benefit or jeopardize the mother's well-being.

RESULTS

RELEVANT JEWISH ETHICAL PRINCIPLES

We present six fundamental principles of Jewish medical ethics based on traditional rabbinic sources that must be considered when making a treatment decision, including a complex case, such as resuscitation of a critically ill person, in which the care of one patient may impact on another. Each concept is explained separately:

1. "One human life does not take precedence over another human life." (Mishna, *Ohalot* 7.6) The source for this principle is that one independent living human may not care for, attend to, or perform healing efforts that may lead to the death of a second living individual. This concept is noted in the Mishna, a late second century legal code. This principle is used to explain why a fetus that has emerged may not be sacrificed to save its mother.
2. "Who are you to say that your blood is redder than his?" (Babylonian Talmud, *Pesachim* 25b) This Talmudic concept is used to explain why a person ordered to kill another individual, or else risk be killed, must himself be killed. Nothing justifies taking someone else's life to preserve one's own because all people are viewed as equals and no one is more significant than another.
3. "The life of the mother takes precedence over the life of a fetus." (Mishna, *Ohalot* 7.6) The life of a living, independent human being (i.e., the mother) has priority over that of a potential life (i.e., the fetus). This is because the fetus is not considered a full, living entity until its head exits the womb. According to this principle, also found in the Mishna, if a fetus endangers the mother, even if the mother is a terminal patient with a very poor prognosis and the healthy fetus has the potential to lead a full life for many years to come, we are not entitled to sacrifice the life of the mother for the fetus's potential benefit.
4. "The fetus is as the thigh of its mother." (Babylonian Talmud, *Yevamot* 78a; *Baba Kamma* 46a) This principle, debated in the Talmud, asserts that as long as a fetus is still in utero, it is considered part of the mother's body and not as an independent being.
5. "Saving a single soul is like saving a whole world." (Jerusalem Talmud, *Sanhedrin* 4.1) Salvation of a single life is of infinite value.
6. "One must remove debris from someone trapped [on Yom Kippur] ... even if the person is expected to live but a very

short time." (Babylonian Talmud, *Yoma* 85a) The prognosis of the survival time of the wounded does not bear on the obligation to extend full care to any victim. Even established end-of-life care is judged to be of identical value to that of one presumed to be able to lead a full long life.

These principles lead to the conclusion that according to Jewish law, in the dire case of a young woman with an advanced pregnancy who is experiencing cardiopulmonary arrest, the immediate focus and concern should be directed solely toward saving the mother. The needs of the fetus may only be taken into account as a secondary surrogate outcome and not at the expense of the mother. Yet, by the time the resuscitation efforts are deemed to have failed, the fetus will likely have lost all chance of survival because of the delay in its evacuation from the uterus.

EARLY SOURCES

The authoritative code of Jewish Law, *Shulchan Aruch*, which was written by Rabbi Josef Caro in the sixteenth century in Israel, includes a directive that sheds light on this issue. Discussing the laws of the Sabbath, he notes that despite the prohibition of carrying an object through a public thoroughfare on the Sabbath, if a woman in labor dies, a knife is to be brought through the public domain and the Sabbath desecrated so that "the woman's abdomen may be sliced" and the fetus extricated and possibly saved (*Orah Hayyim* 330.5). Rabbi Moses Isserles (d. 1572, Cracow), who commented on the *Shulchan Aruch* and interpreted it according to the customs of eastern European Jewry, noted that in the event of maternal collapse, a cesarean section to extract the living fetus was never done, even on weekdays, for the simple reason that there was no immediate way to confirm maternal death. Later authorities maintained that Rabbi Isserles did not dispute the legal assumption of the *Shulchan Aruch*, that the Sabbath may be desecrated if there is even a chance of saving a life. Rabbi Caro may simply have been unrealistically optimistic that long after the mother was unequivocally determined to be dead, the fetus could still be viably extricated.

The view that one cannot even contemplate performing a cesarean section early in the course of a woman's medical complications is valid so long as there is uncertainty regarding definite declaration of death. When death is determined by the use of cardiac monitors, CO₂ levels, pulse oximetry, and other means available today, it would appear that Rabbi Isserles would accept that a cesarean delivery should be performed even on the Sabbath to save the fetus. The change brought about by modern technology allows us to predict that the death of all involved entities is imminent and/or inevitable if action is not taken immediately in the case of early maternal collapse with lack of electrical cardiac activity. This approach, that the intervention aimed to save the fetus is fatal for the mother, may not be true in the case of perimortem cesarean delivery as performed in the twenty-first century.

DISCUSSION

PREVIOUS MEDICAL AND ETHICAL APPROACHES

The first research to describe a greater likelihood of neonatal survival in maternal cardiovascular arrest with early PCD collected cases from 1875 to 1985 [4]. The majority of women described in that paper did not undergo CPR as the procedure was only introduced in 1961 [5]. Since then, there has been a debate regarding the interplay of these two modalities and precisely when one should use PCD. Both clinical and moral standards suggest that CPR should be immediately initiated and should continue in order to provide the greatest chance of survival for the mother. However, the presence of the second living entity inside the uterus, still a viable fetus under equal danger but perhaps with superior likelihood of survival, challenges this approach. The fetus's heart may have slowed significantly but it is still functioning independently. The mother's cardiac activity is not effective and in such instances, the prognosis is grim unless the event is witnessed or occurs within a medical center [6]. If the medical staff waits until the mother's status becomes clear and ignores the fetus, the delay will likely lead to irreversible organ damage and death to the fetus. According to the abovementioned first principle, from the perspective of Jewish medical ethics, the medical staff must treat the primary patient (i.e., the mother) to the best of their ability to maximize the chances of her survival. Principle 2, that one human being's life is not more important than another's, dictates that the medical staff cannot simply give priority to the child over the mother. Principle 3, that the fetus has not yet achieved the status of an independent being, conforms to principle 2, and therefore, it is the mother who must be the focus of efforts of the medical staff. According to these principles, the primary guide for all decisions during attempts at resuscitation must be saving the life of the mother without any secondary objective. Only after all efforts have been exhausted to meet this goal is it permitted to deal with the needs of the fetus. Thus the needs of the fetus are set aside until the fate of the mother is decisively determined one way or another.

Principles 3 and 4 both position the status of the fetus as secondary to that of the mother. While in general, if one of two individuals in need of immediate care has a greater probability of survival, that person would deserve priority. Here, the reverse applies. In the event of a clinical condition endangering both mother and fetus, even if the fetus has a far greater prognosis of survival, the mother is assumed to have absolute priority from all perspectives: appraisal, observation, and treatment. If, in any of these fields, the fetus may be negatively affected, these principles maintain that this is of secondary importance and they may be ignored, provided maternal danger is substantial and ongoing. Only if the well-being of the fetus can be provided, without detracting from the mother's care, can we make clinical decisions for the benefit of all subjects involved simultaneously.

Accordingly, in cases such as hyperstimulation syndrome, preeclampsia or eclampsia, multiple gestation, and abruptio placenta, if the mother's well-being is endangered, intervention must be immediate, even at the expense of the fetus.

Principles 5 and 6 imply that even if the chances of saving the mother are slim and only of short-term benefit, all attempts must be made to save her life since the value of life, even for a brief interval, is infinite and immeasurable.

Until recently, it was believed that a rapid sequence PCD would be prohibited since delaying ongoing CPR efforts for the sake of emergency surgery and possible enhanced blood loss would be detrimental to the mother. Interruptions of external cardiac compressions for even a few seconds have been proven to decrease resuscitation outcomes [7-10].

CURRENT MEDICAL KNOWLEDGE LEADING TO A NOVEL ETHICAL APPROACH

A recent publication summarizing the results of almost 100 advanced gestational cardiopulmonary arrests purports a more favorable outcome for these women with survival rates of up to 50% [11]. Resuscitation of other segments of the population yields a far poorer outcome rate [12]. The major difference should be attributed to the young and healthy baseline condition of most of this population, the fact that most are under regular follow-up, and the physiology of pregnancy. Again, this is highly dependent on whether the event occurs in an environment where an immediate resuscitation response can occur. There is growing awareness that the physiological and anatomical changes of pregnancy necessitate modification of standard practice, as in the current resuscitation guidelines of the UK-based Royal College of Obstetricians and Gynecologists [13]. Based on the assumption that compression of the vena cava by the gravid uterus may interfere with maternal hemodynamics, it has been postulated that mid-resuscitation delivery can lead to an increase of up to 80% in cardiac output [14,15]. This result can have a crucial impact on recovery of the hemodynamic status.

Following a brief assessment and positioning of the patient, the medical crew can continue CPR with displacement of the uterus caudally. With a strict, midline incision, well trained staff may perform fetus extrication within seconds. Bleeding from wound margins can be limited to a minimum. Sterile napkins can be placed on the tissues until closure if indicated to limit blood loss to a minimum. In light of this knowledge, both resuscitation and obstetric guidelines recommend that PCD be considered within 4 minutes of maternal collapse [6,13,14]. This time interval theoretically benefits both mother and neonate by minimizing ischemic neurological damage in both. Today, delivery within minutes in women beyond 20 weeks of gestation is endorsed to facilitate maternal resuscitation (Grade D recommendation). This recommendation may lead to a return of spontaneous circulation. Neonatal outcome was better the earlier PCD was implemented; however, even if the 4 minute

time frame was missed, favorable outcomes may be reached after 10 minutes and even 25 minutes after the event [11].

Thus, our analysis currently projects that indulgence in PCD is primarily for the benefit of the mother while simultaneously affording optimal probability for fetus survival. If so, we may now judge such an unfortunate event with full support of early PCD without breach of any one of the six principles we cited.

Emerging technology of on-scene selective catheter embolization of the uterine and umbilical arteries, such as rapid endovascular balloon obstruction of the aorta, may become a feasible option to provide temporary restoration of effective perfusion pressure and provide some relief by reducing the volume of the arterial network without hindering venous return [16]. However, such an intervention will result in fetal death. One of the ethical concepts consistent in Jewish scriptures is that if there are a number of interventions offered, the one that confers maximum benefit is preferred. In this case, uterus evacuation that would increase the possibility of survival of both mother and fetus would be the preferable choice, especially if PCD may confer a quicker solution. PCD should take no longer than 60 seconds to complete and is possibly performed in the course of CPR without interruption.

SAMPLE CASE

We present a recent case exemplifying the clash of values that need resolution. Emergency medical services were notified of a woman who had collapsed in a nearby shopping mall. The team arrived on the scene within 2 minutes to find a “very pregnant,” thin woman lying on the floor without any vital signs. She was 39 years old, 8 months pregnant, and had no known previous illnesses. The team attached an automatic cardiac defibrillator monitor and, without inserting an intravenous line, notified the hospital obstetrics and pediatric service. The basic life support crew sped to the medical center while performing cardiopulmonary resuscitation. Three cycles of “no shock” were registered during the short journey. On arrival, pulseless electrical activity at the rate of 30 beats per minute was found. The fetal heart rate was spontaneous at 20 beats per minute. Total time: 8 minutes since she collapsed.

How should the medical team have responded at this point?

CASE OUTCOME

The patient was intubated and CPR was continued according to standard code. The fetus was delivered approximately 8 minutes from the time of the collapse and the child was handed off to the neonatal team. Despite continuation of resuscitation efforts, the mother was pronounced dead 30 minutes after arrival. The fetal heart rate was flat at birth with no respiratory effort. Intubation and CPR were initiated. At 2 minutes the heart rate rose to 120 and at 30 minutes spontaneous respirations were observed. Cord arterial blood gas read pH of 6.69 bicarbonate 9.0 and base deficit of -27. The child made a full neurological recovery.

CONCLUSIONS

In this paper we describe the complexity of applying Jewish ethical principles to the case of a resuscitation involving both a mother and her fetus. Medical research is necessary to determine both the most appropriate and beneficial path to choose. The Jewish perspective dictates that medical personnel must remain flexible to modify and adapt rules for adequate application when confronted with diverse clinical scenarios in light of current medical knowledge. The conclusion of this discussion is that according to the Jewish school of thought, PCD is the moral approach that should be taught and instituted whenever its indication is considered medically appropriate.

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