Effects of Miscarriage on Breast Cancer Risks

(See Biology of the Abortion-Breast Cancer Link)

1. First-Trimester Miscarriage

In her first trimester, the mother's ovarian production of estrogen and progesterone (in response to fetal hCG[1]) maintains the pregnancy. Early miscarriage is often a response to hormone levels insufficient to maintain the pregnancy, due to an abnormality that inhibits the embryo from producing sufficient hCG or to the mother's ovaries' failure to respond to the hCG. The levels of estrogen and progesterone during an abnormal pregnancy that result in a first-trimester miscarriage are insufficient to stimulate breast development. As the breasts were never stimulated to grow, the mother normally has no change in breast cancer risk.[2]

2. Second-Trimester Miscarriage

Second-trimester spontaneous abortions (ie. miscarriages) usually occur due to physical problems (e.g., the umbilical cord twisted around the fetus's neck). In such cases, estrogen and progesterone levels are normal; mothers' breasts have therefore undergone the changes that increase breast cancer risk. Because the pregnancy will not continue to term, the natural maturation process that protects the breasts will not be completed, and a mother may have an increased risk of breast cancer.

3. Premature Delivery

If a mother's pregnancy does not continue past 32 weeks due to premature delivery, she will not get the protective effect of pregnancy against breast cancer, because her breast tissue will not have developed enough Type 4 cancer-resistant lobules.

4. Induced Abortion

If a woman has an induced abortion (presumably prior to 32 weeks), she has the same vulnerability as a woman delivering prematurely or experiencing spontaneous abortion not caused by low hormone levels, because her breasts will contain an increased number of Type 1 and Type 2 lobules and will not have developed sufficient cancer-resistant Type 4 lobules. The longer a woman is pregnant before an induced abortion, the more cancer-vulnerable Type 1 and Type 2 lobules she will develop.

Repeated induced abortions also increase a woman's risk of premature birth. Very premature delivery may affect a woman's future breast health.

Whether a pregnancy ends before 32 weeks with premature birth, second-trimester miscarriage, or induced abortion, a woman's risk of breast cancer is increased. The woman's breasts have been

exposed to the same pregnancy hormones, more cancer-vulnerable breast tissue has formed, and this tissue's natural maturation process has been arrested. By contrast, full-term pregnancy and lactation bring most of the lobules in the breast to maturity, providing resistance to breast cancer.

[1)] The embryo's production of hCG (human chorionic gonadotropin) acts as a chemical signal and causes the mother's ovaries to increase her production of estrogen and progesterone before the embryo is implanted in the mother's womb. These hormones sustain the pregnancy.
[2)] Janet R. Daling, Kathleen E. Malone, Lynda F. Voigt, Emily White, and Noel S. Weiss, "Risk of Breast Cancer among Young Women: Relationship to Induced Abortions," *Journal of the National Cancer Institute* 86 (1994): 1584-1592.

This entry draws heavily from Induced Abortion and Breast Cancer.