

Case series

Re-operation through the same approach after thoracic surgery excluding postoperative clotted hemothorax: retrospective study about 20 patients



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Abstract

In thoracic surgery, postoperative clotted hemothorax presents the frequent complication indication reoperation of patients. Operate through the same incision especially after thoracotomy needs a laborious pulmonary release. We included 20 patients who were operated for a second time through the same incision. We excluded from this study patients re-operated for postoperative clotted hemothorax. It was 9 men (45%) and 11 women (55%). The median age was 50.55 years old. Nine patients (45%) were operated firstly outside our department, against 11 patients (55%). Duration between the first and second surgery was varied from 4 days to 30 years. The etiologies indicating the first surgery were especially hydatidosis in 7 patients (35%), chest wall disease in 3 patients (15%), post-trauma affections in 2 patients (10%), mediastinal pathology in 2 patients (10%). The approach for the first intervention were thoracotomy in 12 patients (60%), elective incision in 3 patients (15%), cervicotomy in 2 patients (10%), sternotomy in 1 patient (5%), mediastinoscopy in 1 patient (5%) and anterior mediastinotomy in 1 patient (5%). The reasons why a re-operation was indicated were essentially: recurrence of hydatidosis in 3 patients (15%), inconclusive anatomopathological study in 2 patients (10%), fortuitous adenocarcinoma discovery in 2 patients (10%), postoperative empyema in 4 patients (20%) and infection of the chest wall in 3 patients (15%). The rate of mortality was 15% in 3 patients. Reoperation through the same incision especially after thoracotomy is accompanied with a difficult pulmonary release. Among the indications responsible of reoperation, we quote recurrence of the primary disease, an inconclusive anatomopathological study and fortuitous discovery of lung cancer.

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Introduction

Thoracic surgery has undergone a tremendous development due to introduction of minimally invasive surgery and advances in techniques of general anesthesia and analgesia. This has allowed a decrease in rates of morbidity and mortality. Postoperative complications can occur following each thoracic surgical procedure. The most feared complications remain atelectasis, postoperative hemothorax, postoperative pyothorax, prolonged aerial leakage and bronchopleural fistula especially after pneumonectomy or pulmonary lobectomy. Most complications are managed by conservative methods such as fibroaspiration, mobilization or addition of a chest tube [1,2]. Sirbu and colleagues in their article published in 1998 about re-exploration for complications after lung surgery, they found that postoperative bleeding is the frequent complication for re-operation [3]. In different series, the rate of this complication is varied between 25 to 75% [3-5]. In this manuscript, we excluded the postoperative clotted hemothorax, since it was devoted in another article. The particularity in this manuscript according to the title, we treat patients who were re-operated through the same approach of the first surgery. Several articles discuss **reoperation** in a general way, which explain the frequency of postoperative clotted hemothorax and bronchopleural fistula [4,5].

Methods

It was a descriptive and monocentric study with a retrospective collection of data, concerning 20 patients who were re-operated in our department of thoracic surgery over a period of ten years (from 1st January 2009 to 31st December 2018). We have included all patients who benefited of a thoracic surgery in the past time in our department or outside it and who were operated from the same first surgical incision,

whatever the period between the two interventions. Also, patients who were approached from the same first incision with addition of another approach were included in this study. Our exclusion criteria were patients benefiting of a re-exploration for postoperative clotted hemothorax and patients operated from another approach other than the first approach. Also, patients with incomplete medical records were excluded. We collected data from the operative report, especially age, sex, indications for the first intervention and approach, the period between the two surgical procedures, informations concerning the second intervention (approach, extrapleural plan, exploration, chest tube) and finally postoperative complications. Our aim is to specify the indications for re-operations of these patients and to characterize the difficulties and complications that are accompanied to this reintervention through the same approach.

Results

Among 20 patients, it was 9 men (45%) and 11 women (55%). The median age was 50.55 years old with extreme ages between 24 and 74 years old. Table 1 summarizes data of all patients. The first surgical procedure was carried out outside of our department in 9 patients (45%) against 11 patients (55%) was managed by our thoracic surgeons. Duration between the first and second surgery was varied from 4 days to 30 years. The etiologies indicating the first surgery were: hydatidosis all forms combined in 7 patients (35%) (hydatid cyst of liver broken in the thorax in 2 patients 10%), chest wall disease in 3 patients (15%), post-trauma affections in 2 patients (10%), mediastinal pathology in 2 patients (10%), undocumented problem in 1 patient (5%), tuberculosis pyothorax in 1 patient (5%), goiter in 1 patient (5%), diaphragmatic hernia in 1 patient (5%), cavitory lesion in 1 patient (5%) and aspergilloma in 1 patient (5%). The approach

for the first intervention were thoracotomy in 12 patients (60%), elective incision in 3 patients (15%), cervicotomy in 2 patients (10%), sternotomy in 1 patient (5%), mediastinoscopy in 1 patient (5%) and anterior mediastinotomy in 1 patient (5%). The reasons why a re-operation was indicated were: recurrence of hydatidosis in 3 patients (15%) and recurrence of elastofibroma dorsi in 1 patient (5%), recurrence of hemoptysis in 1 patient (5%), inconclusive anatomopathological study in 2 patients (10%), fortuitous adenocarcinoma discovery in 2 patients (10%), postoperative empyema in 4 patients (20%), infection of the chest wall in 3 patients (15%), chest wall hematoma in 1 patient (5%), diaphragmatic hernia in 1 patient (5%), cervical and mediastinal lymph nodes after an operated goiter in 1 patient (5%) and finally lacing of tracheal sutures in 1 patient (5%). For postoperative complications, 3 patients needed transfusion of the red blood cells (15%) and the rate of mortality was 15% in 3 patients. No patient in our study was operated for a persistent prolonged air leakage.

Discussion

In recent years, various evolutions have been observed which can influence the surgical follow-up in thoracic surgery. These evolutions concern surgical techniques by the rise of video-assisted thoracoscopic surgery (VATS) and the optimization of anesthetic techniques and postoperative management in intensive care unit, including the use of non-invasive ventilation [6]. Some complications after thoracic surgery are common to any surgical procedure, and some depend on the type of intervention. The frequent reason for early re-operation in different series remains postoperative clotted hemothorax. According to Table 1, there are patients who were re-operated in the early period after the first surgery and patients who stayed years before benefiting of a second intervention. In the first case and especially after thoracotomy, there is no difficulty since the pleura-pulmonary adhesions are

not yet constituted. Unlike the second case where the pulmonary release is laborious and difficult, associated with bleeding. The recurrence of hydatid cyst is related to patients who have been operated by general surgeons who don't know the particularities of hydatidosis surgery (especially the notion of avoiding pleural contamination), since thoracic surgery has not been recognized at the time in our country.

Surgical revision for wall infection is also common in our study, due to the predominance of infectious diseases in our context [7]. Normally, infection of the wall is managed by the daily dressing and the antibiotic treatment oriented by the antibiogram after sampling. However, a patient who does not respond to these procedures and in case of deep infections, sometimes associated with pleural empyema, surgical revision is indicated. No patient in our series was re-operated for persistent prolonged air leakage. Our procedure in this complication is to mobilize the chest tube or add another. Christophoros and colleagues according to their article published in 2014, re-operated 6 patients among 719 patients for control of a prolonged air leakage [8]. For postoperative atelectasis, especially in children who cannot do their respiratory physiotherapy properly, our management is to perform fiber optic with bronchial aspiration and no patient was re-operated for this complication. Otherwise, the patient is urged to do his respiratory physiotherapy after leaving the hospital with spontaneous cough and incentive spirometry. When the surgical procedure is done for patients in order to have a diagnosis (mediastinotomy or mediastinoscopy) and the pathological study is inconclusive, we can propose to re-operate the patient to have a diagnosis especially if there are no other alternatives to get the diagnosis and the surgical procedure is not aggressive.

Likewise, the fortuitous discovery of lung cancer on the operative specimen was noted in two patients in this study

who were chronic smokers; the first was operated firstly for a pulmonary hydatid cyst and the other for an aspergilloma. In this cases, an anatomical lung resection with mediastinal lymph nodes dissection remain mandatory. The mortality rate was low in the Christophoros and colleagues series (6.1%), with variable rates ranging from 13.3-37.7% [3,4,9]. In our series, the mortality rate was 15%. The limitations of this study are that it is retrospective, including a small number of patients and excluding patients with postoperative clot hemothorax and bronchopleural fistula with the most common complications indicative of reoperation. The advantage is that this study included all approaches that were performed, thoracotomies and others.

Conclusion

The surgical reintervention after thoracic surgery through the same incision, especially a thoracotomy, presents a surgical difficulty that associates in the postoperative period with prolonged air leakage and bleeding following laborious release of the lung. Recurrence of primary disease, inconclusive anatomopathological study and the fortuitous discovery of lung cancer also present indications for reoperation.

What is known about the topic

- The management of complications in thoracic surgery must be conservative;
- Re-operation is most often performed for postoperative clotted hemothorax.

What this study adds

- Re-operation is indicated in case of recurrence of primary disease, inconclusive anatomopathological study, or fortuitous discovery of lung cancer;
- Re-operation is accompanied with a considerable rate of mortality.

Competing interests

The authors declare no competing interests.

Authors' contributions

All the authors have read and agreed to the final manuscript.

Table

Table 1: characteristics of patients

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Table 1: characteristics of patients.

Number	First surgery (etiology and approach)	duration	Indication of re-operation	Approach of second surgery	Follow-up
1	Hydatid cyst of RUL Thoracotomy	4 years	Recurrence of hydatid cyst	Rethoracotomy	
2	Right hydatid cyst of lung Thoracotomy	10 years	Recurrence of hydatid cyst	Rethoracotomy	
3	Elastofibroma Dorsi Elective incision	5 days	Recurrence of elastofibroma Dorsi	Same incision	
4	Mediastinal lymph nodes Mediastinoscopy	7 days	Inconclusive anathomo-pathological study	Remediastinoscopy	
5	Tumor of the chest wall Elective incision	15 days	Hematoma of the chest wall	Same incision	
6	Bone hydatidosis of sternum Sternotomy	7 days	Chest wall infection and sternum disunion	Resternotomy	
7	Tracheal stenosis post-trauma Cervicotomy	4 days	Lachage of tracheal sutures	Cervicotomy + sternotomy	Death by hemorrhagic shock
8	Left diaphragmatic hernia Thoracotomy	4 years	Pyothorax + pleuro-cutaneous fistula	Rethoracotomy	
9	Hydatid cyst of LUL Thoracotomy	40 days	Postoperative empyema	Rethoracotomy	
10	Aspergilloma of LLL thoracotomy	30 days	Adenocarcinoma in the anatomopathological study	Rethoracotomy	Transfusion of RBC
11	Hydatid cyst of liver broken in the thorax Thoracotomy	5 years	Recurrence of hydatidosis	Rethoracotomy	Death by septic shock
12	Foreing body of thoracic esophagus Thoracotomy	8 days	Empyema on oesophageal fistula	Rethoracotomy + cervicotomy	Death by septic shock
13	Undocumented problem Thoracotomy	30 years	Diaphragmatic hernia	Rethoracotomy	Transfusion of RBC
14	Tuberculosis empyema thoracotomy	45 days	Chest wall infection	Rethoracotomy	
15	Hydatid cyst of LLL + nodule thoracotomy	21 days	Adenocarcinoma of nodule after the anatomopathological study	Rethoracotomy	
16	Goiter cervicotomy	11 years	Cervical and mediastinal lymph nodes	Re-cervicotomy + mediastinoscopy	
17	Anterior mediastinal process Anterior mediastinotomy	20 days	Inconclusive anatomopathological study	Anterior remediastinotomy	
18	Chest wall abscess Elective incision	9 days	Chest wall infection	Same incision	
19	Hydatid cyst of liver broken in the thorax Larotomy + thoracotomy	90 days	Postoperative empyema	Rethoracotomy	Transfusion of RBC
20	Cavity of the LLL Thoracotomy	1 year	Aspergilloma of postoperativeresidual cavity	Rethoracotomy	

RUL: right upper lobe, LUL: left upper lobe, LLL: left lower lobe, RBC: red blood cell