

# Disease risk after pediatric heart surgery

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Infections and autoimmune diseases are more common among people who have undergone heart surgery as children and had their thymus removed at the same time, which is often done to get access to the heart. This is evident in a study published in the *Journal of Allergy and Clinical Immunology*.

"One should pay heed to the increased risks for these patients and, if possible, avoid removing the [thymus](#)," says Olov Ekwall, professor of pediatric immunology at Sahlgrenska Academy, Sweden, and chief physician at Sahlgrenska University Hospital.

The thymus is situated high in the thorax and is a gland with important functions in the development of the immune system. In the current study, researchers have identified individuals in Sweden who had their thymus surgically removed during the 1997-2009 period in connection with an operation for congenital heart diseases before they were five years old.

The 5,664 people who were identified were compared with two control groups. One control group consisted of 2,276 people who also underwent [heart surgery](#) as a child but retained their thymus. The other group included about 56,000 people matched for age and gender who have not had heart surgery.

What is clearly evident in the Swedish health care registers is the fact that those who lack a thymus have an increased incidence of [autoimmune diseases](#) in which the immune system attacks the body's

own tissue; Type 1 diabetes; [thyroid disease](#); rheumatic disease; and hypersensitivity to gluten.

Thyroid disease is more common than in both control groups; type 1 diabetes is more common than in the group that had heart surgery with the thymus intact; and rheumatic diseases and hypersensitivity to gluten are more common than among those who did not undergo surgery.

The study also points to an increased incidence of tumors compared with those not operated on, but there the risks remained very small.

Nevertheless, the incidence of infections is greater. Both viral and bacterial infections are more common among people without a thymus than in both control groups. In relation to the non-surgical group, fungal infections also are more common. However, many infections can go under the radar.

"There probably is under-reporting here because the registers have poor or no coverage of primary care. The patients have not only needed care but even hospital-based care, such as on-site or outpatient care at the hospital," Olov Ekwall notes.

Each year 200-250 children in Sweden have their thymus removed in surgery due to [congenital heart disease](#). Olov Ekwall emphasizes the importance of keeping a close watch on this group, in which only a few [people](#) have passed the age of 40 yet, and also of developing surgical methods that preserve the thymus.

"In some cases the thymus can be divided in the middle or moved aside during the operation. In other cases it's necessary to remove the thymus, but removing the entire gland can be avoided."

**More information:** Judith Gudmundsdottir et al. Long term clinical

effects of early thymectomy: associations with autoimmune diseases, cancer, infections and atopic diseases, *Journal of Allergy and Clinical Immunology* (2018). [DOI: 10.1016/j.jaci.2018.01.037](https://doi.org/10.1016/j.jaci.2018.01.037)

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