

# LOBECTOMY FOR PULMONARY DISEASE AT A TERTIARY CARE HOSPITAL: A TWO-YEAR STUDY

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## OBJECTIVES:

*The present study was designed to provide data on the role of elective open lobectomies in the treatment of benign and malignant pulmonary diseases in our setting.*

## METHODS:

*A retrospective audit of patient's records over a two-year period was performed to collect relevant data at the Cardio Thoracic Unit of the Lady Reading Hospital, Peshawar, Pakistan.*

## RESULTS:

*A total of 55 lobectomies were performed from January 1999 to December 2000, including 34 males and 21 females. The mean age of patients was 31.23 + 14.95 years, with only 7 (12.7%) cases above 50 years of age. Benign pulmonary conditions, particularly chronic lung infections were the major indication for lobectomies (50/55, 90.9%), while lung cancers accounted for only 5/55 (9.1%) of lobectomies. Bronchiectasis was the leading indication with 28 (50.9%) lobectomy cases. Most patients 37/55 (67.3%) had uneventful post operative recovery, while 18/55 (32.7%) developed some sort of complication. The most common postoperative complication was infection (wound infection and empyema) accounting for 8 patients (14.6%), followed by air leak 5/55 (9.1%). Mortality was low, with only 2 deaths (3.6%).*

## CONCLUSION:

*Elective open lobectomy is a safe procedure in our setting with significant benefits for patients and acceptable morbidity and mortality. PJCTS 2004;III:77-80*

Key Words: Lobectomy, Chronic Lung Infection, VATS, Air Leak, Bronchiectasis.

## INTRODUCTION

Lobectomy for a variety of pulmonary diseases is a therapeutic procedure introduced by Tuffier<sup>1</sup> in 1891. Over the preceding six centuries the procedure of open thoracic lobectomy underwent a series of dramatic evolutionary changes involving problems of suitable anaesthesia, antibiotics, and the absence of radiological techniques<sup>2</sup>. Common indications for lobectomy include both benign<sup>3</sup> and malignant lung diseases<sup>4,5</sup>. Among benign conditions, chronic lung infection (lung abscess, bronchiectasis, drug-resistant tuberculosis, mycetomas) is the main indication for lobectomy<sup>3</sup> while other conditions include emphysema, severe hemoptysis and AV malformations<sup>3</sup>. For malignant conditions, non small cell carcinomas are the most frequent

indications followed by small cell carcinomas and metastatic tumours<sup>4,5</sup>.

Even though elective open lobectomy is the procedure of choice for pulmonary conditions which are otherwise untreatable, the procedure is not free from its own complications. These include arrhythmia, air leak, pneumothorax, respiratory difficulties, post operative bleeding, pleural effusion, wound infection, myocardial infarction, pulmonary embolus, empyema, bronchial stump leak, and lobar gangrene<sup>6</sup>. Various innovations and modifications have been developed to overcome or reduce these complications<sup>7,8,9</sup>.

Recent improvements to the classical open lobectomy technique include Video Assisted Thoracoscopic Lobectomy (VATS), which offers the advantage of endoscopic surgery.<sup>10</sup> VATS is a safe and effective approach and it seems to give the same long term results as open surgery<sup>10,11</sup>.

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Although open lobectomies have been performed as a routine in Pakistan in the last two decades, both for benign and malignant pulmonary conditions, there are no published studies available on the usefulness or outcome of this operation. The present study, conducted at the Cardiothoracic unit of the Lady Reading Hospital (LRH) Peshawar aims to provide an overview of this operation over a period of two years.

## MATERIAL AND METHODS

The present retrospective study was carried out at the Cardiothoracic unit of the Lady Reading Hospital, Peshawar from January 1999 to December 2000. Case records of all patients undergoing lobectomies for a variety of pulmonary diseases were collected and analysed for relevant data. Data was recorded and analysed in SPSS over 8.0 software.

Single lung anaesthesia and stapling devices have facilitated lobectomy, but total reliance on these methods is to be decried. We have used single lung anaesthesia for lobectomies when double lumen endobronchial tubes were available.

The standard posterolateral thoracotomy was used in all patients, because it allows greater exposure and maneuverability through the fifth intercostal space or the bed of the fifth rib. Combined sharp and blunt dissection was done along the interlobar plane to mobilize the involved lobes. The pulmonary vessels were dissected from their fibrous sheath using scissors in the long axis of vessels and a right angle clamp was passed to encircle the vessels and to draw a ligature (silk) beneath it. Manual (Hand) sewing was used for bronchial closure. Suture material commonly used was polypropylene (2/0, 3/0). After removal of the specimen, the integrity of the bronchial closure was tested by the application of positive pressure (40mmHg) to the endotracheal tube with a saline filled hemithorax. Parenchymal air leaks were localized and repaired. Two chest drains (apical and basal) were placed through separate stab wounds in the anterior axillary line. After closure of the chest, negative suction of 10 to 20 cm of water were applied to the drainage system. The tubes were removed serially once drainage was less than 50 ml in 24 hours and air leaks had ceased.

## RESULTS

A total of 55 lobectomies were collected during

the study period; of these 25 cases were collected in 1999 and 30 cases in 2000. They included 34 males and 21 females, giving a male: female ratio of 1.62:1. Ages of patients ranged from 1.5-60 years, with a mean age of  $31.23 \pm 1.95$  years; only 18% of patients were above the age of 45 (Table-1)

Table 1: Basic demographic data of patients (n=55)

Variables	Number of cases	Percentage
<b>Genders</b>		
Males	34	61.8
Females	21	38.2
<b>Age groups</b>		
1-10	05	9.1
11-20	12	21.8
21-30	12	21.8
31-40	11	21.0
41-50	08	14.5
51-60	07	12.7
Mean age: $31.23 \pm 1.95$ years		

Indications for lobectomies covered a wide range of pulmonary diseases, (table-2). The most frequent indication was bronchiectasis 28/55 (51%), followed by mycetoma 8/55 (14.5%) and then cancers and lung abscess 5/55 each (9.1%). Other causes included hemoptysis 4/55 (7.3%), consolidation 3/55 (5.5%). Tuberculosis and hydatid cyst were uncommon conditions accounting for one case each (1.8%).

Table -2: Distribution of lobectomies (n=55)

Indication	Number of cases	Percentage
Bronchiectasis	28	50.9
Mycetoma	08	14.5
Lung abscess	05	9.1
Cancers	05	9.1
Hemoptysis	04	7.3
Hydatid Cyst	01	1.8
Consolidation	03	5.5
Tuberculosis	01	1.8

The right lung was more frequently operated upon than the left, as shown in table -3. Right sided operations accounted for 33/55 (60%) of operations, while the left side accounted for 22/55 (40%) of operations. Lobectomies were performed more frequently on the lower lobes 22/55 (40%), followed by the upper lobes 19/55 (34.5%) and the middle lobe 5/55 (9.1%). The most frequently resected lobes were the right upper lobe and the lower lobe 15/55



resection<sup>14</sup> or by modifications in surgical techniques like GIA staplers and pericardial sleeves to complete interlobar fissures for pulmonary lobectomy<sup>15</sup>.

Post operative infections, including wound infection and empyema, accounted for 8 (14.6%) cases; this figure may be higher than in most studies, perhaps due to the higher frequency of underlying chronic lung infection in our setting. One of the recommended methods to reduce post operative infection is to use VATS lobectomy instead of open lobectomy<sup>16</sup>.

The mortality in this series was 2 (3.6%) cases, which is a better figure than that obtained in

some studies, where figures range from 0 to 2% for VATS<sup>5</sup> and up to 8% for open resections<sup>7</sup>. In fact one of our cases died due to unrelated myocardial infarction.

## CONCLUSION

We conclude that elective open lobectomy is a safe and effective procedure in our setting, despite a lack of published data or multicenter cooperation. A majority of patients with chronic untreatable pulmonary diseases are expected to benefit as a routine from this procedure, with acceptable complication rates and minimal mortality. Perhaps, in the future, VATS lobectomies could be adopted in select patients, with greater benefits.

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