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BRONCHOPLASTIC PULMONARY RESECTIONS: INDICATIONS, SURGICAL TECHNIQUES AND PROGNOSIS

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SUMMARY

The indications for bronchoplastic pulmonary resections are limited, allowing carcinological resection while preserving good respiratory function, with a highly significant drop in morbidity and mortality rate. It's about a Retrospective study of 6 cases, There were 6 women, whose average age was 47.3 year. It was 4 cases of endobronchial process (2 the right main bronchus, the middle trunk and the right upper lobar bronchus) and 2 cases of tissue mass (of the right upper lobe, straddling the right upper lobar bronchus and the the middle lobe) ; The resections were: Upper and middle Lobectomy with anastomosis of the inferior right bronchus and the right main bronchus (1case), Upper Lobectomy with anastomosis of the the right main bronchus and the middle trunk (2cases), Middle and Inferior Lobectomy with anastomosis of the right upper bronchus and the right main bronchus (1case), Right pneumonectomy enlarged to the carina with V-plasty (1 case) and Kergin plasty (1 case). The histological types were a typical carcinoid tumor (3cases) and atypical (1case), a lepidic ADK (1case) and a moderately differentiated ADK (1case). The mortality rate was 0% compared to 9.5% for 21 tumor pneumonectomies performed in the same period in our department

KEYWORDS: Bronchoplastic, sleeve lobectomy, tumor.

INTRODUCTION

Applied in 5 to 8% of lung cancers, the indications of bronchoplastic pulmonary resections are limited, allowing a carcinologic resection while preserving a good respiratory function, with a highly significant decrease in morbidity rates. The aim of this work: to evaluate the factors that contribute to bronchoplasty results, while discussing its indications and surgical techniques.

MATERIELS AND METHODS

It's about a Retrospective study of 6 cases benefiting from an Bronchoplastic Pulmonary Resections in our department for a period of (6 years).

RESULTS

There were 6 women, whose average age was 47.3 years.Among the antecedents, we find a notion of chronic smoking (1case) and 1case operated for a thigh liposarcoma.

Apart from a single incidental discovery, the most common reason for consultation was a productive cough exacerbated by intermittent hemoptysis.

The radiological assessment showed in standard radiography an opacity: hilar (4cases), right upper lobe (1case) and right inferior lobe (1case), supplemented by a thoracic CT scan objectifying: an endobronchial process (4cases: 2 the right main bronchus, the middle trunk and the right upper lobar bronchus) and 2 cases of tissue mass (of the right upper lobe, straddling the right upper lobar bronchus and the the middle lobe).

Bronchial fibroscopy confirmed the siege, while studying the macroscopic character which directed towards a carcinoid tumor (3cases).

After an assessment of extension, the tumors were classified stage: IA (3cases), IB (1case), IIB (1case), IIIA (1 case). Mean FEV1 was 1.7L.

Through a right posterolateral thoracotomy, and intubation across the operative field; The resections were:

- Upper and middle Lobectomy with anastomosis of the inferior right bronchus and the right main bronchus (1case),
- Upper Lobectomy with anastomosis of the the right main bronchus and the middle trunk (2cases), (Figures 1,2,3)
- Middle and Inferior Lobectomy with anastomosis of the right upper bronchus and the right main bronchus (1case)
- Right pneumonectomy enlarged to the carina with V-plasty (1 case) and Kergin plasty (1 case);

Associated with radical lymph node dissection, and an extemporaneous examination of bronchial recuts negative income.

The histological types were a typical carcinoid tumor (3cases) and atypical (1case), a lepidic ADK (1case) and a moderately differentiated ADK (1case).

Lobar atelectasis (1case) was noted as postoperative complications. All patients had undergone fibroscopy of postoperative control, which did objectify any fistula or infection on the bronchial stumps. During an average follow-up of 20 months, the mortality rate was 0% compared to 9.5% for 21 tumor pneumonectomies performed in the same period in our department.

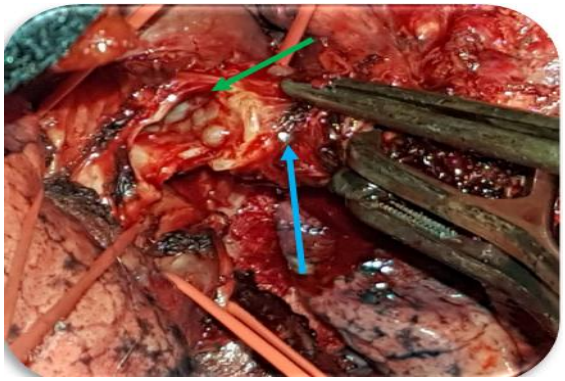

Figure 1: Peroperative image of a tumor of the right upper lobar bronchus invading the right main bronchus.

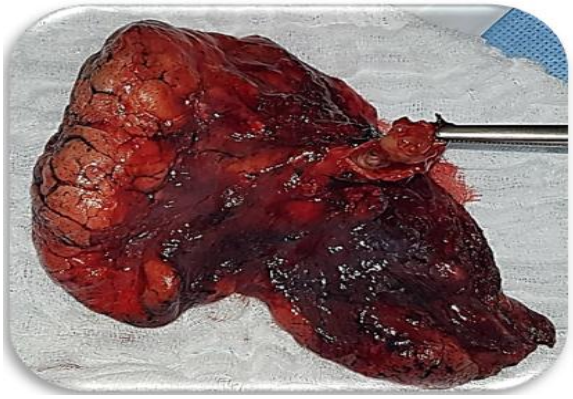

Figure 2: Operating piece for a right upper lobectomy enlarged to the right main bronchus by an oblique section.

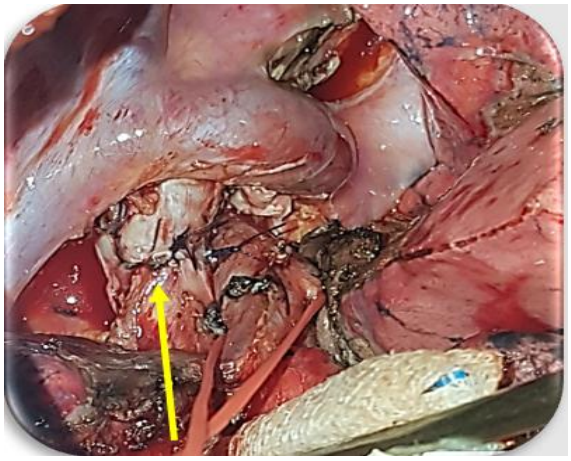

Figure 3: Bronchoplasty of the right main bronchus to the intermediate bronchus with protection of the sutures by a pleural flap.

DISCUSSION

Lung cancer is responsible for more than 1 million deaths annually.[1] Lung cancer represents >17% of all new cases of cancer and 28% of all cancer deaths worldwide. At the time of diagnosis, >80% of patients are inoperable, Approximately 30% of patients with carcinoma of the lung present with obstruction of the central airway.[2]

Resection and reconstruction of the bronchus, the pulmonary artery (PA), or both associated with lobectomy have proved to be valid therapeutic options for numerous conditions that may cause obstruction of the airway, especially when it comes to centrally located non–small cell lung cancer. These operations are generally indicated to avoid pneumonectomy (PN) in patients with compromised cardiac and/or pulmonary function.[3]

It should be used routinely even in patients with sufficient pulmonary reserve permit pneumonectomy, to avoid complications (postpeumonectomy lung edema, acute respiratory distress syndrome (ARDS), bronchopleural fistula, and postpeumonectomy syndrome).[4]

The main indication for bronchoplasty is an anatomically suitable lesioninvolving main or lobar bronchi.[5] These lesions typically are benign to low-grade malignant neoplasms and stenoses; Carcinoid tumors account for more than 80% of the lowgrade neoplasms, followed by mucoepidermoid tumors, fibrous histiocytomas, hamartomas and adenoid cystic carinomas.[6] Sleeve lobectomy for bronchogenic carcinomas is less common, and accounts for fewer than 10% of operable cases of lung cancers.

However, three main relative contraindications are specific to bronchoplasty: high-dose corticosteroids, active bronchial inflammation, and remote (greater than 1 year prior) high-dose irradiation.[7]

Standard pulmonary function testing is imperative, pneumonectomy is always possible, either for unexpected extent of tumor which was applied in 2 cases in our series by invasion of the carina with special plastic techniques, or technical difficulties.[8]

Double-lumen tubes are suitable for almost all bronchoplastic techniques for the main and lobes bronchus. The posterolateral thoracotomy is still probably the most commonly used incision in general thoracic surgery. It provides not only excellent access to the lung, hilum, middle and posterior mediastinum, endothoracic trachea, and endothoracic esophagus, but it also allows for the safe control of pulmonary blood vessels during pulmonary resection.[9]

For good results after a bronchoplasty, there are some recommendations to respect:

- A balance must be struck between the need for clear surgical margins and concern about reconstructing the airway.
- Unnecessary dissection that may devascularize the bronchial blood supply is to be avoided. This is especially an issue when lymph node dissection is performed.
- Use an absorbable sutures to avoid development of suture line granulomas.
- Excessive tension is the enemy of successful bronchoplastic procedures, a section of the triangular ligamentand a U-shaped pericardial incision just below the inferior pulmonary vein will give added mobility to the bronchus.
- Pedicled flap of pleura or pericardial fat is then passed around the anastomosis as a buttress and to separate the suture line from nearby vascular structures, and protect the bronchial stump from fistulas.

Routine postoperative bronchoscopy is invaluable in identifying potential anastomotic complications. A small necrotic area may be managed expectantly if a fistula has not actually developed.

Morbidity and mortality have decreased, and survival increased, as more experience has been gained. Combined angioplastic and bronchoplastic procedures have historically been associated with higher morbidity and mortality rates than bronchoplasty procedures alone.[10]

Complications following sleeve lobectomy arise in 15%–38% of patients, ommon complications include sputum retention and secondary atelectasis.

Bronchovascular (less than 2%) and bronchopulmonary fistula (5%), and anastomotic failure (1%–4%).[11,12,13]

Overall survival following sleeve lobectomy for patients with Non-small.

Cell Lung Cancer (NSCLC) ranges from 39%–53% at 5 years and 28%–34% at 10 years.[14] Sleeve lobectomy for pulmonary carcinoid is extremely well tolerated with 5 and 10 year survivals range from 100% and 92% respectively.[15]

Documented factors decreasing long-term survival following a sleeve lobectomy include incomplete resection, which underlines the place of the extemporaneous examination of the margins of resection practiced in all the cases of our series (Kim and colleagues reported that the locoregional recurrences with sleeve lobectomy occurred in 32.6% of patients versus 8.5% in pneumonectomy,[17]); and increasing nodal involvement.[18]

CONCLUSION

The survival rate of BPH remains influenced by factors of poor prognosis, such as lymph node invasion and histological type; but also improved by a good command and experience of bronchoplastic surgical techniques ; where the extemporaneous examination of bronchial margins has an important role.

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