



DCIS PRECISION News about Ductal Carcinoma In Situ (DCIS)

Ductal Carcinoma In Situ (DCIS) is a breast condition that is often found on mammograms. DCIS refers to abnormal cells found inside a milk duct. Research shows that at least 3 out of 4 women (75%) with DCIS will not get a future invasive breast cancer, but almost all still receive breast cancer treatment. There are types of DCIS that are considered low-risk or higher risk. This is why DCIS is sometimes called different names. PRECISION* is learning about DCIS risk to find women who may not need treatment. One of their published articles is explained here.

What is the science article about?

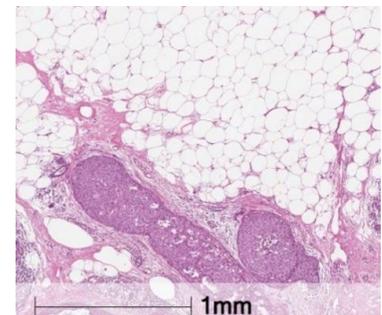
Fat tissue is a major part of the breast. Fat cells store energy and can also make hormones and other proteins for the body to use. Not all fat cells are alike – some are bigger than others. When a fat cell becomes very large, they may change the way they make hormones and proteins. A fat cell may even die. When that happens, it is surrounded and “eaten” by special immune cells which creates inflammation. Large fat cells that have inflammation may raise the risk of a future breast cancer.

PRECISION researchers measured fat cell size in breast samples that women with DCIS donated after they had breast conserving surgery. This was done to see if the size of breast fat cells at a DCIS diagnosis offers clues about that person’s risk of developing a future breast cancer.

Why was this study done?

Many studies suggest that most women with low-risk DCIS may not get invasive breast cancer, even if DCIS is not treated. The problem is that doctors and researchers need to know more about factors that can help them decide which patients have low-risk DCIS.

Past studies found that breast fat cells may play a role in invasive breast cancers, but there has not been much research about fat cells in DCIS so far.



Breast tissue with large fat-cells
(seen under the microscope)
Source: article listed below.

How was this study done?

This study looked at fat cell size under the microscope to see what happened to patients who were diagnosed with DCIS. All women in the study were diagnosed with DCIS between 1989 to 2005 and had breast conserving surgery in the Netherlands. It was also known which women developed invasive breast cancer in the same breast and which women did not up to 2016.

This study picked samples out of a total of 2,658 women. Over 8 in 10 of these women (88.9%) did not get a future invasive breast cancer. Samples were chosen from 276 women with DCIS who had breast conserving surgery – they did not have any other treatment.

Researchers picked 108 women who developed Invasive breast cancer in the same breast many years later. These women were compared to 168 women who did not develop invasive breast cancer.

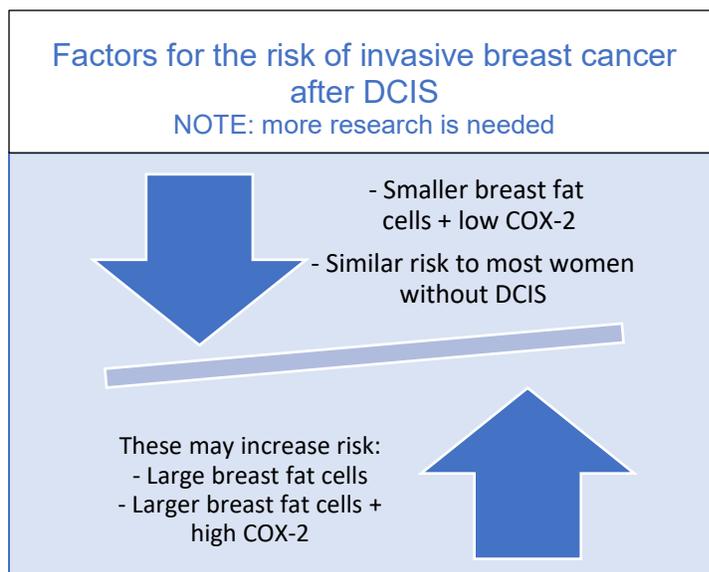
Fat cell size was checked with other patient factors, such as the size and grade of the original DCIS. Researchers also looked at specific protein markers. For example, a marker called COX-2 is a protein that is on DCIS cells. A past study showed that if DCIS cells have a lot of COX-2 (high levels), there is an increased risk for invasive breast cancer after DCIS.

What are the results of this study?

This study found interesting information, but a lot more work needs to be done before this will be used for DCIS patients.

This study showed that

- DCIS patients with very large breast fat cells had a higher risk for developing invasive breast cancer many years later.
- DCIS patients with smaller breast fat cells and a low amount of COX-2 had a low risk to develop invasive breast cancer in the same breast. This risk is similar to women in the general population.
- DCIS patients with both large breast fat cells and a high amount of COX-2 have a higher risk for developing invasive breast cancer.



More patients need to be studied to make sure this is repeatable before these results can be used in the clinic.

What does it mean for women with DCIS?

This study shows that fat cell size, combined with the amount of COX-2 in DCIS cells may help to predict who is at high or low risk of invasive breast cancer after a DCIS diagnosis.

While this study found out more about breast fat cells, a lot more work is needed before doctors can use it for patients.

There are also important limits about this study.

- This study only tells us about DCIS patients who had breast conserving surgery and no other treatment. We do not know if fat cell size will predict invasive breast cancer in patients who had different treatment.
- It was hard to measure fat cell size in some of the samples, so improvements are needed.
- The study included women who were mainly of European descent. It may not apply to other ethnic groups.
- The studies that were reviewed did not include men. A very small number of men get DCIS each year.

What are the next steps?

- This research needs to be repeated in another group of patients to test our results.
- We need to see if we can do these measurements in biopsy tissue.
- We need to see what role breast fat cells may play in breast cancer after DCIS.
- We need to learn what the relation is with the amount of body fat in a person's whole body.

When was the study done?

The science article was published in March 2021. This public summary was completed in March 2021.

Official name of the article

"Breast adipocyte size associates with ipsilateral invasive breast cancer risk after ductal carcinoma in situ."
Almekinders, MM, et al. NPJ Breast Cancer, DOI: [10.1038/s41523-021-00232-w](https://doi.org/10.1038/s41523-021-00232-w).

The article can be found at: <https://www.nature.com/articles/s41523-021-00232-w> and at <https://www.dcisprecision.org/publications/>.