

# Percutaneous pulmonary artery stenting for extrinsic malignant compression: case report

A. Kerzmann<sup>1,2</sup>, G. Swennen<sup>3</sup>, S. Dassy<sup>3</sup>, M. Miribung<sup>4</sup>, T.N. Dang<sup>5</sup>, E. Passelecq<sup>1,2</sup>, J.O. Defraigne<sup>1</sup>

<sup>1</sup>Dept. of Cardiovascular and Thoracic Surgery, CHU Sart-Tilman, Liège, Belgium | <sup>2</sup>Dept. of Vascular and Thoracic Surgery, Sankt Nikolaus-Hospital, Eupen, Belgium

<sup>3</sup>Dept. of Oncology, Sankt Nikolaus-Hospital, Eupen, Belgium | <sup>4</sup>Dept. of Anaesthesiology, Sankt Nikolaus-Hospital, Eupen, Belgium

<sup>5</sup>Dept. of Radiology, Sankt Nikolaus-Hospital, Eupen, Belgium

No conflict of interest

## Introduction

Compression of pulmonary artery by non-small cell lung cancer is a rare cause of dyspnea. Surgery is most of the time not indicated because of the stage of the tumor. Benefit of the treatment by chemotherapy and radiation is delayed and unpredictable.

Pulmonary artery stenting is usually performed for congenital heart diseases. It can also be used for fibrosis, strictures after lung transplantation and malignant stenosis.

We report one case of dyspnea improvement get by left pulmonary artery stenting for severe stenosis. Later was induced by extrinsic compression due to non-small cell lung cancer.

## Case report



A 61-year-old white man was treated by chemotherapy and radiation since 8 months for pT3N1M0 squamous cell carcinoma located in the hilum of the left lung. He had past history of smoking habit 50 pack years till diagnosis, arterial hypertension, dyslipidemia, insulin-dependent type II diabetes, excess weight, chronic obstructive pulmonary disease and partial pancreatectomy after trauma. He had the impression that something was wrong with his lungs. Chest radiography revealed the tumor in the left lung. Chest computed tomography (CT) confirmed the diagnosis and measured the widest diameter at 7,3 cm. Positron emission tomography combined to CT found one mediastinal lymph node near the cancer. Other metastases were excluded. The transbronchial biopsy showed a mild differentiated squamous cell carcinoma. Stage was IIIa.

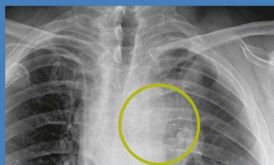
He received navelbine-ifosfamide-platinol chemotherapy and 60 Gy radiotherapy. The tolerance and the response were good with reduction of the widest diameter to 6,6 cm. 6 months later the patient was admitted for short windedness class III of the New York Heart Association (NYHA). Pulmonary scintigraphy revealed absence of perfusion in the left lung. Latest chest CT was reevaluated and severe stenosis of the left pulmonary artery due to extrinsic compression by the cancer was seen. The general state of the patient was good and the stenting was decided.



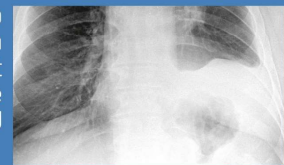
Under general anaesthesia, a short 6 French introducer was placed into the right common femoral vein. 2500 UI heparin were injected. A normal 0,035 guide wire was placed into the inferior vena cava. The short introducer was replaced by a long straight 8 French. With the help of the 0,035 guide wire and of a pigtail catheter, the long introducer was positioned into the pulmonary artery. The contrast medium was sent with a manual syringe. The severe stenosis of the left pulmonary artery was spotted. It was predilated with balloon Bard



Rival® 7mm-4cm. A self expandable nitinol stent Bard Luminexx® 12mm-4cm was placed successfully. The stent was dilated several times with high-pressure balloon Bard Atlas® 12mm-2cm. The severe stenosis was significantly reduced. There was no operative complication. The patient went back home the day after.



After 1 month follow-up, he felt better. He had dyspnea class II of the NYHA. After 3 months, he stayed in the class II but not as good as after 1 month. Chest radiography showed atelectasis of the left upper lobe and left diaphragmatic palsy. The cancer progressed and new chemotherapy had to be planed.



## Discussion

Extrinsic compression of pulmonary artery by non-small cell lung carcinoma is rare. The diagnosis can be easily missed. Stent placement for compression due to squamous cell cancer is very unusual. Most of the reports about pulmonary artery stenting concern young patients with congenital heart diseases. There are some reports about stent for fibrosing mediastinitis, strictures after lung transplantation, stenosis due to malignancy of the vessel. There are case reports about stent for mediastinal or lung cancer.

The results are technically good. Possible complications are ventricular arrhythmias, misplacement or migration of stent with loss of arterial side branches, arterial injury, and pulmonary edema. The short-term results are most often good with clinical improvement. The long-term results depend on the underlying disease.

This is a palliative approach. The natural history of the cancer doesn't change. In our case, the patient was unable to climb stairs and even to speak as he wanted before the procedure. He was happy he could do it again after.

Percutaneous pulmonary artery stenting for the indication we report is minimal invasive, feasible and safe. It is a palliative treatment but it can improve patient's quality of life.