

August 1999

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Recommended Citation

Diamond, Eugene F. (1999) "Linacre Institute Paper: Moral and Medical Considerations in the Management of Extrauterine Pregnancy," *The Linacre Quarterly*: Vol. 66 : No. 3 , Article 2.
Available at: <https://epublications.marquette.edu/lnq/vol66/iss3/2>

Linacre Institute Paper

Moral and Medical Considerations in the Management of Extrauterine Pregnancy

by

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The incidence of ectopic pregnancy has increased by 600% in the last two decades.¹ When the government began counting ectopic pregnancies in 1970, the estimated rate was 4.5 per 1,000 reported pregnancies or 17,800 women. That compared to a rate of 19.7 per 1,000 pregnancies or 108,000 women in 1992. CDC epidemiologists attribute the rise to chlamydia and other sexually transmitted diseases that can scar the fallopian tubes. Lesser contributory causes are failed tubal sterilization, the increased use of drugs and surgery to induce ovulation and indeterminate factors such as smoking and stress. Ectopic pregnancy rates are highest among women over 30 and minority women. Given this dramatic increase, issues related to medical and morally permissible management of ectopic pregnancy have escalated in Catholic health care institutions. The medical problem can be summarized as follows:

There is an increase in pelvic inflammatory disease which qualifies as a pandemic and which follows logically in the United States and elsewhere from the climate of permissiveness and promiscuity known as the "sexual revolution". Pelvic inflammatory disease denotes medically serious infection in the fallopian tubes and ovaries. The patient may be quite ill in some cases but there are many instances where the infection is clinically silent and unrecognized in women of child-bearing age and may go untreated for long periods. The disease has a predilection for the delicate sensitive lining of the tubes known as the endosalpinx. (In some

instances, the tube may be dysfunctional in the absence of obvious injury to the endosalpinx.)

The endosalpinx serves a most important function in reproduction through its extremely complex convoluted folding and interfolding. This provides the environment for the transportation of spermatozoa through the tubes to their destination in the tube where fertilization of the ovum takes place. Infection in the tubes damages this complex machinery. In the healing process, scar tissue develops which in turn frequently produces occlusion of the tube resulting in partial or total sterility. This scar tissue not only deters the sperm from reaching their destination but it would likewise interfere with the return trip of the fertilized ovum to the uterine wall. The fertilized ovum is much larger than the sperm and lacks the power of self-propulsion which the sperm enjoyed prior to fertilization. The fertilized ovum must be wafted back through the tube through the process known as peristalsis. Peristalsis is the result of the contraction of small muscles in the wall of the tube that effect the downward motion of the developing fertilized ovum until it reaches the interior of the uterus where it embeds itself in the wall of the uterus as the blastocyst. After implantation it grows to term. It does all of this providing the tube has sufficient patency and effective peristalsis. Where these are lacking, the fertilized ovum continues its growth including the development of microscopic finger-like special cells known as the trophoblast, in the oviduct. The trophoblast produces large amounts of hormone to sustain the pregnancy.

Ectopic pregnancies take place as a result of damage to the tube resulting in narrowing of the tube which impedes travel, decrease of tubal peristalsis which lessens propulsive capability and finally the outgrowth of trophoblastic tissue which is then able to erode the tubal wall and invade it sufficiently to achieve attachment and embedding. Increased hormonal production produces softening and increased vascularity typical of early pregnancy.

When the enlargement of the growing pregnancy reaches the point beyond which the accommodating fallopian tube can no longer expand, the eroding invading action of the trophoblastic cells causes disruption of the wall of the tube with resultant pain and hemorrhage. It is not the embryo itself which implants, erodes, and invades but the trophoblastic cells performing their intended task. The baby itself is not the threat but rather the implantation process common to all pregnancies. It is virtually impossible for ectopic tubal pregnancy to get started without pre-existing disease of the endosalpinx. It was this intrinsic tubal pathology which then permitted the invasion of the wall of the tube by trophoblastic tissue. It would therefore be appropriate to excise this tissue which was the cause of

hemorrhage which threatened the woman's life. It would then be correct, by the same reasoning, to excise this tissue before rupture and hemorrhage because it posed the same potential threat to the mother's life.²

In the recent past, the vast majority of ectopic pregnancies were discovered by virtue of the symptomatology related to the rupture of the tube. The treatment of this catastrophe was the excision of that part of the tube which contained the ectopic pregnancy. Currently the diagnosis of *unruptured* ectopic pregnancy is made more commonly by B-hCG immunoassay, ultrasound or laparoscopic techniques and the issues surrounding the appropriate management of an intact tubal pregnancy have come to the fore. The tubal pregnancy may also be visualized directly by vaginal ultrasound.

Historical Review

In the 1880s the Archbishop of Cambrai referred to Rome a series of questions regarding ectopic pregnancy. The reply from the Holy Office was "it cannot safely be taught that any surgical operation which directly kills the fetus or the pregnant mother is allowed."³

In 1898⁴ and 1904 the question of laparotomy for ectopic pregnancy was raised with the response that direct removal of a pre-viable fetus would be a direct abortion and not permissible. The interpretation of the medical facts at the time was that the life-saving surgery was a direct attack on the fetus rather than the removal of a pathologically affected oviduct. In 1943 the matter was clarified in the work of T.L. Bouscaren, S.J.⁵ who stated: "Removal of a pregnant fallopian tube containing a non-viable fetus, even before the external rupture of the tube, can be done in such a way that the consequent death of the fetus will be produced indirectly." Currently Directive 48 of the *Ethical and Religious Directives for Catholic Health Care Services*, printed in 1995, states: "In the case of extrauterine pregnancy no intervention is morally licit which constitutes a direct abortion." The medical facts have changed dramatically as to diagnosis but the moral principles related to diagnosis and the moral principles related to the principle of double effect have remained as the guiding moral context of decision making. To review the requirements for the fulfillment of the *principle of double effect*:⁶

1. The action, considered by itself and independent of its effects must not be morally evil.
2. The evil effect must not be the means of producing the good effect. A good end cannot justify an evil means.

3. The evil effect is not intended but merely tolerated.
4. There must be proportionate reason for performing the action in spite of its evil consequences. The good obtained must be of sufficient value to compensate for the evil tolerated.

The above conditions relate to numerous clinical situations where important distinctions are made between Direct and Indirect abortion, Direct and Indirect sterilization and conflicts involving the distinctions between killing and allowing to die. There is a difference both in context and intentionality between removing a gravid cancerous uterus and doing a D & C abortion on the same patient. The same can be said for the sterilization of a woman by removing a pathological uterus and doing a contraceptive tubal ligation on the same woman. The same would hold for the discontinuation of assisted ventilation in a terminally ill patient with metastatic carcinomatosis and the discontinuation of food and drink on a patient in a persistent vegetative state without an underlying fatal disease.

Medical Issues

The treatment of unruptured ectopic pregnancy admits of multiple therapeutic options:

- 1) Salpingectomy with removal of the diseased portion of the tube including the ectopic pregnancy.
- 2) Salpingotomy with incision of the tube and removal of the developing fetus and possible resuturing of the tube.
- 3) Laparoscopic approach with removal of the fetus through a suction tube.
- 4) Administration of Methotrexate to kill the developing fetus in situ.

The use of Methotrexate has the advantage of being a non-invasive procedure. Methotrexate is a folic acid antagonist developed in the early 1950s as a chemotherapeutic agent for the treatment of certain types of cancer. Its effect is directed against rapidly replicating cells eventually to interfere with DNA synthesis.⁷ Its primary effect would be on the trophoblast, the early precursor of the placenta which functions as the life support system for the developing child and produces human chorionic gonadotropin which signals the corpus luteum to continue to produce

progesterone which is necessary for the maintenance of the pregnancy. In the event of intrauterine pregnancy it is used in conjunction with prostaglandin to produce strong uterine contractions to expel the child. This combination of Methotrexate and prostaglandin is effective primarily in the first seven weeks of pregnancy in producing induced abortion. In the case of ectopic pregnancy it is given parenterally or by direct injection into the tube (Salpingocentesis).

5. Linear Salpingostomy, segmental excision and Salpingectomy can be performed through the laparoscope with results comparable to those achieved at laparotomy (segmental excision may require an additional laparotomy). Salpingectomy has recently been compared⁸ with Salpingotomy and other so-called "conservative" surgeries with a future fertility that is comparable in both groups.^{9, 10, 11} Persistent ectopic pregnancy is less common after Salpingectomy.¹²

Moral Considerations

In recent years linear Salpingostomy has become the most popular laparoscopic operation for unruptured tubal pregnancy.¹³ Likewise, stable patients in which the mass is unruptured and measures 4 cm. or less by ultrasound can be successfully treated by Methotrexate.¹⁴ These two therapeutic techniques have produced comparable results in randomized trials.¹⁵ These two therapeutic techniques constitute surgical or medical direct attacks on the embryo and as such are direct abortions.¹⁶

When evaluating these medical procedures we must be guided by the general teaching that all innocent human life is sacred from the first moment of conception by virtue of its creation in the image and likeness of God, redemption by Christ and its call to eternal life with God.¹⁷ The human embryo and the human fetus are different stages of the developing human being. While not yet capable of assuming an actualized moral responsibility they have the radical capacity to do so because the embryo and fetus are stages of human development which will be actualized given the right conditions.¹⁸ As O'Donnell¹⁹ has pointed out, "The belief that aborting a non-viable fetus from a fallopian tube is morally different from aborting it from the uterus is a distinction without a difference."

The conditions necessary for an indirect abortion under the principle of double effect have clearly delineated as follows:²⁰ In extrauterine pregnancy, the dangerously affected part of the mother (e.g. cervix, ovary or fallopian tube may be removed even though fetal death is foreseen provided that a) the affected part is presumed already to be so damaged and dangerously affected so as to warrant its removal and that

b) the operation is not just a separation of the embryo or fetus from its site within the part and c) the operation cannot be postponed without notably increasing the danger to the mother.

Of the methods listed above, resection of the entire tube or the affected segment can be solved under the principle of double effect. Linear Salpingostomy, aspiration of the pregnancy or killing the fetus with Methotrexate all involve direct abortions.

Segmental Salpingectomy is an effective method of treating ectopic pregnancy with less likelihood of persistent ectopic pregnancy and comparable rates of retained fertility. Laparoscopic Salpingectomy is more invasive than Methotrexate given parenterally. Side effects from Methotrexate therapy, both short term and long term are significant. Where fetal death has been confirmed, the choice of treatment is moot. Progesterone levels below 5ng/ml may indicate non-viability.

Directive 47 distinguishes direct and indirect abortion as follows: "Operations, treatments and medications that have, as their direct purpose, the cure of a proportionately serious pathological condition of a pregnant woman are permitted when they cannot be safely postponed until the unborn child is viable even if they will result in the death of the unborn child."

Alternative Ethical Analysis

In a series of articles in *Ethics and Medics*,^{21, 22} Father Albert Moraczewski has presented a defense of the position that both Salpingostomy and Methotrexate therapy constitute indirect abortions since the *intention* is to protect the health, life and reproductive capacity of the woman and the *moral object* is the curative inhibition of the destructive action of the trophoblastic tissue on the tube.

The argument on behalf of the licitness of the use of Methotrexate (either given parenterally to the mother or injected directly into the tube at laparoscopy) is based on the presumption that Methotrexate would act selectively against the trophoblast and that the growth of the trophoblast in an ectopic site (rather than on the uterus) is "pathological". The action of Methotrexate is directed toward rapidly dividing cells. Both the trophoblast and the developing embryo or fetus are made up of rapidly dividing cells and therefore the action would not be selectively against trophoblastic tissue but would also interfere with DNA synthesis in the fetus. However effective the Methotrexate might be against the trophoblast it would also kill the unborn child. This is obviously true also in the case of uterine pregnancy where under Father Moraczewski's analysis, the trophoblastic attachment would not be considered pathological because the

location would be in a tissue bed more tolerant of trophoblastic invasion. The embryo/fetus and the trophoblast/placenta are a single inseparable entity in the sense that placental destruction invariably results in the death of the fetus.

One of the fallacies of Moraczewski's analysis is the failure to recognize that the trophoblast is a vital organ of the developing human being but rather to regard it as a sort of unnamed third party. The tube is maternal, the developing embryo is clearly not maternal and the trophoblast seems to be a connected but different third entity. The invasion of the tube by the trophoblast creates a pathological situation which through the use of Methotrexate is "solved" by destroying the fetal lifeline to the mother.²³

In the case of linear Salpingostomy the rationale is based on the allegation that the "pathological tissue" recognizable at the time of surgery consists in the embryo embedded in the trophoblast which has invaded the mucosal and muscular layers of the tube. It is difficult to comprehend how the direct removal of both *the embryo and the trophoblast* with a forceps could constitute an indirect abortion. Those who argue in favor of the acceptability of linear Salpingostomy point out that the clamping of the blood supply to the tube prior to a resection would also result in the death of the fetus. This effect is more readily defined as *indirect* however and, in any case, the "pathological tissue" removed in linear Salpingostomy almost certainly includes a live developing human being.

Whether or not one accepts Father Moraczewski's interpretation as persuasive, he has made his proposal as a "call for discussion and review" based on a further elucidation of the medical facts and theological response.

Other theologians such as William May²³ and Thomas O'Donnell²⁴ have disagreed with his analysis.

The long-term hoped-for solution to the dilemma will be the development of successful techniques for the transplantation of fetuses growing in ectopic location into the uterine cavity. There are two documented cases of successful transplantation of an ectopic embryo into the uterus with successful birth of the child.^{25, 26} Attempts at embryo transfers continue, thus far unsuccessfully.²⁷ Obviously the only way such transfers could theoretically succeed would be if the method of removal of the ectopically placed embryo were not in itself fatal to the developing child. The enucleation of the ectopic pregnancy from the fallopian tube as in a Salpingostomy procedure would be an example of a direct killing of the embryo which would preclude any possibility of transfer.

Summary

1. The rate and number of ectopic pregnancies have increased dramatically in the past 20 years largely as a result of a pandemic of sexually transmitted diseases.
2. The ability to diagnose ectopic pregnancy prior to rupture has been enhanced by the availability of more sensitive hCG tests and of ultrasonic and laparoscopic visualization.
3. Techniques for the management of intact tubal pregnancy include: a) Segmental or complete resection of the affected tube b) Linear Salpingostomy with removal of the pregnancy c) Methotrexate given parenterally to the pregnant woman or injected into the affected tube.
4. Moral evaluation of the aforementioned techniques based on the traditional principle of double effect would lead to the conclusion that Salpingectomy either segmental or total represents an indirect abortion while linear Salpingostomy and the use of Methotrexate constitute direct abortion.
5. Alternative moral analysis based on a different interpretation of the medical facts is included.

This Linacre Institute Paper was submitted to the following panel for review and comment.

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