

# Surgery Resection of a Massive Thymic Carcinoma during Urgent Coronary Artery Bypass Grafting

Selman Dumani<sup>1\*</sup>, Ermal Likaj<sup>1</sup>, Aferdita Veseli<sup>1</sup>, Stavri Llazo<sup>1</sup>, Leart Berdica<sup>2</sup>, Ali Refatllari<sup>1</sup>

<sup>1</sup>Service of Cardiac Surgery, University Hospital Center "Mother Theresa", Tirana, Albania; <sup>2</sup>Departement of Pathology, University Hospital Center "Mother Theresa", Tirana, Albania

## Abstract

**Citation:** Dumani S, Likaj E, Veseli A, Llazo S, Berdica L, Refatllari A. Surgery Resection of a Massive Thymic Carcinoma during Urgent Coronary Artery Bypass Grafting. Open Access Maced J Med Sci. <https://doi.org/10.3889/oamjms.2018.249>

**Keywords:** Thymoma; Thymic carcinoma; Concomitant surgery

**\*Correspondence:** Selman Dumani, Service of Cardiac Surgery, University Hospital Center "Mother Theresa", Tirana, Albania. E-mail: [selmandumani@yahoo.co.uk](mailto:selmandumani@yahoo.co.uk)

**Received:** 22-Jan-2018; **Revised:** 22-May-2018; **Accepted:** 24-May-2018; **Online first:** 16-Jun-2018

**Copyright:** © 2018 Selman Dumani, Ermal Likaj, Aferdita Veseli, Stavri Llazo, Leart Berdica, Ali Refatllari. This is an open-access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC 4.0)

**Funding:** This research did not receive any financial support

**Competing Interests:** The authors have declared that no competing interests exist

**BACKGROUND:** Thymic carcinoma is a very rare tumour. It is classified as thymoma type C according to World Health Organization classification. There are not many publications of simultaneous surgical treatment of thymoma during cardiac surgery interventions.

**CASE REPORT:** We present a case of simultaneous surgical treatment of incidentally discovered thymic carcinoma during an urgent coronary artery by-pass operation. A 55-year-old man with diagnosis three coronary vessel diseases indicated urgent by-pass surgery. The patient underwent triple coronary bypass surgery. During the intervention, it was discovered incidentally a strong mass 15 x 12 cm located in the right pleural space. A tumour was excised totally, and biopsy referred thymoma type C or thymic carcinoma. The patient did very well early postoperatively. He was referred to oncologist clinicians for further treatment. The patient was clinically very good for at least 1.5 years after surgery.

**CONCLUSION:** We think that simultaneous surgical treatment of thymoma, whenever it is encountered during cardiac surgery procedures, is the recommended solution.

## Introduction

Thymoma is a rare tumour. Its incidence refers to 0.15 to 100 000 persons [1]. They are two main classifications of the thymomas. The Masaoka classification is most widely accepted to determine the treatment strategy of thymomas while the histological classification according to WHO is important especially to distinguish thymomas, thymic carcinomas and thymic carcinoids. Thymic carcinomas are very rare and more aggressive than classical thymomas [2]. The simultaneous treatment of tumours of the thymus during a cardiac surgery procedure is referred to in some presentations, mostly during CABG [3] [4] [5] [6] [7] [8] [9] [10] [11]. We will present below a case of simultaneous surgical treatment of an incidentally detected thymic carcinoma during an urgent coronary artery bypass.

## Case presentation

A 55-years old man is hospitalised in our clinic with a diagnosis of severe three-vessel disease with indications for urgent CABG. The patient referred to angina pectoris in low efforts and during rest. Echocardiography showed a normal cardiac function without any other data related to the function and cardiac structures.

**Coronarography:** Three-vessel disease with very critical stenosis of LAD, LCx and RCA: urgent indication for intervention. Preoperative routine examinations were normal.

**Intervention:** CABGX3: LIMA-LAD; VSM-OM1, PDA. The interventions were performed under cardiopulmonary by-pass and cardiac arrest. At the moment of hemostasis, occasionally in the right

pleural space attached to the sternum, is discovered a very strong mass. The mass lied from the medial part of the sternum to the right subclavian vein. The rapport with pericardium was clear with no signs of infiltration. The tumour was excised totally. Macroscopically the mass was very strong, and it was about 15 x 12 cm. The mass was incised and had the appearance of the honeycombs (Figure 1).



Figure 1: Photo during the intervention. In the left the moment the mass was excised, in the right, the mass was incised

The mass was sent to the biopsy. The biopsy response consulted by a group anatomopathologists was: lobular neoplasia consisting of solid neoplasms of polygonal epithelial elements (CK19+, CD117-, CD20-, CD5-) mixed with immature T elements (TdT +). There is capsule infiltration. These results support the diagnosis of thymoma type C or thymic carcinoma (Figure 2).

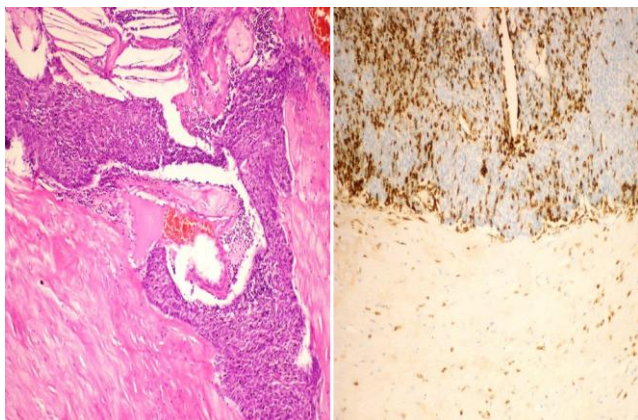


Figure 2: Photos of biopsies

The patient was referred to local oncologist clinicians, and he did not undergo additional treatments. He realised a thoraco-abdominal CT-scan one week and 1.5 years after surgery. Both CT-scans were normal. The patient has been clinically very well.

## Discussion

Thymomas are the most common primary tumour in the anterior mediastinum [2]. It is a neoplasm of the thymus that originates in the gland's epithelial tissue. The incidence of thymoma in the United States is approximately 0.15 per 100,000 person-years. Histopathologically thymic carcinomas are also tumours of thymic epithelial cells. The distinction between thymomas and thymic carcinomas is not as clear, because thymic carcinomas have malignant cytologic features, whereas thymomas are generally considered cytologically benign. Patients with thymoma are often asymptomatic, and the tumour is detected incidentally on a chest x-ray or computed tomography. The most common presenting symptoms for thymomas are dyspnea, chest pain, cough, and symptoms of myasthenia gravis. More advanced thymoma present with symptoms related to the involvement of local structures [12]. Thymic carcinomas often cause pericardial and pleural effusion and that and more aggressive than thymomas [2]. Thymomas are classified mostly according to World Health Organization (WHO) and Masaoka staging. The WHO adopted a pathologic classification system that takes in to account both histologic and morphologic features. The WHO classification is also used to differentiate among different histologic types of thymomas. Thymic carcinomas are type C thymomas according to the WHO classification. Masaoka describes thymomas regarding the local extension of a tumour. This staging system is the most widely accepted system for management and determination of prognosis for both thymomas and thymic carcinomas [12].

Our case was a huge thymic carcinoma asymptomatic until was discovered incidentally during an urgent CABG. There are rare cases reported with the coexistence of thymomas with cardiac surgery pathologies and the simultaneous surgical treatment of thymus tumours during a cardiac surgery procedure. The incidence of the coexistence of the thymoma and CABG pathologies is referred 0.2-0.7 % [5] The most of the thymus tumors were incidental findings after the sternotomy is done [5] [6] [7] [8] [10] while a part of them was distinguished prior the cardiac intervention [3] [4] [9] [11]. All cases referred to the localisation of tumour in the anterior mediastinum. Poullis and Punjabi [3] presented a case of resection of thymoma with pure red aplasia during an elective CABG. Agrifoglio referred a case of an occasional finding of thymoma in a patient that was in the theater for mitral valve surgery [7]. Kouzu at al report simultaneous operations performed for angina pectoris, aortic regurgitation and thymoma [11]. In all of them, the tumour of thymus were thymomas [3] [4] [5] [6] [7] [8] [9] [11] while Abdullah et al., [10] refer a very rare case of thymic carcinoid tumour encountered incidentally during a CABG procedure. The case we presented may be the first case of an

incidental finding of thymic carcinoma and treated simultaneously during a CABG. Unusual was the localisation in the right pleural space.

Total thyroidectomy and complete surgical excision of the tumour are the gold standard of treatment and are recommended whenever possible. There are no definitive guidelines about additional modalities of treatment such as radiotherapy or chemotherapy, but the treatment is guided in large consensual documents. Additional radiotherapy, according to National Comprehensive Cancer Network (NCCN), may be considered for the thymic carcinomas. It is recommended an annual CT scan check for the recurrence. The definitive treatment for thymic carcinomas is still undefined. All patients with thymic malignancies should be evaluated by radiation oncologists, surgeons, medical oncologists, diagnostic imaging specialists, and pulmonologists to determine the optimal plan of care before treatment [2] [12]. Surgery is accepted as a mainstay for this type of a tumour while the role of additional therapy is still unclear [13] [14]. We performed total surgical resection of a tumour and referred to the oncologist the patient. The patient underwent some laboratory examinations and CT scan after surgery first immediately after the intervention and 1.5 years after surgery. The patient did not undergo additional therapy and was in very good health conditions at least 1.5 years after surgery.

We think that simultaneous surgical treatment of thymoma, whenever it is encountered during cardiac surgery procedures, is the recommended solution.

## References

- Engels EA, Pfeiffer RM. Malignant thymoma in the United States: demographic patterns in incidence and associations with subsequent malignancies *Int J Cancer*. 2003;105:546–551. <https://doi.org/10.1002/ijc.11099> PMID:12712448
- Ettinger DS, Riely GJ, Akerley W, Borghaei H, Chang AC, Cheney RT, Chirieac LR, D'Amico TA, Demmy TL, Govindan R, Grannis FW. Thymomas and thymic carcinomas. *Journal of the National Comprehensive Cancer Network*. 2013; 11(5):562-76. <https://doi.org/10.6004/jnccn.2013.0072> PMID:23667206
- Poullis M, Punjabi P. Concomitant Thymectomy and Cardiac Operation in a Patient with Pure Red Cell Aplasia. *Ann Thorac Surg*. 2001; 72:621–3. [https://doi.org/10.1016/S0003-4975\(00\)02313-4](https://doi.org/10.1016/S0003-4975(00)02313-4)
- Bozođlan O, Meşe B, Erođlu E, Sökmen A. Resection of a giant thymoma and coronary artery bypass graft surgery: a case report. *Türk Göğüs Kalp Damar Cerrahisi Dergisi*. 2013; 21(4):1094-1096. <https://doi.org/10.5606/tgkdc.dergisi.2013.7004>
- Al-Smady MM, Hamdan FF, Abu-Abeeleh MM, Massad IM. Incidental invasive thymoma during coronary artery bypass surgery. *Saudi Med J*. 2009; 30(1):140-142. PMID:19139788
- Omidifard N, Mokhtari M, Shokripour M. Two Invasive Thymomas Incidentally Found during Coronary Artery Bypass Graft Surgery. *Case Reports in Pathology*. 2016; 1516521. <https://doi.org/10.1155/2016/1516521>
- Agrifoglio M, Barili F, Dainese L, Cappai A, Cheema FH, Biglioli P. An occasional diagnosis of myasthenia gravis - a focus on thymus during cardiac surgery: a case report. *Journal of Cardiothoracic Surgery*. 2009; 4:55. <https://doi.org/10.1186/1749-8090-4-55> PMID:19811646 PMCid:PMC2764702
- Mirsadraee S, Shah SS, Kumar B, Kaul P. Incidental locally infiltrating malignant thymoma and coronary artery bypass surgery-excision should always be considered. *J Card Surg*. 2005; 20(3):291-2. <https://doi.org/10.1111/j.1540-8191.2005.200455.x> PMID:15854100
- Ohshima K, Ishikawa S, Yoshida I, Ohtaki A, Ohtani Y, Takahashi T, Satoh Y, Aizaki M, Morishita Y. A concomitant operation of coronary artery bypass grafting and thymectomy: a case report. *Kyobu Geka*. 1994; 47(12):1029-31. PMID:7990283
- Abdullah F, Loon LG. An incidental finding of thymic carcinoid during urgent CABG operation. *Heart Surg Forum*. 2002; 5(4):E35-6. PMID:12538128
- Kouzu S, Fujii N, Shinohara M, Sode Y, Yoshioka J, Akahane K, Tozuka N, Sawaki S. A case of angina pectoris and aortic regurgitation combined with thymoma. *Kyobu Geka*. 1993; 46(4):359-62. PMID:8468866
- Falkson CB, Bezjak A, Darling G, Gregg R, Malthaner R, Maziak DE, Yu E, Smith CA, McNair S, Ung YC, Evans WK. The management of thymoma: a systematic review and practice guideline. *Journal of Thoracic Oncology*. 2009; 4(7):911-9. <https://doi.org/10.1097/JTO.0b013e3181a4b8e0> PMID:19557895
- Zhai Y, Hui Z, Ji W, Wang X, Liang J, Mao Y, Luo Y, Zou S, Lv J, Zhou Z, Chen D, Zhang H, Xiao Z, Wang L, Feng Q. A Single-Center Analysis of the Treatment and Prognosis of Patients with Thymic Carcinoma. *Ann Thorac Surg*. 2017; 104(5):1718-1724. <https://doi.org/10.1016/j.athoracsur.2017.06.025> PMID:28969896
- Song Z, Zhang Y. Outcomes after surgical resection of thymic carcinoma: A study from a single tertiary referral centre. *Eur J Surg Oncol*. 2014; 40(11):1523-7. <https://doi.org/10.1016/j.ejso.2014.05.011> PMID:24953416