The Psychic State of the Pregnant Woman and Prenatal Diagnostic Procedures

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Contents

Abstract

- Prenatal procedures have a major impact on a woman's psychological experience during pregnancy. Generally, women expect a confirmation of their expectation of a healthy child during ultrasonography. The detection of a fetal abnormality is a considerably stressful situation. The active decision to terminate a wanted pregnancy following an adverse prenatal diagnosis as well as any loss of a pregnancy, frequently result in acute feelings of grief, despair, and guilt, and may also cause severe long-term psychological sequelae.
- Invasive procedures are often linked with anxiety about losing the baby and may confront women and their partners with a moral dilemma about terminating the pregnancy. This seems even more evident for multiple pregnancies, which may expose couples to the question of selective feticide or multifetal pregnancy reduction.
- Psychological support, from the first suspicion of a fetal abnormality, and during the prenatal diagnostic process and after the termination of a pregnancy, is needed to help women and their partners.

Abbreviations

CVS	Chorionic villus sampling
MFPR	Multifetal pregnancy reduction
MRI	Magnetic resonance imaging

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1 Introduction

The field of prenatal procedures has not only radically changed our strategies in dealing with pregnancies at a medical level, but also has changed the pregnant woman's view about fetal life. Women seeing their unborn child on the screen are often struck by the sudden reality of the living body within them. Registration of the heartbeat and fetal measurements during ultrasonography help to develop a real image of the unborn child. Direct visualization of the unborn child increases the mother's attachment to the child. In addition, this visualization has changed the maternal/parental attitude toward termination of pregnancy, fetal death, or detection of a fetal abnormality even more dramatic. Technological advances seem to have increased women's anxieties as well as their belief in all-powerful medicine to prevent any mishaps. Pregnancy is more often experienced as a time of particular vulnerability and the fetus has now become a "patient." This seems to be even more prevalent in twin pregnancies. Ultrasound and other prenatal procedures, such as fetal MRI, are of particular relevance for twin pregnancies, as these are monitored more frequently and this increases maternal anxiety, and dependency on the medical system (Piontelli 2000).

The use of different prenatal procedures offers the opportunity to detect fetal pathology, but therapeutic options are limited when chromosomal anomalies or severe malformations or acquired changes become evident. The active decision to terminate a wanted pregnancy following an adverse prenatal diagnosis, as well as any loss of a pregnancy (i.e., stillbirth or perinatal death of the child), frequently results in acute feelings of grief, despair, and guilt, and may also cause severe long-term psychological sequelae (Demyttenaere et al. 1995; Grossmann 1987; Lilford et al. 1994; Lloyd and Laurence 1985; Salvesen et al. 1997).

2 Affective State of Women Following a Prenatal Diagnosis

2.1 Acute Psychic Stress

The emotional attachment to a fetus develops much earlier than has been assumed (Beutel 1991; Beutel et al. 1992). Women already have fantasies of a child and its very specific attributes even before the event of an intact pregnancy (Zeanah et al. 1985). Miscarriage, fetal death, preterm delivery, or termination due to medical reasons is connected with psychic stress both for the women and their partners (Weiner 1992; Dyregov and Matthiesen 1987a; Condon 1987). The psychological impact of miscarriages is often underestimated by the medical system or by the partner. As a consequence, women are alone with their grief.

It has been shown that even a suspect prenatal pathology is a traumatic event for the woman and her partner. Depression rates of women who receive a prenatal diagnosis of a fetal abnormality correspond to those of women with major depression episodes. Older women in particular, women who are nulliparous, who have high trait anxiety levels, and women who use negative coping strategies are at risk for developing psychological problems after the prenatal diagnosis of a fetal abnormality (Leithner et al. 2004).

The loss of an unborn child hits a woman at a psychologically and psychobiologically vulnerable phase (Beutel 1991). Several authors emphasize the need for mourning to enable the detachment from the deceased child in order to regain the ability to reestablish relationships with other persons (Weiner 1992; Dyregov and Matthiesen 1987b; Beutel 1996). However, data about predictive factors for mourning reactions and the associated patterns of mourning after an adverse prenatal diagnosis are limited and somewhat contradictory (Kirkley-Best and Kellner 1982; Schütt et al. 2001).

The number of preceding losses and advanced pregnancy were found to influence the course and severity of mourning reactions (Beutel 1991; Toedter et al. 1988; Kennell et al. 1970; LaRoche et al. 1984). Some studies found an increase in anxiety, somatic, and socio-economic stress, and adverse coping strategies in women with a pregnancy loss in their history (Läpple and Lukesch 1988). Former, unprocessed losses have also been suggested to be a risk factor for a poor psychological outcome, as well as a negative image of oneself, and problematic relations to one's children (Turco 1981; Pines 1990).

In two studies, women who had already had children before a stillbirth were found to have a better psychological outcome (Kirkley-Best and Kellner 1982; Läpple and Lukesch 1988), although this finding was not replicated in other studies (Toedter et al. 1988; LaRoche et al. 1984). Moreover, advanced maternal

age has been linked to decreased mourning (Beutel 1991; Toedter et al. 1988). We found that older women with a history of prenatal incidents are more at risk for developing depressive reactions, because advanced age is associated with an increased risk of losing a child during a subsequent pregnancy (Leithner et al. 2004). In some women, work may serve as a distraction, and workplace social networks may provide some support in the crisis situation of a prenatal diagnosis of fetal pathology or loss of pregnancy. Other studies have reported that women who had to work showed less improvement of their poor affective state, than women who did not work (Leithner et al. 2004).

The importance of social support has been stressed in some studies (Toedter et al. 1988; LaRoche et al. 1984). An individually perceived deficit in social support is found to be a predictor for a severe grief reaction, which is associated with social withdrawal, feelings of distrust, and hostility (Beutel 1991).

The results of coping research indicate a relationship between negative coping strategies and increased psychological discomfort (Läpple and Lukesch 1988). Factors such as self-consciousness, a supportive family background, higher education, and a satisfying working situation seem to promote efficient coping strategies "acitve-cognitive" and "behavior-orientated" coping) (Moos 1988). Active behavior, problem analysis, acceptance, emotional relief, an optimistic attitude, and the application of diverse strategies were described as effective coping strategies, while passivity, resignation, self-accusation, rumination, and suppression of emotions were classified as unsuitable strategies (Heim 1988; Becker 1985).

The variance in perinatal grief was related to inadequacy as a personality trait and negative life-events were found to have a significantly more negative impact on anxious individuals than on nonanxious persons (Rapee et al. 1990; Hunfeld et al. 1995). These findings correspond to our results that high trait anxiety levels were found to be a predictor for a negative psychological outcome (Leithner et al. 2004).

The mere suspicion of having any prenatal problem may have a tremendous emotional impact on pregnant women, regardless of the actual obstetric diagnosis and its medical outcome. A prenatal diagnosis always means the loss of the "imaginary child" (Soulé 1990). The "imaginary child" is built on conscious and unconscious wishes, expectations, fantasies, and hopes of the parents-to-be. In the course of ultrasound investigation or prenatal examinations of the fetus, imagined and actual children of the parents-to-be meet for the first time. At least, after birth, the integration of the "imaginary child" of each parent with the "real" baby must take place to allow acceptance and bonding with the baby. A major discrepancy caused by a prenatal problem or a fetal malformation between the "imaginary" child and the "real" baby makes this process much more difficult. Between the "imaginary," perfect child and the "real" child with a prenatal problem lies a gap that is difficult to overcome. The process of integration depends on the parents' abilities to gradually give up their "imaginary child" in order to accept their "real" child with its appearance, temperament, and sex. When the child has a prenatal problem or a malformation, this process requires mourning for the loss of an "imaginary" healthy child.

2.2 Long-Term Consequences

Women are very disappointed when doctors or the social environment cannot deal with the personal meaning of the loss. The experience of a termination of pregnancy due to a "medical reason" (fetal malformation, genetic problems) may be accompanied by severe psychological trauma and the fear that the reproductive functions have been damaged. This emotional crisis situation may persist over a long period of time (Beutel et al. 1996). The predominant use of depressive coping strategies, such as resignation, passivity, self-accusation, and repression, may lead to serious psychic problems (Moos 1988; Muthny et al. 1992; Cuisinier et al. 1996; Demyttenaere et al. 1995).

Long-lasting negative psychological and social reactions occur more frequently following the termination of pregnancies due to genetic problems than abortions due to social indications (Donnai et al. 1981). Women who decide to terminate a desired pregnancy represent a high-risk group for depression or for social withdrawal (Jörgensen et al. 1985). One in five women develops an adjustment disorder with increasing somatic symptoms, a depressed mood, and continual occupation with the loss 1 year after the abortion (Beutel et al. 1993).

Repeated miscarriages, particularly when they are linked to unresolved mourning and long-lasting

depression, frequently lead to a decrease in self-esteem and hate of the female body (Pines 1990; Leon 1990; Kennell et al. 1970). Factors that have a negative influence on the duration and the degree of the mourning reaction are related to the duration of pregnancy, the absence of children, miscarriages, the lack of a social support system, the mental attitude of the women toward pregnancy, and the psychic representation of the pregnancy and previously unresolved mourning situations and a negative self-representation (Kirkley-Best and Kellner 1982; Condon 1987; Lilford et al. 1994; Lloyd and Laurence 1985).

2.3 Psychological Interventions

The importance of psychological/psychotherapeutic help for women and couples following the prenatal diagnosis of a fetal malformation is clearly mentioned in the literature (Salvesen et al. 1997; Langer et al. 1988).

The patient–doctor relationship is frequently characterized by ambivalent emotions. Feelings of gratefulness, reproach, grief, and aggression may exist at the same time, which makes the situation of professionals working in the field of obstetrics and prenatal care precarious (Knapp and Peppers 1979; Hall et al. 2003). After an adverse prenatal incident, women frequently complain about a lack of emotional support and sufficient information from health care professionals (Nikcevic et al. 1998; Hamilton 1989; Jörgensen et al. 1985; Leschot et al. 1982; Radestad et al. 1996). When fetal death or miscarriage occurs, the women's needs during the initial phase of the grieving process are great (Seibel and Graves 1980). Moreover, adverse prenatal incidents are tragedies experienced by the medical staff as well. Adequate supervision services may help to ensure that interactions with the patient do not become routine and impersonal (Prettyman and Cordle 1992).

Physicians may fill some of the patients' immediate needs by supplying sufficient medical information about the cause and circumstances of the prenatal incident (Leithner et al. 2006). As a matter of course, everyday life at a hospital can hardly provide a sufficient setting to answer all the needs of these highly traumatized patients. The implementation of communication training, which has proven to be effective in teaching physicians to address psychological issues and concerns (Hall et al. 2003; Van Dulmen et al. 2003; Sollner et al. 1998; Langewitz et al. 1998), may enhance the chances for a more satisfying interaction for all parties involved.

Psychological support should be available to all women who are referred to a department of prenatal care. Short-term psychological treatment has been shown to be sufficient for the majority of women, but access to long-term psychotherapy should be facilitated. Involved therapists should be able to apply various psychological techniques, depending on diagnostic findings and the subjective needs of a patient. To avoid a negative psychological outcome, psychological techniques should focus on the patient's potential use of negative coping strategies (Leithner et al. 2002).

2.4 Satisfaction with Prenatal Care

During a prenatal procedure, women are in a fragile psychic state. The importance of the subjective experiences of prenatal procedures as a determinant factor for satisfaction with the received care has been clearly shown (Leithner et al. 2006). Several findings indicate that up to 35% of women attending a prenatal care unit complain about the paucity of information and the lack of emotional support (Nikcevic et al. 1998; Hamilton 1989; Leschot et al. 1982; Friedman 1989; Helström and Victor 1987; Dyregov and Matthiesen 1987a; Beutel 1996; White-Van-Mourik et al. 1992). In a follow-up study of 20 patients after pregnancy termination because of genetic indications, women reported that they felt unprepared for their diagnosis and complained about the communication style of physicians (Leschot et al. 1982). Similarly, in a follow-up investigation in women after a second trimester termination of pregnancy due to fetal abnormality, women complained about a lack of understanding, silence about the termination of pregnancy, indifference, and disapproval (White-Van-Mourik et al. 1992). Generally, women's dissatisfaction with treatment in the hospital is reported to be between 13% and 35% (Hamilton 1989; Friedman 1989). However, there may be different expectations toward certain subgroups of professionals working in primary care. Nurses and midwives were found to demonstrate a greater tendency to promote the patient's autonomy by making less direct

recommendations about prenatal decisions than obstetricians (Bernhardt et al. 1998).

3 Prenatal Diagnostic Procedures

In general, attitudes concerning prenatal procedures are reported to be positive in the majority of pregnant women. Women were found to be informed about the procedure of screening (29%–65%) tests, but had little knowledge about the purpose of tracing fetal malformations (30%–43%) or the limitations of screening tests (Dahl et al. 2006a). Van den Berg et al. (2005) showed that screening in a context where it is not part of routine prenatal care resulted in lower up-take rates and different reasons for accepting or declining screening tests than in a context in which screening is offered routinely. Accepting prenatal screening is often not the result of an informed decision, but is rather perceived as self-evident when prenatal screening is part of the customary prenatal care (Green et al. 2004).

Dahl et al. (2006b) found that the content of provided information only rarely includes details that would enable informed choice, and lacks detailed and balanced information. Prenatal tests are often issued in an uncomplicated and positive manner. Information (e.g., group counseling, individual counseling, and information leaflets) can improve the level of knowledge without raising anxiety (Dahl et al. 2006b).

3.1 Ultrasonography

The diagnostic benefits of ultrasound scanning in pregnancy are well documented, but little attention has been paid to the psychological impact of prenatal diagnostic procedures (Levi 1998). It has been reported that the majority of women who undergo routine ultrasound examination exhibit positive feelings toward scanning and accept the procedure rather uncritically (Whynes 2002).

Ultrasound is considered a benign procedure that allows the baby to be seen (van den Berg et al. 2005). Kowalcek et al. (2002) found that the invasiveness of the prenatal method does not influence the subjective mood within the meaning of depressive irritations. They found higher rates of depressive reactions in mothers and fathers before diagnostic ultrasound compared to invasive procedures (amniocentesis or chorionic villus sampling (CVS)). The sonographic visualization of the fetus often is the father-to-be's first contact with the baby, thus probably explaining the high levels of depressive reactions during ultrasound. Müller et al. (2006) showed that offering nuchal translucency screening for Down syndrome does not increase anxiety levels.

Generally, pregnant women expect the confirmation of their expectation of a healthy child and the removal of any uncertainty about fetal problems or malformations during ultrasound. Therefore, routine ultrasound is mainly perceived as a positive and reassuring experience for the parents-to-be.

3.2 Invasive Procedures

3.2.1 Amniocentesis and Chorionic Villus Sampling

Raphael-Leff (2005) describes amniocentesis as a live event and not as a medical procedure. The procedure is followed by a long wait for a "verdict," associated with the risk of a possible miscarriage.

In addition to the sense of endangering the fetus by the procedure, the woman knows that the result might expose her to a dilemma about a decision that will affect the rest of her life.

Typically, 53% of women are anxious about miscarriage, and 78% are anxious before the examination (Endres 1989). Women who undergo amniocentesis were found to be more anxious and showed more negative attitudes toward the baby than women who did not undergo amniocentesis (Marteau et al. 1992). Previous experience with prenatal testing, increased risk of a birth anomaly, and favorable attitudes toward abortion were found to be associated with increased precounseling anxiety (Tercyak et al. 2001). Earlier gestational age, as seen in women having CVS, does not go along with lower levels of stress (Kowalcek et al. 2002). Several studies showed that women were most worried about miscarriage and fetal injury due to the procedure and about test outcome (Cederholm et al. 1999; Beeson and Globus 1979). These factors, of significant importance to women, should be considered in preinformation and genetic counseling.

3.2.2 Termination of Pregnancy

The detection of a fetal malformation, and the subsequent management by termination of the pregnancy, presents a challenge to the medical staff as well as to the woman and her partner. Support is needed from the first suspicion of a fetal malformation, during the prenatal diagnostic process, and during the waiting for the test results. After receiving positive results, the couple needs help about the decision and, after termination of pregnancy, the woman and her partner need psychological help to resolve the mourning process as well as support in case of a subsequent pregnancy (Elder and Laurence 1991).

3.2.3 Multiple Pregnancies

A woman expecting two or more babies must meet greater physiological and psychological demands during pregnancy. The risk of preterm labor, lower birth weight, and perinatal mortality are increased, and the woman is more often exposed to prenatal screening procedures than in a singleton pregnancy. Psychologically, the mother-to-be must integrate the reality of two or more babies. The woman is confronted with the necessity to bond with two babies, knowing, at the same time, about the high risk of losing one fetus during pregnancy. Apart from the physiological and psychological strains of a multiple pregnancy, the detection of a serious abnormality in one twin or the question of multifetal pregnancy reduction (MFPR) in higher-order pregnancies after infertility treatment may generate anxiety, fear, and moral dilemmas for the parents-to-be.

Selective Feticide

The main predictor of whether a woman will terminate a pregnancy in singleton pregnancies is the severity of fetal malformation (Evans et al. 1996). A selective feticide in a twin pregnancy is very different from termination of a singleton pregnancy, as the pregnancy continues with the dead fetus (Bryan 2005). Data on fantasies and long-term consequences for parents-to be and the surviving child after selective feticide is still lacking. Many parents have not heard of selective feticide before faced with that situation. Apart from the moral dilemma for the parents-to-be, there is often a limited time frame to come to an acceptable decision. Professionals need to be aware of their own moral feelings concerning feticide, and the management of these cases essentially requires good communication between all parties involved (Bryan 2005).

Multifetal Pregnancy Reduction

Fortunately, the number of MFPR has dramatically decreased in the last several years due to restriction on the numbers of transferred embryos. MFPR is always a distressing experience for parents (Bryan 2002). The main feelings associated with the reduction are anxiety, sadness, grief, and guilt (Bergh et al. 1999). Moreover, the psychological trauma of an MFPR may reinforce stress due to prolonged fertility treatment, low self-esteem, and a feeling of failure (McKinney et al. 1996). Britt et al. (2002) reported that the moral dilemma for couples in multiple pregnancies may lie in the fact that no fetal abnormality is found, which probably makes the decision for MFPR even more difficult. Consequently, the detection of a fetal abnormality in one fetus may be met with relief rather than despair.

Follow-up studies showed that many women suffered from guilt and grief during the first year after MFPR, but the majority felt that they had made the right decision (Schreiner-Engel et al. 1995). Psychological support should be available, not only during the decision process or the ongoing pregnancy after the reduction, but also in the longer term.

3.3 Fetal Magnetic Resonance Imaging

Data about the psychological experiences of fetal magnetic resonance imaging (MRI) is rare. Michel et al. (2002) investigated the psychological reactions of 15 pregnant women and 15 nonpregnant controls undergoing pelvimetry, and compared patient acceptability between open 0.5-T and closed 1.5-T MR systems. Thirty-three percent of pregnant women in both systems reported fear of fetal harm independent of the pre-information provided by their gynecologists about possible MRI-induced risks. The noise during an MRI examination, in particular, has been mentioned as a major disturbing factor, even though there are phantom studies that MR room noise of 120 dB falls to below 90 dB in utero (Glover et al. 1995), comparable to the

baseline noise from 72 to 88 dB of the aorta, to which the fetus is physiologically exposed daily (Smith et al. 1990). Scan time was only a minor determinant of overall satisfaction with MRI.

With regard to psychological reactions during MRI procedures in general, we know that prevalence rates for claustrophobic reactions during scanning are between 5% and 10% in the general population (Mackenzie et al. 1995; Kilborn and Labbé 1990; Friday and Kubal 1990). Anxiety reactions were found in up to 37% of the patients undergoing scanning procedures (Katz et al. 1994; Melendez and McCrank 1993). A long examination time, high noise level, and temperature are found to be predictive for developing problems during MRI (Quirk et al. 1989; Mackenzie et al. 1995). Anxious patients who stated that they were worried by technical apparatus before the examination are at risk for developing problems during scanning (Thorp et al. 1990; Dantendorfer et al. 1997). The degree of information provided by the referring doctor has a major impact on a patient's experience of MRI. Information folders are often not understood by the targeted patient population (Quirk et al. 1989). Intervention strategies to increase a patient's ability to cope with these procedures, which have been discussed in literature, include detailed patient information using special folders or information material, video demonstration, or support by an accompanying person during the examination (Tillier et al. 1997; Nozzolillo et al. 1991; Thorp et al. 1990).

Garel (2008) reported that women felt greater levels of anxiety before fetal MRI than before ultrasonography, and she concluded that fetal MRI has a potentially negative psychological effect on the patient that should be considered in the decision for this prenatal procedure.

We performed a study on the psychological experiences of fetal MRI examinations (Leithner et al. 2008). Although fetal MRI was well accepted in our sample, women were found to experience considerable stress immediately before scanning, which decreased to normal anxiety levels after the scan. Major distressing factors for the pregnant women were physical restraint, noise level, duration of the examination, and anxiety for the baby. The severity of the referral diagnosis showed an increasing effect on anxiety levels.

In contrast to ultrasound examinations, women do not see their baby during scanning: thus, immediate reassurance of the baby's health is not possible. Generally, women are alone in the examination room without the opportunity to see the medical staff, which probably makes the situation for the women even more frightening. The presence of the partner during MRI may be a relief for some women, because fetal MRI is a rather new procedure in prenatal medicine, and women are often not well prepared about the course and the circumstances of the examination procedure.

According to our experiences, pregnant women referred because of a suspicion of a prenatal diagnosis are already in a considerably stressful situation. Women need adequate pre-information to prepare them for the special situation of an MRI examination. This pre-information should stress the restricted body movement, the high temperature, the noise level, and the duration of the examination. Women should also be informed about the safety of their baby during MRI. Remaining insecurities and anxieties concerning the baby's health should be addressed by the referring physician.

3.4 Checklist Before Any Prenatal Diagnostic Procedure

- Explain the reason for the performance of ultrasound or MRI and make sure the pregnant woman/ parents-to-be have understood the explanation.
- In case the examination might have consequences on the further management of the pregnancy (premature C-section, prenatal therapy, EXIT (ex utero-intrapartum) procedure, postnatal surgery, pregnancy termination), counseling by a team (referring obstetrician, surgeon, neonatologist, psychologist…) will be necessary.
- MRI examination requires a written patient information and a signed consent.
- The pregnant woman/ parents-to-be should be informed prior to the examination when a definite written report will be available. Especially in case of MRI, this might take some time if measurements, such as lung volumetry have to be performed.

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