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Islamic Perspectives on the Ethics of Stem Cell Research

Abdulaziz Sachedina

The ethical assessment of research that uses pluripotent stem cells derived from human embryos and aborted fetal tissue gives rise to serious ethical-legal question concerning embryonic sanctity and the legality of abortion in Islamic tradition. Although the rulings given by Muslim jurists in this regard are inferentially deduced on the basis of the precedents in the criminology connected with harming or destroying a fetus, the moral status of the fetal viability and embryonic sanctity remains unclear. There is no clear definition of “embryo” or “fetus” in the Muslim juridical tradition. Hence, its ethical-legal status remains unresolved. From the prevalent rulings about the graded penalty for inducing abortion, it appears that personhood of the fetus becomes established much later in the nine-month gestation period. This ambiguity has led to lax attitudes when assessing fetal viability in new bioethical rulings. The ethical dilemma concerning embryonic stem cells in biomedical research and all its ramifications for the dignity of the embryo has not been taken up in the current debates.

Embryonic Sanctity

On August 7, 2005, Christian groups in the U. S. announced the “Snow Flake Embryo” adoption program as part of their campaign to oppose stem cell research that uses in vitro fertilization (IVF) clinic surplus embryos to derive stem cells. The group believes that the only

natural way to give moral weight to the lives of frozen embryos is to adopt and implant them, and carry the fetus through a full pregnancy. They are not opposed to assisted reproduction technology that uses these frozen embryos to help couples to have their first or second child. They have problems with the modern science reducing potential human life to “surplus” unwanted embryos that can be destroyed for research. From a strictly religious point of view, there cannot be anything like “surplus” or “unwanted” embryos, since such a devaluation of an embryo would be counted as an affront to God’s claim on life. In the context of Islamic or any other religiously informed bioethics, as I shall discuss in this chapter, as long as the embryo is defined ontologically as possessing the potential ability to become a human being, there will be moral qualms and religious opposition in supporting the use of frozen embryos for research purposes. The litmus test will be the determination of whether the embryo at that very early stage of its development (five to eight days after fertilization when it is totipotent) is a being with rights.

Stem cells are defined by their potential for differentiation as totipotent, pluripotent, and unipotent, and by their source as embryonic or adult. Although all types of stem cells are currently being studied for their potential therapeutic benefits, most scientists agree that embryonic stem cells from the inner cell layer of the blastocyst, which have the potential to generate all types of cells in the human body, offer the greatest prospect for the study and treatment of incurable human diseases. There is little controversy over the morality of using adult stem cells, because they can be derived from living donors of bone marrow and other tissues. However, adult stem cells, which are undifferentiated and unipotent cells, have limited potential to reproduce themselves in culture and to differentiate into cell types besides those tissues and organs from which they were isolated. Consequently, the scientific community has concentrated its research on embryonic stem cells. Embryonic stem cells are usually harvested from donated frozen embryos that were produced for the purpose of assisted reproduction. The religious-legal acceptance of the technology in the Muslim world is corroborated by the mushrooming of fertilization clinics in all major cities. In spite of this endorsement of IVF technology, the problem is the total lack of ethical discussion in the Muslim sources regarding the beginning of life and morally questionable attitude towards clinical abortion. The revelation-based principle of sanctity of life would appear to rule out the termination of

fetal life through clinically induced abortions in the early stages. And yet, both in the liberal opinions on abortion and legal permission to use “surplus” frozen embryos there is total disregard for the embryonic inviolability. By concentrating on the legal implications of the feticide and totally neglecting the moral philosophical dimensions of human embryology, Muslim jurists have limited the extension of the principle of the sanctity of life to the embryo that is in the womb. That sanctity principle is not extended to the embryos that are not implanted and that are frozen.¹

One of the intriguing questions connected with embryonic sanctity in the Islamic revealed texts deals with the beginning of life. The question of the moral standing of embryonic and fetal life remains unresolved in Islamic jurisprudence because of the lack of a precise definition of life and of the beginning of life that involves religious, ethical, legal and social considerations. Although the jurists do not dispute the biological fact of life and the sanctity a fetus enjoys because of that, they differ as to the stage of fetal development at which the fetus enjoys absolute inviolability (*dhimma ṣāliha*) and possesses full rights as an independent person.²

Hence, there are disagreements about the moment of conception and the time when the ensoulment—the infusion of the soul into the body of the fetus, thus conferring moral status on the fetus—occurs, and whether the viability of the fetus is marked when it is capable of living as a newborn outside the womb. By definition, since the fetus (*janīn*) is ‘concealed’ (*istajann*) in the mother’s womb until it is born,³ it has no independent claim to life. In juridical terminology, the fetus is defined as an entity that in one sense does not acquire a personhood (*nafs*) directly so as to benefit from rights.⁴ Furthermore, in Islamic jurisprudence the abortion rulings are not

¹See, for instance, *Masā'il fī al-talqīh al-ṣanā'ī*, in *Masā'il wa Rudūd*, compiled by Muḥammad Jawād Raḍī al-Shihābī and edited by 'Abd al-Wāḥid Muḥammad al-Najjār (Qumm: Dār al-Hādī, 1412 AH) i. 99. The opinion is ascribed to prominent Shī'ite jurist Abū al-Qāsim al-Khū'ī.

²In the section on “The Crime against the Fetus,” ‘Abd al-Raḥmān al-Jazarī, *Kitāb al-fiqh'alā al-Madhāhib al-'arba'a, Kitāb al-ḥudūd* (Beirut: Dār al-Kutub al-'Ilmiyya, 1392 AH), v. p.372ff.) takes up detailed comparative rulings on the status of the fetus and culpable actions leading to its abortion among four Sunni schools.

³*Lisān al-'Arab* and other lexicons (*al-Miṣbāḥ al-Munīr, al-Mu'jam al-Wajīz*)

⁴This is the Hanafī definition of *janīn* as mentioned by Ibn 'Abidīn, *Hāshiya*, vi. 587. See also: *al-Baḥr al-Rā'iq*, viii. 389; *Badā'ī' al-Sanā'ī'*, vii. 325.

framed in terms of a resolution to a conflict of rights between the pregnant woman and her fetus. According to the Ḥanafī Sunni scholars, for instance, as long as the fetus remains in utero it does not have independent and absolute inviolability because it is regarded as a part of the mother's body. However, as soon as it becomes separated from the uterus with the capability of surviving outside the womb then it is regarded as a person (*nafs*) possessing inviolability and rights like liberty, inheritance, proper lineage, and so on.⁵

In this sense, the fetus in the womb has a relative claim to life and to rights based upon its eventual personhood in that it is a potential human being while in utero. The closer to birth the fetus is, the closer to personhood it can be considered and the greater justification it has to be accorded rights.⁶ Such an estimation of the personhood of the fetus is behind the contemporary liberal juridical opinions among the Ḥanafī Sunni scholars who do not regard abortion as forbidden if the mother's life is in danger at any stage of gestation, including the last days before the child is born.⁷ This conditional permission linked to the impending danger to the mother's life is often overlooked when clinical abortions are readily performed in the Muslim world with no impunity. To add to this unscrupulous attitude towards the pre-ensoulment embryo, the ruling that permits abortion for the reason of poverty⁸ actually leads to the abuse of abortion as a method of population control. Certainly, no school of Islamic jurisprudence allows abortion to function as a method of population control.⁹

The problem is that it is not until recently that abortion began to be treated independently under its own rubric in the juridical formulations. Like a number of topics that involved some kind of criminal act and the ensuing penalty in medical jurisprudence, abortion as an unlawful act found its place in Islamic penal system (*jināyāt*).

⁵Al-Jazarī, *al-Fiqh 'alā al-madhāhib al-arba'a*, v. 372.

⁶Ibn 'Ābidīn, *Hāshiyā*, v. 517; *al-Baḥr al-Rā'iq*, viii. 389; *Badā'ī' al- Sanā'ī'*, vii. 325.

⁷*Al-Mawsū'a al-fiqhiyya al-kuwaytiyya*, xvi. 279.

⁸*Ibid.*

⁹A number of articles that include opinions and rulings issued by leading Muslim scholars, both Sunni and Shī'ite, have been published during the last three decades that permit safe methods of birth control but reject abortion as one of the legitimate ways of encouraging or enforcing population control. See, for instance, Jād al-Ḥaqq, *Tanzīm al-nasl wa fawā'id al-bunūk al-muḥaddada*, *Al-Fatāwā al-islāmiyya*, ix. p. 3110; Muḥamaad 'Alī al-Tashkīrī, *Ra'y fī tanzīm al-'ā'ila wa taḥdīd al-nasl*, *Majjala al- Taḥdīd*, xxxix. 76-85.

Consequently, in the juridical tradition one finds little or no discussion of the ethical dimensions of embryonic personhood. The fundamental assessment of an embryo in the Shari‘a is based upon the Qur’anic reference and its elaboration in the Tradition that speak of a progressive acquisition of a human status without any concern for moral issues connected with the independent status of a fetus as a moral entity. Although there are a number of recent studies devoted to fresh rulings that deal with legality of abortion because of adultery (*zina*) and rape (*ighṭiṣāb*), there is hardly any serious debate among Muslims about the ethical issues connected with a pre-implantation embryo and/or fetus as a person with its own rights and needs for protection.¹⁰

It is significant to note that the issue of intentional abortion does not come up in the Qur’an. All the standard juridical references to the Qur’anic passages actually deal with homicide (*qatl al-nafs*), rather than abortion of the fetus through a miscarriage before it completes its nine-month gestation. In fact, there is no definition of the embryo as a living entity right from the zygotic stage anywhere in the Tradition. In their assessment of the tort committed against the fetus, the jurists have regarded implantation of the coagulated drop—zygote—in the uterus (*istiqrār al-nuṭfa fī al-rahīm*) as the determining stage of fetal life when any infliction of harm to it requires compensation.

The verses quoted for assessment of the compensation due to the fetus or any other party who participated in this wrong act treat the fetal development as a growing entity that resembles another organ of the body. To be sure, the verses do cover the stages of gestation from fertilization to personhood. But they do not in any way explain the nature of the zygotic stage, whether it holds life or carries pluripotent stem cells with a potential to generate all the cells of the human body. According to some recent rulings on allowing abortion in pregnancies that have resulted due to forced rape, like the ones that took

¹⁰In recent years a number of articles have appeared in Arabic and Persian that discuss abortion in the context of modern medicine. Unlike articles in Western languages on the subject of abortion in Islamic tradition, these are written by Muslim scholars of Islamic law, whose thorough grounding in juridical sources and methodology make these studies an important contribution to our understanding of the issue in jurisprudence. However, there is little attention paid to the ethical issues connected with the rightness or the wrongness of abortion with due analysis of personhood and rights that accrue to a fetus. See, for instance, a number of articles on the subject in the last five years in *Majalla al-shari‘a wa dirāsāt al-islāmiyya*, published by the Kuwait University.

place in the Balkans in the 1990s, it appears that the embryo is treated as an entity that does not have all the factors that biologically lead to its ability to grow into a human being.¹¹ In fact, an interesting discussion providing guidelines to determine whether intentional abortion inflicted at the stage of coagulated drop (*al-dam al-malqā* = zygote) constitutes a tort underscores a completely different understanding of the crime against the embryo. According to majority of the jurists, if the aborted matter dissolves in hot water then it cannot be regarded as aggression toward the embryo.¹² In other words, it is only when an embryo has coagulated and lodged itself in the uterus and has grown into a clot and tissue that the crime needs to be assessed for compensation.

More pertinently, the passages that speak about the embryonic development of a fetus do not spell out the modern-day differentiation between a biological animation and moral-legal existence to argue for the embryo's integrity. Verses 12-14 of Chapter 23 describe the stages of the biological development of the embryo:

We created man of an extraction of clay, then we set him, a coagulated drop (*nutfa*) in a safe lodging, then We created of the coagulated drop a leech-like clot (*'alaqa*), then We created of the clot a morsel of tissue (*mudgha*), then We created of the tissue bones, then we covered the bones in flesh; thereafter We produced it as another creature. So blessed be God, the Best of creators.¹³

Some important conclusions have been drawn from the three primary stages of embryonic development to a human person in the Qur'an: First, perceivable human life is possible at a later stage of biological development of the embryo when God says: "thereafter We

¹¹Sa'd al-Dīn Mas'ad Hilālī, *Ijhād janīn al-ighṭiṣāb fī daw' alhkām al-sharī'a al-islāmiyya: dirāsa fiqhiyya muqārana*, in *Majalla al-sharī'a wa dirāsāt al-islāmiyya*, Vol. 15, Number 41 (1421/2000), pp. 282-315, deals with the new situation that arose when the Serbs in the Balkans used rape as a weapon against Muslim women.

¹²Ibn Rushd, *Bidāya*, ii. 416; Ibn Qudāma, *Mughnī*, ix. 539, 556-7; Ibn Ḥazm, *Muḥallā*, vii. 30.

¹³See Keith Moore, "A Scientist's Interpretation of References to Embryology in the Qur'an". *The Journal of Islam Medical Association* 18: 15-16. Moore has interpreted *nutfa* = drop as the zygote, the union of the sperm and the ovum; *'alaqa* = lit. "leech" refers to a bloody form; *mudgha* = lit. "chewed substance" refers to a stage when fetus acquires flesh and solidity; and the fourth stage refers to the time when all organs attain their full perfection.

produced him as another creature.”¹⁴ Second, since all the factors that make up a human being are not present, it is possible to make a distinction between biological animation and moral-legal personhood, and, as indicated by the consensus among the Sunni jurists over the interpretation of the above verses, to place the latter stage after the first trimester of pregnancy. This consensus is based on the traditions that provide further elaboration of the Qur’anic embryology.

The single most important tradition that has provided religious grounds for legal estimation of a fetus inviolability has been reported in both the Sunni and Shi’ite compilations. In the version preserved in Bukhārī’s (d. 870) compilation, which in the Sunni estimation is the most authentic collection, the Prophet is reported to have said as following:

Each one of you in creation amasses in his mother’s womb [in the form of a coagulated drop (*nutfa*)] for forty days; then he becomes a blood clot (*‘alaqa*) for the same period; then he becomes a lump of flesh (*mudgha*) for the same period; then the angel is sent with a mandate [to write down] four things [for the child]: his sustenance, his term of life, his deeds, and whether he will be miserable (*shaqī*) or happy (*sa‘īd*).¹⁵

There is no mention of the breathing of the spirit (*rūh*) in this version. However, in another equally authoritative version related in Muslim’s (d. 875) collection the last part of the tradition includes an additional sentence which clearly states: “Then the angel is sent to breathe into him the spirit (*al-rūh*).”¹⁶ In another variant reported in the same compilation, the angel is present from the time of implantation, some forty-five days after the conception, when the embryo lodges itself in the uterus. This report also mentions the determination of the sex of the child whether it will be male or female.¹⁷

These traditions provide the ontological interpretation of biological data as to when the embryo attains a status of another human in-

¹⁴Qurṭubī, *Jām‘i*, xii. 6; Rāzī, *Tafsīr*, xxiii. 85; Ṭabarsī, *Majma‘*, vii. 101; Ṭabāṭabā‘ī, *Mizān*, xv. 20-24

¹⁵Bukhārī, *Ṣaḥīḥ*, *kitāb al-qadar*, *ḥadīth* 1 and 2, i. 211. For variants see Muslim, *Ṣaḥīḥ*, *kitāb al-qadar*, *ḥadīth* 2643 and 2645 (Nawawī’s commentary on *Ṣaḥīḥ*, Vol. 16:191). For Shi’ite version see: Hurr al-‘Āmilī, *Wasā’il*, *kitāb al-diyāt*, *ḥadīth* 35652.

¹⁶Muslim, *Ṣaḥīḥ*, *Kitāb al-qadar*, iv. 2036, *Ḥadīth* No. 2643.

¹⁷Ibid., iv. 2038, *Ḥadīth* No. 2644; also, Aḥmad b. Ḥambal, *Musnad*, iv. 7.

dividual. From different versions of this tradition it is possible to speak about the stage of recording human destiny by an angel who is sent by God to breathe the spirit as occurring either on the fortieth, forty-second, or forty-fifth night or after 120 days. The jurists have identified this stage as the moment of ensoulment when the fetus attains ontological unity and identity as a human person. It is important to note that the moral-legal implication of the ensoulment is not the subject of these traditions.

With their limited knowledge about human embryology, ancient Muslim jurists did not emphasize the distinction between two periods of pregnancy to deduce decisions about the culpability and accruing penalty in the matter of induced abortion. In fact, the inference regarding the first trimester is particularly absent in Bukhārī's above-cited version. Others, like Ibn al-Qayyim al-Jawziya (d. 1350), have argued that the tradition suggests that all the three early stages from coagulated drop to clot to lump of flesh are covered in the first forty days because the tradition clearly states: "Each one of you in creation amasses (*yajma'u*) in his mother's womb for forty days."¹⁸ Moreover, none of the authenticated traditions refer to the coagulated drop (*nutfa*) stage as a separate gestational stage. According to some jurists, even the phrase that literally means "like that" does not suggest that the reference is to "the same period," that is, forty days. The tradition simply suggests that before the angel is sent to write the child's destiny there is no spirit in the fetus whether in drop, clot, or lump form. For these jurists the ensoulment occurs at the end of the first forty days and not after that as asserted by others.¹⁹

However, it is possible to extrapolate the beginning of life from the time of conception in some Shī'ite traditions. Thus, for instance, the following tradition in which a disciple of the seventh Shī'ite Imam Mūsā al-Kāzīm (d. 800) asks for a solution to the case involving an induced abortion:

[Ishāq b. 'Ammār reports:] I asked Abū al- Ḥasan [al- Kāzīm]:
[What is your opinion about] a woman who fearing pregnancy

¹⁸Muḥammad b. Abū Bakr, known as Ibn al-Qayyim al-Jawziya, *al- Tibyān fī aqsām al-qur'ān* (Beirut: Mu'assassa al-Risāla, 1994), p. 337; also, Ibn Ḥajar al-'Asqalānī, *Fath al-bārī*, xi. 481.

¹⁹Sharaf al-Quḍāt, *Matā tunfakh al-rūh fī al-jamīn?*, (Dār al-Furqān, 1990), p. 45.

takes a medicine and aborts what she has conceived? He responded: No, [it is not right.] At that I said: But it is a coagulated drop (*nutfā*). He said: The beginning of human creation is a coagulated drop.²⁰

This tradition explicitly mentions the beginning of human creation at the zygotic stage and rules the abortion at that stage illicit. A similar implication can be inferred from another tradition ascribed to ‘Ali b. Abū Ṭālib (d. 660) in which he specifies the five stages of fetal development in the matter of the amount of compensation that must be paid when the abortion is induced:

He specified five stages for man’s semen [in order to fix the compensation]: when it is fetus before the ensoulment 100 dinars, this is because God created a human being from an extraction of clay. This is the coagulated drop. Hence, this is a part [of human creation]. Then it is a blood clot. This is another part. . . .²¹

In both these traditions, and in the light of the above-cited verse, it is possible to argue that the zygotic stage is regarded as the beginning of life and hence abortion at that stage carries the prescribed penalty. However, there is another tradition that specifically takes up the issue related to the timing of ensoulment. Sa‘īd b. al-Musayyib (d. 715) is reported to have asked the fourth Shī‘ite Imam ‘Alī b. al-Ḥusayn (d. 713) about ensoulment in the following case:

I asked [the Imam]: [In your opinion] do the changes from one state to another that take place [in the fetus] during the gestation occur with or without the spirit (*rūḥ*)? He said: The changes occur through the spirit, with the exception of the preexistent life that is transferred in the loins of men and the wombs of women. If the fetus had no [independent] spirit other than the life that was there [because of the parent’s existence], it could not have changed from one state to another in the womb. [The existence of the spirit and ensoulment are proven by the fact that had it not been for the presence of the spirit] the killer

²⁰Ḥurr al-‘Āmilī, *Wasā’il al-shī‘a*, xix. 15.

²¹Kulaynī, *Furū‘ al-Kāfī*, vii. 342; Ibn Bābūya, *Man lā yaḥḍur*, iv. 54.

would not have been required to pay the blood money (*dīya*) at that [early] stage [of fetal development].²²

This last case provides a clearer understanding about the beginning of life and ensoulment in Shī'ite tradition. Based on these accounts, a number of Shī'ite jurists have argued for embryonic inviolability much before the 120 days' cut-off period.

In any event, Sunni jurists are agreed upon the prohibition against aborting after the ensoulment. Al-Qurṭubī (d. 1273) has stated this most clearly in his juridical exegesis of the Qur'an: "There is no disagreement among the scholars that the ensoulment occurs after 120 days. This is after completing four months of gestation and having entered the fifth."²³ More importantly, the jurists regarded the deliberate termination of pregnancy at any stage of the embryonic development to be sinful. However, after the first trimester, when the majority of the jurists afforded the fetus ontological status of an individual, abortion was absolutely prohibited unless it conflicted with saving the mother's life.²⁴ Variant readings and interpretations notwithstanding, among the Sunni scholars there seems to be a juristic agreement that based on the above-quoted traditions in the two highly respected compilations of Bukhārī and Muslim, the fetus attains personhood after 120 days.²⁵ Nevertheless, the differences of opinion about the absolute inviolability of the fetus had to wait for the biomedical advancements in modern times, when biological data on the embryonic journey to a full human at times contradicted the traditional account of when conceivable life was scientifically discernible. But, even then, the jurists remained oblivious to the moral dimension of embryonic inviolability.

²²Kulaynī, *Furu' al-Kāfi*, vii. 347. The use of *dīya* as a form of penalty prescribed in this case indicates that the crime is seen as homicide. This signification of *dīya* is supported by the lexical sense of the word. See, for instance, major classical Arabic lexicons under WDY: *Tāj al-arūs*, x. 386; Ibn Athīr, *Nihāya*, iv. 202; *Lisān al-'Arab*, xv. 383.

²³*Al-jāmi' li-aḥkām al-qur'ān*, viii. 12. Al-Nawawī in his commentary on *Ṣaḥīḥ Muslim*, xvi. 191 and Ibn Ḥajar in his *Fath al-bārī*, being a commentary on *Ṣaḥīḥ al-bukhārī*, xi. 481, mention the consensus of the jurists in this regard.

²⁴Nawawī after commenting on the traditions in Muslim's compilation makes this observation: "The jurists are in agreement that the ensoulment takes place only after four months [of the pregnancy]" (xvi. 190-91).

²⁵Ibn 'Abidīn, *Ḥāshiyā*, ii. 370; Ibn al-Humām, *Fath al-qadīr*, ii. 495; Qurṭubī, *Jāmi'*, xii. 8; Nawawī, *Sharḥ*, xvi. 191; Ibn Qayyim al-Jawziyya, *Tibyan*, 337-8; al-Ramlī, *Nihāyat al-muḥtāj*, viii. 416; al-Mirdāwī, *al-Inṣāf*, vii. 386; Ibn Ḥajar, *Fath al-bārī*, xi. 481 and 484.

Moral Problems Related to Technically Assisted Reproduction

While more or less in agreement about abortion before the first trimester, the jurists have disagreed about the legal status of the fetus in according it rights that are categorically and unqualifiedly due to an individual. The rulings about the legal status of the fetus are mostly inferred from the estimation of the three primary stages of embryonic development in the Qur'an rather than from the ontological assessment of the nature of the human person. Accordingly, there is no discussion about the dignity of the person, which serves as the foundation upon which all human rights rest. Just as there is no clear understanding of the zygotic stage of the fertilized ovum in Islamic sources, there is also a conspicuous absence of any ontological definition of a human person (*nafs*) in any estimation of the fetus as the unity of body and spirit. In jurisprudence, there is an assumption that the term *nafs* self-evidently stands for personhood (*ādami*), whose life must be protected through a detailed penal code rather than a theory of inherent dignity of the fetus. Any argument to assert the fetal inviolability at all stages of its journey towards a full human being would have required the jurists to seriously engage the Qur'an in deriving an ethical framework to define human personhood in order to affirm the inherent dignity of the pre-ensoulment fetus. The juridical trend is simply to deny personhood to the pre-ensoulment fetus because it does not have full moral status in the absence of differentiated organs to indicate human shape and, as a consequence, to permit abortion at this stage as well as the derivation of embryonic stem cells from cryopreserved embryos.

The other reason for this relaxed attitude towards pre-ensoulment fetal personhood is the religious tradition that holds that no pre-ensoulment fetus will be resurrected on the Day of Judgment (*al-qiyāma*). In other words, anyone who has not been infused with the soul is not to be resurrected. Hence, it is not forbidden to abort the fetus at this stage because it is not a being as yet.²⁶ The problem with this argument is that from the point of view of the Qur'anic doctrine that speaks about God's omnipotence and omniscience, how can human beings prejudice that the fetus will not be ensouled and will not reach personhood to be capable of being resurrected if allowed

²⁶*Al-Furū'*, i, 281

to continue in its gestational journey? Certainly, to abort or destroy the fetus at this stage is an act of aggression toward it, and unless there is a valid reason to do so it is forbidden to abort it.

In the 1970s in vitro fertilization (IVF) to treat human infertility marked the beginning of the revolution in making possible what is impossible in nature. "In vitro" (lit. 'in glass') refers to the Petri dish in which the sperm and eggs are mixed. This technique was originally developed to get around the woman's damaged or absent fallopian tubes, which connect the ovaries to the uterus. In 1978 the technique was successfully used to fertilize the eggs and implant the resultant products to treat infertility.

The major ethical concern with IVF is about a woman's egg being fertilized outside the body and then being injected into the fallopian tubes of the mother or surrogate mother. Although in the classical juridical corpus the jurists had accepted the possibility that a woman could asexually introduce the sperm that she considered to be her husband's into her uterus on her own, an asexual pregnancy without penetration through assisted reproductive technology had no precedent in the Shari'a. Neither was surrogate motherhood known to the jurists. With the provision of polygamy, the immediate solution to infertility was always a second wife, sometimes with the encouragement and approval of the first wife, and at other times with the disapproval or even divorce of the first wife. But the new possibility that the second wife could now gestate an embryo that carried the gametes of the husband and the first wife (who, due to a medical condition, could not carry it to its full term) through IVF procedure required precise determination whether the procreation had occurred within the same family unit. The legal methodology provided an important rule that required the jurists to avert probable harm (*daf' al-darar al-muhtmal*) before any consideration of benefit that accrued to the agent through such a medical intervention.

Notwithstanding the unknowns in the traditional law, the benefits of IVF in treating infertility were obvious, as long as such fertilization was achieved within the legitimate boundaries of marriage. However, as was customary in Islamic juridical deliberations, little attention was paid to the moral and social implications of the procedure for the nature of the child's identity and relationship to the family, on the one hand, and the status of multiple human embryos that were produced in the Petri dish and then implanted to increase the possibility of pregnancy, on the other. In the case of multiple preg-

nancies the procedure requires the abortion of additional embryos to avoid endangering the mother's health and to improve the chances of survival for one embryo. Besides two to three embryos that were injected for gestation, there were surplus embryos that were frozen for use in further, future attempts. What is the status of these inseminated and frozen embryos? Could they be used later in further attempts at having a first child or for additional children? Who owns them if the couple later divorce or if one of them dies? Could they be simply discarded as "unwanted" embryos? Could they be used to derive stem cells for research and therapeutic purposes? Currently derivation of stem cells is justified on the basis of all therapeutic ramifications that are speculatively assessed in order to advance potential cures for many people with chronic, debilitating, fatal, or degenerative disorders.

Undeniably, IVF had a limited goal of correcting a natural condition to allow a would-be mother to carry a fertilized embryo to its full term of gestation. Keeping in mind the plurality in the Muslim legal opinions on new bioethical issues, in spite of the fact that there were some dissenting voices among both the Sunni and the Shī'ite scholars, the majority of them came to endorse the IVF technology, with the stipulation that the procedure itself should not lead to any sinful act contrary to the rulings about man-woman relationships in the Shari'a. Hence, even when some scholars had reservations about the procedures of producing gametes asexually, including the morally questionable act of masturbation to derive the sperm, IVF became a routine medical practice in the Muslim world to help women who could afford expensive reproductive technology to conceive. In addition, in order to avoid surgery, doctors can now be guided by ultrasound to the ovaries to retrieve eggs vaginally, but this somewhat invasive procedure raises questions about a third party male physician (other than the woman's father, husband, or brother) having access to the private parts of the woman. This is morally problematic from the Islamic code of modesty for women. There was no immediate solution to this latter problem since there were not enough physicians, male or female, to perform the IVF procedures without invading the privacy that was protected by Islamic code of modesty.

In majority of the cases of infertility, if the family was well-to-do, the treatment was sought abroad, where such Islamic sensibilities about male-female relationships were altogether absent. Neverthe-

less, the issue, however academic in nature, was general enough to require a sensible and immediate solution in view of the shortage of women specialists in all areas of medicine. I have specified the problem as academic because for most people, medical care was so difficult to obtain that it hardly mattered whether the patient was seen by a male or female doctor. Before the spread of modern mass education, infertility was a serious problem in the family and in the society at large. Married couples who could not have a child left no stone unturned to become parents, which included even financial hardship. Consequently, the legal hair-splitting that was part of the seminary culture and was meant for consumption among the traditional scholars of Islamic law rarely filtered down to the ordinary folks looking for practical solutions, except in the form of ruling that either permitted or forbade a procedure.

For those jurists who wanted to provide moral-legal justification for the use of surplus embryos as the source for derivation of embryonic stem cells for research, juridical solutions were not hard to deduce when legal principles like public good (*maṣlaḥa*) that promotes what is beneficial, and necessity (*ḍarūra*) that overrules prohibition, could provide religious-legal justification and legitimization. After all, as some prominent jurists had already ruled, the sanctity of life principle does not apply to the embryos that are outside the womb. Consequently, the use of frozen embryos to isolate stem cells was justified, especially in view of enhancing the possibility of discovering cures for incurable diseases. The future use of frozen embryos for posthumous transfer of an intra-fallopian gamete to a widow was another problem that required meticulous understanding of the status of the frozen embryo to make sure it could be treated as a property that belonged to the legally married couple. If it were established that the frozen embryo is in the usual sense a property then it was subject to the laws governing ownership and transfer of property that belonged to the biological father and mother. However, is it really a property? There was no doubt that if the couple was alive, both had a right to determine the use of their embryos. What if one of them died? Then the complexity of the problem came to the fore as the jurists began to question the widow's right to use a frozen embryo that was the result of her husband's gamete being fertilized with hers, when legally, because of the death of her husband, the contract that wedded her to him be-

came invalid. She was no more his wife, and hence, the newborn could not use his name as part of her/his identity.

The Problem of Endorsing Stem Cell Research

Although assisted reproductive technology has been endorsed by the Muslim jurists, one of the controversial issues in this technology is the asexual production of embryos through somatic cell nuclear transfer (SCNT), which involves the introduction of the nuclear material of a somatic cell into an enucleated oocyte. The use of donor eggs or sperm is out of the question in Islamic tradition, since the preservation of the child's lineage to its biological parents through marriage is obligatory. The ethical issues in assisted reproduction are associated with the SCNT technique through which the embryo is created. While the moral status of the embryo remains at the center of the controversy connected with the permission to use the frozen embryos, the problem of producing embryos with SCNT technique raises serious questions about the commodification of early forms of human life.

Retrieval of stem cells necessitates the embryo's destruction and its production just for that reason gives rise to incompatible notions of embryonic sanctity and the respect and rights owed to preimplantation embryos at the blastocyst stage. SCNT-derived stem cells may lead to the acceleration of research in reproductive genetics with direct impact on interhuman relationships that occur from a naturally occurring pregnancy, uninterrupted by science, through its natural course of development within a marriage. As discussed earlier in the context of embryonic sanctity, there is enough evidence in the revealed texts of Islam to argue for the moral status and rights of the embryo at the zygotic stage. Hence, its destruction for the derivation of stem cells cannot be ethically justifiable. And, although there is an absolute and collective moral duty in Islam for the physicians and scientists to undertake biomedical research that may result in beneficial treatments for a number of incurable diseases that afflict humanity today, there is an equally valid concern whether the potential benefits of the research involving embryos can be translatable into therapy. This requirement puts the burden of proof on public and private agencies in the Muslim world to provide evidence that stem cell research adheres to the standards of religious-ethical and scientific oversight.

In addition, the hesitation in endorsing the cloning method of creating pluripotent stem cells is the remote potential (at this time, at least) for the asexual reproduction of a human being outside the boundaries of a marriage. One of the essential principles of Islamic bioethics is “No harm, no harassment,” which underlies all ethical decisions that might cause harm and lead to harassment of an individual who must be protected from such probable harm in future (Sachedina, 2006). There is no greater harm in Muslim societies than to cause an ambiguity in an individual’s lineage. One of the essential purposes of the Shari‘a is the protection of the lineage of the offspring through marriage. Islam regards relationships growing out of one’s natural connection to one’s kin, in addition to relations that are negotiated in the social context on the basis of interpersonal justice, as fundamental to human religious and spiritual life.

Accordingly, Muslim scholars and their governments need to assess the risks and the benefits of stem cell research in the light of Islamic values related to the dignity of the embryonic being. Thus far the ethical-religious assessment of research uses of pluripotent stem cells derived from human embryos in Islam has been inferentially deduced from the rulings that deal with the fetal viability and embryo sanctity in the classical and modern juristic decisions. The jurists treat a second source of cells derived from fetal tissue following abortion as analogically similar to cadaver donation for organ transplantation to save other lives, and hence, permissible. As discussed above, the moral considerations and concerns in Islam have been connected with the fetus and its development to a particular point when it attains human personhood with full moral and legal status. Based on theological and ethical considerations derived from the Qur’anic passages that describe the embryonic journey to personhood developmentally, and the rulings that treat ensoulment and personhood almost synonymously occurring over time rather than at the time of conception, it is correct to suggest that majority of the Sunni and Shi‘ite jurists will have little problem in endorsing regulated research on embryonic stem cells that promises potential therapeutic value, provided therapeutic benefits are not simply speculative.

The inception of embryonic life is an important moral and social question in the Muslim community. Anyone who has followed Muslim debates over this question notices that the answer to it has differed with the different ages and in proportion to the scientific information available to the jurists. Accordingly, each period of Islamic

jurisprudence has come up with its ruling (*fatwā*) consistent with the findings of science and technology available at that time. The search for a satisfactory answer as to when an embryo attains legal rights that must be protected has continued to this day.

As for the experimentation on human embryos in the Muslim world, at this time there is very little hard core evidence available even to regional government agencies. But with the growth of IVF reproductive technology and the so-called “surplus” embryos readily available for experimentation in the field of biomedical research and biotechnology, it is not farfetched to assert that in the Muslim world the integrity and the life of the early human embryo is in serious danger. Stem cell research in the field of developmental and cell biology is promising critical therapeutic benefits, and it is hard to imagine that Muslim scientists are not interested in harvesting stem cells from human embryos and fetuses in the hope of solving the problem of incurable diseases. The ethical dilemma posed by stem cell research on embryos created either by in vitro fertilization or nuclear transfer cloning is a serious one that requires a careful assessment of technically assisted reproduction that seems to be treating the embryo’s life as a means to an end. Whether created for reproduction purposes or research, there is no legal or moral basis to deny the dignity of the so-called “spare” embryos. The loosely applied principle of public good (*maṣlaḥa*) seems to have provided unproblematic justification for any procedure that actually requires more scrupulous ethical analysis because it is a potential life that is involved. A more relevant principle in this case states in no uncertain terms that “averting corruption has preponderance over advancing public good.”

However, in the juridical tradition, on the basis of the penalties prescribed for the feticide, there is an agreement that the fetus before ensoulment cannot be accorded the status of a full person. Also no funeral rites are to be performed for a fetus before the first trimester.²⁷ Overall the law stipulates the fetus’ right to life, even when a universally recognized definition of an embryo that specifies personhood was lacking. Accordingly, in the penal system it requires postponement of a pregnant woman’s execution until after she has delivered her baby and made provisions for its care after her death. Besides maternal safety, the majority of the Sunni and some Shī‘ite

²⁷Qurtbī, *Tafsīr*, xii. 6; Ibn Qudāma, *Mughnī*, ii. 398; Ibn Qayyim al-Jawziyya, *Tibyan*, p. 351; Tūsī, *Nihāya*, i. 50.

scholars rule that abortion may take place during the first trimester if the woman's pregnancy threatens the well-being of an already existing infant. However, in the case of a pregnancy that threatens a woman's life, the jurists have prioritized saving the life of the ensouled fetus over saving the mother's life.²⁸ These were the rulings formulated in the classical age.

The phenomenal advancement of biomedical technology in saving the life of a woman faced with complicated pregnancy as well as in determining the beginning of a conceivable life in a fetus has led to modification of some classical formulations about embryonic inviolability. A number of juristic principles, including the "contrariety between two harms" (*ta'āruḍ al-d ararayn*) and "protection against distress and constriction" (*'usr wa ḥaraj*) have been evoked to rule on the priority of saving the mother's life on whose well-being depends the life of the fetus.

The differences of opinion regarding the appropriate penalty for the act of feticide and the lack of agreement among the jurists regarding its assessment as homicide shows that the fetus was not accorded personhood when ensouled. In the case of a man who causes a woman to miscarry (or aborts her) and if the fetus is unformed, his crime carries the penalty of *al-ghurra* (monetary compensation). However, if the expelled fetus is formed then the penalty is full blood money (*diyya kāmila*). Notwithstanding the estimation of the earlier stages of fetal development as less than human person, this latter opinion treats feticide at that advanced stage as more of a crime than the death of just an ensouled fetus. When that happens an additional penalty of *al-kaffāra* ("expiation") may be levied, requiring the aggressor to fast for two consecutive months.²⁹

Under Islamic penal code the penalty for self-induced abortion or abortion inflicted by others, whether intentionally or accidentally, is treated in some detail.³⁰ There, the abortion of the fetus at any time is regarded as a crime because it is prematurely removed from the womb where it was created to complete the gestation until it was ready to sustain life outside the uterus. In fact, according to Ibn 'Ābidīn, contrary to the modern liberal rulings, the permission for

²⁸Ibn 'Ābidīn, *Hāshiyā*, i. 602, vi. 591; Ghazālī, *Iḥyā'*, ii. 53; Ibn Rajab, *Jāmi' al-'ulūm*, 46.

²⁹Ibn Rushd, *Bidāya*, ii. 416; Ibn Qudāma, *Mughnī*, ix. 539, 556-7; Ibn Ḥazm, *Muḥallā*, vii. 30; Tūsī, *Nihāya*, ii. 803.

³⁰See detailed comparative rulings on the subject among four Sunni schools in al-Jazarī, *Kitāb al-fiqh' alā al-Madhāhib al-'arba'a*, v. 372ff.

abortion to save the mother's life is not unconditional, because the assessment of the situation is a conjecture. His ruling makes this clear:

If the fetus is alive, and [even] if there is fear for the life of the mother as long as the fetus remains alive, it is not permissible to dismember it. The reason is that the mother's death on account of the fetus is conjectural. As such, it is not permissible to kill a human being (*ādami*) on the basis of a conjecture.³¹

The question of fetal rights assumes importance in relation to determining a fetus' personhood. The penal system imposes monetary fines progressively in relation to the age of the fetus on anyone involved in inducing abortion with the intention of terminating the pregnancy, including physician, father, or mother. However, if the wife decides to abort with the permission of her husband, then, according to some Ḥanafīs, there is no need to pay the monetary compensation to anyone.³² The fully formed fetus is treated like an independent human being with rights to inherit and to be compensated for any damage done to it. This is so even when in another situation the law regards the fetus as an integral part of the mother's body, identical to an organ. It is for this latter reason that it permits donating fetal tissue, treated like other bodily organs for medical research, including the derivation of stem cells. However, in the context of IVF reproductive technology, the jurists seem to maintain a moral distinction between the embryo that is already implanted and developing in the uterus and "surplus" or "spare" embryos. Whereas the implanted embryo enjoys the fetal rights, including the right to life, surplus embryos are not treated as aborted since these existed outside the body of a woman and never reached the stage of ensoulment. Hence, there is no prescribed penalty for discarding these pre-implanted embryos. In fact, there is permission for using them to derive stem cells.

Such a devaluation of pre-implanted human embryos in the IVF clinics gives rise to their exploitation because they have become an important source for potential therapeutic and commercial value. It might even lead to the commercialization of human embryos specifically fertilized as the source of therapeutic products. Muslim jurists

³¹Ibn 'Abidīn, *Hāshiya*, i. 602.

³²Ibn 'Abidīn, *Hāshiya*, vi. 591.

have not considered all the negative facets of their ill-conceived ruling allowing both unregulated in vitro fertilization and the discarding of unused embryos, as if potential human life could be treated like a commodity. The problem is essentially related to Islamic jurisprudence, which ignores any moral analysis of the case and simply deduces its rulings from legal principles that are fundamentally ethical in their purport, but never acknowledged as such. If the contemporary Sunni Muslim jurists were adequately trained in Islamic theological ethics where the objective nature of human action is analyzed in terms of moral good and evil, then they would have considered the moral status of the embryo meticulously. The advancement of medical technology makes it imperative to reconsider the moral status of the fetus in the light of fresh interpretations of religious, cultural and social beliefs.

A human embryo is a potential human life. It has moral-legal status and deserves respect from the time it is conceived. If that were not the case, why would Islamic penal code impose fines for induced abortion from the early stage of progressive fetal development? It certainly cannot be simply used as a product or as a means to an end. Hence, any ruling that permits creation of human embryos to use them as the source of therapeutic products and, in doing so, destroy them is an affront to the divine purposes of the Shari‘a. The Qur’anic description of the human embryonic journey to acquire human status underscores God’s special endowment on humanity by providing it meaning in life. At no point does the Qur’an or the Tradition suggest that using human embryos to benefit human society is permissible. Those who support such permission base their opinion on the argument that regards destruction of pre-implanted, unensouled embryos that existed outside the uterus as a minimum sacrifice of “left over” embryos for the greater good of the entire society.

The major problem, as I see it, pertains to the denial of the moral status of a fetus outside the mother’s womb because, according to this assessment, fetal life even when the fetus is implanted in the womb is still a remote possibility. The progressive development and viability of the embryo indicate and express a moral and legal progression of rights and dignity. And, even if full personhood and ensuing complete rights are achieved only after birth, by its own terms the Shari‘a takes into account the various stages of biological development to assess the level of damage done to the fetus, indirectly contributing to a progressively growing respect, dignity, and rights of

the fetus. At no point does the tradition differentiate between pre-implanted embryos and those that are already implanted in the uterus. All the laws in the criminology know of only the in uterine embryo.

Nonetheless, the reference in the Qur'anic embryology about God breathing His "spirit in him" (Q. 23:5) raises the question about when that happens. From a purely scientific viewpoint the debate is irrelevant since whether or not a fetus acquires a soul is a matter in the realm of theology and metaphysics. But in Islamic jurisprudence the matter of ensoulment is of utmost importance because it determines the stage at which the fetus acquires legal personhood and provides a dividing line in a pregnancy after which abortion is not permissible unless carrying the fetus through complete gestation is a threat to a woman's life.

The question of ensoulment is critical to determine the legal status of a fetus in Islamic criminology. The problematic in jurisprudence stems from the terminology used to express different stages of the fetal development from pre-implanted fertilized ovum, embryo, embryo-fetus in utero, and newborn that is strictly derived from the references to embryonic development in the revealed texts. These texts, as discussed earlier, do not speak about the ensoulment until much later. More importantly, these texts do not refer to aborted fetuses. Let us examine juridical terminology for abortion in some detail to get to the root of the problem in according legal-moral status to the fetus.

Legal-moral status of an entity is described in terms of its relation to other moral agents and the obligations and relationships that other moral agents have toward this entity. If fetal tissue is treated as organic non-human life form, then it might be permissible to treat it as an organ in a woman's uterus, and, when aborted, lawful to use it for research with compelling reasons and just ends. On the other hand, if human embryonic cells are considered human entities then our moral relationship and obligation toward them shifts sharply. In Islam, as pointed out earlier, a fetus is guaranteed legal rights by the Shari'a, and the evidence is abundant in many sections of Islamic jurisprudence. If the moral status of the fetus is conceded from the moment of conception, then it puts constraints in medical research that wishes to use the "spare" IVF embryos to derive, for instance, stem cells, because of our obligation to another entity that is not capable of protecting itself and consenting to its use for research purpose. In the Shi'ite moral tradition, like the Catholic formulation,

eradication of a fetus is a sin. But unlike Catholicism, not all Shī'ite jurists regard the moment of conception as the moment of ensoulment. Some maintain that ensoulment occurs at the time of implantation of the fertilized egg in the uterine wall (that is, after 11-14 days); whereas others, taking the hint from the Prophetic tradition, rule that it occurs at the end of first trimester (120 days).

That the fetus has a moral-legal status in the legal corpus cannot be questioned. Hence, for instance, in the matter of inheritance related to the fetus, the jurists are in agreement that if a man dies and a pregnant wife survives him, the right of the fetus is secure, and the inheritance cannot be disposed of before the share of the fetus is set aside. Moreover, if the woman delivers more than one baby, the other heirs have to pay back the share of the other babies. In the case where a woman aborts a fetus, at any stage of its life, and if it betrays any sign of life, such as a cough, sneeze, or finger movement, the fetus is entitled to inherit any legitimate relative who has died after its conception. If the fetus does not survive, its legal heirs inherit its share.

In ruling on the wrongness of abortion, the jurists have ruled that since the Shari'a guarantees the sanctity of fetal life it protects a fetus against deliberate abortion without legitimate excuse. As noted above, in the case of a pregnant woman who is sentenced to death, execution is postponed until after delivery, and according to some jurists, until the mother completes nursing the child.³³ The fetal sanctity is further maintained in the Islamic penal code that does not regard the embryo in its early stages as simply a dormant mass. The treatment of both induced or accidental abortions, in the form of interdiction, admonition, or penalties, indicate that the Shari'a recognizes human dignity at conception. It safeguards the life of a fetus, as well as its rights, while it is still in the womb.

However, with all the social changes and scientific findings today, we find ourselves before an open window, with hands almost reaching in to tamper with the lives of fetuses. Permission and prohibition seem to be obscured by the interpretations of modern science concerning fetal growth, stages, and movement, as well as the inception of embryonic life. Modern methods of fetal diagnosis, such as fetoscopy, ultrasound, and other means for examining a fetus and monitoring its growth inside the uterus were not available to ancient

³³Ibn Qudāma, *al-Mughnī*, viii. 170

scholars. These scientific methods allow us now to see the embryo inside the mother's womb from the earliest moments and to follow its growth, hour after hour and day after day, until it fully grows into a human being.

On the basis of the textual evidence examined, it is possible to maintain the following conclusions about the stem cell research in Islamic societies: 1. The silence of the Qur'an over a criterion for moral status of the fetus allows the jurists to make a distinction between a biological and moral person, placing the latter stage after, at least, the first trimester in pregnancy, and extrapolating a number of rulings that deny dignity to pre-implanted "surplus" embryos in IVF clinics and allow their use for stem cell research. 2. Since the Tradition regards perceivable human life possible at the *later* stage in biological development of the embryo, and since there is hardly any discussion of the early stages of fetal development on the basis of which to assess moral culpability if the embryo were destroyed, Muslim jurists tend to ignore the ethical dilemma concerning their use to derive stem cells.

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