

The Psycho-Technology of Pregnancy and Labor

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Couples and their friends who desire a more personal birth experience than a hospital normally allows often cast obstetrical nurses and doctors in the role of insensitive professionals. Nurses and doctors tend to feel resentful when confronted by women with a shopping list of demands, yet their professional roles do not allow them to show their annoyance. What do they do with these feelings?

Often, because one cannot predict how many women will be in labor at any one time, a situation in which too few nurses are treating too many patients will develop. Under such circumstances, they may have their hands full just making sure nobody dies and, much as they would like to, are unable to meet the emotional needs of the laboring woman. Thus the medical staff is frequently assigned the part of "heavies" in accounts of birthing practices.

Speaking from firsthand experience as a clinician, I know that under the insistent demands of a busy work week I sometimes tend to act more like a fireman rushing from one fire to the next than a physician who stops long enough to really see and hear his patient.

I think all health professionals should get sick once every two years and be hospitalized at least once every decade to appreciate fully better what it is like to be a patient. Though I say this tongue in cheek, I do believe that all of us need to be reminded occasionally that patients are people and that their emotions will affect all their bodily functions.

This article is concerned with two themes: the hospitalization of birth and the increasing use of and reliance on technological devices as diagnostic tools during pregnancy and labor. It will explore the physiological and psychological effects of these procedures on the pregnant woman, her unborn or newborn baby, and the hospital staff.

The Hospitalization of Birth

During the last 100 years, birthing has moved from the home into the hospital. The home is the domain of the family; the hospital is run by doctors and nurses. Doctors and nurses are trained to treat sick people,

and hospitals admit only very sick people for treatment, surgery and special investigations. Consequently, anyone who occupies a hospital bed will likely be regarded by the staff as an ill patient. In this simple way, without anyone giving it much thought and with the best of intentions by health professionals, the natural process of birth has been transformed into a major disease. What are the consequences of this hospitalization of birth for the pregnant woman?

1. She finds herself in an unfamiliar place where she has to obey peculiar rules enforced by strangers.
2. Because staff members are experts and she is not, the pregnant woman is made to feel as if others know more about her body than she does.
3. Staff members often behave as if her body has become theirs to do with as they please. They give her drugs to swallow, stick needles into her, take blood from her veins and urine from her bladder, measure her blood pressure, subject her to x-rays and so on.
4. On admission, the pregnant woman receives a name tag with a number. Then she is asked to disrobe and change into a hospital gown that leaves her totally exposed from the back when she is not lying down. Confined to her room, she has a never-ending stream of nurses, interns, and residents examining her. Her sense of individuality and self-esteem are gradually eroded.

This process is uncannily similar to what happens to people entering a prison. Both systems deprive their inmates of liberty and dignity, and they both aim to achieve compliance with the rules and regulations of the institution. This is not the place to examine what effect this system has on prisoners. What it does to the pregnant woman, however, is very bad indeed. For one thing, it increases her anxiety. Anxiety will interfere with the birth process by decreasing the efficiency of contractions and increasing muscular tension. More muscle tension will lead to more pain and more pain to more anxiety. As the pain and the anxiety increase, the staff, in their attempt to be helpful, offer her painkillers. These medications slow down contractions and doctors become more anxious and increasingly interventionist, resorting to the use of forceps, episiotomy, induction of labor with oxytocin (Pitocin), and/or caesarean section. Then the mother is expected to feel grateful for having had such wonderful care. Obviously, she could not have been so well cared for in her home.

Fear and apprehension cause us all to shift into a flight-fight pattern. One of the results of this stress reaction is the shunting of blood from internal organs such as the uterus to the large muscles—a good system

when one is confronted by a lion but counterproductive when one is a laboring mother. She will end up with a bloodless uterus which leads to uterine inertia and decreases the amount of blood flowing to the baby.

When people feel pushed around like pawns on a chess-board, they tend to become angry, and the pregnant woman is no exception. But how can she get angry with the medical staff when her own and her baby's life and health depend on these very individuals' goodwill and expertise? So the pregnant woman keeps quiet while her blood pressure rises and her body reacts in a million other harmful ways to her suppressed feelings of frustration. None of this makes her feel good or enhances birthing.

Many women recognize the futility of the struggle—especially if they are unaccompanied by an assertive mate, friend, or midwife—and resign themselves to the role the staff demands of them. Their attitude becomes “do with me as you like; wake me up when it's all over.” A woman like that will be deprived of one of the most magical moments she can experience in life. And her baby, after his arduous and perilous journey, will not be hugged, stroked, looked at, or talked to after finally emerging into the light; his mother will not be there to welcome him. Many studies on bonding have shown that this lack of early and intimate contact may adversely affect both mother and child.¹⁻⁵

By stripping the childbirth experience of so much of its personal and familial character, we have diminished its rewards and created a multitude of new problems.

Hospital staff members like to follow routines because routines make the staff's life easier. They want pregnant women to do as they are told and not to make a fuss. Even if the staff is genuinely committed to “family-oriented birth” and Leboyer type of deliveries, their foremost goal is to facilitate a safe and efficient birth. They are quick to show their annoyance if the woman persists in breathing her way instead of their way or if she refuses medication and begins to scream. The woman who refuses the well-intentioned ministrations of the medical staff calls into question their competence and threatens their self-esteem. Thus, if anything goes wrong, they quickly turn on her and reassert control. “You wouldn't want to endanger your baby, would you now?” Of course not, so in goes the merperidine hydrochloride (Demerol) or the local anesthetic and out goes the pregnant woman's determination that this is going to be her delivery. More suppressed anger, anxiety, or resignation follow.

Hospitals can be not only authoritarian and impersonal, but also downright dangerous. In the hospital, germs are more numerous than in the home, and they are also more virulent. So infections in hospitals are usually more frequent and more severe than those acquired outside of

hospitals. If an infection develops, it will make the new mother uncomfortable at the very least and in some cases quite sick. She will not be able to breast-feed her baby, and she may not even get to see him. This again mitigates against the development of a loving mother-newborn child relationship.

In 5 percent of high-risk pregnancies, the benefits of medical treatment in a hospital far outweigh the emotional and bodily risks discussed here. The other 95 percent of pregnant women require the hospital to serve as insurance against anything going wrong. Is it fair to manage them as if they were sick? In addition to having to cope with the general effect that hospitals have on patients, the pregnant woman also has to contend with an explosion of high-technology tests and electronic equipment designed to help her and her baby to a safe birth. Nobody would quarrel with this objective, but does all this gynegadgetry really deliver? (Pardon the pun.) And what are the emotional sequelae to the mother and baby of this increasing reliance on instrumentation and invasive devices?

I believe that the proliferation of such techniques as amniocentesis, the fetal heart monitor, fetoscopy, hysteroscopy, and ultrasound—just a few of the most widely used devices—is now changing the fundamental character of birthing as much as the move away from the home did in the past.

High-Tech Obstetrics

Amniocentesis

When amniocentesis was introduced in the 1950's it was used to test for Rh-hemolytic disease in the third trimester.⁶ Today amniocentesis is still employed for that purpose. Prior to introducing the needle, the doctors would palpate the woman's abdomen to determine the baby's position. Some doctors inject a local anesthetic before amniocentesis; others believe that a second needle with an anesthetic is as painful as one needle without an anesthetic. I feel strongly that every woman should be given a choice in this matter instead of having the doctor decide what's good for her.

Presently, amniocentesis can also identify over 75 metabolic diseases and about 80 to 90 percent of open neural tube defects (such as spina bifida) in the second trimester of pregnancy.⁷ An examination of the chromosomes in the fetal cells can reveal the baby's sex.

Seven out of ten women are referred for amniocentesis because they are age 35 or older. Most of the others are tested because of a family history of chromosomal aberrations. At age 35, the chances of a woman having a baby with Down's syndrome is 1 in 350; at age 40, the chances increase to 1 in 100; and at age 45, chances are 1 in 32.⁸

Complications. Scientists at the Mayo Clinic report that amniocentesis stands a 15 percent chance of being technically unsatisfactory: the sample of amniotic fluid may be inadequate, the culture may fail to grow, or the laboratory analysis may be wrong.⁹ In one study, 22 percent of specimens were blood tinged to grossly bloody.¹⁰ Major complications of amniocentesis include pneumothorax, gangrene of a fetal limb, and sudden fetal death.¹¹⁻¹³ A study at the University of California at San Francisco based on 3,000 consecutive cases from 1970 to 1978 found a 1.5 percent spontaneous abortion rate before 28 weeks gestation. These investigators "are reasonably certain that a small portion of these losses were directly attributable to the procedure."¹⁴ They are also concerned that, as amniocentesis moves from controlled research settings to many hospitals and likely less skilled office practice, the complication rate will increase.

Of the fetuses on whom amniocentesis is carried out, 95 percent are unaffected with the condition for which the test is performed. Parents should balance this information against the known risks of this procedure to their probably well babies.¹⁵

So far, there have been only three major studies on the effects of amniocentesis on the mother and her baby.¹⁶⁻¹⁸ A fourth is presently taking place in Toronto, and the results will not be known until 1988.

A National Institute of Child Health and Development project reported in 1976 that about 2 percent of women had complications such as vaginal bleeding or amniotic fluid leakage following the procedure. They found no increased risk to mother or child.¹⁶ These conclusions were confirmed in a 1980 study in which total fetal mortality was 2.7 percent among the amniocentesis group compared to 2.2 percent in the control group.¹⁷

However, a British study sponsored by the Medical Council of Britain concludes that amniocentesis increases the risk of fetal loss and neonatal and obstetrical complications by 1 to 1.5 percent and by the same amount for certain types of major infant problems. It reports a fetal death rate of 2.6 percent in the amniocentesis group and 1.1 percent among the controls. These investigators also found that amniocentesis significantly increases rates of maternal antepartum hemorrhage and neonatal respiratory distress and slightly increases major neonatal orthopedic deformities such as hip malformation.¹⁸

In *The Secret Life of the Unborn Child*, I report on the case of 16-month-old Claude, who developed severe head and neck spasms and limitations of movement following birth.¹⁹ His mother's pregnancy history revealed that she had undergone amniocentesis in her last trimester and that the needle had nicked her baby's neck. This child would shrink away from any bodily contact with his mother, who was as distraught by his apparent fear and avoidance of her as she was by his physical handicap. After six months of psychotherapy as practiced by Anne-Marie Surael in France, Claude totally recovered both in body and mind.²⁰ Although there are few reports in the scientific literature on this, many obstetricians have told me that under ultrasound they have seen babies move away from the intruding needle or even try to push it aside.

Consider for a moment how you would feel if you sensed a sharp object as long as your entire body coming at you and did not know whether it was going to stop short or pierce you. Clinical evidence from observations in my own practice and those of other psychotherapists indicates that the unborn ascribes almost everything that happens to him as originating with his mother. Therefore, the newborn might naturally develop an avoidance or fear of his mother because of the suffering that amniocentesis caused him. Because every pregnancy and birth is accompanied by inevitable stresses, one wonders whether an additional stress which offers no benefit to the newborn is justified.

Consider the predicament facing a woman who becomes pregnant at age 42 and desperately wants a child. Knowing that her chances of giving birth to a live child with Down's syndrome are about the same as those of causing a miscarriage by the diagnostic procedure itself, does she refuse the amniocentesis?

At medical centers throughout the country, ever-increasing numbers of doctors and their patients have turned to amniocentesis and subsequent abortions to control the gender of the child to be born. Marilyn Pollack at New York's Sloan-Kettering Institute has devised a means for establishing the paternity of the baby through amniocentesis.²¹ She thinks the technique is warranted only in cases of rape, suspected incest, or situations where uncertain paternity puts a great strain on the pregnant woman.

What does a mother do when amniocentesis demonstrates that her child has spina bifida or has an extra Y chromosome, a condition that may be linked to mild retardation and increased aggressive behavior? Most amniocenteses are performed from the 16th to the 20th week of pregnancy. The results are known about four weeks later. By the 20th week, the woman is showing, feels fetal movement, and, should she opt for abortion if abnormalities are found, she chances delivering a live fetus. What are the psychological effects on a woman who aborts a live

baby that has an outside chance of growing into a mentally and physically well person? The answer must be weighed against the consequences of giving birth to a handicapped youngster or of sustaining the pregnancy and then relinquishing the infant for adoption at birth.

There are no clear-cut or simple solutions to the problem of fetal screening, but we may be certain that amniocentesis:

1. is not the "safe, highly reliable, and extremely accurate" procedure it was touted to be just a few years ago,¹²
2. it is an invasive technique that can harm the unborn child both physically and mentally and
3. its results may force parents to make agonizing choices—to play God and then to live with that decision for the rest of their lives.

Because amniocentesis is performed routinely together with ultrasound visualization of the baby, the combined risks of the two techniques rather than the hazards of each separately should be considered.

Ultrasound

For this test, the woman is required to have a full bladder, but the procedure is not otherwise unpleasant. While she lies on the examining table, oil is poured on her stomach and a probe is moved back and forth over her abdomen.

Until recently, ultrasound in obstetrics was used to determine the baby's gestational age and the size of its head, to detect abnormalities of early pregnancy (such as ectopic pregnancy or congenital malformations), to ascertain the location and health of the placenta and position of the baby in conjunction with amniocentesis, to investigate vaginal bleeding or pelvic masses, and to confirm multiple pregnancies or abnormal fetal presentation.

Surveys indicate that diagnostic ultrasound is employed in about 76 percent of high-risk pregnancies and in a steadily increasing percentage of low-risk pregnancies.²² Many physicians screen all their pregnant patients with ultrasound.

Complications. Because of the known hazards of x-rays, scientists have welcomed ultrasound as an investigative tool that provides them with better and apparently safer information. But because ultrasound is a mechanical form of energy that creates heat, most researchers have been more cautious about its widespread use than they have been with amniocentesis.

The attitude was reflected by Doreen Liebeskind, assistant professor of radiology at Albert Einstein College of Medicine, at a symposium sponsored by the March of Dimes and Columbia University in 1983:

I don't think we are producing childhood cancers, rather we may be producing subtle changes. . . . When we say subtle, we mean possibly behavioral mechanisms; possible changes in reflexes; in IQ or attention span; or some of the more subtle psychological, psychiatric, or neurological phenomena. . . . My only concern is possible delayed effects, and I think we should proceed as if there were some.²³

Good advice, as it turns out.

In the spring of 1984, the National Institute of Health consensus panel released its long-awaited report on the use of ultrasound. The panel noted that ultrasound was not essential in any condition and discouraged its use "solely to satisfy the family's desire to know the fetal sex, to view the fetus, or to obtain a picture of the fetus."²²

Some physicians have been ringing the alarm bells for years. James Stockman, the associate editor of the 1979 *Year Book of Pediatrics*, states: "Whether ultrasound is as safe as it appears to be remains to be seen. Ultrasound can produced breakage in purified DNA."²⁴ He adds that the use of ultrasound reminds him of the days when every shoe salesman had a fluoroscope in his store. It was fun watching your toes wiggle, but none of us would subject ourselves to that examination today.

Animal and laboratory studies have shown that ultrasound may cause chromosome damage, breakdown of DNA, and a variety of changes in circulation, liver cells, brain enzymes, EEG tracings, nerve reflexes, and emotional reactivity.^{25,26} In addition, experimental rats exposed to ultrasound demonstrated delayed neoromuscular development and reduction of antibodies involved in immune response.¹⁸

Professor Earl Prohofsky of Purdue University has studied the structure of DNA extensively. He has demonstrated that all kinds of waves, including microwaves, will cause the double-stranded DNA to vibrate, much like the strings of a violin.²⁷ Reacting to various chemicals, DNA begins to vibrate, causing the strands to unwind during cell reproduction. Researchers at the University of Maryland have shown that DNA absorbs 400 times more microwave radiation than a surrounding salt solution.²⁸ Increased microwave (and presumably other waves as well) absorption leads to increased heat and vibration within the DNA, which in turn can cause genetic damage.

Researchers at the University of South Florida studied children exposed to ultrasound *in utero*. Although they found no solid indications of subtle or late-occurring harm, their advice to pregnant women was to reject ultrasound as a diagnostic procedure. Dr. Charles Stark, who

conducted the study, stated that he would personally not consider using ultrasound at any time during pregnancy.²⁹

Benefits. It is regrettable that ultrasound is considered potentially biologically harmful to the unborn child, for it is the only high-tech investigative tool in obstetrics that has proved psychologically beneficial to the pregnant mother and her baby. At a time when many women are not even aware of being pregnant and when many who are don't really feel pregnant, ultrasound enables the mother to actually see her child in the uterus.

Seeing that she is carrying within her a tiny human being engenders positive feelings that predate by several months the experience of fetal movement. As one woman reported: "At nine weeks, it looks like a tadpole. You can definitely see the little head and the spinal cord and sticks of arms and legs. After 12 weeks, you can see a dot going up and down—that's its heart. Then as the baby gets older, you can see it moving."

In a pioneering study conducted at King's College Hospital in London, two groups of pregnant women underwent ultrasound examination. Those in a high-feedback group received a comparable examination but were unable to see the monitor screen and did not receive visual and verbal descriptions. Instead, they were simply told, "All is well."

The women's attitudes toward being pregnant and toward the fetus were tested before and after the scan. The direction of change was the same in both groups, with the woman becoming less "concerned, more attached, reassured, secure, and confident." However women in the high-feedback group felt better during the scan, 74 percent rating their emotional state as "wonderful" compared to 11 percent in the low feedback group. The researchers conclude that scanning is informative as well as emotionally rewarding—especially when specific and detailed feedback is made available to the mother.³⁰

Being able to see her unborn child on an ultrasound monitor could have a beneficial emotional effect for a mother who had ambivalent feelings about her pregnancy or is particularly worried, anxious, or depressed about the prospect of having a baby. The pregnant mother and her physician would have to weigh carefully the potential biological risks against the known psychological value of this procedure.

Fetal Heart Monitors

Until recently, the fetal heart rate was determined by listening with a stethoscope placed on the pregnant woman's abdomen at intervals throughout labor. Now the electronic fetal monitor (EFM) can continu-

ously record the fetal rate on a graph. The EFM utilizes continuous wave ultrasound, in contrast to the ultrasound scanner, which uses pulsating ultrasound. The purpose of the EFM is to detect fetal heart rate abnormalities that would indicate that the baby is in distress. The EFM is applied to the mother's abdomen with tape or an elastic belt to hold an ultrasound transducer and pressure gauge in place. The transducer is positioned where fetal heart sound can best be heard. The pressure gauge indirectly records intrauterine pressure during contractions.

A further refinement of the EFM is the internal fetal monitor which involves placing two catheters into the uterus during labor. After the membranes rupture, a spinal metal wire electrode is inserted beneath the scalp of the baby's head. This catheter measures fetal pulse while the second catheter measures intrauterine pressure. The internal monitor is more precise and allows more freedom of movement than the external monitor.

Does fetal monitoring accomplish what its supporters claim? Does it prevent cerebral palsy and brain damage? Does it correctly identify fetal distress? Does it, in the final analysis, reduce fetal and maternal morbidity and mortality?

An analysis in 1978 of 15,486 live-born infants published in the *New England Journal of Medicine* showed a drop in the neonatal death rate from 304 per 1,000 live births in non-EFM labors to 195 per 1,000 in EFM labors in the highest risk pregnancies.³¹ However, the neonatal death rate in the lowest-risk group was only 1 per 1,000 live births, so EFM couldn't possibly improve the outcome. In this group it would probably affect mother and child adversely.

A study at the Denver General Hospital compared high-risk women in labor who were monitored with EFM with an equal number of high-risk women on whom EFM was not used. There were no differences in neonatal deaths, Apgar scores, or cord blood gases between the two groups. However, the monitored group's cesarean section rate was more than double that of the auscultated group, and the monitored group had a three times higher rate of postpartum infections.³²

Researchers at the National Center of Health Sciences Research (U.S.) who reviewed over 600 studies on fetal monitoring concluded that there was no scientific evidence that continuous EFM prevents brain damage or otherwise improves infant health except in very small babies.³³

The internal monitor is an invasive technique that carries bacteria into the uterus. Because the likelihood of infection increases as time passes, the procedure commits the hospital staff to deliver the baby, ready or not, within 12 to 16 hours. This in turn leads to an increased number of induced labors and cesarean sections. It is not surprising,

then, that electronic fetal monitors have led to an increase in cesarean sections wherever they have been used.

If the fetal heart monitor tells doctors that the baby is in distress, they will likely draw blood from the fetal scalp. Some babies have been delivered with heads that have been described as looking like raw hamburger meat. It is conservatively estimated that up to 5 percent of babies who have had scalp electrodes during labor develop abscesses on their heads, which lead to the use of antibiotics (more needles) and prolonged hospitalization.

Finally, the use of the machine over six, ten, or more hours exposes both the baby and mother to a significant dose of ultrasound energy.

In spite of all this data, EFM advocates have done a remarkable job of selling the idea to pregnant mothers. Studies have shown a largely positive response to its use, with laboring women finding monitoring reassuring, though worry appeared to increase slightly with longer labors.^{34,35}

Negative responses focused on the physical discomfort associated with the placement of the electrodes and enforced immobility. The authors of one of these reports suggest: "In order to maximize beneficial and minimize detrimental psychological effects, accurate information about fetal monitoring and its associated procedures should be given to mothers."³⁴ What are the psychological effects of the EFM on the staff, the pregnant woman and her baby?

The First Law of Psychotechnology of Labor (Verny's First Law):

The quantity of technological devices in the labor room is inversely proportional to the amount of human contact between staff and patient.³⁶

As soon as the woman is connected to a fetal heart monitor, all eyes are on the monitor. The pregnant woman must lie flat on her back and not move or she will disturb the monitor. The nurses and doctors no longer put their stethoscopes on her abdomen to listen to the baby; the monitor takes care of that. They no longer palpate, the traditional way to determine quality of contractions, because the belts of the monitor are in the way.

The nurse who watches the monitor does not function as a nurse but as a technician. How do nurses feel about this new role? I doubt that this is what they had in mind when they entered nursing with the idea of caring for people. Obstetrical nurses aren't oblivious to this; they try to relate to the patient, but their attention is at best divided between

the machine and the woman in labor. The staff's job is made more difficult by the unreliability of the information and the very large chance of misinterpretation of data provided by fetal monitors.

Under these circumstances, I would expect the medical staff to be under considerable stress and this stress to be conveyed to the pregnant woman. Staff members seem to deal with this stress by unconsciously denying it and at the same time idealizing the machine. The result is an overreliance upon the monitor and an inability to perceive its shortcomings objectively.

The Second Law of Psychotechnology of Labor (Verny's Second Law):

*The quantity of technological devices in the labor room is directly related to the degree of discomfort experienced by the patient.*³⁶

Even women thoroughly brainwashed or "prepared" for electronic monitors (and some high-risk women are plugged into both an external and internal fetal monitor) become uncomfortable, worried, and progressively more anxious as labor drags on and they are not allowed to move about. What an insane way to have a child: strapped down to a bed, belts over her stomach, connected with wires to a machine that emits weird sounds and draws graphs—with everyone paying attention to it and not to her. I cannot think of a better method to make a pregnant woman feel unimportant and vulnerable. As her anxiety increases, her body will try to delay labor rather than facilitate it; this will provoke medical interventions and may culminate in a cesarean section. Then staff members will congratulate each other on having saved another baby that would have been lost before the advent of space-age technology. And the mother will be thankful and more than willing to repeat the experience next time she is pregnant.

And what of the poor baby? Up to the time his mother is laid out flat on her back, the baby is comforted by the unique rhythm of her movements. Suddenly, all movement ceases. Dramatic changes in its routine elicit anxiety in the baby. Next a needle is jabbed under his scalp, and it hurts. Then perhaps more needles, sometimes one every half-hour. Such a baby might well experience a sense of angry puzzlement, an emotional equivalent to the question "Why is my mother doing this to me?" How is the baby expected to be eager to be born if this is a foretaste of what the outside world will be like? How can the baby be expected to push forward with his head when any such movement causes more pain? What a torture to inflict on a human being. How could this process fail to leave psychological scars?¹⁹

Fetoscopy

Fetoscopy is an outpatient procedure done under ultrasound guidance. It lasts one to two hours and is usually performed after 18 weeks gestation. Physicians generally administer a local anesthetic and intravenous diazepam (Valium) to relax the mother. The most widely used instrument is a combination needle 15 cm long and 1.7mm wide. It contains a solid optic lens with fiberoptic illumination that allows the doctor to see the unborn child in the uterus with two- to fivefold magnification.³⁷

Fetoscopy is used to determine the appropriate spot for sampling fetal blood or tissue. Potentially lethal syndromes involving skin abnormalities can be diagnosed by skin biopsies taken with the aid of a fetoscope. Fetoscopy directed by sonography has been successful in obtaining fetal blood in approximately 90 percent of cases. It is accompanied by a 3 to 5 percent risk of spontaneous abortion in experienced hands.³⁸

Other risks to the mother include exchange of blood between the baby and the mother, with maternal sensitization, leakage of amniotic fluid during later months of pregnancy, uterine bleeding, scarring of the uterus, infection, and puncture of other organs.³⁹ There is also the unknown effect of the intensity of the fiberoptic light on the baby's eyes. One good result of the use of fiberoptics has been the realization by at least a few obstetricians of the sensate nature of the unborn. One obstetrician observed: "I had a blood vessel lined up and was just about to strike when out of nowhere came this hand to knock away the needle. I think it was coincidental, but who knows?"⁴⁰

Fetal Therapy

Fetal surgery got its start in 1963 with intrauterine transfusions for Rh disease. With the widespread use of such high-tech procedures as ultrasound, amniocentesis, and fetoscopy, the number of unborn children being operated upon is beginning to rise rapidly.

Recent cases include surgery on the unborn's bladder, head, diaphragm, and heart. In one instance, doctors in San Francisco discovered on a routine ultrasound scan that one of their patients had twins, a female and a male, and that the male was developing abnormal urine retention. "As the picture became clearer, we diagnosed the condition as bladder-outlet obstruction." They realized that any kind of intervention might induce premature delivery and endanger the normally de-

veloping twin. At 31 weeks gestation, the doctors succeeded in inserting a catheter under local anesthetic into the bladder of the boy and thus prevented the continued accumulation of urine in his body. At the time the case was reported, he was 2½ months old and doing well. He will require further surgery when he is a little older.⁴¹

With ultrasound scanning, about 30 unborn babies have had shunts inserted into their brains to relieve pressure caused by the buildup of cerebrospinal fluid. "It's like bobbing for apples," said Dr. Thomas Brown, a neurosurgeon at Northwestern Memorial Hospital in Chicago.⁴² Dr. William Clewell of the Colorado Health Science Center cautions that "results are not as dramatic as preliminary reports indicated." He states that the fetal mortality rate for the treatment of fetal hydrocephalus has been 25 percent and that 30 percent of the survivors have significant to profound developmental delays.⁴³

Some disorders such as Rh incompatibility and heart rhythm irregularities may now be detected and treated *in utero*. Others, such as anencephaly (absence of brain tissue) and chromosomal disorders, though diagnosed, cannot be treated.

Prenatal Diagnosis

Prenatal diagnosis benefits many prospective parents who wish to know whether their fetus suffers from certain mental and physical impairments. In most centers, prenatal diagnosis is offered on the assumption that relief from anxiety or an opportunity to prepare for a disabled child are benefits that outweigh the risks to the fetus and mother from a procedure. At the same time, prenatal diagnosis presents a wide range of decisions and challenges for health care providers, prospective parents, and policy makers.

Prenatal diagnosis has been integrated into obstetric care with minimal attention to its psychological effects on families. The guiding assumption of advocates of prenatal diagnosis has been that it is a means of preventing tragedy.

The testing process appears to change the parents' experience of pregnancy—even when the results are favorable. The period of waiting for results (up to six weeks in some tests) is often characterized by a "suspension of commitment to the pregnancy," a postponement of what has been called the "integration" stage of pregnancy.^{44,45}

Fletcher has observed the impact on parents of learning the sex of the

fetus, referring to the time of pregnancy following test results as “the newest human stage of life.”⁴⁶ Both he and Beeson observed that parents who were told the sex of the fetus, and assured of the absence of certain major disorders, began a series of family interactions that previously took place upon birth. These included naming the fetus, informing relatives and friends of the news (or of the pregnancy), and going out and celebrating.^{45,46}

The psychological effects of miscarriage following amniocentesis (estimated at 0.5 percent) or fetoscopy (estimated at 3 to 5 percent) have not been studied. Those who miscarry may never know if the miscarriage was caused by the testing, even though they opted to take this risk. Perhaps the most difficult dilemmas are faced by women who are carriers of Duchenne muscular dystrophy, an X-linked disorder. Such women carrying male fetuses must decide whether or not to abort, knowing only that 50 percent will be affected and *50 percent will be normal*.

Selective Abortion: The Ethical Issues. The central ethical issue in prenatal diagnosis that has concerned laymen, religious leaders, and ethicists has been selective abortion.

For some parents, prenatal diagnosis may prevent abortion by assuring the absence of certain disorders, *but for the majority, abortion is the primary procedure* that is responsible for preventing the birth of a disabled child. This option, for which many families are deeply grateful, is not without psychological costs to the parents. Blumberg et al. found that women who abort because of genetic disease may suffer significant emotional trauma and may have a greater need for psychotherapy than women who abort for socioeconomic or psychological reasons. Despite this trauma,

77 percent of families studied would again opt for amniocentesis and, if indicated, selective abortion in any future pregnancy. These families have accepted selective abortion and its attendant problems as preferable to the birth of a defective child.⁴⁷

Many who oppose abortion on general grounds think it is the only human response to the knowledge of genetic disease. Others approve of abortion for fetal degenerative diseases such as Tay Sachs disease and Duchenne muscular dystrophy but disapprove of abortion for sickle-cell anemia and hemophilia, which are not as immediately fatal and can be treated, albeit with only partial success. A few ethicists and others have expressed concern that we are reducing our tolerance for imper-

fection.⁴⁸ Some bioethicists view prenatal diagnosis as an appropriate method of reducing the suffering of an unborn child and the burden on the family; others oppose selective abortion as a violation of fetal rights.⁴⁹⁻⁵⁰

In response to this controversy, an interdisciplinary group of bioethicists from the Hastings Institute of Society, Ethics, and the Life Sciences met to form guidelines. They concluded that the purpose of prenatal diagnosis should be to treat and eventually cure disease in the fetus or infant. Because this is possible in only a small fraction of cases, they conclude:

Abortion is never therapeutic for the fetus, but we believe it can be morally justified for the relief of suffering and burden to family and society. These guidelines were developed in a moral framework favoring the protection of individual choice and the autonomy of parents, even when we disagree with their courses of action . . . These guidelines cannot reconcile the views of those who believe that abortion is wrong virtually without exception with the views of those who exclude the welfare of the fetus completely from any argument about reproductive decisions.⁵¹

Because with present technology abortions following prenatal diagnosis are generally performed during the second trimester, they are often viewed as ethically more questionable than first trimester abortions. They are more physically and emotionally traumatic for the mother because she has felt fetal movements and the pregnancy is apparent to others.

In some centers, it is thought to be psychologically easier on the mother if the abortion is conducted by suction and curettage under general anesthesia. However, many nurses and doctors in the operating room find this form of abortion particularly repugnant and prefer that the mother go through induced labor and delivery. The mother herself may have little choice in the method of abortion.

Abortion is not the only ethical issue raised by prenatal diagnosis. It is now possible to detect a number of chromosomal abnormalities the effects of which are not agreed upon. One such case is the presence of an extra Y chromosome. Because the consequences of the condition are disputed, the appropriate response is unclear. In such cases, practitioners generally agree that parents should be informed of the ambiguities even though this may cause anxiety.⁵²

Another problem is the question of whether prenatal diagnosis should be denied to women who are at risk and want the procedure but have decided not to abort.

Conclusion

Medical technology has greatly added to our knowledge of fetal development and our capacity to "see" the unborn child. It has also improved the outcome in high-risk pregnancies. The question is whether the benefits from this explosion of gynegadgetry outweigh the risks.

First we hospitalized birth; now we have mechanized it. Obstetrics today is rushing headlong toward "guaranteed safe no-risk" birth. In pursuing this goal, we have created new problems that may prove worse than the ones the high-tech procedures were supposed to solve.

Current evidence does not favor the unrestrained use of technical procedures. Rather, it would be prudent at present to limit diagnostic tests and monitoring devices in obstetrics to a narrow segment of the spectrum of conditions in high-risk pregnancies."

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