AN AUDIT OF LOBECTOMY FOR PULMONARY DISEASE AT LADY READING HOSPITAL, PESHAWAR

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Background: 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:** An audit of patients' 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 postoperative 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.

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[1] in 1891. Over the years 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.[2] Common indications for lobectomy include both benign[3] and malignant lung diseases.[4,5] Among benign conditions, chronic lung infection (lung abscess, bronchiectasis, drug-resistant tuberculosis, mycetomas) is the main indication for lobectomy[3] while other conditions include emphysema, severe hemoptysis and AV malformations.[3] For malignant conditions, non small cell carcinomas are the most frequent indications followed by small cell carcinomas and metastatic tumours.[4,5]

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, postoperative bleeding, pleural effusion, wound infection, myocardial infarction, pulmonary embolus, empyema, bronchial stump leak, and lobar gangrene.[6] Various innovations and modifications have been developed to overcome or reduce these complications.[7,8,9]

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

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

MATERIAL AND METHODS

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

RESULTS

A total of 55 cases of 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 ± 14.95 years; only 18% of patients were above the age of 45 years (table 1).

Indications for lobectomies covered a wide range of pulmonary diseases, as shown in table 2. The most frequent indication was bronchiectasis.

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

Variables	*Number of cases*	*Percentages*
Genders		
Males	34	61.8
Females	21	38.2
Age groups		
1-10	05	9.1
11-20	12	21.8
21-30	12	21.8
31-40	11	20.0
41-50	08	14.5
51-60	07	12.7
Mean age: 31.23 ± 14.95 years		

Table 2: Indications for Lobectomies

Indications	**Number of Cases**	**Percentages**
Bronchiectasis	28	50.9
Mycetoma	08	14.5
Lung abscess	05	9.1
Cancers	05	9.1
Hemoptysis	04	7.3
Consolidation	03	5.5
Tuberculosis	01	1.8
Hydatid Cyst	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 or 60% of operations, while the left side accounted for 22/55 or 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 left lower lobe (15/55 cases each, 27.3%). Bilobectomies were performed on 9 cases (16.36%) equally divided between

upper and middle lobes, middle and lower lobes and lingula and left lower lobe (3/55 each, 5.5%).

Postoperative complications and mortality are shown in table 4. Majority of patients recovered (53/55, 96.4%), two patients died (3.6%); uneventful recovery occurred in 37/55 patients (67.3%), whereas some complications were found in 18 (32.7%) patients. Of the complications, air leak developed in 5/55 (9.1%), wound infection and empyema developed in four cases each (7.3%), Broncho-Pleural fistula developed in three cases (5.5%) and postoperative bleeding and arrhythmia developed in one case each (1.8%). Of the two cases that died, one went into respiratory failure requiring ventilatory support prior to death; the other, aged 55 years, died due to a massive myocardial infarction postoperatively, which was not related to his lobectomy.

Table 3: Distribution of lobectomies (n = 55)

	Number of cases	**Percentages**
Side of thorax		
Right	33	60
Left	22	40
Lobes of lungs		
Right		
Upper	15	27.3
Middle	05	9.1
Lower	07	12.7
Left		
Upper	04	7.3
Lower	15	27.3
Bilobectomies	09	16.3
Right		
Upper & Middle	03	5.4
Middle & Lower	03	5.4
Left		
Lingula & Lower	03	5.4

Table 4: Postoperative Mortality and Morbidity

(n = 55)

Postoperative Complications	Number of Cases	Percentage
Mortality		
Alive	53	96.4
Died	02	3.6
Morbidity		
None	37	67.3
Air Leak	05	9.1
Wound Infection	04	7.3
Empyema	04	7.3
BP Fistula	03	5.4
Postop Bleeding	01	1.8
Arrhythmia	01	1.8

DISCUSSION

This study represents the first published study on lobectomies for pulmonary diseases from our centre. It indicates that a good number of lobectomies are performed per year in one tertiary centre (25-30 cases per year). Lobectomies were performed in a relatively younger age group than in the western world, where most lobectomies are for malignant lung conditions occurring in ages 50 and beyond.[11] In our study, a majority of cases (35/55, 63.6%) were in the age groups of 11-40 years, with only 7 cases (12.7%) above 50 years of age. This points out the frequency of benign lung conditions (50/55, 90.9%), particularly chronic lung infections (46/55, 83.6%), which are much more common in our setting than malignancies (05/55, 9.1%).

Regarding involvement of lungs, the right lung appeared more frequently involved by disease accounting for 60% of lobectomy procedures. However both the right upper lobe and the left lower lobe accounted for a total of 54.6% of lobectomies, divided equally among them. This may reflect anatomic peculiarities of the tracheobronchial tree or other factors not yet fully understood. Drainage of lower lobes may be a factor, as 22 (40%) lobectomies were performed on the lower lobes, compared to 19 (34.5%) lobectomies on the upper lobes; these figures change to 28 (50.9%) and 22 (40%) if bilobectomies are also included.

Regarding postoperative complications, 32.7% patients developed some sort of complication. This compares well with the figure given in a large series of lobectomies performed between January 1970 to December 1983, where 151/369 (40.9%) lobectomy patients developed some complication.[12]

The most common complication was Air Leak developing in 5 (9.1%) patients. In a study in New York,[13] Air Leak developed in 25.5% of complications, which is similar to our rate of 27.7%. The frequency of air leaks can be reduced by placing chest tubes on water seal after a brief period of suction after pulmonary resection[14] or by modifications in surgical techniques like GIA staplers and pericardial sleeves to complete interlobar fissures for pulmonary lobectomy.[8]

Postoperative infection, 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 postoperative infection is to use VATS lobectomy instead of open lobectomy.[15]

Mortality in this series was 02 (3.6%) cases, which is a better figure than that obtained in some studies, where figures range from 0 to 2% for VATS[5] and up to 8% for open resections.[7] 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. 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 selected patients, with greater benefits.

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