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Fetal Tissue Transplants as Treatment for Parkinsonian Patients: A Miracle Cure or Science Fiction Nightmare?

An old film portrays the story of a woman who had been severely injured in an automobile accident. A scientist, motivated by his love for the injured woman and his desire to simultaneously further science, took the woman's decapitated head and miraculously preserved it so that it functioned perfectly in a fluid-filled tray.

The rest of the woman's body was combined with remnants of other victims to make a "person". The "person" turned out to be a mindless monster capable only of destruction. The unfortunate head, while totally capable of reason and fully appreciative of what her scientist fiance had done, wanted only to be allowed to die.

Today, the movie is science fiction. But what about tomorrow?

I. INTRODUCTION

In March 1992, the House of Representatives passed and sent the Public Health Service Act to the Senate. This bill proposed to remove the moratorium placed on the National Institute of Health which prohibited the federal funding of research on fetal tissue obtained from induced abortions.¹

"Fetal" means in utero from three months until birth.² "Tissue" means a collection of similar cells.³ Fetal tissue comes from aborted fetuses. Many questions arise about these aborted fetuses. Are parents asked if their aborted fetuses can be dissected? Do parents get paid for "goods" thus obtained? Is there a "market" for fetal tissue? How does this relate to the abortion issue?

What should an anti-abortion person think about this procedure? Can one justify elective abortion if it will alleviate a

1 The bill ultimately did not pass. President Bush would not sign it, and Congress did not have the votes to override his veto. See *infra* part IV.A.

2 ILLUSTRATED STEDMAN'S MEDICAL DICTIONARY 521 (5th ed. 1982) (see "fetus").

3 *Id.* at 1456.

living person's inevitable physical and mental anguish? Some Christian beliefs suggest "no."⁴ The following is the result of my struggle to shed light on a personally clouded issue.⁵

This article will review the etiology of Parkinson's Disease. It will review the effectiveness of traditional Parkinson's Disease therapy and discuss the current areas being researched. It will then analyze the arguments for and against the use of fetal tissue research, in general, in relation to the moratorium; and in treating Parkinson's Disease specifically. It will additionally demonstrate the availability of alternative areas of research for treatment of Parkinson's Disease. Finally, the Clinton Administration's policy on the use of fetal tissue will be discussed.

II. PARKINSON'S DISEASE

A. *The Nature of Parkinson's Disease.*

Parkinson's Disease (PD) is a chronic, progressive illness.⁶ The actual cause of the disease is unknown.⁷ In fact, the process of elimination is used more in PD diagnosis than in the diagnosis of almost any other disease.⁸

What physicians do know is that PD patients have a deficiency of special brain cells which produce a chemical called dopamine.⁹ Dopamine aids the passage of stimuli and responses to and from the brain.¹⁰ Without this chemical, neural transmissions are terminated or impaired, causing the typical PD patient to have uncontrollable tremors of the limbs or the head; a loss of balance; a temporary, involuntary inability to

4 "For a good tree bringeth not forth corrupt fruit; neither doth a corrupt tree bring forth good fruit." *Luke* 6:43.

5 My mother, Liddy Bankston Baird, was diagnosed with Parkinson's Disease in March of 1992. This article is dedicated to her.

6 A.N. Lieberman et al., *Parkinson's Disease Handbook: A Guide for Patients and Their Families*.

7 *Id.* at 2.

8 *Id.* at 2, 11-13.

9 This deficiency is caused by the death of these specialized cells. What causes this cellular death is unknown though current speculations include genetic susceptibility; environmental toxins (see William C. Scott & Russell H. Patterson, Council on Scientific Affairs and Council on Ethical and Judicial Affairs, *Medical Applications of Fetal Tissue Transplant*, 263 *JAMA* 565 (1990)); human chemical production abnormalities; and viral infections. It is known that many victims of a world wide epidemic of viral encephalitis (between 1918 and 1932) developed PD.

10 Lieberman et al., *supra* note 6, at 3.

move; a poor or stooped posture; and/or a slow, shuffling step when walking.¹¹ The level of incapacity can range from mild interference and annoying tremor, to total, bedridden dependence.¹²

B. *The Treatment of Parkinson's Disease*

There is presently no cure for PD.¹³ All treatments are designed to ameliorate symptoms only.¹⁴ The most commonly used treatment is a progressively complex regime of medications meant to augment dopamine levels in the brain, and to combat the many side effects of the medications themselves.¹⁵ The numerous side effects along with the increasing and inevitable tolerance to PD medications¹⁶ make alternate treatment methods desirable.

The most recently researched treatment methods involve transplantation of tissue into the brain. Two different types of tissue have been used. The first type, used between 1987 and 1988, was tissue taken from the PD patient's own adrenal gland (located above the kidneys) and transplanted into his brain.¹⁷ The second type of tissue used was fetal tissue.¹⁸ Fetal tissue was (and still is) an attractive source of grafts for scientists because it presents fewer of the complications associated with other types of transplants.¹⁹

11 Other symptoms include drooling, forced eyelid closure, difficulty in swallowing, incontinence, impotence, sleep disturbances, senility, dementia, and speech problems. Lieberman et al., *supra* note 6, at 5-10.

12 Lieberman et al., *supra* note 6, at 14 (rating scale).

13 Lieberman et al., *supra* note 6, at 16.

14 *Id.* at 16.

15 Levodopa (L-dopa) and L-dopa compounds are the most effective medications used to control PD symptoms. L-dopa side effects include hallucinations and depression. Lieberman, *supra* note 6, at 19.

16 Lieberman et al., *supra* note 6, at 21.

17 Enrico Fazzini, *A Comparison of Neurosurgical Procedures in the Treatment of Parkinson's Disease*, AM. PARKINSON DISEASE ASS'N, Spring 1993, at 4.

18 The fetal tissue used in experimentation included fetal adrenal tissue and fetal brain tissue. *Id.*

19 David R. Liskowsky, *Neural Grafting: Repairing the Brain and Spinal Cord*, 265 JAMA 3225 (1991) (stating that an autograft (taking tissue from one area of the PD patient for transplant into another area) put the PD patient at risk of two very complex surgeries; transplants from non-fetal donors risk rejection of the tissue; and genetically engineered (or cloned) cells are not yet scientifically feasible). *But see infra* pp. 190-92.

III. FETAL TISSUE USE

A. *Foreign Fetal Tissue Transplantation in Treatment of Parkinson's Disease*

Because of the relative localization of the area of the brain damaged, PD was selected as an ideal disorder for transplant experimentation.²⁰ However, since implantation of adrenal tissue had yielded only minimal, inconsistent and transitory results,²¹ in 1987 scientists turned their focus towards fetal tissue implantation.²²

Scientists have found fetal tissue easier to work with because it has the unique ability to differentiate into the cell type surrounding it.²³ This means that when fetal tissue is implanted in the brain it becomes brain cells like those into which it was transplanted. Therefore, the likelihood of the PD patient's body reacting to and rejecting the transplanted tissue as "foreign" is lessened.²⁴

Mexico's Dr. Ignacio Madrazo was one of the first to do a study comparing transplantation of fetal adrenal tissue with fetal brain tissue.²⁵ According to Madrazo, the adrenal transplant patients showed an amelioration of rigidity of movement but no other improvement in symptoms.²⁶ Drug therapy that was initially lowered, required gradual increasing.²⁷ The recipients of the fetal brain tissue showed an amelioration of more symptoms, and all were able to lessen medication levels.²⁸

Although Madrazo called his results (after one year of observation) "encouraging,"²⁹ his factual findings and the resultant conclusions drawn have been questioned.³⁰ As Sarah

20 Scott & Patterson, *supra* note 9, at 569.

21 Liskowsky, *supra* note 19, at 3225.

22 Fazzini, *supra* note 17, at 4.

23 Scott & Patterson, *supra* note 9, at 566.

24 *Id.*

25 Ignacio Madrazo et al., *Fetal Homotransplants (Ventral Mesencephalon and Adrenal Tissue) to the Striatum of Parkinsonian Subjects*, 47 ARCH. NEUROL. 1281 (1990).

26 *Id.* at 1283.

27 *Id.*

28 *Id.*

29 *Id.* at 1284.

30 Thomas B. Freeman & G. Warren Olanow, *Fetal Homotransplants in the*

Glazer reported in her article, *The Fight over Fetal Tissue*,³¹ researchers found Madrazo's "results to be exaggerated, short-lived and accompanied by an unacceptable rate of complications."³²

In 1991 an English study was done exclusively using fetal brain tissue.³³ Although the English results were initially more promising than Madrazo's, the long term effects (at the end of one year) once again proved inconsistent and temporary.³⁴

B. *The Use of Fetal Tissue in the United States*

The use of fetal tissue began decades ago. In the 1950s, human fetal kidney cells were used in the development of the polio vaccine.³⁵ Fetal thymus transplantation was also used in the treatment research for DiGeorge's Syndrome.³⁶

Since the 1950s, fetal tissue grafting research has been done in animals for many disorders, including the neurological disorders of Huntington's Disease, Alzheimer's Disease, and motor neuron disease.³⁷ Research done on animals has also been done on spinal cord injuries, brain disorders, epilepsy, diabetes, multiple sclerosis, the mechanisms of viral infections, the diagnosis of viral infections, and detecting markers for

Treatment of Parkinson's Disease, 48 ARCH. NEUROL. 900 (1991). According to Freeman, the best period for neuronal development before axonal extension is 6.5 to 8.0 weeks gestation. All of Madrazo's fetuses were older than that. He also argued, among other things, that the initial improvement of the patients occurred too quickly to be the results of neuronal outgrowth of dopaminergic neurons. *Id.* at 901.

31 Sarah Glazer, *The Fight over Fetal Tissue*, WASH. POST, June 30, 1992, at Z10.

32 *Id.*

33 Bruce T. Henderson et al., *Implantation of Human Fetal Ventral Mesencephalon to the Right Caudate Nucleus in Advanced Parkinson's Disease*, 48 ARCH. NEUROL. 822 (1991).

34 *Id.* at 825.

35 Henry L. Nadler, *Fetal Tissue Transplantation*, 143 AM. J. DIS. CHILD. 149 (1989). DiGeorge's Syndrome is a disease which develops in the embryonic stages of development. The pharyngeal (throat) region fails to develop into the thymus gland. Without the thymus, a person falls victim to multiple viral and fungal infections which the person is unable to fight off due to weak production of lymphocytes (which destroy viruses and fungi). It is hideously disfiguring and inevitably fatal—usually at a very early age. See Rebecca H. Buckley, *Immunodeficiency Diseases*, 268 JAMA 2797 (1992).

36 *Id.*

37 See Scott & Patterson, *supra* note 9, at 566; Liskowsky, *supra* note 19, at 3225.

inherited diseases.³⁸ So far, only diabetes³⁹ and Parkinson's Disease research have progressed to the human testing stage.⁴⁰

IV. PRESIDENT BUSH'S MORATORIUM ON GOVERNMENT FUNDING FOR RESEARCH INVOLVING ELECTIVELY ABORTED FETUSES.

A. *Beginning the Moratorium*

In March 1988, the Assistant Secretary of Health issued a moratorium on federal funding to the National Institute of Health for research on fetal tissue obtained from induced abortions.⁴¹ In a letter refusing approval of the Public Health Service Act, President Bush carefully and clearly articulated his stand on this issue.⁴² He began by reiterating that the moratorium was *not* a ban on fetal tissue research altogether (the moratorium did not affect the privately funded sector); nor was it a ban on all federal funding of fetal tissue research.⁴³ He reminded the House that the moratorium only affected *federal* funding of research on tissue obtained from induced abortions.⁴⁴

Funding for research using tissue obtained from spontaneous abortions or ectopic⁴⁵ pregnancies was *not* affected.⁴⁶ Furthermore, he stated that quantities obtained from these funded sources should be sufficient for the researchers' needs.⁴⁷ President Bush went on to say that the interests of this nation would not be served through the federal funding of research that was "promoting and legitimatizing abortion," and

38 Scott & Patterson, *supra* note 9, at 566.

39 George Archibald, *NIH Skirts Ban on Transplants of Fetal Tissue*, WASH. TIMES, Jan. 6, 1992, at A7 (stating that the first unsuccessful human fetal pancreas transplant for diabetes was performed in 1939; the first successful (reduced daily insulin by 20%) transplantation was done in 1986).

40 Liskowsky, *supra* note 19, at 3225.

41 Nadler, *supra* note 35.

42 Message to the House of Representatives Returning Without Approval the National Institute of Health Revitalization Amendments of 1992, 28 WEEKLY COMP. PRES. DOC. 1132 (June 23, 1992) [Hereinafter Message to the House].

43 *Id.*

44 *Id.*

45 An ectopic pregnancy is one where the fetus grows outside the womb and must be surgically removed. Glazer, *supra* note 31.

46 Message to the House, *supra* note 42.

47 *Id.*

which is "morally repugnant" to many Americans.⁴⁸

Many doctors presented opinions to the House and Senate to the effect that the moratorium imposed too heavy a restriction on the potential advancement of science based on an abstract possibility of swaying ambivalent mothers toward getting an abortion.⁴⁹ They further argued that the regulations that would be included in the Revitalization Amendment would be sufficient to remove the "possibility of evils" associated with tissue harvesting.⁵⁰

The proposed United States regulations were quite similar to those of the United Kingdom and Mexico. They included prohibitions on purchase of fetal tissue; solicitation of tissue from an induced abortion when there is a specified donee and the donor/donee are related, or when the soliciting person gives valuable consideration for costs of the abortion; and altering of timing, method, or procedure for termination solely for obtaining tissue.⁵¹ The proposed regulations also include the following requirements: informed consent from the donor; consent to the abortion prior to the request for consent for tissue donation; full disclosure of any personal interest the physician may have in the tissue; researchers can have no part in timing, method or procedure for the abortion; and the donee must know the tissue received is aborted or stillborn human tissue donated for this purpose.⁵²

As proposed, the United States' regulations would be very similar to those established in Mexico and Great Britain. Those countries specify the need for informed consent of the donor, obtained separately from the consent for the abortion, and in a method more conducive to a non-prejudiced decision to abort.⁵³ Mexico's statute in 1990 required the use of spontaneously aborted tissue only.⁵⁴ Great Britain and the United States both concur that the method of abortion may not be altered after consent to donate the fetus has been given.⁵⁵

48 *Id.*

49 138 CONG. REC. S4759 (daily ed. Apr. 2, 1992). As yet, neither side of this issue has generated demographics or offered any other type of factual proof to support their position.

50 *Id.* at 4759.

51 138 CONG. REC. H3340, at 3342 (daily ed. May 18, 1992) (reporting on H.R. 2507).

52 *Id.* at 3342.

53 NEURAL TRANSPLANTATION 140 (Stephen B. Dunnett & Anders B. Jorklund eds., 1992).

54 Madrazo et al., *supra* note 25.

55 See *Code of Practice on the Use of Fetuses and Fetal Material in Research*

This avoids putting the mother in a higher level of risk caused by different abortion procedures in order to retrieve usable tissue.⁵⁶

Mexico's regulations are quite similar to those proposed for the United States except they restrict tissue to spontaneously aborted tissue only,⁵⁷ whereas neither the United States⁵⁸ nor the United Kingdom place any restriction on the cause of the abortion.⁵⁹

Dr. Jay Moskowitz, then Associate Director for Science Policy and Legislation at the National Institute of Health, argued for the removal of restrictions on electively aborted tissue because the use of spontaneously aborted tissue would net a poorer quality tissue and an insufficient number of available fetuses. He claimed:

The cells and tissues from spontaneous abortions and ectopic pregnancies are generally of poor quality because they (a) may represent inherently abnormal tissue, (b) have been subjected to diminished blood supply, (c) exist in a poor in-vivo environment, (d) may have been retained in the body for five to eight weeks prior to explosion [sic]. The state of disintegration of these tissues is another factor affecting viability.⁶⁰

Drs. Freeman and Olanow added that bacteria associated with spontaneously aborted fetuses transmitted to the fetus through vaginal delivery of the fetus can increase the potential for transplant related infections.⁶¹

B. Establishment and Purpose of a Fetal Tissue Bank

On May 19, 1992, President Bush, sensitive to the researchers' need for fetal tissue, while true to his pro-life convictions, ordered the establishment of a fetal tissue bank.⁶²

and Treatment, FFMC (from Her Majesty's Stationery Office 1989) cited in FETAL TISSUE TRANSPLANTS IN MEDICINE 331-32 (Robert G. Edwards ed., 1992); 138 CONG. REC. H3340, *supra* note 51, at 3342.

56 NEURAL TRANSPLANTATION 140 (Stephen B. Dunnett & Anders B. Jorklund eds., 1992).

57 Madrazo et al., *supra* note 25.

58 138 CONG. REC. H3340, *supra* note 51.

59 Henderson et al., *supra* note 33.

60 *Continuing Debates About Human Fetal Tissue*, 1992 BIOLAW 2503 [hereinafter *Continuing Debates*].

61 Freeman & Olanow, *supra* note 30, at 900.

62 Exec. Order No. 12,806, 57 Fed. Reg. 21,589 (1992) [hereinafter Exec.

With the establishment of the tissue bank, President Bush tried to soften the impact of the moratorium by authorizing collection of fetal tissue obtained through spontaneous abortions and ectopic pregnancies and by making this tissue available to qualified researchers.⁶³ He also authorized development of "cell lines" in accordance with the spontaneous abortion/ectopic pregnancy limitations.⁶⁴ A "cell line" is the "capacity to clone, or endlessly reproduce, certain fetal cells in a laboratory in immortal . . . lines."⁶⁵

C. *Support for the Moratorium and a Fetal Tissue Bank*

Louis W. Sullivan, as Secretary of the Department of Health and Human Services, enumerated the "compelling reasons" for supporting the President's establishment of a fetal tissue bank.⁶⁶ First, adequate tissue could be collected from spontaneous abortions and ectopic pregnancies at six major medical centers across the nation. Second, the administration's estimate of the number of fetuses needed is a conservative one. "Only 60 fetal tissue transplants have been conducted in the last 30 years,"⁶⁷ and according to the Bush estimate, 1000 usable fetal cadavers could be collected annually.⁶⁸ Finally, the federal government already funds the National Institute of Health's research in the alternative research avenues (cell lines for one).⁶⁹

There are other reasons for banning the funding and the use of electively aborted tissues. One argument is that federally funded use of electively aborted fetuses legitimizes abortion. This was a signal the Bush administration did not wish to send.⁷⁰

Another argument against allowing the use of elective abortions is that it could lead to the development of a "baby

Order 12,806]. This was not the first time a tissue bank had been established. In 1961 the NIH funded the Central Laboratory for Human Embryology at the University of Washington in Seattle. See Archibald, *supra* note 39, at A7.

63 Exec. Order 12,806, *supra* note 62, § 2.

64 Exec. Order 12,806, *supra* note 62, § 3.

65 Rorie Sherman, *The Selling of Body Parts*, NAT'L L.J., Dec. 7, 1987, at 1.

66 Louis W. Sullivan, *Good Reasons for the Fetal Tissue Research Ban*, WASH. POST, Aug. 16, 1992, at C6.

67 *Id.*

68 Julianne Byrne, *On Fetal Tissue, Bush Shows He's Pro-Death; Tissue Bank Is Needed*, N.Y. TIMES, July 14, 1992, at A24.

69 Sullivan, *supra* note 66.

70 Message to the House *supra* note 42. *But see infra* part IV.H.

market" and pregnancies for abortions' sake.⁷¹ Competition and the prospect of monetary remuneration could encourage doctors to use procedures with higher risk to the mother in order to obtain usable fetuses for research.⁷²

D. Arguments Against the Moratorium and the Alleged Sufficiency of a Fetal Tissue Bank

Opponents of the ban agree that use of elective abortions could result in a "baby market."⁷³ They argue, however, that this result would not be all bad. For now, a fetus does not qualify as a "baby." Like blood, a fetus is considered just a collection of cells. Sale of blood is not prohibited generally, so why should the sale of fetuses be prohibited?⁷⁴ Opponents of the ban argue further that the Bush position was hypocritical. They argued that there was already a "private market" for fetuses tacitly sanctioned by the government as long as federal funds were not involved.⁷⁵

Proponents of fetal tissue research argue that any "procedure" problem can be eliminated by regulations against altering the planned abortion procedure after permission to donate the tissue has been obtained from the mother.⁷⁶ However, growing interest in fetal tissue research will also increase the availability of commercial incentives.⁷⁷ In fact, there is already a high demand for tissue collected, *live* "from abortions performed in weeks 20 through 24."⁷⁸ Pro-choice proponents claim that second and third trimester abortions are "unusual," but the Centers for Disease Control estimates that about 16,000 abortions a year are done after twenty weeks gestation.⁷⁹ Furthermore, at the Risk Management Seminar of the National Abortion Federation's September 1992 seminar, ten practitioners gave papers on performing second trimester abor-

71 See Sherman, *supra* note 65, at 32.

72 NEURAL TRANSPLANTATION, *supra* note 53, at 140.

73 *Id.* at 32.

74 Michael Schrage, *Vision and Rational Discussion Needed in Fetal Tissue Debate*, WASH. POST, July 31, 1992, at F3.

75 *Id.* See also 138 CONG. REC. S4759, *supra* note 49 (Senator Adams reading a letter by Reverend Guy Walden into the record).

76 138 CONG. REC. S4759, *supra* note 49.

77 Douglas Turner, *Ethics Issues Raised in Use of Fetal Tissue*, BUFFALO NEWS, June 14, 1993, at 3; see also, Roger W. Evans, *Organ Procurement Expenditures and the Role of Financial Incentives*, 269 JAMA 3113 (1993).

78 Turner, *supra* note 77, at 3.

79 *Id.*

tions.⁸⁰ Dr. Martin Haskell's seminar included a procedure for removing brain tissue from a fetus in a manner meant to "protect the skull and its contents until the last minute."⁸¹ This seems an unnecessary concern unless the goal is actually obtaining usable fetal brain tissue.

It is also argued that President Bush's estimate on the number of available fetuses, as well as the number of fetuses needed, was an inaccurate one. They argued that spontaneously aborted tissue and ectopic pregnancies are argued to be inherently infected or defective.⁸² Electively (or surgically) aborted fetuses are, as Dr. Bernadine Healy (then Director of the National Institute of Health) said, "[a]pt to be uninfected and more likely to be genetically normal."⁸³ As the demand for fetal tissue transplants increases as progress is made, the bank's supplies will be inadequate to meet the demand.⁸⁴

Without federal funding many Parkinson's patients who desired fetal tissue transplantation would not be able to obtain it because of its tremendous cost. The government, under the moratorium, does not "foot the bill" for these experimental operations if electively aborted fetuses are used.⁸⁵ This argument, however, is premised on the assumption that researchers will not be doing the operations unless electively aborted fetuses are provided.

Another unpersuasive argument is that the lack of federal funding discourages colleges and hospitals from participating in fetal tissue transplant research and thereby diminishes the "brain pool" available for new research.⁸⁶ Again, the assumption is that researchers will use electively aborted fetuses or not research at all.

E. Analysis of the Two Counter-Arguments

The arguments pertaining to demand and availability of fetuses is unpersuasive. Future demand may increase, but until it does—and a great deal depends on federal funding of such

80 *Id.*

81 *Id.*

82 *Continuing Debates, supra* note 60.

83 James Mason, *Fetal Transplant Fallacies*, WASH. TIMES, June 16, 1992, at F3 (quoting Dr. Healy).

84 *Id.*

85 Gina Kolata, *Evidence Found that Fetal Tissue Transplants Can Ease a Brain Disease*, N.Y. TIMES, May 7, 1992, at B11.

86 *Id.*

research—the bank's 1000 fetuses should suffice. Even if the estimate of available fetuses was reduced by one-half, the current need for fetal tissue could be met.⁸⁷ An odd contradiction among the pro-choice and pro-federal funding arguments arises. The proponents of lifting the ban claimed, as one of their foremost arguments, that the ban would create a deficiency in available fetuses. Pro-choice advocates, who wanted the lifting of the ban on federally funded fetal tissue research, also want the ban on the French abortion pill RU 486 lifted.⁸⁸ Since RU 486 must be used before the eighth week of pregnancy, and harvesting the most usable tissue generally takes place after the seventh week of gestation, it seems that the wide use of RU 486 would significantly increase the deficit of available fetuses claimed to be so detrimental to the advancement of scientific research in this area.

The argument that some PD patients will be denied treatment without federal funding (due to the moratorium) has more "teeth" than does the numbers argument. Five hundred thousand people are estimated to be suffering from PD.⁸⁹ At least one report places this amount as high as one million people.⁹⁰ As progress is made, if it is *ever* made, those desirous to be participants in this research will also increase. It is quite possible that the number of people desiring transplants could exceed the number of fetuses obtained through spontaneous abortions or ectopic pregnancies (especially since fetal tissue research is not only done for PD).

Although private funding can be used to transplant with an electively aborted fetus, the cost of this procedure begins at \$30,000.⁹¹ This cost is to the patient because insurance usually does not pay for experimental procedures. Private donations can help, but only minimally. Dr. Eugene Redmond, neural transplant program director at Yale University, said that if federal funding were available, his program would do at least one PD related transplant per month in contrast to the eleven

87 Byrne, *supra* note 68, at A57.

88 Kate Michelman & Marcy Wilder, *The RU 486 Dilemma; Abortion Drug Must Be Legal*, NAT'L L.J., Sep. 7, 1992, at 13. *See infra* p. 193.

89 Schrage, *supra* note 74.

90 Dwight E.M. Angell & Hugh McCann, *Fetal Tissue Research May Help Victims of Parkinson's Disease*, GANNETTE NEWS SERVICE, Feb. 9, 1993; *see also* Lieberman et al., *supra* note 6, at 1.

91 Glazer, *supra* note 31.

operations done in three years on private funding.⁹² The availability of this procedure to only those who can afford to pay “throws a tremendous bias into the system.”⁹³ However, the removal of the ban will not lessen the expense of the procedure, it will merely shift the burden of paying for it onto the taxpayer. Even if the procedure becomes a “standard” one, there is no evidence that the cost to patients or insurance companies will lessen. In fact, the present trend of our health care system demonstrates quite the reverse. Additionally, even if a national health care plan is adopted, this procedure is probably too costly and too infrequent to ever merit inclusion.

The allegation that the moratorium on federally funded research (involving electively aborted fetuses) drains the “brain pool” of competent researchers seems clearly a misleading one. Although Dr. Eugene Redmond, Jr. said that “there ha[d] been major private foundations and drug companies that otherwise would have supported this research, but [didn’t] because of the moratorium,”⁹⁴ and that now “researchers will have more security than they did with private funds,”⁹⁵ there *are* alternate research areas, whose funding was not, nor is it now, significantly reduced. The media and many anti-ban proponents kept conveniently forgetting this fact and generally do not even mention alternatives to federally funded fetal tissue research. Paul Reiser, a professor of neurology with the University of Florida, said that the moratorium caused “no standstill” in fetal tissue research.⁹⁶ Using “private funds, medical societies and other institutions,” fetal tissue research has “flourished in dozens of states” these “past 4 years.”⁹⁷ Actually, several authors raved about the “promise” and “tremendous progress” of fetal tissue transplantation in treating PD,⁹⁸ when in reality even the physicians conducting the research say that fetal tissue transplants do not cure PD nor are they even considered a

92 *Id.*

93 *Legislative and Other Developments in Human Fetal Tissue Transplantation Research*, 1992 *BIOLAW* 2433, 2437 [hereinafter *Legislative and Other Developments*] (quoting Dr. Robert Breeze).

94 Marlene Cimens & Thomas H. Maugh, II, *After Five-Year Wait, Scientists Are Set to Resume Research on Fetal Cells*, *L.A. TIMES*, Jan. 26, 1993, at A5.

95 *Id.*

96 Eric Adler, *Ban on Funding Fetal Tissue Research Seldom Stopped Work*, *PHOENIX GAZETTE*, Jan. 23, 1993, at A1.

97 *Id.*

98 Kolata, *supra* note 85 (quoting Dr. Olanow).

successful long-term treatment.⁹⁹

While some of the arguments for using electively aborted fetuses in research for Parkinson's are somewhat persuasive, ultimately the decision hinges on the diminishment of the human being to a bundle of marketable goods.¹⁰⁰ The Pope, in his 1993 Colorado speech, said we are developing "a spreading anti-life mentality, an attitude of hostility to life in the womb."¹⁰¹ What will opponents to the ban argue as technology pushes back (toward conception) the age of viability for fetuses? Are embryos conceived outside the womb, and then "grown" outside the human body—maybe eventually grown to full term in an artificial womb (an area of research currently in progress)¹⁰² considered babies? At what point? Currently, there are no answers to these questions.

F. General Arguments Against Fetal Tissue Use in Treating Parkinson's Disease

During the congressional consideration of the Public Health Service Act, opponents of Bush's moratorium argued that to control fetal tissue research in any fashion was to sentence PD patients, like Senator Udall, to unnecessary suffering.¹⁰³ Yet, none of the studies have concluded that their procedures were or were not successful. Dr. Olanow himself said that the transplant-treated patients "are by no means cured."¹⁰⁴

Swedish researcher Ollie Lindvall went even further. He said, "[a]lthough animal experimental data are very promising and clinical trials have given encouraging results, it must be underscored that there exists at present no treatment for

99 Mason, *supra* note 83 (quoting Lindvall).

100 It is quite different to use a fetus which would have died anyway, than to use one that is deliberately killed and then purchased. This is analogous to murdering someone for their kidneys. Though there are current laws on the sale of body parts in the United States (see *infra* note 117), the selling of body parts world-wide is not unheard of—especially in India and China. See *Barbaric Trade: Harvesting Organs of Executed Prisoners*, GAZETTE, March 30, 1993, at A2; *Risks to Buying Kidneys*, STRAITS TIMES, May 13, 1992, at 3.

101 Martin Walker, *Pope Tones Down Abortion Speech*, GUARDIAN, Aug. 16, 1993, at 6.

102 William A. Check, *Margery Shaw, MD, JD: Twice Counselor*, 247 JAMA 2884, 2890 (1982) (quoting Dr. Shaw as saying that an artificial womb may be possible in the future).

103 138 CONG. REC. S4759, *supra* note 49 (quoting Senator Domenici).

104 Kolata, *supra* note 85.

Parkinson's Disease based on intracerebral transplantation."¹⁰⁵

As yet, there has not even been a consensus on the several important issues, including the brain region for implantation, the best surgical technique to use, the need for immunosuppressants, the best fetal age for harvesting tissue, the type of tissue to use, the clinical usefulness, or any long term results.¹⁰⁶ Until such consensus can be made, or a definitive long-term benefit is attained, there seems no reason to focus exclusively (or extensively) on fetal tissue research, especially when there are alternate areas of research just as promising which do not require fetal tissue and therefore do not involve the abortion issue.¹⁰⁷

It is the moral issue of abortion which generally caused Bush to implement the moratorium.¹⁰⁸ This alleged need for fetal brain tissue puts at issue the very concept of a fetus as non-living—not worth the sacrifice of a woman's privacy. One recent article in the "Washington Post" even listed "spontaneous sex, luxury, extended travel, higher education, unbroken career paths, choosing a different father, and limiting family size" as "perks" of abortion.¹⁰⁹ This seems to put "creating/terminating life" right below waiting for the telephone man, and just above a bad haircut on the scale of "inconveniences." Yet, as Paul Panuli and Paul O'Connor put it, "[o]ne simply cannot have it both ways. The first trimester fetus cannot be simultaneously a 'blob' and a human being with a specialized brain structure suitable for transplant."¹¹⁰ If "human" fetal tissue is so superior to other mammalian tissue,¹¹¹ "how can it be denied . . . that the child in the womb . . . is fully 'human' . . . and entitled to full protection of the law."¹¹²

This subordination of fetal life to what seems an increasing tenacity to *live* at all costs would combine to encourage, or at

105 Mason, *supra* note 83.

106 Curt R. Freed et al., *Transplantation of Human Fetal Dopamine Cells for Parkinson's Disease: Results at 1 Year*, 47 ARCH. NEUROL. 505 (1990).

107 For example, cell lines, genetic engineering, alternate surgeries, new drugs.

108 Message to the House, *supra* note 42.

109 Carolyn Hax, *No Birth, No Pangs; For Many Young Women, Abortion is a Given*, WASH. POST, March 21, 1993, at C1.

110 *Legislative and Other Developments*, *supra* note 93, at 2436 (quoting Paul Panuli and Paul O'Connor).

111 Turner, *supra* note 77.

112 *Id.*

least justify for some, abortion. Though proponents of the Public Health Service Act argued that their proposed regulations would prevent encouragement of abortion by waiting to ask for donation of a fetus until after the consent to abort was given,¹¹³ they fail to consider the wide publicity associated with any abortion issue. Pro-Life and anti-abortion supporters air all the ramifications of their opponent's proposals openly to the press as often and as loudly as possible. It seems impossible, therefore, to believe that the majority of American women will be ignorant of the possible use of an aborted fetus for medical research. Waiting to ask for consent until after the abortion decision is made, is rather like a judge requesting the jury to disregard a statement made in court by a witness or counsel. Legally it may work, but realistically it is very hard to put those thoughts out of one's mind when making the final decision.

Proponents of the use of federally-funded fetal tissue research also failed to adequately respond to the challenge that use of electively aborted fetuses can lead to baby selling. Superficially, doctors and legislators say the regulations preventing the donor from receiving monetary gain would sufficiently exorcise this particular problem¹¹⁴ (if in fact it even is one). But donors are not the only ones susceptible to the lure of a potentially lucrative market. Even now, legislatures and courts are faced with deciding who is entitled to monetary remuneration for patented "cell lines"¹¹⁵ and who is the "owner" of fetuses used in surrogacy cases.¹¹⁶ Until recently, research labs and doctors/scientists were the only ones receiving the compensation from research done with someone else's body parts.¹¹⁷ In fact, the growing concern over the conflicting interests of researchers and commercial investors has lead to the adoption of

113 138 CONG. REC. S4759, *supra* note 49 (quoting Senators McCain and Riegle respectively).

114 138 CONG. REC. S4759, *supra* note 49 (quoting Senator Dodd).

115 *Moore v. Regents of Univ. of Cal.*, 271 Cal. Rptr. 146 (Ct. App. 1990), *cert. denied*, 1991 U.S. LEXIS 1723 (1991).

116 *In Re Baby M1*, 525 A.2d 1128 (N.J. Super. Ct. Ch. Div. 1987), *rev'd*, 537 A.2d 1227 (N.J. 1988).

117 Many states have legislation making it a crime to buy or sell human organs within their jurisdictions. *See, e.g.*, CAL. PENAL CODE § 367f (Deering 1992); FLA. STAT. ch. 873.01 (1991); LA. REV. STAT. ANN. § 14:101.1 (West 1992); MD. CODE ANN., HEALTH-GEN. § 5-408 (1991); NEV. REV. STAT. ANN. § 201.460 (Michie 1991); S.D. CODIFIED LAWS ANN. § 34-26-44 (1992); TEX. PENAL CODE ANN. § 48.02 (West 1992).

"disclosure" statements.¹¹⁸ For example, some universities require "scientists to disclose not only who pays for their work, but whether they have any outside income from industrial or corporate sources, or any stock in companies whose products they test."¹¹⁹ Medical journals are also starting to list the financial backers of each study, and "whether the private sponsor . . . was involved in collecting data, analyzing it or approving the final article."¹²⁰

Finally, there is a strong presumption that with the success of fetal tissue transplantation, if any, the need for fetal tissue as a "curative" will be supplanted to that of a "therapy".¹²¹ This could also lead to an astronomical leap in the amount of fetal tissue required per year. As Michael Schrage put it, "Fetal transplant surgery could become more prevalent than heart surgery."¹²² With this increased demand (with over 500,000 Parkinson's patients;¹²³ 750,000 diabetics;¹²⁴ and 2,000,000 or more Alzheimer patients¹²⁵ the potential is great) could come the increased pressure from families demanding to provide tissue for their ailing family members.¹²⁶ With the ease in obtaining a first-trimester abortion, the possibility of allowing families to conceive in order to abort and donate tissue to a family member is real.¹²⁷ Although proponents say they could "regulate" so as to avoid this possibility, the inconsistency of forbidding directed donations of fetal tissue, when directed donations of other body parts is allowed, is already being challenged.¹²⁸

Assuming that a fetus is indeed a life, using fetal transplantation as a therapy would mean that instead of a "life for a

118 Sheryl Stolberg, *Funding Science—For a Price: As Public Money Dries Up, Medical Researchers Must Turn to Industry for Help. Private Backing Creates Some Controversial Partnerships, Raises Fears of Commercialism, Conflict of Interest*, L.A. TIMES, June 8, 1993, at A1.

119 *Id.*

120 *Id.*

121 Schrage, *supra* note 74.

122 *Id.*

123 *Id.*

124 *Id.*

125 *Id.*

126 *Id.*

127 *Transplant from Baby for Teen Sister Goes Well*, CHI. TRIB., June 5, 1991, at C10 (relating the case of a couple's deliberate conception of a child for the possible use of it as a bone marrow donor (if the blood type was compatible) for their older daughter).

128 Schrage, *supra* note 74.

life" type justification doctors would be dealing with a "life for a more comfortable life." When should the quality of one life be considered superior to the life of another in and of itself? Where would the "killing" stop? Quality of life arguments tend to eventually lead to a euthanasia argument. Are we, as a society, prepared for that kind of mentality to predominate in the medical profession?

G. *Plausible Alternatives*

There are some who believe all the agonizing over the elective abortion issue is unnecessary; that the combination of alternate research areas and fetal tissue research (limited to spontaneously aborted or ectopic fetuses) gives adequate coverage to the research into the treatment of PD. Robert H. Baker, of Vienna, cites the studies at the University of Toronto and Hahnemann University in Philadelphia as examples of alternate areas of research.¹²⁹ Both universities "have had significantly positive results (in PD patients) from using a substance derived from mammalian brain cells to stem damage and stimulate brain cell repair in humans."¹³⁰ Baker said this line of research is "at least as promising as using human fetal tissue."¹³¹

Dr. Robert J. White, after reviewing the minimal improvement of Parkinson's patients treated with fetal tissue transplants, urges the use of biotechnological genetic engineering (cell lines for one) to treat neurological disease without the use of fetal tissue.¹³² Recent developments in genetic engineering have allowed scientists to "grow fetal brain cells in the lab" and insert "genes into the cells to make all sorts of growth-stimulating chemicals" which, according to Dr. Eugene Major of the National Institute of Neurological Disorders and Stroke, "will make it unnecessary to use tissue from aborted fetuses."¹³³

Joseph Rogers, of the Sun Health Institute for Biogerontology Research Center, "is trying to trick brain cells from recently deceased adults into believing they are fetus-

129 Robert H. Baker, *We Don't Have to Fight over Fetal Tissue*, WASH. POST, June 22, 1992, at A16.

130 *Id.*

131 *Id.* But see Turner, *supra* note 77.

132 Robert J. White, *On Fetal Tissue; The Myth of a Transplant Cure*, N.Y. TIMES, Aug. 15, 1992, § 1, at 18.

133 Tim Friend, *Living Secrets of Fetal Tissue*, USA TODAY, May 18, 1993, at 7D.

es."¹³⁴ The process is still a long way from being a reality and is extremely complex. Scientists will take these live, dopamine producing cells and grow them in a test tube, trick them into multiplying as "fetal cells," and then trick them again to stop multiplying when there is enough replacement tissue.¹³⁵ If the cells do not stop multiplying, the transplant would, in effect, become a "tumor" growing "uncontrollably."¹³⁶

There are also researchers focusing on drug therapy for PD patients. None have yet "alter[ed] the underlying disease process," as Dr. Laurence Golbe said,¹³⁷ but "some believe it is only a matter of time before medication will stop the disease in its tracks."¹³⁸

One of the newest drugs tested, Deprenyl, has been found to delay the need for L-dopa medication for about nine months.¹³⁹ Since L-dopa medications have a limited usefulness,¹⁴⁰ "any delay in onset of this treatment is generally considered a positive step."¹⁴¹

Dr. Ira Shoulson, of the University of Rochester, says his drug research includes "antioxidants that help protect brain cells; growth factors that could work at protecting dopamine cells; and drugs that block glutamate, a brain chemical thought to excite cell death."¹⁴² Dr. Shoulson also adds that drug testing has recently begun in conjunction with a cloned gene—a dopamine transporter.¹⁴³ This phase of testing is "looking for drugs that inhibit, or block, the gene," and according to Dr. Shoulson, "in animals, it prevents the disorder."¹⁴⁴

There has also been a "resurgence" in two ablative surgical procedures, which do not require the use of fetal tissue and which originally were used in the 1950s.¹⁴⁵ Because of the breakthrough in "the theory of the mechanism of brain dys-

134 Lori Baker, *Researcher Seeks Parkinson's Cure; "Like Science Fiction" but Could Help Many*, ARIZ. REPUBLIC, July 28, 1993, at 5.

135 *Id.*

136 *Id.*

137 Jamie Talan, *Drug for Parkinson's Puts Off Use of Stronger Medication, Report Says*, NEWSDAY, Jan. 26, 1993, at 61.

138 *Id.*

139 *Id.*

140 See *supra* note 15 and accompanying text.

141 Talan, *supra* note 137, at 61.

142 *Id.*

143 *Id.*

144 *Id.*

145 Fazzini, *supra* note 17, at 1, 4.

function underlining Parkinson's Disease," surgeons now are retesting these procedures, putting small incisions in "circuitry" gone awry due to low dopamine levels.¹⁴⁶

The pallidotomy (incision in the globus pallidus) is more effective in reduction of slow movement problems than in tremor reduction, but it does offer an immediate improvement, and eventually, a "complete resolution" of the dyskinesia (defect in voluntary movement) caused by the drug therapy (actual drug requirements remain about the same).¹⁴⁷ Twenty-two pallidotomies have been done "without side effects." All the pallidotomy subjects have had a fifty-seven percent improvement during the nine months they have been studied.¹⁴⁸ This is better than the average of the last two Swedish fetal tissue transplantations (at forty-seven and fifty-nine percent improvement).¹⁴⁹ Furthermore, fetal transplants do not result in a decrease of dyskinesia as does a pallidotomy.¹⁵⁰

The thalamotomy (an incision in the thalamus) has shown a ninety-eight percent reduction of severe tremor and also resolves dyskinesia caused by drug therapy.¹⁵¹ However, it also tends to lead to "loss of muscle tone, balance impairment, and speech impairment."¹⁵²

These alternate sources of treatment materials, with fetuses obtained via spontaneous abortion and ectopic pregnancies (already argued as sufficient in and of itself), and combined with the privately funded, electively aborted fetuses, should be sufficient to yield adequate experimental material without having to expand the federal funding to electively aborted fetuses.

H. Fetal Tissue Research Under Clinton

On November 3, 1992, Bill Clinton was elected President of the United States. Within days of his inauguration Clinton did what Congress had been unable to do despite months of trying: He removed the moratorium on federal funding of research involving electively aborted fetuses.¹⁵³

146 *Id.* at 1.

147 *Id.* at 4.

148 *Id.*

149 *Id.*

150 *Id.*

151 *Id.*

152 *Id.*

153 Talan, *supra* note 137, at 61.

Unfortunately, this action came as no surprise to pro-life, anti-abortion supporters. Clinton's political stance on abortion during the campaign was pro-choice.¹⁵⁴ Almost immediately after his election, Clinton's aides were announcing the probable demise of the moratorium.¹⁵⁵ Democrats (including Edward Kennedy and Richard A. Gephardt) as well as the National Abortion Rights Action League (NARAL) expected Clinton to honor his promise to free the country from restrictions to a woman's right to choose: restrictions on abortions.¹⁵⁶ Kate Michelman, president of NARAL, explicitly enumerated the things she and the "abortion-rights voters [who] elected" Clinton expected him to do: (1) lift the ban on federally funded research involving elective abortions; (2) lift the gag rule imposed on family planning clinics; (3) lift the ban on RU 486 (the abortion pill); (4) codify abortion rights (Freedom of Choice Act); and, (5) include abortion in any national health care plan.¹⁵⁷

If Clinton was to avoid Bush's "read my lips" mistake, he had to take swift action in this area. On January 22, 1993 President Clinton did indeed lift the moratorium on federal funding of fetal tissue research using elective abortions,¹⁵⁸ and in May of 1993, a bill authorizing \$6 billion in funding to the National Institute of Health was passed by both the House and Senate.¹⁵⁹ Wanda Franz, President of the National Right to Life Committee, said recently that with this the President has put "the federal government in the business of promoting the use of abortion as birth control."¹⁶⁰

V. CONCLUSION

It is unrealistic to think that "potential good" associated with fetal tissue research will not sway abortion decisions. Nearly every fetal tissue article written mentions this aspect, so persuasion is within the realm of possible ramifications.

154 Robert S. Boyd, *Abortion Restrictions Out; Clinton Keeps Promise*, TIMES-PICAYUNE, Jan. 23, 1993, at A1.

155 Elizabeth Neuffer, *Bill Vetoed by Bush Could Serve as Clinton's Blueprint*, BOSTON GLOBE, Nov. 5, 1992, at 27.

156 *Id.*

157 *Id.*

158 Boyd, *supra* note 154.

159 *Fetal Tissue: House Approves NIH Authorization Bill*, Abortion Report, May 26, 1993.

160 Boyd, *supra* note 154.

Although I am decidedly pro-life, thorough thought and research were required for me to decide that using electively aborted fetal tissue—even to save loved ones some anguish—was wrong. If I can question, so can those who find themselves in the uncomfortable position of being undesireably pregnant, since they also have a strong reason to rationalize their decision to abort.

Limiting the psuedopodic-spread of aborted fetal tissue research, and regulating its commercialization once allowed, could prove a formidable task, especially as awareness of the potential value of fetal tissue spreads. Combining the power to persuade, and the potential of regulatory problems with the inconsistent results of present fetal transplant testing, leads to the conclusion that failure to limit use in this area of research can only be looked upon as the science fiction movie monster turned loose—bent on the destruction (however insidiously) of the morals of the American people.

Billye D. Baird

APPENDIX

Executive Order 12,806
Establishment of a FETAL TISSUE Bank
May 19, 1992

By the authority vested in me as President by the Constitution and the laws of the United States of America, and in order to provide a source of human tissue to develop treatments and research methods for various diseases, it is hereby ordered as follows:

Section 1. Establishment of a FETAL TISSUE Bank. The Secretary of Health and Human Services ("Secretary") shall establish a human FETAL TISSUE bank. The FETAL TISSUE in the bank shall be obtained exclusively from ectopic pregnancies and spontaneous abortions.

Section 2. Procedures. The Secretary shall establish procedures for making tissue from the bank available for meritorious research projects selected through an appropriate peer review process. The Secretary shall include in the bank a registry of physicians and hospitals interested in using the tissue from the bank to further specific medical objectives.

Section 3. Policies. The Secretary shall develop human fetal cell lines in a manner consistent with current policy and ensure that the actions directed by sections 2 and 3 of this order are carried out in accordance with all other applicable legal requirements related to FETAL TISSUE.

Section 4. Report. The Secretary shall report his progress in carrying out this order to the President on or before December 31, 1992.

GEORGE BUSH
THE WHITE HOUSE,
May 19, 1992

Exec. Order No. 12,806, 57 FR 21589, 1992 WL 193236 (Pres.)