

Spontaneous Closing of the Thoracostomy (Case Report)

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Abstract : *Introduction.* — The occurrence of empyema following a pneumonectomy or a chronic pleural pocket is a severe complication of which management is long and difficult. The authors report their experience managing this complication including infection control by an emptying of the pleural pocket through percutaneous drainage or through a thoracostomy which will be coupled with a thoracoplasty to completely erase the pleural pocket. *Observation.* — The patient was 64 years old, with no significant pathological history, and was admitted for the management of a left pleural pocket. Given the patient's age, general condition and the high anesthetic risk, the surgical procedure was a left thoracotomy followed by a good preparation of the patient for a filling thoracomyoplasty. The evolution was marked by a spontaneous closure of the thoracotomy cavity after its complete cleaning. *Conclusion.* — Pyothorax complicating a pneumonectomy cavity and calcified pleural pockets are a serious complication of which the management is long and delicate. The use of thoracic myoplasty is an effective alternative to the filling of the cavity in fragile patients with significant operative risk.

Keywords. — pyothorax, thoracostomy, thoracomyoplasty

Introduction

The use of decortication for management of chronic tuberculosis empyema with calcified pleural pockets often proves risky and sometimes hardly feasible.

In such conditions; The combination of a thoracostomy, followed by a thoracomyoplasty or a single myoplasty is currently widely discussed.

Pyothorax is an infection of the pleural cavity secondary to partial or total pulmonary resection. It is a serious complication; of which management is difficult especially in case of associated bronchopleural fistula. [1]

Since the 1960s, different medical and surgical techniques were suggested to reduce this pathology's morbi-mortality [2,3] mainly the chronic infectious syndrome and chronic renal failure secondary to the amyloidosis it causes. The management of these pyothorax was revolutionized in the 1980s by the use of muscular flaps that, through their excellent vascularization and their throphicity, allowed to prevent infection of the pleural cavity and to treat bronchopleural fistula. [4,5].

The authors report their experience managing this complication through either a percutaneous drainage of the pleural pocket or a thoracostomy combined with a thoracoplasty to fully erase the pleural pocket.

Observation

The patient was 64 years old, with no significant pathological history, and was admitted for the management of a productive cough with left chest pain evolving in a context of altered general condition and uncounted weight loss.

The patient underwent a biological workup with no abnormalities and a chest X-ray that showed an opacity occupying the lower two thirds of the left hemothorax with a hydroaerobic level.

Chest CT showed a large left pleural pocket with thick calcified walls and significant retraction of the left hemothorax.

Given the patient's age, general condition and the high anesthetic risk, the surgical procedure was a left thoracotomy followed by a good preparation of the patient for a filling thoracomyoplasty.

The postoperative follow-up was simple with a daily change of the dressing.

The evolution was marked by a spontaneous closure of the thoracotomy cavity after its complete cleaning (**figures 1,2**).



Figure 1 : spontaneous closure of thoracostomy cavity

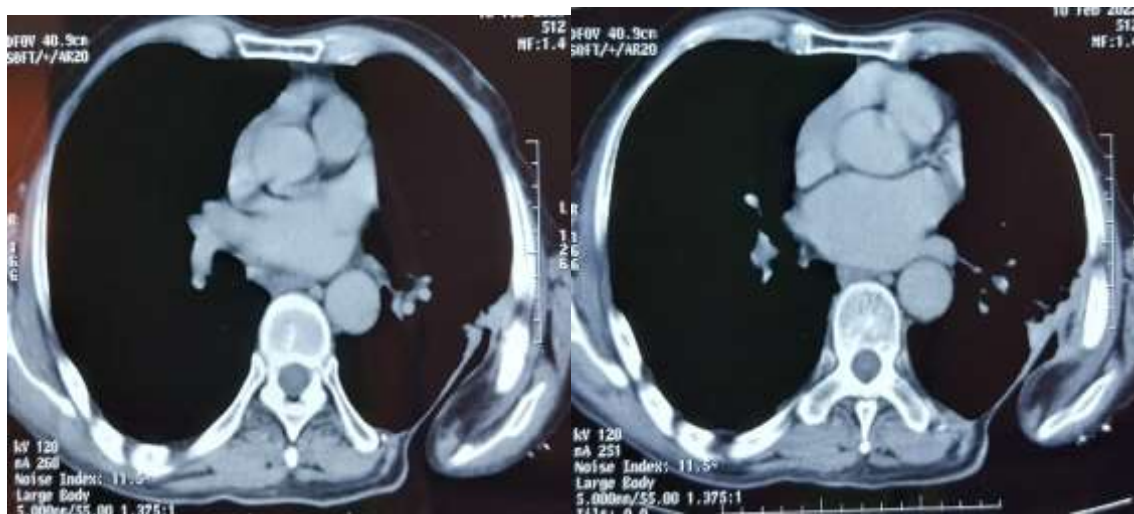


Figure 2 : CT images of a spontaneously closed thoracostomy cavity

Discussion:

Despite the evolution in the management of tuberculosis, choric pyothorax with calcified pleural pockets remains a frequent complication in developing countries. Decortication or pulmonary resection surgery often proves to be challenging, sometimes impossible when taking into account the chronicity of the lesion and the presence of important calcified pachypleuritis. Regarding postpneumonectomy empyema, it is still a severe complication with a high mortality rate. Risk factors for post-pneumonectomy

empyemas are heavily linked to the patient's pre-existing conditions (alteration of respiratory function, preexisting comorbidities such as diabetes). Important per-operative bleeding and the total volume of per-operative blood transfusions are more prevalent in patients with post-pneumonectomy empyema.

Post-pneumonectomy empyemas seem more frequent when the pneumonectomy is performed for an inflammatory pathology, especially an infectious one as is the case for the majority of our patients.

Out of 6 patients with a postpneumonectomy empyema, 4 had a right localization. This aligns with several literature findings where despite lacking a universal physiological explanation, the prevalence of empyema following a pneumonectomy as well as mortality rates were higher in right pneumonectomies over left ones. [8,9] One should also note that the association of empyema with a bronchopleural fistula is increasing mortality rates by flooding of the contralateral lung

Bronchoscopy is therefore a key exam in identifying bronchial fistula. In our series, it allowed us to objectify 6 cases of bronchial fistula.

The Mense et al., distinguish several stages in the evolution of postoperative empyema with different therapeutic possibilities. At the initial stage exudative, which we can observe during the first couple of days following the pneumonectomy. A simple classic draining can allow the evacuation of the liquid within the pleural space which mainly consists of blood; thus, preventing the surinfection of the pleural cavity [10].

At the subacute stage, which occurs in the following weeks, a fibrinopurulent effusion is formed. This effusion cannot be controlled by a simple draining (as proven by the low success rate estimated at 10%). Most authors estimate that a more aggressive method which consists of a lateral open window thoracostomy should be used [11]. This procedure entails a large resection of the chest wall to drain the pleural collection and keep treating the zone until complete detersion and healing is achieved. Said procedure aims to stabilize the patients through infection control and preventing the contamination of the contralateral lung in the case of a bronchopulmonary fistula. If no there is no fistula, some authors suggest a thoracoscopy with lavage irrigation and intrapleural antibiotherapy [12].

In our context, the pyothorax complicates pre-existing tuberculosis with aspergillus colonization and calcified pleural thickening. Therefore, conservative methods (lavage-irrigation and antibiotherapy with or without using intrapleural fibrinolytics) would not allow the control of an eventual infection, thus leaving a residual pleural pocket which will be a source of recurrence. Also, these are costly methods.

At the chronic stade, which occurs months or years following the pneumonectomy, the cavity is reformed with very fibrous walls. At this stage, the pleural drainage through an open window thoracostomy can be deemed insufficient to control the infection of the cavity and ensure a full recovery [10].

In these conditions, thoracoplasty is considered a satisfactory therapeutic alternative. This technique is also applicable for chronic, calcified pleural pockets when faced with the impossibility of performing a pleuropulmonary decortication whether combined or not with a pulmonary resection.

Indeed, filling myoplasty is performed in pleural pockets that do not regress after either a simple drainage or a thoracostomy and also for aesthetic reasons.

In the Massera et al., study, out of 12 patients treated with filling myoplasty post-thoracotomy, the success rate was of 83% with one postoperative death and one pyothorax recurrence treated with a thoracostomy. [13]

In the series of Regnard et al., out of 23, the success rate of a definitive control of infectious complications was of 87%. However, a complement of myoplasty and a

thoracoplasty followed by epiploplasty was needed in 3 patients following a pyothorax recurrence. [14]

In our daily practice, we privilege a posterolateral thoracotomy to preserve the dorsal muscle with it's vascular. The filling of the pleural cavity with dorsal muscle flap combined with was satisfactory and no use of epiploplasty was needed. One should also note that no case of recurring pyothorax was registered in our study.

Conclusion:

Pyothorax complicating a pneumonectomy cavity as well as chronic pleural pockets are a severe complication of which management is long and delicate. The management needs to be multidisciplinary aiming to protect the remaining lung. Conservative Thoracotomy preserving the thoracic wall muscles is important In the context of an eventual filling myoplasty.

Combining a thoracostomy with a thoracomyoplasty or a simple myoplasty seems to be a satisfactory therapeutic alternative, allowing to control infection and fill the residual cavity so as to prevent recurrences while also lowering morbimortality rates.

Conflicts of interest

The authors declare having no conflicts of interest.

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