



Contents lists available at ScienceDirect

## International Journal of Surgery Case Reports

journal homepage: [www.casereports.com](http://www.casereports.com)

# Successful resection of oesophageal adenocarcinoma 16 years after heart transplantation—a case report



Filip Eckerström\*, Marie Maagaard, Hans K. Pilegaard

Department of Cardiothoracic and Vascular Surgery, Aarhus University Hospital, Denmark

## ARTICLE INFO

### Article history:

Received 7 December 2015

Received in revised form 2 February 2016

Accepted 5 February 2016

Available online 12 February 2016

### Keywords:

Oesophagus cancer  
Oesophagus resection  
Heart transplantation  
Surgical approach

## ABSTRACT

**INTRODUCTION:** With improving results of heart transplantation and subsequently increasing survival, long-term complications such as neoplastic malignancies are more often being discovered.

**PRESENTATION OF CASE:** In this report, we present a unique case of successful oesophagus resection with gastric pull-up, on a heart-transplanted patient diagnosed with oesophageal adenocarcinoma.

**DISCUSSION:** With the growing number of long-term surviving heart transplanted patients, the number of neoplasia in this patient-group will subsequently grow. Since physical condition and quality of life in long-term surviving heart transplanted patients is comparable to the general population, and since surgical treatment remains the mainstay of treatment for localised oesophageal carcinoma in non-heart transplanted patients, a larger subgroup of heart transplanted patients will most likely be considered for cancer surgery.

**CONCLUSION:** Our case demonstrates the possibility of operating on the heart transplanted patient-group, and supports the option, that well-managed heart transplantation not should be a limiting factor, when deciding whether a patient is a candidate for surgical intervention or not.

© 2016 The Authors. Published by Elsevier Ltd. on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1. Introduction

Heart transplantation (HTx) has for some years improved the quality of life significantly in patients with end-stage heart failure. With improving results of the procedure and increasing survival of the HTx-patients, long-term complications such as neoplastic malignancies are more often being discovered, and becoming an issue of concern [1].

Prognosis of most of the solid organ tumours occurring in this context is poor, and neoplasia remains the most frequent non-graft-related cause of late deaths after HTx [2]. The risk of de novo malignancies in heart transplant recipients is reported to be ranging from 3 to 25% and has become a significant limiting factor for further survival in the long-term surviving patients [1]. Interestingly, this is a group of patients that otherwise is comparable to the general population when it comes to physical condition and quality of life [3].

The mechanism behind the development of neoplasia in this patient group is poorly understood. The intense immunosuppressive therapy in heart transplant recipients may result in development of malignancy. Yagdi et al., and Rinaldi et al., demon-

strate a significant correlation between the patient's age at time of transplantation and the risk of malignancies [1,4]. Furthermore, both studies reveal that a history of smoking has a significant association with the development of solid organ malignancy, suggesting that a possible combination of altered cellular immune response due to cigarette smoking and pharmacological immunosuppression are responsible for an accelerated carcinogenic effect. However, just being a candidate for HTx, is thought to be associated with a higher risk in the development of neoplasia [2].

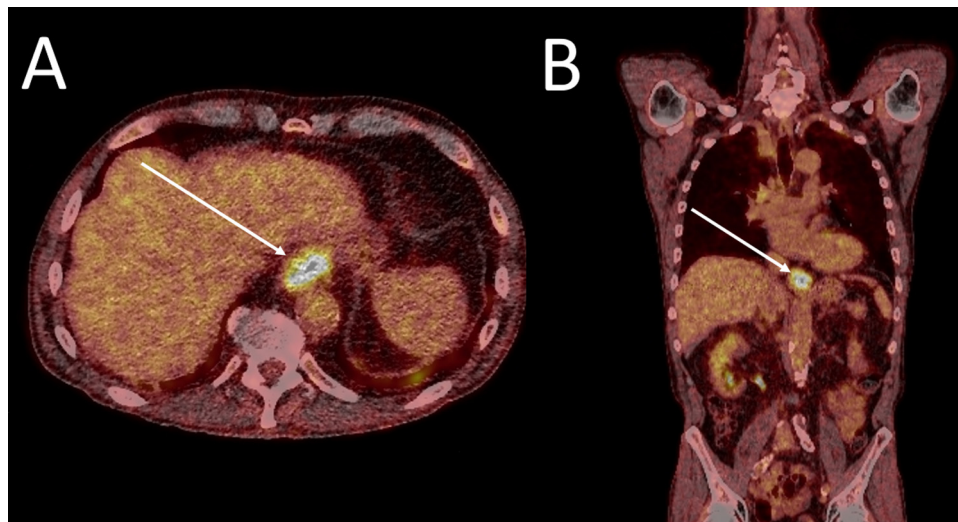
Larger surgical interventions and the subsequent survival-rate in HTx-patients are poorly described. Here we present a case of successful oesophageal resection with gastric pull-up in an HTx patient. Our case demonstrates the possibility of operating on the HTx patient-group. Since an expert surgeon of today has very few technical limitations, the main challenge in this case was the altogether medical and surgical stress on the body, along with an acceptable level of quality of life.

## 2. Presentation of case

In 1998 our patient, a non-smoking Caucasian male, 53 years old, underwent HTx after a ten-year history of ischemic heart disease. The HTx operation was performed at our hospital in Aarhus, Denmark. After a difficult course at the intensive care post-operatively, our patient recovered and was discharged three weeks following the HTx. The patient received a standard triple immunosuppressive regimen consisting of azathioprine, cyclosporine and

\* Corresponding author at: Department of Cardiothoracic and Vascular Surgery, Aarhus University Hospital, Skejby, Palle Juul-Jensens Blvd. 100, DK-8200 Aarhus N, Denmark.

E-mail address: [filip.eckerstrom@clin.au.dk](mailto:filip.eckerstrom@clin.au.dk) (F. Eckerström).



**Fig. 1.** Positron emission tomography–computed tomography. Arrows demonstrate a hypermetabolic area at the oesophageal/cardia junction through a (A) frontal plane and (B) transverse plane.

prednisolone. Routine follow-up revealed satisfying condition, and 16 years following the HTx-surgery, our patient was still well compensated with a good quality of life.

In April 2014, now 69 years old, with a 16 years history of HTx, gastroscopic examination following two months of suffering from dysphagia revealed a 4.5 cm tumour in cardia/distal section of oesophagus. Histological biopsy revealed adenocarcinoma, T3N2M0, spreading to the surrounding blood vessels and five out of 14 lymph nodes (Figs. 1 and 2).

Following meticulous cardiologic evaluation of the risk of surgery, our patient was assessed to be a candidate for cancer surgery and went through a resection of oesophagus with gastric pull-up and anastomosis placed at the level of the azygos vein. The procedure was accomplished by abdominal laparoscopy and right thoracotomy without significant complications peri- or post-operatively. Due to our patient's history of HTx, perioperative chemotherapy and postoperative radiotherapy was dismissed, and our patient was discharged 13 days later on a normal diet.

Monthly routine examinations following the operation revealed an unchanged cardiac performance with a systolic blood pressure of 125 mm Hg, good physical performance, and good self-evaluated quality of life. However, the surgery was not curable, and our patient died because of his progressive cancer, 10 months following the surgery, at the age of 70 years.



**Fig. 2.** Post-operative computed tomography. Arrow indicate the gastric-pull up.

### 3. Discussion

Oesophagus and cardia resection with gastric pull-up in an HTx patient is very rare, and to date only two other cases like our report have been described [3,5]. The fact that HTx patients are assessed as a vulnerable group of patients and the majority consequently receives palliative care rather than surgery, could eventually be the explanation for the small number of cases. Our case supports the option of aggressive surgical intervention despite previous large-scale operations, such as HTx. In line with our assessment, Gupta et al., and von Rahden et al., accentuate the possibility of large-scale surgical intervention in HTx patients [3,5].

Other cases of large surgical interventions on neoplasia in HTx patients have been reported. In a previous report, eight HTx patients with early-stage lung carcinoma went through a successful surgical resection, reflected in a relatively promising median survival of 12 months [2]. However, type of malignancy and extent of the surgical procedure highly reflect survival-rate.

In the case with our patient, naturally we cannot be certain that the survival rate was increased following surgery compared to a non-surgical choice. However, the different options were discussed thoroughly, and since the Department of Oncology advised a strict no radiation or chemotherapy treatment based on his status as an HTx patient, surgery was chosen as the best option. With the growing number of long-term surviving HTx patients, the number of neoplasia in HTx patients will subsequently grow. Since physical condition and quality of life in this patient group is comparable to the general population, and since surgical treatment remains the mainstay of treatment for localised oesophageal carcinoma in non-HTx patients, a larger subgroup of HTx patients will most likely be considered for cancer surgery [6]. This underlines the importance of sharing the outcome and experience from large surgical interventions like that of our case. Provided satisfactory haemodynamic, well-managed HTx is not a limiting factor at our institution, when deciding whether a patient is a candidate for surgical intervention or not.

### Conflict of interests

Hans K. Pilegaard is a consultant at Biomet.

**Funding**

No funding was received for this study.

**Ethical approval**

In Denmark the consent from patient or family is sufficient, and ethical approval is not needed.

**Consent**

Informed consent was obtained from the patient for publication of this case report and accompanying images.

**Author contribution**

All authors have taken part in conception and interpretation of data, drafting or revising the manuscript critically, and final approval of the manuscript submitted.

**Guarantor**

Filip CA Eckerström, Medical Student, Department of Cardiothoracic and Vascular Surgery, Aarhus University Hospital, Skejby, DK-8200 Aarhus N, Denmark.

**References**

- [1] T. Yagdi, L. Sharples, S. Tsui, S. Large, J. Parameshwar, Malignancy after heart transplantation: analysis of 24-year experience at a single center, *J. Card. Surg.* 24 (2009) 572–579.
- [2] A.C. Anyanwu, E.R. Townsend, N.R. Banner, M. Burke, A. Khaghani, M.H. Yacoub, Primary lung carcinoma after heart or lung transplantation: management and outcome, *J. Thorac. Cardiovasc. Surg.* 124 (2002) 1190–1197.
- [3] B.H. von Rahden, H.J. Stein, G. Schmidt, H. Bartels, M. Overbeck, J.R. Siewert, Esophageal cancer surgery in heart transplant patients, *Ann. Thorac. Surg.* 80 (2005) 1510–1512.
- [4] M. Rinaldi, C. Pellegrini, A.M. D'Armini, M. Aiello, M. Negri, E. Arbustini, et al., Neoplastic disease after heart transplantation: single center experience, *Eur. J. Cardiothorac. Surg.* 19 (2001) 696–701.
- [5] D. Gupta, M. Macha, V. Piacentino 3rd, A.K. Singhal, H.F. Saksen, S. Furukawa, Successful treatment of esophageal cancer with transhiatal esophagectomy after heart transplantation, *Ann. Thorac. Surg.* 78 (2004) 702–705.
- [6] S. Mackay, G. Stefanou, Management of oesophageal carcinoma, *Aust. Fam. Physician* 35 (2006) 202–206.

**Open Access**

This article is published Open Access at [sciendo.com](http://sciendo.com). It is distributed under the [IJSCR Supplemental terms and conditions](#), which permits unrestricted non commercial use, distribution, and reproduction in any medium, provided the original authors and source are credited.