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Case Reports

Central Airway Stenting as a Palliative Procedure in A Patient with Critical Airway Stenosis

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Abstract

Stents are devices designed to maintain the patency of tubular structures. Airway stents are placed in the central tracheobronchial tree and used either for malignant obstruction or for benign diseases. Their use is indicated in both intrinsic obstruction or extrinsic compression of the airway. We present a case of a 60-year-old female patient with an extrinsic mass obstructing the tracheal lumen, presenting with progressive dyspnea at the slightest effort, in which a stent was successfully placed as a palliative procedure.

Keywords: ***Stent; Airway stent; Surgery; Mediastinal; Airway stenosis.***

Introduction

Airway obstruction more commonly results from malignant diseases, such as bronchogenic carcinoma, extension of esophageal or thyroid carcinomas, or external compression [1]. Up to 30% of patients with lung cancer develop central airway obstruction [2]. Clinical manifestations are since disabling dyspnea, obstructive pneumonia and impending suffocation, until wheezing or stridor in more significant stenosis [3,4]. Since airway lesions are often unresectable, bronchoscopy and stent placement used to be necessary to improve patient's quality of life [5].

Case Report

A 60-year-old female patient, caucasian, smoker (17.5 pack-years), was admitted with progressive dyspnea at the slightest effort. Three years prior, the patient undergone a thoracoscopic lobectomy of the right lower lobe due to an incidentally found pulmonary lesion. The anatomopathological exam revealed a moderately differentiated squamous cell carcinoma and, at that time, preoperative staging exams were all negative for metastasis. Out of 14 lymph nodes, 2 were positives for cancer characterizing the TNM as T2aN1M0. The patient recovered well in the postoperative period, and then started oncological treatment. Four months later, a chest CT scan was requested for postoperative control, in which an enlargement of the paratracheal lymph nodes was noticed, the largest measuring 1.9 cm. These lymph nodes were previously negative for metastasis. A Positron Emission Tomography - Computed Tomography (PET-CT) was requested for the patient. The exam captured three locations, a cervical, a mediastinal and an esophageal lymph node. Fibrobronchoscopy was indicated and performed. An endotracheal lesion was found and submitted to biopsy, which had as result adenosquamous carcinoma. New chest CT scan was requested to follow the paratracheal lymphadenopathy, which had increased in size, reaching up to 3.3 cm. Paratracheal lymph nodes kept growing until forming a mediastinal mass and obstruct the trachea (**Figure 1**). The airway obstruction caused her progressive dyspnea at the slightest effort, which led her to be admitted in the hospital. On admission, she had much difficulty breathing and was almost in respiratory exhaustion due to the excessive effort of the respiratory muscles. Due to the patient's clinical condition a central airway stent was placed in the tracheal lumen (**Figure 2**). The measure successfully unobstructed the airway, reopening the tracheal lumen. Therefore, the patient presented good response to the procedure, dyspnea was controlled and her clinical condition was strongly improved. The good clinical condition enabled her to undergo chemotherapy under a new therapeutic scheme by her oncologist. Six months after the new chemotherapic was started, a control chest CT scan was performed. The mediastinal mass was strongly reduced, demonstrating a good response to the new treatment (**Figure 3**). Nowadays, the patient remains under medical follow-up.

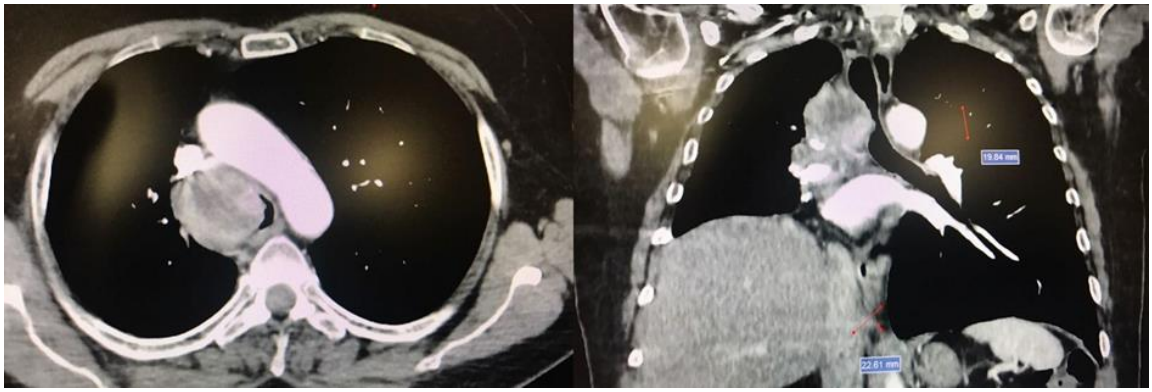

Figure 1: Tracheal compression by the tumor mass producing critical airway stenosis.

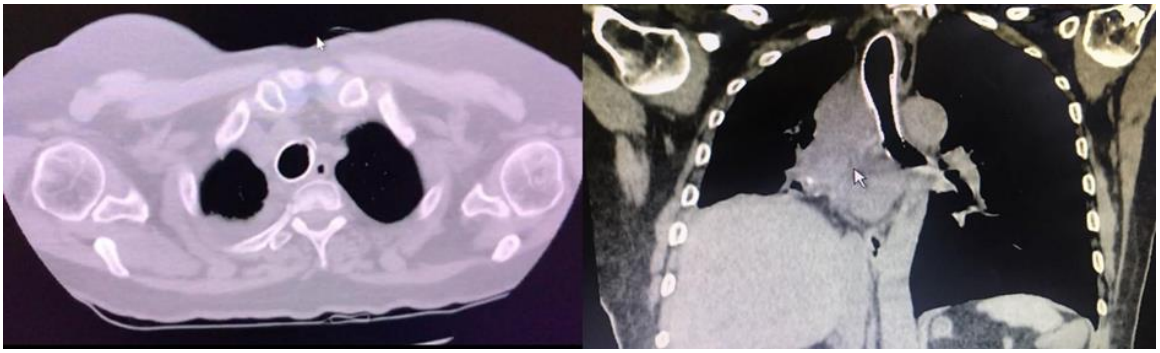

Figure 2: Computed Tomography of thorax after stent placement.

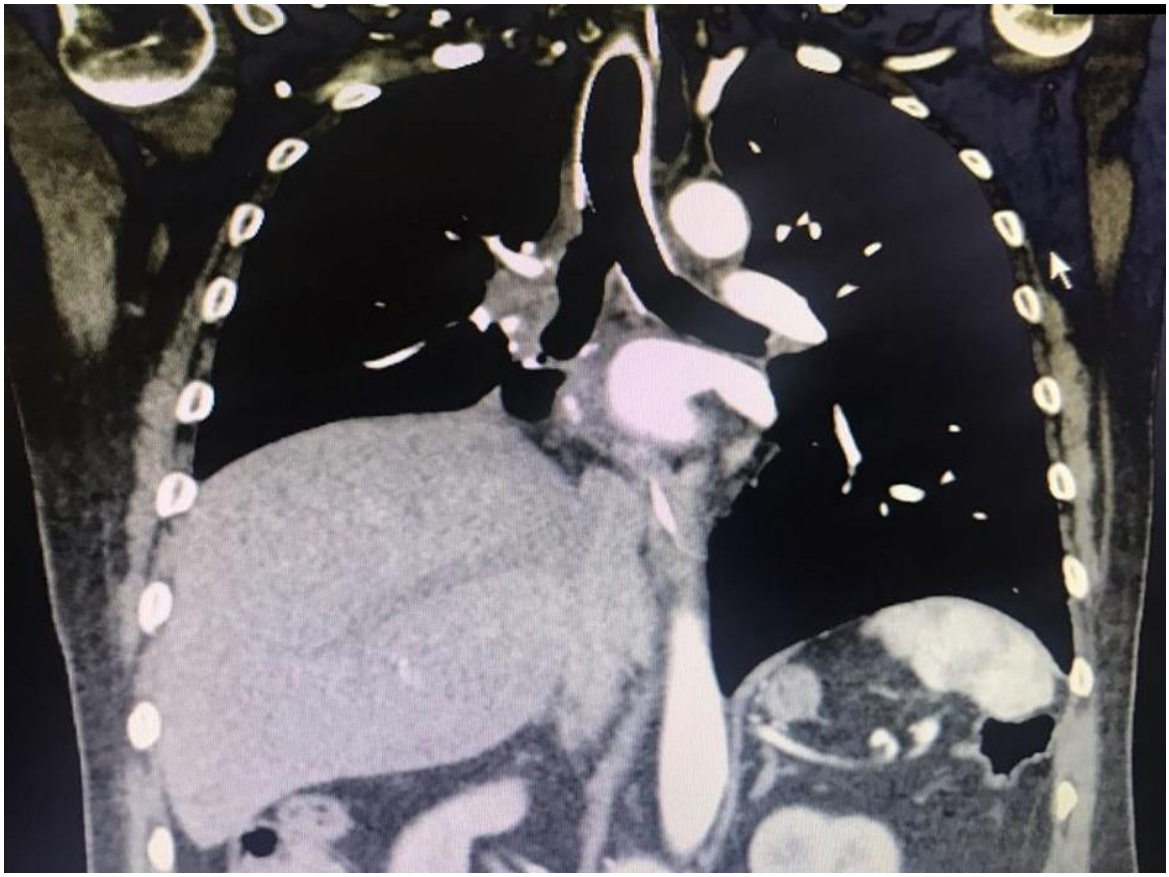

Figure 3: Computed Tomography of thorax showing the stent placement and the reduction of the mediastinal mass after the chemotherapy.

Discussion

Although surgical resection is the gold standard treatment for airway obstruction - with high success rates and long-lasting results -, it is not always possible to be performed, since patients often are not candidates for a surgical intervention, due to either physiological or oncological criteria [2,4]. Therefore, therapeutic bronchoscopy is the treatment option for many patients. The procedure allows the placement of an airway stent, which provides immediate and long-term results [2,5]. In selected patients, the placement of airway stents is an effective and encouraged measure in addition to other palliative therapies for advanced lung cancer. The therapy benefits patients by

immediate symptom relief and also prolongation of survival [3,6-8]. Another important role of airway stenting is its possibility of acting as a bridge to turn the patient able to receive additional adjuvant therapy, including chemotherapy and/or radiotherapy and even curative surgery [2,9]. The most suitable patients for the procedure are those with good performance status, which present the best prognosis, as well as a longer survival period after stenting [10]. While in malignant pathologies the use of stent brings good outcomes, in benign diseases it is not recommended as first line treatment, because of the increase of stent-related complications in this group [7].

Abbreviations

PET CT: Positron Emission Tomography - Computed Tomography
CT: Computed Tomography
TNM: Classification of Malignant Tumours

Declarations

Ethical Approval and Consent to participate

This case report has the ethical approval and consent to participate of the patient and the consent of the Hospital São Vicente de Passo Fundo.

Consent for publication

This paper has the consent for publication by the ethical committee organized by Hospital São Vicente de Paulo.

Competing interests

There isn't any competing interest in this case report.

Availability of supporting data

Not applicable

Funding Statement

Not applicable

Authors' contributions

Not applicable

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