



Surgical Outcomes of Pulmonary Lobectomies for Malignant Diseases: Experience of a Moroccan Center about 42 Cases

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Abstract

Introduction: Pulmonary lobectomy is an anatomical resection of lung which presents the basic treatment for malignant diseases, particularly for non-small cell lung cancer. In this study we present our experience in the management of these diseases operated by lobectomy, including our surgical habits, morbidity and mortality results. **Material and Methods:** It was a monocentric and retrospective study including 42 patients, all operated for a malignant disease by a lobectomy of lung, over 8 years.

Results: This study included 32 men and 10 women, with a median age of 54.95 years old. Chronic smoking was presented in 19 patients (45.23%), and 8 patients (19.04%) had a known neoplasia. Respiratory functional signs were predominated by hemoptysis in 13 patients (30.95%), and the discovery was accidental for 14 patients (33.33%). Respiratory functional exploration done by spirometry showed a mean FEV1 of 2.86 Liter. The approach was a posterolateral thoracotomy for all patients (100%), and surgical procedure was a lobectomy for all patients (100%). Histological study was predominated for non small cell lung cancer in 26 patients (61.9%). The average duration of hospitalization was 6 days, and the mean follow-up was 2.6 ans. The rate of morbidity and mortality in our study was respectively 14.28% and 7.14%.

Conclusion: Pulmonary lobectomy is performed in our department with an acceptable rate of morbidity and mortality, even if all patients were approached by thoracotomy.

Keywords: Pulmonary lobectomy; Lung cancer; Surgery

Introduction

For a long time, lobectomy of lung was performed for benign diseases, especially for tuberculosis and bronchiectasis [1]. But afterwards, the evolution concerning antibiotic treatment and the development of lung cancer screening, this surgical procedure presents the basic treatment of Non Small Cell Lung Cancer (NSCLC) worldwide. Until now in our context, the anatomical resections of the lung (especially lobectomy) remain more practiced for the infectious pathology compared to the tumoral diseases because of the endemicity of tuberculosis and hydatidosis. When we talk about malignant diseases, we are talking mainly about NSCLC, even though there are other tumors that remain rare, such as carcinoid tumors or pulmonary metastases of an extrapulmonary tumor. Concerning the approach, After that thoracotomy was the reference way for pulmonary resection in NSCLC, the Video-assisted Thoracic Surgery (VATS) has taken a major place in the treatment of these patients [2,3]. Our main objective is to report our experience in the realization of pulmonary lobectomy in malignant diseases, and the surgical results concerning this procedure, mainly morbidity and postoperative mortality.

Material and Methods

This study was carried out in our department of Thoracic Surgery in CHU Hassan II Fez. It has collected 42 patients over a period of 8 years (from 01 January 2010 to 31 December 2017), all having benefited of pulmonary lobectomy for a malignant pathology. We have excluded patients, who have been operated by lobectomy for a benign disease, and all patients with incomplete medical records, and patients located outside the determinate period of study. We have recorded clinical

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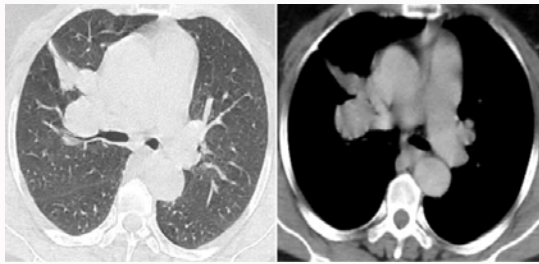


Figure 1: Thoracic CT showing a mass of a hilar localization compressing the upper lobe bronchus (Surgical specimen: atypical carcinoid tumor).

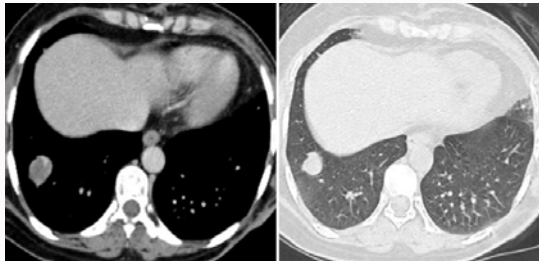


Figure 2: Thoracic CT showing a nodule of right lower lobe (surgical specimen: Adenocarcinoma).

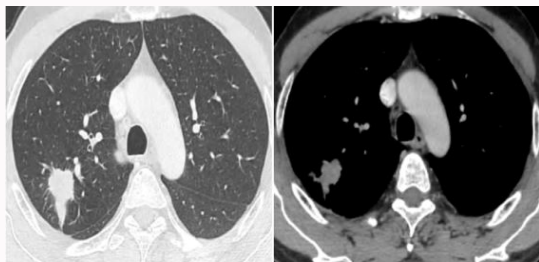


Figure 3: Thoracic CT showing a mass of right upper lobe (surgical specimen: Adenocarcinoma).

and paraclinical information's, especially age, sex, pathological antecedents, functional signs, results of Thoracic Computed Tomography, and outcomes of postoperative follow-up. Our goal in this study is to specify the etiological profile of malignant diseases in our department, and the operative and postoperative management in front of this type of pathologies.

Results

Among 42 patients (Table 1), it was 32 men and 10 women, with a sex Ratio of 3.2 H/F. The median age was 54.95 years old, with limits from 25 to 72 years old. For pathological history 19 patients (45.23%) had a chronic smoking, 8 patients (19.04%) had a known neoplasia, and 2 cases (4.7%) with a Chronic Lymphocytic Leukemia. Respiratory functional signs were predominated by hemoptysis in 13 patients (30.95%), chest pain in 12 patients (28.57%), and dyspnea in 3 patients (7.14%). The discovery was accidental for 14 patients (33.33%), including 8 patients in the context of radiological control of known neoplasia. Fiber optic bronchoscopy was performed in 13 patients (30.95%), returning without abnormality in 7 patients (16.66%), and evoking a carcinoid tumor in 3 patients (7.14%) (Figure 1), and bronchial stenosis in 4 patients (9.52%). The Computed Tomography-guided biopsy was realized in 7 patients (16.66%), confirming adenocarcinoma in 3 patients (7.14%) (Figure 2 and

Table 1: Characteristics of patients and postoperative complications.

Characteristics	Number of patients (percentage)
Median age	54.95 years old
Pathological history	
Chronic smoking, had	19 (45.23%)
Known neoplasia	8 (19.04%)
Chronic Lymphocytic Leukemia	2 (4.76%)
Respiratory functional signs	
Hemoptysis in	13 (30.95%)
Chest pain in	12 (28.57%)
Dyspnea	3 (7.14%)
Accidental discovery	14 (33.33%)
Mean of FEV1	2.86 (L)
Postoperative complications	
Bleeding	2 (4.76%)
postoperative empyema	2 (4.76%)
wall infection	1 (2.38%)
atelectasis	1 (2.38%)
Rate of mortality	3 (7.14%)

Table 2: Outcomes of histological study of surgical specimen.

Histological study	Patients (percentage)
Carcinoid tumor	5 (11.9%)
Lung squamous cell carcinoma	8 (19.04%)
Adenocarcinoma of lung	18 (42.85%)
Secondary localization of lung	6 (14.28%)
Adenocarcinoma of unknown origin	1 (2.38%)

3), and inconclusive in 4 patients (9.52%). All patients (100%) had benefited of preoperative staging, by a thoracic, abdominal, pelvic, and cerebral Computed Tomography, but only 5 patients (11.90%) had a PET scan, given the unavailability in our city and the increased price of this radiologic examination. Respiratory functional exploration done by spirometry showed a mean FEV1 of 2.86 Liter. The approach was a posterlateral thoracotomy for all patients (100%), conservative of the chest wall muscles. The surgical procedure was a lobectomy for all patients (100%), associated with parietectomy of chest wall in 3 patients (7.14%), and bronchial sleeve in one patient (2.38%). All patients (100%) had benefited of a mediastinal lymphadenectomy, and 30 patients (71.42%) of a flap of bronchial stump, usually pleural flap. The results of histological study of surgical specimen were cited in Table 2.

For the immediate follow-up surgery, 2 patients (4.76%) were transfused 24 hrs after surgery for bleeding. Also 2 patients (4.76%) who had a postoperative empyema with good evolution after a thoracic drainage. only one patient (2.38%) had a wall infection with a change of dressing each day with antibiotic therapy, and only one patient (2.38%) presented postoperative atelectasis benefitting of a fibroaspiration with a good evolution. The average duration of hospitalization was 6 days. The mean follow-up was 2.6 ans. The recurrence of tumor was recorded in two patients, the first at the level of chest wall, and the second in the left lower lobe after he has received left upper lobectomy for a squamous cell carcinoma. The rate of mortality in this study was 7.14% (3 patients). The first had

adenocarcinoma died in the oncology department after 3 years of a left upper lobectomy. The second patient (right lower lobectomy: squamous cell carcinoma) died one month after surgery, after he presented postoperative pyothorax probably on a bronchopleural fistula, benefitting from a chest tube. The third patient had died after a lower right lobectomy probably by a cardiorespiratory arrest at home.

Discussion

Anatomical resections of lung in Morocco are predominated for benign diseases, especially for tuberculosis, its parenchymal complications, and hydatid cyst. Sadly, for malignant diseases, the absence of lung cancer screening in our context explains the frequency of NSCLC at a non-surgical stage. Surgical treatment remains the most effective curative option for NSCLC, since the rate of survival reaches approximately 50% to 80% at five years [4], and according to the randomized study of LCSG (Lung Cancer Study Group) carried out in 1995 [5], the best surgical intervention remains pulmonary lobectomy [6,7]. Therefore, segmentectomy of lung is performed only for functionally failing patients or small and peripheral tumors [8].

Concerning the surgical approach, the benefits of thoracotomy versus VATS are [7]: a wide field of vision, the possibility of manual palpation of the lung parenchyma looking for nodules; easier vascular control. Generally, the VATS is responsible for a significant decrease in pain and post-operative complications, as well as the duration of hospitalization [9]. But, according to the study of Bendixen, et al. there is no significant difference between the two groups in terms of perioperative morbidity and mortality [10]. In this study, all patients were treated by a posterolateral thoracotomy conservative of the chest wall muscles, and no Video-assisted Thoracic Surgery lobectomy (VATS lobectomy) was performed in our center because of the lack of the necessary equipment for this technique.

For the protection of the bronchial stump against a bronchopleural fistula, our habit is to make a flap by parietal pleura or by the intercostal muscle. Mediastinal lymph node dissection allows a better local control of NSCLC, but has not yet been clearly proven on survival, because of the limited randomized controlled trials [11]. Zhang et al. have demonstrated that open thoracotomy can achieve better lymph node dissection efficacy than thoracoscopy lobectomy in lung cancer [12]. Sleeve Lobectomy (SL) performed in 2 patients of this study was discovered in order to avoid pneumonectomy which is accompanied with a high risk of morbidity and mortality. According to the study published in 2016 realized by D'Andrilli, et al. this technique (SL) presents comparable functional and oncologic results in front of standard lobectomy [13].

In a study realized by Sophie Guinard, et al, published in 2015, the rate of morbidity was 32.2% among 11016 patients approached by thoracotomy [14]. This rate was significantly recorded compared to the VATS group (among 523 patients, the morbidity rate was 25.8%). Therefore, the rate of mortality was not significative between the two groups (1.1% for the VATS group versus 1.6% for the thoracotomy group, $p=0.39$) [14]. The morbidity rate was in our study 14.28% which remains very acceptable seeing that all patients were approached by posterolateral thoracotomy. Compared to the same previous study, the rate of mortality was high (7.14%).

On another side, the limits are that this study was retrospective and monocentric, including a small number of patients. Also, this study was focused on the lobectomies performed only for malignant

diseases, and all patients were approached by thoracotomy, and any VATS lobectomy was realized.

Conclusion

Lobectomy of lung presents the best surgical procedure for non small cell lung cancer worldwide, but in our context it is more practiced for infectious diseases. In this study, we conclude that the pulmonary lobectomy can be performed with an acceptable rate of morbidity and mortality.

References

1. Ian R Gray. Atelectasis as a complication of pulmonary lobectomy. *Thorax*. 1946;1:263-73.
2. Whitson BA, Groth SS, Duval SJ, Maddaus MA. Surgery for early-stage non-small cell lung cancer: a systematic review of the video-assisted thoracoscopic surgery versus thoracotomy approaches to lobectomy. *Ann Thorac Surg*. 2008;86(6):2008-16.
3. Brioude G, Orsini B, Natale C. VATS major Lung resection: a new standard for the treatment of early stages primary lung cancers. *Rev Mal Respir Actualités*. 2011;395-9.
4. Reck M, Heigener DF, Mok T, Soria JC, Rabe KF. Management of nonsmall cell lung cancer: recent developments. *Lancet*. 2013; 382 (9893):709- 19.
5. Ginsberg RJ, Rubinstein LV. Randomized trial of lobectomy versus limited resection for T1 N0 non-small cell lung cancer. Lung Cancer Study Group. *Ann Thorac Surg* 1995;60(3):615-22.
6. Rinieri P, Peillon C, Bubenheim M, Salaün M, Mahieu J, Melki J, et al. Comparaison des segmentectomies pulmonaires video- et robot-assistées. *Chirurgie Thoracique et Cardio-Vasculaire*. 2015;19(3):135-40.
7. Étienne H, Le Roux M, Giol M, Debrosse D, Khalife T, Camuset J, et al. Les standards de la prise en charge chirurgicale des cancers bronchiques non a petites cellules Standards in surgical treatment of non-small cell lung cancer. *Revue des Maladies Respiratoires Actualités*. 2018;10: 275-84.
8. Sonobe M, Date H. Technology on partial resection and segmentectomy for early-stage lung cancer. *Kyobu Geka*. 2016;69(8):676-80.
9. Falcoz PE, Puyraveau M, Thomas PA, Decaluwe H, Hürtgen M, Petersen RH, et al. Video-assisted thoracoscopic surgery versus open lobectomy for primary non-smallcell lung cancer: a propensity-matched analysis of outcome from the European Society of Thoracic Surgeon database. *Eur J Cardiothorac Surg*. 2016;49(2):602-9.
10. Bendixen M, Jorgensen OD, Kronborg C, Andersen C, Licht PB. Postoperative pain and quality of life after lobectomy via video-assisted thoracoscopic surgery or anterolateral thoracotomy for early stage lung cancer: a randomised controlled trial. *Lancet Oncol*. 2016;17(6):836-44.
11. Watanabe S. Lymph node dissection for lung cancer: past, present, and future. *Gen Thorac Cardiovasc Surg*. 2014;62(7):407-14.
12. Zhang W, Wei Y, Jiang H, Xu J, Yu D. Thoracotomy is better than thoracoscopic lobectomy in the lymph node dissection of lung cancer: a systematic review and meta-analysis. *World J Surg Oncol*. 2016;14 (1):290.
13. D'Andrilli A, Maurizi G, Andreetti C, Ciccone AM, Ibrahim M, Piraino A, et al. Sleeve lobectomy versus standard lobectomy for lung cancer: functional and oncologic evaluation. *Ann Thorac Surg*. 2016;101(5):1936-42.
14. Guinard S, Falcoz P-E, Olland A, Renaud S, Reeb J, Santelmo N, et al. Évolution de la prise en charge chirurgicale des cancers pulmonaires en France : lobectomie mini-invasive versus lobectomie par thoracotomie d'après la base de données nationale Epithor. *Chirurgie Thoracique et Cardio-Vasculaire*. 2015;19 (1):27-31.