

Striking a Balance: Medical Ethics Insights on Treating Cervical Cancer in Pregnancy with Reduced Standard Radiation via IMRT



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INTRODUCTION

Cervical cancer is said to be the most common gynecological malignancy diagnosed during pregnancy, and it exerts a significant multidimensional burden, particularly among low- and middle-income countries, including the Philippines. In general, the occurrence of any malignancy during pregnancy definitely presents one of the most confronting scenarios in the field of general medicine and oncology. The physician is being challenged with a dual responsibility: to protect the life and overall well-being of the mother while also reflecting on the safety and viability of an innocent fetus.

Cancer associated with pregnancy is a challenging setting as therapeutic strategies may

require careful modification of treatment protocols. In this actual case, involving the utility of Intensity Modulated Radiation Therapy (IMRT) at reduced standard radiation volume aimed to provide a “therapeutic dose” to manage cervical cancer in a pregnant patient. Technology has indeed advanced to the point that this modality (IMRT) is now capable of targeting cancer tissue with utmost precision while sparing surrounding viable organs as well as potentially minimizing the radiation exposure to the fetus. Here comes the balancing act: deciding to deviate from the standard of care with its potential inherent risks possibly impacting the mother’s prognosis versus a full radiation volume projected to cause direct fetal harm.

This commentary will examine the ethical implications of such a decision-making process. We will revisit the four principles of biomedical ethics—autonomy, beneficence, non-maleficence, and justice — to explore how technological advances intersect with the multidimensional paradigm of patient-centered care, cultural nuances, and the moral imperative of doing good to the mother and avoiding harm to the fetus.

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THE INTERSECTION OF THE CLINICAL AND ETHICAL CONTEXT

The treatment of cervical cancer during pregnancy will be based on parameters such as age of gestation, TNM staging, and the patient’s informed wishes. While in an early-stage disease, surgery may be an option, but for more advanced stages,

chemoradiation is included in the standard of care. [1] Radiotherapy is pivotal in local control, and literature has established therapeutic dosing and volumes. Any deviation from the standard carries the potential risk of incomplete treatment or disease progression, which can impact positive survival outcomes.

Pregnancy confounds this equation. In general, radiation is an established risk to the fetus, particularly in the critical development period of the first trimester, where it can cause growth restriction, anatomical malformations, neurocognitive impairment, or even fetal death. There is little evidence to support that an irradiated uterus can carry a successful gestation due to radiation-induced fibrosis.[2] The physician is confronted with a slippery slope that prioritizes maternal outcomes with standard care that will harm the fetus, versus attempting to preserve the fetus by deviating from the standard, potentially decreasing the mother's best outcomes.

IMRT represents a technological advancement in this field. Modulating beam intensity allows highly targeted radiation delivery, sparing normal tissues and, in this case, reducing fetal dose.[3]

What will be our ethical challenge? Does the decision to reduce standard radiation volumes impose a concomitant risk to the mother? Are we compromising the mother's prognosis for the sake of fetal preservation? And if so, is that ethically justified?

RESPECT FOR PERSONS AND INFORMED CONSENT

Central to this discussion is the principle of autonomy. The pregnant patient, being a free and informed adult, made aware of the diagnosis, the benefits, and potential risks, has the right to exercise self-determination. In this context, the physician should ensure that informed consent is not just a form to sign, but a dynamic process of thoughtful analysis emanating from the duality of her role as both a mother and a patient herself.

The physician has a duty of care that will ensure that the patient understands all potential outcomes: the probability that her survival may be reduced due to deviation from the standard, the concomitant high risk to the fetus brought about by the radiation therapy, and the uncertainties surrounding the fact that medicine is not an exact science. This

process should be straightforward, but sensitive, compassionate, and non-directive, [4] shifting paternalism to a patient-centered approach.

Cultural and personal values may influence how patients interpret these outcomes to inform their decisions. In societies where maternal sacrifice for fetal life is highly regarded, a woman is likely pressured to accept modified treatment in favor of possible fetal viability. [5] However, since values and circumstances differ significantly, some may prioritize their own survival, especially in the presence of dependents and/or other children. Genuine autonomy highlights respect for human dignity and individuality, with the patient weighing on these parameters free from coercion, force, and even violence.

Ultimately, the physician is bound to respect an exercise of autonomy while ensuring that choices are indeed free and informed. Shared decision-making becomes the ethical cornerstone of care in such circumstances.

BENEFICENCE AND NON-MALEFICENCE

The principles of beneficence (do good) and non-maleficence (do no harm) are central in cancer associated with pregnancy. The physician is challenged by two patients in a single body whose primary interests may conflict.

We need to do what is good. To whom? Who is the "patient"? Is it the mother, the fetus, or both of them? Some may argue that the primary covenant is to the mother, who is capable of making autonomous decisions and whose survival safeguards the possibility of continued caregiving for the child and other dependents. Others will choose the viable fetus, as a patient in its own right, with inherent right to life and access to healthcare. All of these ethical concepts emanate from the beneficence-based obligation to the fetal patient in the same manner as the beneficence-based and autonomy-based obligation to the pregnant patient is upheld.[6]

Non-maleficence is equally challenging. As discussed earlier, harm cannot be entirely avoided by the mother or fetus; therefore, it must be weighed and balanced. The ethical burden lies in recognizing that this balance is imperfect and that decisions must be guided by a moral compass rather than wishful compromise.

In this specific dilemma, when two basic bioethical principles may appear opposing in serving the best interest of both patients, invoking the Doctrine of

Double Effect [7] is necessary. Deciding in favor of IMRT is ethically justifiable, as summarized with the conditions below:

- a. The act (IMRT) is morally good since it addresses the malignancy and projects a decrease in harm for the surrounding organs and the fetus.
- b. The mother did not will the potential bad effect (toxicity, radiation exposure). The bad effect is indirectly voluntary.
- c. The beneficial effect is produced directly by the action (IMRT, therapeutic dose), which proceeds as immediately as the adverse effect (radiation exposure).
- d. The beneficial effects (cancer treatment, maternal survival) are reasonable and desirable, compensating for any potential adverse effects.

JUSTICE AND EQUITY

Justice requires that patients be treated equitably and that modifications from the standard be justifiable. If a non-pregnant patient receives the full dose while a pregnant patient receives a reduced dose, which can potentially impact the outcome, is it just? However, we acknowledge that applying justice requires accommodation to the unique perspective of pregnancy. To manage the mother similarly to a non-pregnant patient would be to ignore the moral responsibility of fetal protection. Thus, justice here does not mean similar management but relatively equitable treatment that respects the unique circumstances of pregnancy. [1] It is not unfair to treat them unequally, for both are dissimilar from the start.

Medical economics further complicate the scenario. IMRT is a resource-dependent technology, often unavailable in rural or low-income settings. In the Philippines, it is only available in 47 Radiation Therapy centers, and 36% of these are located in the National Capital Region. [8] As such, some patients may not have access to a more precise and relatively safer intervention. Cost is another consideration. A fraction of IMRT will cost around Php 11,000, limiting access to those who can afford it. [9] Health inequalities will be considered unjust when there is inequitable access to healthcare, as well as when the social determinants of health (e.g., education, income, resources) are not distributed fairly. As such, it raises broader questions about the ethics of medical innovation if access to technological innovations

widens the gap, thereby creating unjust disparities in outcomes for patients facing the same disease. [10]

THE ROLE OF RESEARCH AND MEDICAL INNOVATION

We acknowledge the pivotal role of medical innovation in confronting ethical and clinical dilemmas. IMRT endeavors to chart a middle ground, showing how technological advances can expand options in ethically complex settings, such as pregnancy-associated malignancies. There is no robust evidence that details the optimal management for cervical cancer in pregnancy. Some treatment modalities are based on expert recommendations, although the data supporting them is limited. [11] This enjoins us to be mindful that medical advancements have ethical responsibilities. When literature is not robust, or if it is not acknowledged as a standard of care, physicians must accept the experimental nature of the intervention.

The Declaration of Helsinki, Section 37, [12] clearly stipulates the criteria for non-proven therapies, summarized as follows:

1. Seeking an expert advice.
2. Need for informed consent.
3. The intervention offers hope, possibly save a life, or alleviate suffering.

Deciding in favor of an experimental option requires diligent documentation, thoughtful discussion of uncertainties, and ideally, contribution to systematic data collection that can inform future clinical practice.

CULTURAL AND COMMUNITARIAN DIMENSIONS

Treatment decisions are individualized, taking into account cultural, religious, and societal nuances. These dimensions may significantly influence how patients and other stakeholders interpret the trade-offs involved in cancer treatment during pregnancy. In the Philippines, a predominantly Catholic society, the sanctity of fetal life is often highlighted, creating a moral imperative in favor of fetal preservation even at significant maternal risk. Some may interpret this as a conflict-based approach between the interests of

the mother and the fetus. However, we can view this as an act based on parental obligation, answering the question, "What would a good parent do?" [5]

While we consider respect for cultural and societal diversity, it should not overpower patient autonomy. Physicians should be sensitive to settings where patients are compelled to make decisions that do not align with their personal values. Likewise, societal pressures may directly or indirectly influence the physician's approach, leading to biased counseling. Ultimately, proceeding with an unpopular yet scientifically sound and ethically upright approach is more acceptable than making a decision that suffers from moral dissonance.

As physicians, our ethical duty is to recognize these cultural and societal pressures, explicitly identify them in the appraisal, and ensure that the individual patient is seen, heard, remained at the core of the shared decision-making process. This is not about imposing value sets and cultural norms, but about empowering patients to make informed choices consistent with their values, beliefs, and circumstances.

CONCLUSION

This case of treating cervical cancer in pregnancy with reduced standard radiation volume via IMRT demonstrated the deep ethical complexities of

striking a balance between two lives within one body. It reminds physicians to thoughtfully explore the delicate intersection of medical science and medical innovation, including cultural, societal, and religious values.

IMRT, with its current capability for precision, represents a humane attempt to reconcile competing interests. While ethical questions are being raised as to compromising maternal survival in pursuit of fetal viability, applying medical innovation lacking robust evidence, widening the gaps in healthcare delivery due to access issues, and questions on autonomous decision-making in the background of cultural and societal pressures, we were able to present a guided approach to come up with a sound decision.

Such decisions must be made through a transparent, patient-centered approach that respects autonomy and individuality. We hope that ethical frameworks for rare but significant dilemmas such as cancer in pregnancy will provide clarity and guide physicians accordingly.

Ultimately, the guiding principle is to uphold the sanctity of human life, which stems from the individual dignity of both mother and child. In striking a balance between two precious lives, physicians must strive not for perfect resolutions but for compassionate, ethically grounded care that upholds the individuality and dignity of patients that we serve.

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