Forbidding Fruits of Fetal-Cell Research

Ethical issues raised by promising therapy

By RICK WEISS

More than 4,000 times each day in the United States, an unwanted pregnancy is terminated by abortion. Despite such frequency, the 10-minute procedure can hardly be characterized as routine. Indeed, 15 years after the U.S. Supreme Court's landmark decision affirming a woman's constitutional right to abortion, a national debate over the ethics of the procedure continues unabated.

Now, reluctantly, research scientists find themselves swept into the controversy, as they seek to extract from the remnants of aborted fetuses raw materials for a variety of biochemical cures. Fetal cells, when transplanted into the organs of ailing adults, show unique promise as a treatment for a range of disorders, including insulin-dependent (Type I) diabetes and Parkinson's disease. But scientists' attempts to make use of this controversial "national resource" have evoked a cry from some theologians, anti-abortionists and others who argue that harvesting living cells from intentionally aborted fetuses lies beyond the moral pale.

It's bad enough that 1.5 million fetuses are "deliberately killed" each year in the United States, says Kay James of the National Right to Life Committee in Washington, D.C. "We must not compound this gigantic moral and ethical lapse by weaving this slaughter into the warp and woof of modern medical management."

Fetal-cell scientists reject such objections as a misguided threat to medical research. They acknowledge the issue disturbs many people — even within medicine — and that if alternatives existed, fetal tissue might best be left alone. After all, "Who but a masochist would risk the wrath of anti-abortionists for no good reason?" asks John A. Robertson, an attorney and consultant to the National Institutes of Health (NIH) who has studied the legality of fetal-tissue research.

But the bottom line, many researchers say, is that fetal cells have properties unlike those of any other cells. So while government should regulate fetal-tissue research to ensure ethical practices, they say, there is no reason to waste such a potentially beneficial biological resource obtained from a perfectly legal procedure.

"Medical research should be given a higher stature in our society than being a pawn in the debate over abortion," says Robin Duke, co-chairman of the Population Crisis Committee in New York City. "To hold hostage a nation and medical research for a minority group who are anti-abortion is to my mind a very grave mistake."

Medical researchers' heavy reliance on federal funding made it inevitable that the debate would catch the interest of congressional committees and Reagan administration officials. The issue came into focus earlier this year when researchers at the NIH sought permission to perform the first U.S. transplant of fetal brain cells into a human being, a patient with Parkinson's disease. That request went right to the top of the U.S. Public Health Service, and drew a rapid reply.

In a March 22 memo to NIH Director James B. Wyngaarden, Assistant Secretary of Health Robert E. Windom wrote: "This proposal raises a number of questions — primarily ethical and legal — that have not been satisfactorily addressed, either within the Public Health Service or within society at large."

Windom ordered the NIH to convene a panel of experts to examine the medical, legal and ethical issues relevant to fetal-tissue research. Pending the outcome of the advisory panel's assessment, he concluded, "I am withholding my approval of the proposed experiment, and future experiments, in which there is performed transplantation of human tissue from induced abortions."

In response to Windom's directive, an advisory panel of scientists, religious leaders, lawyers and bioethicists met twice at the NIH in September and October for a total of five emotionally charged days. In the course of these deliberations, dozens of interested individuals and organizations provided their views to the panel. The complex, often contradictory testimony presented and discussed during those days attests to the depths of philosophical subtlety that scientists and policy makers increasingly must explore.

"The transplantation of parts from the dead to the living is one of the strangest things human beings have devised," says Arthur L. Caplan, director of the Center for Biomedical Ethics at the University of Minnesota in Minneapolis. "Some of us may fancy ourselves to be so sophisticated that we are emotionally indifferent to transplantation. But we are fooling ourselves if we think that the means by which we harvest the dead to help the living does not make us uneasy."

If transplantation in general is a source of uneasiness, transplantation from fetal remains is flat-out immoral to some. The NIH panel — which is scheduled to present its final report Dec. 1 — was the government's attempt to settle some of that uneasiness by outlining the moral ramifications of such research.

While the ethical implications of fetal-tissue research remain controversial, there is little disagreement that the science itself is promising. Embryonic cells have a number of properties — including their exceptional ability to adapt to a new environment, their capacity to stimulate the growth of new blood vessels and their unique tolerance to long-term storage — that make them ideal as tissue transplants. Perhaps most important, fetal cells are immunologically "naive" — that is, upon being transplanted they generally fail to stimulate a rejection response from the recipient's immune system.

Animal studies in monkeys indicate that transplanted fetal brain cells can reverse the symptoms of Parkinson's disease – a debilitating neurological disorder that affects 1.5 million individuals in the United States alone. Fetal-cell transplants into the brains of human Parkinson's patients have been performed in a handful of countries, with preliminary results recently reported in Sweden and Mexico.

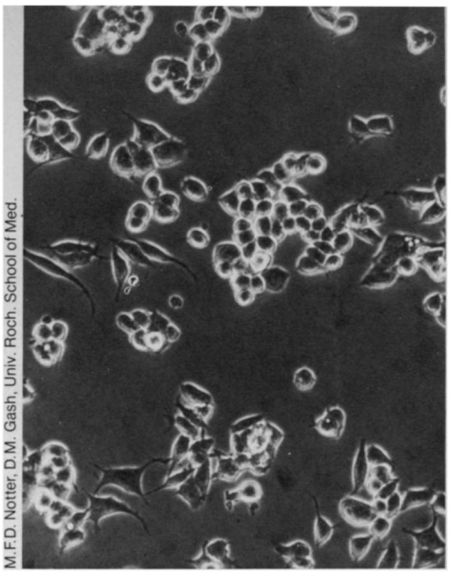
"It appears that we are seeing minor positive changes in [our] two patients," Lars Olson of the Karolinska Institute in Stockholm told the NIH panel. With the surgery performed less than a year ago, he says, "the [transplanted] cells are still immature." But based upon the volume of animal studies already performed, he adds, "We have approached the point where I believe it is unethical *not* to try this with human patients."

In related research performed since August 1987, U.S. researchers have transplanted fetal pancreatic cells into Type I diabetics. Pancreatic cells produce insulin, a hormone these diabetics secrete in insufficient amounts.

According to the Juvenile Diabetes Foundation in New York City, at least 30 patients in the United States have already received experimental fetal pancreatic cell transplants. Early results of those trials indicate no adverse reactions and good cell-survival rates, with insulin requirements reduced in some cases.

While fetal-tissue transplants for other disorders remain less well studied, the number of potential beneficiaries of such procedures is huge, says H. Fred Voss of Hana Biologics, an Alameda, Calif.-based company specializing in fetal-cell research. Although some researchers say his numbers may be overstated, Voss estimates nearly 2 million diabetics could benefit from fetal-cell transplants. He also estimates potential benefits for as many as 2 million U.S. sufferers of Alzheimer's disease, 300,000 victims of spinal injuries and more than 10,000 individuals each for hemophilia, muscular dystrophy and Huntington's disease.

The economic implications of this scenario are astounding, says James Bopp Jr., a Terre Haute, Ind.-based attorney and anti-abortion activist who served on the NIH panel. "Hana Biologics estimates that the potential market in treating diabetes and Parkinson's disease through the use of fetal tissue from induced abortions exceeds $6 billion," says Bopp. "Thus a vast, new and lucrative market would be created for fetal tissue from induced abortion" – a market whose gross revenue would exceed that of abortion clinics by 30 times, according to his controversial calculations. "The likely result is increased number of abortions, changes in abortion procedures, and delayed abortions to facilitate acquisition of more useful fetal tissue," Bopp contends.



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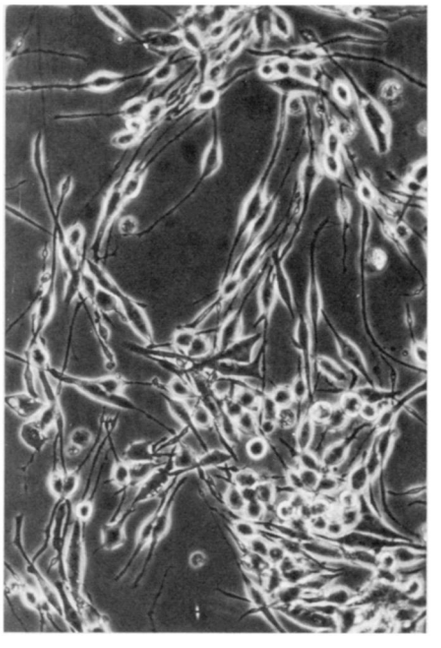


Eventually, nerve cells grown in culture may lessen or eliminate the need for fetal cells as transplants. Scientists have already implanted into animals cultured neuroblastoma cells (left), which are grown from tumors and resemble the precursor cells of neurons. Under proper conditions, laboratory neuroblastoma cells can differentiate into cells (below) that resemble mature neurons, able to make, store and release neurotransmitters and generate electrical potentials. Their long fibers can make specific connections to muscles or to other nerve cells.

Will the advent of fetal-tissue transplants really prompt an increase in induced abortions? While few challenge the market potential of fetal-tissue transplants, considerable debate centers on what influence this might have on abortion practices.

"Today I can see no evidence at all of any physician being willing to alter anything he's doing to make tissue more available," Voss says. Moreover, others add, since researchers generally deem first-trimester fetal cells most useful for transplant purposes—and first-trimester abortions already account for 90 percent of performed abortions in the United States—there would be little incentive for practices to change.

Federal and state laws and regulations already preclude paying a woman for fetal tissue from her abortus. But some ethicists express concern that procurement agencies currently pay abortion clinics $25 to $50 per fetal-tissue sample, and that these transactions could create some incentive for physicians to urge more women to abort. They fear that once the practice of fetal-tissue harvesting becomes more routine, the line between medical decision-making and marketing will begin to break down.

"As various interest groups become accustomed to and dependent upon supplies of fetal tissue they will inevitably seek to enforce their rights to this material," says Stuart Newman of the New York Medical College in Valhalla.

Moreover, note critics of fetal-tissue research, with the knowledge – or rationale – that tissues from her abortus may help an ill adult, a woman uncertain about her desire to abort may decide to do so when otherwise she would not.

"The media will let women know well in advance about the transplantation option," says Kathleen Nolan of the Hastings Center, a bioethical "think tank" in Briarcliff Manor, N.Y. "And while it's speculative that knowing about that option will have an influence on an abortion decision, I think it's a serious concern that ought to give us pause."

Others, however, argue forcefully that fetal-tissue market value and neurological research are the last things on a woman's mind as she makes the extremely difficult decision to abort her fetus. "I have been troubled by . . . the lack of appreciation of the intensity of the drive and the desperation that women have who are wanting an abortion," says Ezra C. Davidson, chairman of the Department of Obstetrics and Gynecology at King-Drew Medical Center in Los Angeles. "For the woman who has been driven to have an abortion, some of these [business] concerns are so far down the line that they really don't represent any level of primary concern."

Indeed, several panel members contended, the great majority of abortions performed in the United States each year result not from any positive scientific incentive, but from failings of society at large. "If one wants to assign blame for abortion in this country, you have to start with education," says Kenneth J. Ryan, of the Brigham and Women's Hospital in Boston, the NIH panel co-chairman. "I feel very strongly that the unavailability of contraception creates more abortions than [does] anything done in science or

research."

Finally, some opponents of fetal-tissue research argue that the immorality, in their eyes, of abortion itself inherently taints aborted fetal tissue. In this view, researchers who make use of tissue from intentionally aborted fetuses are accomplices to murder.

Along these lines, Father James T. Burtchaell, professor of theology at the University of Notre Dame in South Bend, Ind., compares fetal-tissue research to the human experiments performed by the Nazis during World War II. "The insight of Nuremberg taught us that no antecedent goodwill and no subsequent scientific yield will absolve us" from participating in fetal research, he says.

Adds the National Right to Life Committee in written comments to the NIH panel: "If our society allows the . . . medical use of aborted babies' tissues, the evil of abortion will be institutionalized in our nation. The unborn will be further dehumanized not only as an expendable inconvenience, but now also as a mere source of benefit to others through the use of his or her parts."

Comparisons of modern medical research to the hideous experiments of Nazi Germany angered a number of panelists. In fact, no panelist argued that abortion in and of itself is anything to praise. "I do believe that we'd be better off as a moral community without abortion," says Thomas H. Murray, director of the Center for Biomedical Ethics at the Case Western Reserve University School of Medicine in Cleveland. "But the ethics of research of human fetal-tissue transplantation is not inextricably tied to approval of abortion any more than recovering organs from accident victims is equivalent to approving of accidents."

Leatrice Ducat, of the National Disease Research Interchange, a tissue procurement agency in Philadelphia, agrees. "A center like Harvard does 4,000 abortions a year, and most of those tissues – as in most centers across the country – are wasted, trashed or incinerated." Fetal tissue, she contends, is a "precious resource, a national resource" that ought not be wasted.

Instead of precluding the use of fetal tissue in research, Ducat and other proponents say, regulations should be tightened to ensure the economics of tissue transplants in no way influence a woman in her decision to abort. Neither should research affect the timing of an abortion or the kind of abortion performed, she and others say.

In its tentative recommendations decided last month, the panel did the best it could to tease apart the issues of abortion and fetal research by specifying several research guidelines. Among them are requirements that a woman must give her informed consent to any use of fetal tissue taken from her abortus, and that consent may be asked only after a final decision to abort has been made. The woman should not receive any compensation for the tissue donation, and may not direct the tissue to a specific recipient. Moreover, says the panel's draft report, "Payments and other forms of remuneration and compensation associated with the procurement of fetal tissue should be prohibited, except for reasonable expenses occasioned by the actual retrieval, storage, preparation and transportation of the tissues."

Although a majority of the panel approved the recommendations, the proposed precautions failed to pass moral muster with some opponents of fetal transplants. In a statement of dissent, Bopp and Burtchaell argue that "when a parent resolves to destroy her unborn, she has abdicated her office and duty as the guardian of her offspring." In doing so, they say, "She abandons her parental capacity to authorize research on that offspring and on his or her remains."

Several panelists countered, however, that neither the State nor the father should have any greater right to decide the fate of a woman's fetal tissue. While recognizing the moral complexity of these and other questions, the panel's draft statement says clearly that there is room for fetal-tissue research within the framework of morality in a pluralistic society.

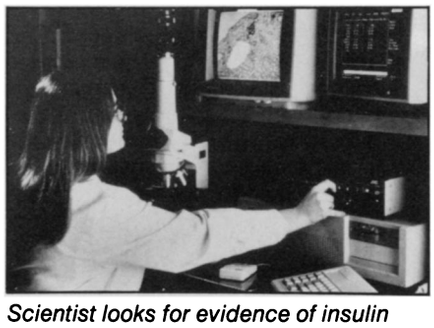
"It is of moral relevance that human fetal tissue for research has been obtained from induced abortions," the statement says. "However, in light of the fact that abortion is legal and that the research in question is intended to achieve significant medical goals, the Panel concludes that the use of such tissue is acceptable public policy."

Moreover, the draft says, "There is sufficient evidence from animal experimentation to justify proceeding with human clinical trials in Parkinson's disease and juvenile diabetes." Despite "promising results" from animal studies of other disease states, such as Alzheimer's disease, Huntington's disease, spinal cord injury and neuroendocrine deficiencies, the report adds, "investigators should continue animal studies to further strengthen the rationale for using human fetal tissue."

Finally, the panel's statement notes, alternatives to fetal cells may someday prove useful.

Fetal cells and other specialized cells will almost certainly be cultured in the laboratory someday, drastically reducing the need for aborted fetuses, scientists told the NIH panel. Already, researchers have had success growing, or "expanding," fetal-cell populations in the laboratory. In conjunction with cryopreservation techniques that already allow scientists to freeze and store fetal cells at low temperatures for long periods of time, a few fetuses each year might ultimately provide sufficient numbers of transplantable cells.

There are scientific as well as ethical advantages of fetal-cell culture, according to D. Eugene Redmond Jr. of the Yale University School of Medicine – one of the few medical centers in the United States poised to perform fetal brain cell transplants. "It might make it possible to do tissue typing if that became necessary," he told the NIH panel. "It also allows an interval for biological safety to determine that there's no contamination and that the cells that you've collected are the correct cells."



Scientist looks for evidence of insulin production in a sample of proliferated human fetal pancreatic cells.

Several researchers noted, however, that suitable tissue-culture techniques are still about a decade away. And with no such panacea in the immediate offing, the recommendations that next month will land on Wyngaarden's desk represent a delicate, if imperfect, teasing apart of two issues. They leave the intractable issue of abortion to the U.S. Supreme Court, while providing support for more fetal-tissue research.

"This position must not obscure the profound moral dimensions of the issue of abortion, nor the principled positions that divide scholars, scientists and the public at large," says the draft statement. "The Panel notes that induced abortion creates a set of morally relevant considerations, but notes further that the possibility of relieving suffering and saving life cannot be a matter of moral indifference to those who shape and guide public policy."

The implementation of that public policy, if indeed it occurs, will not happen overnight, most observers agree. Nor is rapid implementation recommended. "We don't need a system yet to routinely harvest fetal tissue. What we need is research," says Caplan of the University of Minnesota, who advocates limited, restricted transplanting of fetal tissues at a few centers to find out whether there is in fact any benefit to their use.

"There has been a lot of talk about the promise of fetal-tissue transplants, but it is only a promise," Caplan says. "We need the NIH to face the question of whether it wants to fund research that will *allow us to know* whether there is value." □