

# Link between breast implants and cancer under investigation

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An international research group including Viennese pathologist Lukas Kenner has reviewed cases of possible association between breast implants and a form of lymphoma that may develop tumors at a later stage. The researchers conclude that breast implants can cause a new subtype of the rare yet malignant lymphoma known as ALCL. The research results have been published in the journal *Mutation Research*.

Worldwide there have been 71 documented cases of [patients](#) with [anaplastic large cell lymphoma](#) (ALCL) in which researchers suspected breast implants to be the cause. ALCL is normally found in the lymph nodes, as well as in skin, lung, liver and soft tissue, but not usually in the breast. Cases in which ALCL developed in the breast region almost exclusively involved patients who have had breast surgery. In these cases, ALCL developed around ten years after the operation. The tumours grew in the scar tissue around the implant.

Breast implants are generally safe and studies have found no association between [breast surgery](#) and other forms of cancer. ALCL itself is also an extremely rare occurrence. Among three million [breast implants](#), there are between one and six reported cases of ALCL.

ALCL is divided into two subtypes. In one subtype, the cancerous cells produce an abnormal form of the protein ALK (anaplastic [lymphoma](#) kinase). The other type does not express ALK in tumour cells at all. While patients with ALK-positive lymphoma have a better chance of survival, the cancer is considerably more aggressive in ALK-negative

cases.

Implant-related ALCL appears to form a third group. The cells do not express ALK, but patients have good survival rates. "This is a previously unrecognized, new subtype of ALCL," Lukas Kenner explains. "We must now determine the exact causes behind its occurrence."

## The search for causes

The actual reasons why implants can cause lymphoma remain unclear. While some patients were successfully treated with chemotherapy and radiation therapy, the lymphoma in many cases subsided on its own following removal of the implant and the surrounding tissue. An abnormal immune response from the body could therefore be a cause of the cancer. Kenner and his team are now preparing for further studies in which implants and dentures will be examined in other parts of the body.

**More information:** The article "Anaplastic large cell lymphoma (ALCL) and breast implants: Breaking down the evidence" by Xuan Ye, Kayvan Shokrollahi, Warren M. Rozen, Rachel Conyers, Penny Wright, Lukas Kenner, Suzanne D. Turner and Iain S. Whitaker was published in the *Journal Mutation Research*. [www.sciencedirect.com/science/ ... ii/S138357421400043X](https://www.sciencedirect.com/science/article/pii/S138357421400043X)

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