

The Third Trimester - Halachic Ramifications of the Viability of the 8th Month Old Fetus

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Today, thanks to modern medicine, women around the world are lucky enough to experience the joy of childbirth without much concern for their baby's survival. Typically, a healthy and normal gestational term is considered to be around forty weeks, which is about nine complete months. Recent studies have shown that the optimal time for a baby to be born is actually between thirty eight and forty weeks. The further away one moves from this time period in either direction can increase the risks of the baby's health [1]. To ensure the health of the baby, the more time it spends in the womb until the end of the full-term, is considered better and safer.

Interestingly, according to Talmudic Rabbinic scholars, babies could stay in the womb for either seven or nine months, and be born perfectly healthy (*Yevamos* 42a). The "eighth month" baby, however, would die soon after being born (*Yevamos* 80b). In *halacha*, the "non-viable" status holds a great weight specifically when it comes to two cases, *Shabbat* and *Yibbum* [2]. For instance, the *Gemara* states that one may desecrate *Shabbat* to circumcise a baby born in the seventh month, however, one may not desecrate *shabbat* for a baby born in the eighth month as it was not viable (*Shabbat* 135a). The *Gemara* continues on even further and compares the baby born in the eighth month to a rock that maintains a *muktza* status and thus may not even be carried on *Shabbat*. Another time this issue of viability comes up is in the case of *Yibbum*, the biblical commandment for a man to marry his deceased childless brother's wife. The *Gemara* explains a situation where a woman gave birth to a baby in the eighth month, and soon after was widowed. The *Gemara* responds to this case by classifying the woman as childless, since the baby born in the eighth month is not considered viable, thus requiring *Yibbum* to be performed (*Yevamos* 80b). The *Gemara* in *Yevamos* 80b also adds that if this eighth month baby has visible signs of viability,

meaning fully developed hair and fingernails, the baby is considered viable and actually was meant to be born in the seventh month but for whatever reason was delayed in the womb. This statement indicates that in Talmudic times, a baby born in the seventh month was thought to be viable while one born in the eighth month was not [2]. This is rather perplexing as current research on gestational and fetal development seems to only indicate the opposite.

According to current research, a fetus continues to mature as the gestational cycle progresses. An ideal pregnancy is one that is said to reach full term, which is between 38 to 40 weeks. A baby born before term is considered a premature newborn, however, there are various classifications of premature babies. A baby born before 28 weeks, before the third trimester, is considered extremely premature, between 28 and 32 weeks is considered very premature, and between 32 to 34 weeks is considered moderately premature [3]. It has been shown that there are clear dangers involved when a baby is born early, and the risks only increase the earlier the baby is born. A recent study compared the various stages and survival rates of premature babies. It was concluded that 9.9% of all babies born between 27 and 31 weeks, *i.e.*, in the seventh month, were stillborns, and 5.4% of the babies born alive in this period died in the neonatal intensive care unit (NICU). From all the babies born between 32 and 34 weeks, *i.e.* in the eighth month, only 2.3% were stillborns and 0.7% died in the NICU [4]. Clearly, as the fetus remains inside the womb complications and risks of mortality decrease significantly.

In addition, formation of vital organ systems in the body develop as the fetus moves along weekly checkpoints, until the completion of the gestational term [1]. One of the major issues premature babies encounter is due to the lungs failing to completely develop. The lungs develop in five distinct stages,

including the embryonic, 4 to 7 weeks, the pseudoglandular, 5 to 17 weeks, the canalicular, 16 to 26 weeks, the saccular, 24 weeks to term, and the alveolarization stage, 36 weeks to 21 years [5]. One stage in particular, the saccular stage, is important to note as it takes place further along fetal development. The saccular stage is when branching morphogenesis occurs, which allows the lungs to develop their shape, while alveolarization has not yet started. The terminal airways grow in length and widen at the beginning of the saccular stage. This forms clusters of large airspaces and the area where future gas exchange will take place. When two airspaces meet, primary septa are formed, which contain a double-layered capillary network. The surface of the septa is mainly covered by type I epithelial cells, while type II epithelial cells cover the rest of the surface [5]. These type II cells produce surfactant which decreases surface tension and prevents alveolar collapse during exhalation [6]. Since premature babies are born before the lungs are fully developed, many times in the hospitals these babies will be given surfactant, other steroids, or oxygen mechanically ventilated. This can cause major damage to the cells due to oxygen toxicity [5]. When comparing the administration of surfactant to premature babies born at 27 to 31 weeks to those born at 32 to 34 weeks, 58.7% of babies born at the earlier stage were treated with surfactant, while only 12.7% of babies born at the later period were treated [4]. This indicates further development of the lungs as the fetus is maintained in the womb, thereby decreasing the need for supplementary surfactant, as well as the potential dangers that are associated with increased outside material. Additionally, pulmonary inflammation and steroid induced reprogramming of lung development is an issue premature babies have to deal with, leading to less efficient alveolarization progression [5]. This disease is known as bronchopulmonary dysplasia (BPD) [7]. Those with BPD have significant airflow restrictions, causing obvious problems. It has been noted that BPD in babies who were mechanically ventilated is prevalent at a younger gestational age and lower birth weight, thus supporting the idea that BPD development is influenced by the incomplete development of the

lungs [7]. In a study, 4.6% of premature babies born from 27 to 31 weeks were found to have severe BPD, while 0% of premature babies born from 32 to 34 weeks had severe BPD [4]. As almost all research has indicated, a baby is meant to stay inside the womb up until the end of term to ensure proper development. The earlier the delivery, the more likely issues and complications will arise.

At face value, all possible scientific evidence seems to contradict the *Gemara* regarding the viability of the seventh, but not of the eighth, month old fetus. A baby born during the seventh month of gestation should not be considered any more healthy and viable than a baby born during the eighth month, and in fact the opposite seems to be true. Instead of proclaiming that the Talmudic Rabbis to have been wrong, since they stated what they witnessed to be true, a reinterpretation of the text is necessary. The *Gemara* makes a statement that an eighth month born baby is considered “like a stone,” or as “dead flesh” (*Yevamos* 80a). This statement alone does not indicate that a baby born before eighth months is any more viable, rather it is simply saying any baby not born in the ninth and final month is considered non-viable because it has not yet fully matured. The Talmudic Rabbis even go on to say that maturation cannot be visible externally alone, and thus any baby born before nine months would be given the same non-viable status. Therefore, when the Rabbis talk about an “eighth month baby,” they were talking about any baby born before nine months that had not fully matured in the womb [8].

Now, the second issue that must be addressed appears earlier when the *Gemara* stated that a nine month pregnancy is one that lasts a full nine months, however a seven month pregnancy can end safely before the completion of the seventh month (*Yevamos* 42a). At first, one may want to draw the conclusion that there is some sort of mysterious intermediate time between the seventh and ninth month where the baby will not survive. Looking at the text and commentaries on a deeper level will actually show that this is not the proper conclusion.

When the *Gemara* cited this statement it was meant to show that a baby can be born not only at the end of the seventh month but at the beginning of that month as well (Rashi, Yevamos 42a). Therefore, a baby born at any point after the start of the seventh month can be born healthy. This means that a baby born at any point in the third trimester could be considered viable. As modern science suggests, a baby born early during the third trimester has some chance of survival, with obvious necessary assistance [3]. When the Rabbis talk of a “seventh month baby,” they are referring to any baby born before the ninth month that has fully matured. This is indicated by the language of the text as the *Gemara* makes a clear distinction between an “eighth month baby” who is not viable and a “seventh month baby who was delayed in the womb” and is viable. The baby born after eight months is one that has not matured, while the one born in the seventh month has fully developed. Thus, based on this explicit distinction, it can be deduced that a “seventh month baby” refers to a fully formed baby, whether born in the seventh or eighth month [8].

Regardless of how these statements may be interpreted, modern day Rabbis are still tasked with responding to *halachic* issues that may come up as a result of the birth of a premature baby. Medicine has certainly evolved over the last hundreds of years and only continues to become more advanced. Today, premature babies born in the third trimester have a much greater likelihood of survival than they did many years ago. Since 1960, there has been a steady increase in the survival rates of premature infants born. It has been shown that babies born after 27 weeks have less than a 20% mortality rate [9]. With the help of advanced medical techniques during the pregnancy and after the birth, such as incubators, premature babies are given a stronger chance of survival and of being healthy [10]. For the most part, contemporary sources have taken these advances well into account. For instance, the Chazon Ish was approached with a question from one of his students regarding this issue of whether or not in modern times one can desecrate *Shabbat* for a premature baby.

He responded as follows,

“Nowadays, such infants must be given appropriate care even though this entails *hilul Shabbos*. This is not only true about an eight month fetus with undeveloped hair and nails, but even on behalf of a fetus of six months’ gestation whose hair and nails are underdeveloped. Even though in the time of Chazal such a baby could not survive, nowadays they often do!” [11].

Similarly, Rabbi Shlomo Zalman Auerbach maintains that medical knowledge has changed dramatically since the time of the Talmud and hospitals are well equipped with incubators and medication to save premature babies, including those born in the eighth month. Thus, it is a responsibility to ensure the safety of the child if they are able to be saved (Shmirat Shabbat Kehilchata). Rabbi Auerbach even added, “Don’t forget to be filled with gratitude to Hashem for the lifesaving wonders of modern medicine” [11]. New medical discoveries that possibly contradict the Talmud are not meant to be looked at as problematic, rather they should be celebrated as G-d’s doing.

An important value in Jewish tradition is to accept the Torah as true and timeless. At the same time, there are obvious questions that can come up as science and the world evolve. It is important to point out that our Talmudic scholars teachings were based on the known scientific knowledge at that time. As more research on gestation has surfaced, our modern day sages have worked to reconcile science and *halacha* while holding on to our core values.

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References

- [1] Loftin RW, Habli M, and Snyder CC, Cormier CM, Lewis DF, Defranco EA. (2010), Late preterm birth. *Rev Obstet Gynecol.* 3:10–19.
- [2] Pincus, N, and Roditi-Kulak., S. (2010), Seven, Eight, and Nine: Historical and Halakhic Discussion of the Third Trimester Bab.” *The Journal of Torah and Medicine of the Albert Einstein College of Medicine Synagogue*, 2:147-159.
- [3] Glass HC, Costarino AT, Stayer SA, Brett CM, Cladis F, and Davis PJ. (2015). Outcomes for extremely premature infants. *Anesth Analg.* 120:1337–1351.
- [4] Ancel P, Goffinet F, and the EPIPAGE-2 Writing Group. (2015), Survival and Morbidity of Preterm Children Born at 22 Through 34 Weeks’ Gestation in France in 2011: Results of the EPIPAGE-2 Cohort Study. *JAMA Pediatr.* 169:230–238.
- [5] Schitton JC. (2017). Development of the lung. *Cell Tissue Res.* 367:427–444.
- [6] Whitsett JA, Wert SE, and Weaver TE. (2015). Diseases of pulmonary surfactant homeostasis. *Annu Rev Pathol.* 10:371–393.
- [7] Davidson LM, and Berkelhamer SK. (2017) Bronchopulmonary Dysplasia: Chronic Lung Disease of Infancy and Long-Term Pulmonary Outcomes. *J Clin Med.* 6:4.
- [8] Kornfeld, M. “The Daf Yomi Discussion.” Eight -Month Babies and Modern Science. Kollel Iyun Hadaf of Yerushalayim
- [9] Institute of Medicine (US) Committee on Understanding Premature Birth and Assuring Healthy Outcomes. (2007), Behrman RE, Butler AS, editors. *Preterm Birth: Causes, Consequences, and Prevention*. Washington (DC): National Academies Press (US); 10, Mortality and Acute Complications in Preterm Infants.
- [10] Lawn, J.E., Davidge, R., Paul, V.K. et al. (2013) Born Too Soon: Care for the preterm baby. *Reprod Health* 10, S5
- [11] Eichenstein, Y. (2014). “Daf Yomi Digest.” *The Premature Infant*. Ruben Shas Kollel Publication. Yevamos 80.