

# Cancer Association of South Africa (CANSA)



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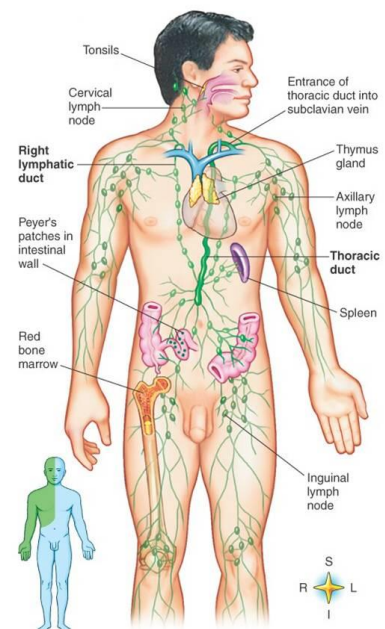
## Fact Sheet on Thymoma

### Introduction

The lymph system is made up of thin tubes that branch out to all parts of the body. The lymph system carries lymph, a colourless fluid containing a type of white blood cell called lymphocytes. Lymphocytes fight germs in the body. B-lymphocytes, or B cells, make antibodies to fight bacteria, and T-lymphocytes, or T cells, destroy viruses and foreign cells and trigger the B cells to make antibodies. The thymus is involved in the development of T-lymphocytes.

[Picture Credit: Lymphatic System]

Tiny, bean-shaped organs called lymph nodes are located throughout the body at different sites. Lymph nodes are found in clusters in the abdomen, groin, pelvis, underarms, and neck. In addition to the thymus, other parts of the lymph system include the spleen, which makes lymphocytes and filters blood, and the tonsils, located in the throat.



Cancer begins when normal cells change and grow uncontrollably, forming a mass called a tumour. A tumour can be cancerous or benign. A cancerous tumour is malignant, meaning it can spread to other parts of the body. A benign tumour means the tumour will not spread.

### The Thymus Gland

The thymus gland will not function throughout an individual's full lifetime, but it has a big responsibility when it is active - helping the body protect itself against autoimmunity, which occurs when the immune system turns against itself. Therefore, the thymus plays a vital role in the lymphatic system (the body's defense network *and* endocrine system).

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The thymus is instrumental in the production and maturation of T-lymphocytes or T cells, a specific type of white blood cell that protects the body from certain threats, including viruses and infections. The thymus produces and secretes thymosin, a hormone necessary for T cell development and production.

[Picture Credit: Thymus Gland]



The thymus is special in that, unlike most organs, it is at its largest in children. Once one reaches puberty, the thymus starts to slowly shrink and become replaced by fat. By age 75, the thymus is little more than fatty tissue. Fortunately, the thymus produces all of one's T cells by the time one reaches puberty.

Thymosin: The Hormone of the Thymus - thymosin stimulates the development of T cells. Throughout childhood years, white blood cells called lymphocytes pass through the thymus, where they are transformed into T cells.

### **Thymoma (Thymus Cancer)**

Thymoma is cancer that develops in the thymus gland. It is the uncontrollable growth of cells that eventually forms a tumour.

**Jilani, T.N. & Siddiqui, A.H.** 2020.

“The mediastinum is a cavity that separates the lungs from the other structures in the chest. Generally, it is further divided into three main parts: anterior mediastinum, posterior mediastinum, and middle mediastinum. The borders of the mediastinum include the thoracic inlet superiorly, the diaphragm inferiorly, the spine posteriorly, the sternum anteriorly, and the pleural spaces laterally. Structures contained within the mediastinal cavity include the heart, aorta, esophagus, thymus, and trachea. Cancers in the mediastinum can develop from structures that are anatomically located inside the mediastinum or that transverse through the mediastinum during development, and also from metastases or malignancies that originate elsewhere in the body.”

### **Causes of Thymoma**

The exact cause of thymomas is not known. Thymomas are said to be slightly more common in men than in women and are most frequently seen in persons between the ages of 40 and 60. There are no known risk factors that predispose a person to developing thymoma.

**Comacchio, G.M., Marulli, G., Mammana, M., Natale, G., Schiavon, M. & Rea, F.** 2019.

“About 15% of patients with myasthenia gravis are affected by thymoma. Precise tumor staging is necessary to plan the appropriate operation. In early stages, complete surgical resection is the mainstay of treatment. Minimally invasive approaches can be safely performed by highly trained surgeons, and may be preferred in myasthenic patients because they can ensure optimal results from the oncological, neurologic, and surgical point of views, avoiding the complications of open

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approach. For advanced stage thymoma in myasthenic patients, a careful, multidisciplinary planning of the therapeutic approach must be undertaken, particularly for extended resections involving the lung and great vessels.”

### **The Incidence of Thymoma in South Africa**

The incidence of thymoma in South Africa is not known as the National Cancer Registry (2014) does not make mention of thymoma.

### **Signs and Symptoms of Thymoma**

Up to 50% of thymomas are asymptomatic, meaning they do not produce any symptoms or signs and are diagnosed during an imaging study for another reason. In other cases, the tumour may cause symptoms related to the size of the tumour and the pressure it exerts on adjacent organs:

- Chest pain
- shortness of breath
- cough
- Fever
- Night Sweats
- Weight loss

### **Thymic Carcinoma**

Thymic carcinomas are more aggressive tumours than thymomas and are more likely to spread and to cause symptoms. Thymic carcinoma is a much rarer condition than thymoma. It tends to grow and develop more quickly and is more likely to spread to other parts of the body. Thymic carcinomas are found in all age groups but are very rare. Most people do have symptoms. These include a cough and chest pain.

### **Diagnosis of Thymoma**

Diagnosis of thymoma includes:

- a physical examination
- chest X-ray
- other imaging tests such as positron emission tomography (PET) scan, computed tomography (CT) scan, or magnetic resonance imaging (MRI)
- biopsy

### **Staging of Thymoma**

The Masaoka-Koga Staging System is mostly used to stage thymomas.

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## Treatment of Thymoma

Treatment of thymoma includes one or more of the following:

- Surgery – removal of the tumour
- Chemotherapy
- Radiation therapy
- Hormone therapy

**Terra, R.M., Milanez-de-Campos, J.R., Haddad, R., Tridade, J.R.M., Lauricella, L.L., Ribas, B.J. & Pêgo-Fernandes, P.M. 2019.**

**Objective:** To evaluate the results of resection of tumors of the thymus by robotic thoracic surgery, analyzing the extent of resection, postoperative complications, time of surgery, and length of stay.

**Methods:** Retrospective study from a database involving patients diagnosed with a tumor of the thymus and undergoing robotic thoracic surgery at one of seven hospitals in Brazil between October of 2015 and June of 2018.

**Results:** During the study period, there were 18 cases of resection of tumors of the thymus: thymoma, in 12; carcinoma, in 2; and carcinoid tumor, in 1; high-grade sarcoma, in 1; teratoma, in 1; and thymolipoma, in 1. The mean lesion size was  $60.1 \pm 32.0$  mm. Tumors of the thymus were resected with tumor-free margins in 17 cases. The median (interquartile range) for pleural drain time and hospital stay, in days, was 1 (1-3) and 2 (2-4), respectively. There was no need for surgical conversion, and there were no major complications.

**Conclusions:** Robotic thoracic surgery for resection of tumors of the thymus has been shown to be feasible and safe, with a low risk of complications and with postoperative outcomes comparable to those of other techniques.

**Krishan, M. & Ganti, A.K. 2019.**

Thymic carcinoma is a rare entity and can be distinguished from benign thymomas by their aggressive nature and poor prognosis. The National Comprehensive Cancer Network guidelines recommend resection followed by adjuvant platinum-based chemotherapy for resectable tumors. However, the outcomes for metastatic or relapsed thymic carcinomas are poor with no regimen showing a consistent benefit. Moreover, the relative rarity of these tumors makes clinical trials difficult. Molecular analysis of thymomas shows a high incidence of genetic mutations and targeted therapy holds promise.

## About Clinical Trials

Clinical trials are research studies that involve people. They are conducted under controlled conditions. Only about 10% of all drugs started in human clinical trials become an approved drug.

Clinical trials include:

- Trials to test effectiveness of new treatments
- Trials to test new ways of using current treatments
- Tests new interventions that may lower the risk of developing certain types of cancers
- Tests to find new ways of screening for cancer

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The South African National Clinical Trials Register provides the public with updated information on clinical trials on human participants being conducted in South Africa. The Register provides information on the purpose of the clinical trial; who can participate, where the trial is located, and contact details.

For additional information, please visit: [www.sanctr.gov.za/](http://www.sanctr.gov.za/)

### Medical Disclaimer

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## Lymphatic System

[https://www.google.co.za/search?q=lymphatic+system&source=lnms&tbm=isch&sa=X&ei=n6XYU4e4G9KA7QbFzIH4DA&sqi=2&ved=0CAYQ\\_AUoAQ&biw=1517&bih=714&dpr=0.9#facrc=\\_&imgdii=\\_&imgrc=YFSA26FR7t-uAM%253A%3BLbtzHbqOLOvJwM%3Bhttp%253A%252F%252Fhealthfavo.com%252Fwp-content%252Fuploads%252F2013%252F10%252Flympatic-system-anatomy.jpg%3Bhttp%253A%252F%252Fhealthfavo.com%252Flympatic-system-anatomy.html%3B528%3B865](https://www.google.co.za/search?q=lymphatic+system&source=lnms&tbm=isch&sa=X&ei=n6XYU4e4G9KA7QbFzIH4DA&sqi=2&ved=0CAYQ_AUoAQ&biw=1517&bih=714&dpr=0.9#facrc=_&imgdii=_&imgrc=YFSA26FR7t-uAM%253A%3BLbtzHbqOLOvJwM%3Bhttp%253A%252F%252Fhealthfavo.com%252Fwp-content%252Fuploads%252F2013%252F10%252Flympatic-system-anatomy.jpg%3Bhttp%253A%252F%252Fhealthfavo.com%252Flympatic-system-anatomy.html%3B528%3B865)

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## Thymus Gland

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