



Pulmonary Lobectomies for Benign Diseases: Results and Complications about 120 Cases

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Abstract

Introduction: In developed countries, lobectomy is mainly used for lung cancer. However, in our context, this surgical procedure is especially practiced for infectious lesions. Our objective in this study is to present the epidemiological and surgical outcomes of lobectomy in benign pathology.

Material and Methods: It was a retrospective study, collected 120 patients over a period of 8 years (from 1 January 2010 to 31 December 2017). All patients who had a lobectomy as a surgical procedure were included. Patients with malignant diseases and incomplete medical records were excluded.

Results: It was a 70 men (58.33%) and 50 (41.66%) women, with a median age of 34.7 years old. The pathological history was predominated by tuberculosis in 37 patients (30.8%). Hemoptysis was the most predominant respiratory functional sign in 84 patients (70%). The etiologies were predominated by bronchiectasis in 38 patients (31.6%), hydatid cyst of the lung in 31 patients (25.8%), aspergilloma in 29 patients (24.1%), a tuberculosis destroyed lobe in 14 patients (11.6%). The localization of lesions was on the left side in 61 patients (50.8%). All patients (100%) benefited from a posterolateral thoracotomy conservative of the chest wall muscles. The extra pleural plan was done in 41 patients (34.16%). Concerning postoperative complications, 10 patients (8.3%) were transfused and 3 deaths within 48 h of surgical intervention. The average long-term follow-up was 2 years without any marked recurrence.

Conclusion: The endemicity of tuberculosis and hydatidosis in our country explains the frequency of anatomical lung resections. A good selection of patients and a serious preoperative preparation can reduce the rate of morbidity and mortality correlated to this type of diseases.

Keywords: Lobectomy; Tuberculosis; Thoracotomy; Bronchiectasis; Aspergilloma

Introduction

Pulmonary lobectomy introduced firstly in 1891 by Tuffier, is an anatomical resection of lung which can be performed in malignant and benign disease [1-3]. In our context, the benign pathology, represented essentially by tuberculosis and hydatidosis still remains predominant in comparison with the tumoral pathology (lung cancer). Because of pleura pulmonary adhesions, the difficult hilar dissection, and peribronchial hypervascularization, lobectomy is known to be a complex procedure if it has been done for inflammatory and infectious diseases. For this reasons, the rate of morbidity and mortality remains high. Conventional surgery is the basic option by thoracotomy; therefore, the Video-Assisted Thoracic Surgery (VATS) starts to be used also in company with open surgery. In this study, we will try to present the outcomes of lobectomy performed in patients with benign diseases.

Material and Methods

It was a retrospective study done in our department of thoracic surgery in CHU Hassan II Fez, collected 120 patients over a period of 8 years (from 1 January 2010 to 31 December 2017). All patients who had a lobectomy in the operative record were included. Patients with malignant diseases and incomplete medical records were excluded. The clinical, paraclinical, and operative data were summarized on a study sheet already established. Our goal is to show the peculiarities of lobectomies in the context of benign pathology, and analyze the results, especially postoperative complications.

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Table 1: Characteristics of patients and postoperative complications.

	Number of patients (percentage)
Median age	34,7 years old
• Male	70 (58.33%)
• Female	50 (41.66%)
pathological antecedents:	
• Tuberculosis	37 (30.8%)
• Repetitive pneumopathies	10 (8.3%)
• Hydatid cyst operated	7 (5.8%)
• Chronic smoking	6 (5%)
• Foreign body	1 (0.8%)
• Situs in versus	1 (0.8%)
Etiologies:	
38 (31.6%)	
• Hydatid cyst of the lung	31 (25.8%)
• Aspergilloma	29 (24.1%)
• Tuberculosis destroyed lobe	14 (11.6%)
• Emphysema bubble	3 (2.5%)
• Hydatid cyst of liver broken in the thorax	2 (1.6%)
• Diaphragmatic hernia	1 (0.8%)
• Foreign body	1 (0.8%)
• Arteriovenous malformation	1 (0.8%)
Postoperative complications:	
10 (8.3%)	
• Postoperative pneumonia	6 (5%)
• Prolonged air leak	5 (4.1%)
• Postoperative hemothorax	1 (0.8%)
• Persistent pleural pocket	2 (1.6%)
• Deaths	3 (2.5%)

Table 2: Lobar localization of patients.

Lobar localization	Number of patients (percentage)
Left lower lobe	34 (28.33%)
Left upper lobe	27 (22.5%)
Right lower lobe	26 (21.6%)
Middle lobe	17(14.16%)
Right upper lobe	16 (13.33%)

Results

This retrospective study has consisted 120 patients, divided between 70 men (58.33%) and 50 (41.66%) women, with a sex ratio of 1.4 H/F (Table 1). The median age was 34.7 years old. The pathological history was predominated by tuberculosis in 37 patients (30.8%) considering any form, repetitive pneumopathies in 10 patients (8.3%), a hydatid cyst operated of liver or lung in 7 patients (5.8%), chronic smoking in 6 patients (5%), a foreign body concept in one patient (0.8%), and *situs in versus* in another (0.8%). Hemoptysis was the most predominant respiratory functional sign in 84 patients (70%), followed by bronchorrhea in 50 patients (41.6%), dyspnea in 11 patients (9.1%), hydatid membrane rejection in 6 patients (5%), and chest pain in 4 patients (3.3%). The etiologies were predominated by bronchiectasis in 38 patients (31.6%) (Figure 1), hydatid cyst of



Figure 1: Thoracic Computed tomography objectifying bronchiectasis of the left lower lobe.

the lung in 31 patients (25.8%) (Figure 2), aspergilloma in 29 patients (24.1%) (Figure 3), a tuberculosis destroyed lobe in 14 patients (11.6%), emphysema bubble in 3 patients (2.5%), a hydatid cyst of the liver broken in the thorax in 2 patients (1.6%), diaphragmatic hernia in a single patient (0.8%), a foreign body in a single patient (0.8%), and an arteriovenous malformation in another (0.8%). The localization of lesions was on the left side in 61 patients (50.8%), and on the right side in 59 patients (49.2%). The rate according to the lobar localization is recorded in Table 2. All patients (100%) benefited from a posterolateral thoracotomy conservative of the chest wall muscles. The extra pleural plan was done in 41 patients (34.16%). Concerning postoperative complications, 10 patients (8.3%) were transfused during the procedure or immediately after the surgery. Postoperative pneumonia was reported in 6 patients (5%), a prolonged air leak in 5 patients (4.1%), a postoperative hemothorax in one patient (0.8%) a persistent pleural pocket in 2 patients (1.6%), and 3 deaths within 48 h surgical intervention. The pathological study of operative specimens was marked mainly by the presence of active tuberculosis in 7 patients (7.5%), for whom anti bacillary treatment was given. The average long-term follow-up was 2 years without any marked recurrence or death.



Figure 2: Thoracic CT scan showing a huge hydatid cyst of the left lower lobe (left lower lobectomy), associated with a hydatid cyst of the chest wall.



Figure 3: Thoracic CT showing aspergilloma of the right upper lobe.

Discussion

In this study, 95% of etiologies are related to hydatidosis, tuberculosis and its pulmonary sequelae (bronchiectasis, aspergilloma, and destroyed lobe), which show that anatomical resections of the lung are always made for infectious pathology despite the development of antibiotic and chemotherapy against tuberculosis, unlike developed countries that performs these surgical procedures firstly for lung cancer. Hemoptysis was predominated in this study, and it was an important indication to perform lobectomy, because of the high rate of recurrence if we realize just a sub lobar resection, especially with an infected underlying lung. The localization almost similar at the level of the different lobes can be explained by the predominance at the level of the upper lobes and superior segments for tuberculosis, and at the level of lower lobes for hydatidosis.

For the approach, posterolateral thoracotomy consists the main way in infectious diseases, because of important pleural adhesions and inflammatory tissue around vessels. It was performed for all patients in this study. The passage through the extra pleural plan presents an important alternative; with sometimes a resection of a rib in case of inter costal narrowing. In terms of surgery for infectious and inflammatory diseases, especially during lobectomy or pneumonectomy, surgeon must always consider the risk of bronchopleural fistula which remains a serious complication associated with a high morbidity and mortality rate [4]. For this reason, a flap of bronchial stump must be performed (most often pleural flap in our department), and the approach must conserve the muscles of the thoracic wall, especially latissimus dorsi muscle, for a possible thoracomyoplasty. For VATS lobectomy in benign diseases, some authors like Dohun Kim et al. [5], say that is feasible and a safe option with similar outcomes to open surgery if it is made for selected cases [5,6].

The rate of bleeding complications and postoperative pneumonia is explained by pleural adhesions, difficult hilar dissection because of calcified lymph nodes, and infected underlying lung. The only postoperative hemothorax occurring 24 h after surgery was operated with a good clinical and radiological evolution. Air leakage after pulmonary resection is normal. But the problem arises if it exceeds in general 5 to 7 days. This affection is responsible for other pulmonary complications like empyema, and long period of hospitalization [7-9]. The management is to mobilize the initial chest tube or add another. Bronchopleural fistula was described in one patient, who was died one month after the surgery. The other two deaths were recorded 48 hours after intervention by a cardio respiratory arrest. Mortality

after pulmonary lobectomy varies in the literature according to the approach followed. It varies from 0 to 2% after VATS [10], and reaches up to 8% in open surgery [11]. Mortality in our series was 2.5%, which is very satisfactory.

Conclusion

Pulmonary lobectomies for Infectious and inflammatory diseases are usually a complex procedure which explains the high rate of morbidity and mortality. Thoracotomy remains the main approach for this type of diseases, and VATS lobectomy can be safe and efficient in selected patients.

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