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Abortion and Breast Cancer Risk

Abortion is an issue that can bring out strong feelings in people. These feelings are often linked to personal, religious, and political views that may have little to do with any connection to a disease like cancer.

[Breast cancer](#)¹ is the most common cancer in women (aside from [skin cancer](#)²), and it's the second leading cancer killer in women. Because it can be a deadly disease, it's one that many women fear.

Linking these topics creates a great deal of emotion and debate. But scientific research studies have not found a cause-and-effect relationship between abortion and breast cancer.

How might hormone levels affect breast cancer risk?

A woman's risk for some types of breast cancer is related to levels of certain hormones in the body. Breast cells normally grow and divide in response to hormones like estrogen, progesterone, and prolactin. Levels of these hormones change throughout a woman's life.

Breast cancer risk can be affected by a number of things that alter these hormone levels. For example, women who have more menstrual periods over their lifetime (because their periods start earlier, they go through menopause later, or they never get pregnant) have a slightly higher risk of breast cancer. The use of some types of hormones (for birth control or to control the symptoms of menopause) can also increase breast cancer risk slightly (although this risk goes down over time after hormone use is stopped). On the other hand, breastfeeding might lower breast cancer risk slightly.

Pregnancy and breast cancer risk

Women who have a full-term pregnancy before age 20 have a lower risk of breast cancer than women who never have a full-term pregnancy or who have their first full-term pregnancy after the age of 30 or 35. The risk of breast cancer also goes down as the number of full-term pregnancies goes up. Still, a full-term pregnancy after age 30 is linked to a higher risk of breast cancer than never giving birth.

The reasons for these changes in risk are not entirely clear. We do know that hormone levels typically change a lot during pregnancy. Some of these changes cause cells in the breast to mature, to help prepare to produce milk for breastfeeding. This might affect the tendency for these cells to become cancerous. Pregnancy also decreases a woman's total number of menstrual cycles, which also seems to affect breast cancer risk. Still, the reason for the differences in breast cancer risk based on the woman's age during her first full-term pregnancy is not known.

Does abortion affect hormones during pregnancy?

Concern about a possible link between abortion and breast cancer has been raised because abortion is thought to interrupt the normal cycle of hormones during pregnancy. Some believe that this interruption might increase a woman's risk of developing breast cancer.

There are different types of abortion:

- **Spontaneous abortion**, which most people refer to as a miscarriage, is the loss of a fetus before 5 months (20 weeks) into the pregnancy. It is often caused by problems with the fetus or with the maternal environment in which it is growing.
- **Stillborn birth (stillbirth)** is usually considered to be the death of a fetus after 5 months' gestation while still in the uterus (womb).
- **Induced abortion** is a medical procedure done to end a pregnancy. It is what most people think of when they hear "abortion."

All of these have been studied to see what effect they may have on a woman's risk of developing breast cancer later in life.

Research on abortion and breast cancer

Researchers have looked at the possible link between abortion and breast cancer for many years, but this has been a difficult area to study.

How is this studied?

The most reliable way to know if something causes cancer would be to do a randomized study. This means that you would take a large number of people, expose half of them to the thing that could cause cancer (the possible carcinogen), and don't expose the other half to the possible carcinogen. Whether someone is in the exposed or non-exposed group would be chosen at random. As long as the 2 groups were similar to start with in terms of risk factors for cancer, any difference in cancer risk between the 2 groups would likely be because of being exposed to the possible carcinogen. Of course, it isn't practical or ethical to study the effects of many things on cancer risk with this kind of study. This is especially true for effects of abortion.

Instead, to look at the effects of abortion on cancer risk, we have to use *observational studies*. These kinds of studies gather information about the people in them, often by asking questions or looking at medical records. Then the researchers try to see if certain factors (or exposures) are linked to certain outcomes. There are different types of observational studies:

In a **case-control study**, a group of people who already have a disease like cancer (called the *cases*) are compared to a group of people who don't (called the *controls*) to see if there are differences in their past exposures. Often, this is done by asking the people in the study many questions about what they did or were exposed to many years ago. This is called a *retrospective* design. One problem with retrospective studies is that it can be hard to remember what you did long ago. This might mean that the study could miss a link. But a bigger problem with this kind of study is that people with a disease like cancer often think very hard about what they may have done in the past that could have contributed to their getting cancer. They are more likely to remember things that the healthy people don't. They are also more likely to tell the researchers about things that they would otherwise feel was too personal or embarrassing to mention – like abortion. This is called *recall bias*, and it can lead to a study finding links that may not really exist.

A **cohort study** is another kind of observational study, but it is less prone to recall bias. In this type of study, researchers gather baseline information about a group of people who don't have the disease being studied (like breast cancer). These people are then watched over time, often being asked every so often about possible risk factors and exposures. After a period of time, the researchers look to see who got the disease and who didn't. They can see if the people who got the disease were more likely to have had a certain exposure. Since none of the people had the disease (like cancer) at the start of the study, there is no chance that having the disease would have influenced their memory or their willingness to report things in their past (like abortion). Because cohort studies follow people forward in time, they are called *prospective* studies. Researchers generally consider the conclusions from cohort studies to be stronger than those from

case-control studies.

Some case control studies try to get past recall bias by using information that was collected before the person had cancer. They may use medical records or birth certificate registry information, for example. Because these studies use information collected before the cancer, they are also considered prospective studies.

What do the studies show?

The results of studies looking at the possible link between breast cancer and induced abortion often differ depending on how the study was done. Cohort studies and studies that used records to determine the history of abortions have not found an increased risk. Some case-control studies, however, have found an increase in risk.

Cohort and other prospective studies

The largest, and probably the most reliable, study on this topic was done during the 1990s in Denmark, a country with very detailed medical records on all its citizens. In this study, all Danish women born between 1935 and 1978 (a total of 1.5 million women) were linked with the National Registry of Induced Abortions and with the Danish Cancer Registry. All of the information about their abortions and their breast cancer came from registries – it was very complete and was not influenced by recall bias.

After adjusting for known breast cancer risk factors, the researchers found that induced abortion(s) had no overall effect on the risk of breast cancer. The size of this study and the manner in which it was done provide good evidence that induced abortion does not affect a woman's risk of developing breast cancer.

Another large cohort study was reported on by Harvard researchers in 2007. This study included more than 100,000 women who were between the ages of 29 and 46 at the start of the study in 1993. These women were followed until 2003. Because they were asked about childbirths and abortions at the start of the study, recall bias was unlikely to be a problem. After adjusting for known breast cancer risk factors, the researchers found no link between either spontaneous or induced abortions and breast cancer.

The California Teachers Study also reported on more than 100,000 women in 2008. Researchers had asked the women in 1995 about past induced and spontaneous abortions. There was no difference in breast cancer risk between the group who had either spontaneous or induced abortions and those who had not had an abortion.

A European cohort study that published findings in 2006 followed over 260,000 women

from 9 countries over an average of more than 6 years. This study found no link between induced abortion and breast cancer risk.

A French cohort study of more than 100,000 women, published in 2003, also found no link between induced abortion and breast cancer risk.

A 2013 Danish study of over 25,000 women who had at least one full-term pregnancy found no link between induced abortion and breast cancer risk over 12 years of follow-up.

Other cohort studies have looked specifically at the possible link between abortion and breast cancer in African-American women and in women who are at increased risk of breast cancer because they have mutations in the *BRCA* genes. These studies also did not find a link.

Retrospective case-control studies

In 2004, the Collaborative Group on Hormonal Factors in Breast Cancer, based out of Oxford University in England, put together the results of many studies that looked at abortion and breast cancer risk. It looked at both cohort and case-control studies. When the studies that gathered information retrospectively (case-control studies) were looked at together, there were about 39,000 women with breast cancer (the cases) that were compared to about 48,000 women who hadn't had breast cancer (the controls). They found about an 11% increased risk of breast cancer in women who reported having an induced abortion.

Some other retrospective studies published since then have also found an increased risk, including a case-control study of about 1,300 women from China (published in 2012) and a case-control study of 300 women in Iran (published in 2011).

But some recent case-control studies have not found a link, including a study of about 350 women from Serbia (published in 2013). In fact, women in this study had a lower risk of breast cancer.

Why don't all of the studies agree?

Induced abortion brings up many strong feelings in people, so it is often hard to study its long-term effects.

Before 1973, induced abortions were illegal in much of the United States. So when researchers asked a woman about past pregnancies, she may not have felt comfortable

saying that she had an abortion. Even though abortion is now legal, it is still a very personal, private matter that many women do not like to talk about. This means that many women might not report having an abortion if asked for a study. In contrast, women with breast cancer are more likely to accurately report their reproductive histories, including a history of having an abortion. This recall bias (which was discussed earlier) could lead to retrospective studies finding links that aren't found in prospective studies. Still, not everyone agrees that this is the reason that the different types of studies conflict.

In general, though, when prospective and retrospective studies conflict, experts generally accept the results of the prospective studies over the retrospective studies.

What do the experts say?

Several groups of experts have looked at the available studies on the possible link between abortion and breast cancer.

In 2003, the US National Cancer Institute (NCI) held a workshop of more than 100 of the world's leading experts who study pregnancy and breast cancer risk. The experts reviewed human and animal studies that looked at the link between pregnancy and breast cancer risk, including studies of induced and spontaneous abortions. Some of their findings were:

- Breast cancer risk is increased for a short time after a full-term pregnancy (that is, a pregnancy that results in the birth of a living child).
- Induced abortion is not linked to an increase in breast cancer risk.
- Spontaneous abortion is not linked to an increase in breast cancer risk.

The level of scientific evidence for these findings was considered to be “well established” (the highest level).

The American College of Obstetricians and Gynecologists (ACOG) Committee on Gynecologic Practice also reviewed the available evidence in 2003 and again in 2009. In 2009, the Committee said, “Early studies of the relationship between prior induced abortion and breast cancer risk were methodologically flawed. More rigorous recent studies demonstrate no causal relationship between induced abortion and a subsequent increase in breast cancer risk.”

In 2004, the Collaborative Group on Hormonal Factors in Breast Cancer, based out of Oxford University in England, put together the results from 53 separate studies done in 16 different countries. These studies included about 83,000 women with breast cancer

(44,000 in prospective studies and 39,000 in retrospective studies). Although the results of the retrospective studies showed a small increase in risk, the prospective studies found a small decrease in risk. After combining and reviewing the results from all of these studies, the researchers concluded that “the totality of worldwide epidemiological evidence indicates that pregnancies ending as either spontaneous or induced abortions do not have adverse effects on women’s subsequent risk of developing breast cancer.” These experts did not find that abortions (either induced or spontaneous) cause a higher breast cancer risk.

Conclusion

The topic of abortion and breast cancer highlights many of the most challenging aspects of studies of people and how those studies do or do not translate into public health guidelines. The issue of abortion generates passionate viewpoints in many people. Breast cancer is the most common cancer in women aside from skin cancer; and breast cancer is the second leading cancer killer in women. Still, the public is not well-served by false alarms. At this time, the scientific evidence does not support the notion that abortion of any kind raises the risk of breast cancer or any other type of cancer.

Hyperlinks

1. www.cancer.org/cancer/breast-cancer.html
2. www.cancer.org/cancer/skin-cancer.html

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