VOLUME - 11, ISSUE - 07, JULY - 2022 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Plastic Surgery

BRONCHO-PLEURAL FISTULA AS A COMPLICATION OF A PNEUMONECTOMY AND ITS MANAGEMENT WITH A PECTORAL FLAP: A CASE REPORT

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ABSTRACT **INTRODUCTION:** Broncho-pleural fistula (BPF) is one of the most serious complications that can occur in patients undergoing lung resection surgery. Its incidence is estimated at 1.5-11.1%. **CASE REPORT:** A 55-year-old male patient was admitted to the internal medicine area of the hospital for presenting a chronic injury to the right chest, through which he expels air and mucous secretions. He does not report pain, difficulty breathing, or fever; during examination, his vital signs are normal. He presents discrete right mid-basal hypoventilation, without dullness in the area; there is evidence of a wound dehiscence area from a probable mini-thoracotomy in the anterior region of the right chest, where it presents sero-purulent material at the site of insertion of the thoracic catheter 17 months ago, not fetid. **DISCUSSION AND CONCLUSIONS:** It is common practice in thoracic surgery to cover the bronchial stump in high-risk patients with viable tissue in an attempt to minimize the incidence of BPF. Some authors found that the pectoral flap is a viable option due to the scarcity of viable intrathoracic flaps. The patient reported in this case had a bronchopleural fistula, a complication of a pneumonectomy, for more than a year; in this particular case, surgery was considered necessary.

KEYWORDS : Broncho-pleural fistula, pectoral flat, chest surgery

INTRODUCTION

FBP is one of the most serious complications that can occur in patients undergoing lung resection surgery. Its incidence is estimated at 1.5-11.1%; Its appearance has been attributed to many factors, some of them prior to surgery (diabetes mellitus or tumor pathology), use of immunosuppressive therapy (steroids or chemotherapy) and also to the surgical technique used in the intervention, although most BPFs appear in the immediate postoperative period, on some occasions a long time elapses between the intervention and their appearance, even 10 years later. (1)

Surgical intervention, combined with conservative and endoscopic treatments, may be necessary in some cases to completely control the infection and occlude bronchopleural fistulas (2). Has been reported in the literature that exists that an intercostal flap reduces the risk of BPF in people with diabetes and it has been suggested that cardiothoracic surgeons must consider coverage of the bronchial stump by an intercostal muscle pedicle flap in patients at high risk of BPF(3).

In this study, we describe the successful surgical treatment of one patient diagnosed with BPF with a pectoral flap.

CASE REPORT

A 55-year-old male patient, secondary education, divorced marital status, lives in his own home with all the services, reports good hygienic-dietary habits, who was admitted to the internal medicine area of the hospital for presenting a chronic injury to the right chest, through which he expels air and mucous secretions (Figure No.1).

The patient reports that in September 2020 he began to coughing up blood, general deterioration and weight loss, at that time he underwent tests and a chest biopsy. January 2021 a thoracotomy for lung biopsy was performed at his local hospital, this is carried out by the onco-surgery service, and after 2 days, he presents an accidental exit of the pleurostomy tube and is discharged from the hospital. However, later the wound opens, suppurating mucous secretions and leaking air, the patient remained this way for more than a year he was referred from the hospital of his community to assess management.

He does not report pain, difficulty breathing, or fever; during examination, his vital signs are normal. He presents discrete right mid-basal hypoventilation, without dullness in the area; There is evidence of a wound dehiscence area from a probable mini-thoracotomy in the anterior region of the right chest, where it presents sero-purulent material at the site of insertion of the thoracic catheter 17 months ago, not fetid.

Chest CT shows the presence of pulmonary bullae, the largest in the right apical region, as well as chronic inflammatory lesions in the middle and apical right pulmonary regions, with no evidence of pleural effusion. The data referred to are concordant with a chronic infectious process, finding a positive culture for Klebsiella, which is eradicated with antibiotic management.

He was scheduled for a right thoracotomy due to a diagnosis of left Broncho pleural fistula and open chest, requesting the collaboration of the plastic surgery service to perform a dorsal flap and cover the defect in the chest wall with it. The patient's surgical risks are classified in ASA II and Goldman II, considering respiratory complications associated with the potential pulmonary reattachment required (Figure No.2).

About the surgery, it was performed a closure of the fistula and

plasty of the right chest wall; a right anterolateral thoracotomy was performed in the 4th intercostal space, finding the right lung in its upper lobe adhered to the anterior chest wall in the third intercostal space, right parasternal, proceeding to dissection and release of the area (Figure 3a, 3b and 3c); with blunt, sharp dissection, as well as the use of an echelon stapler, lesions are repaired due to deporulation in the lung, the site of the bronchopleural fistula in the skin is resected (Figure 4 and Figure 5), in the open chest, satisfactory pulmonary expansion is achieved, a catheter is placed in the sixth right intercostal space, posterior axillary line, connecting to pleurevac, hemostasis is verified by placing fibrillary surgicel in lung leak repair sites and closed by planes, personnel from the plastic surgery area repair chest wall defect using pectoral flap with good results; the surgery was carried out without complications (Figure 6).

20 days after surgery, the patient reports mild, stabbing pain in the surgical area, without respiratory difficulty, he is calm, conscious and cooperative, in good general condition; with clean and healed wounds; chest X-ray shows adequate lung expansion, with no evidence of pleural effusion or pneumothorax (Figure 7).

DISCUSSION

It is known that a significant percentage of patients achieve healing of the fistula with conservative treatment and endoscopic techniques, such as injection of biological glue, tisuacryl, n-butyl-2-cyanoacrylate (histoacryl) and, of course, sanitization of the cavity, but in others, surgery is necessary.

Moreover, Treatment of BPF remains challenging because of difficulty in obtaining sufficient closure of the fistula and control of pleural infection. Spontaneous closure of the fistula can rarely be obtained with window thoracotomy and additional treatment such as musculocutaneous flap transfer is required (4) an in the case reported.

It is common practice in thoracic surgery to cover the bronchial stump in high-risk patients with viable tissue in an attempt to minimize the incidence of FPB. Some authors found that the pectoral flap is a viable option due to the scarcity of viable intrathoracic flaps(5).

Currently, the main treatment is the application of tissue flap transfer after debridement. After much clinical experience, the pectoral flap has great advantages. The main advantages are: The pectoralis major muscle is close to the sternum, it is easy to dissociate, it does not need another incision. The size of the flap can be adjusted according to the size of the wound; The blood supply of the pectoralis major muscle is rich, such as the intercostal artery. Therefore, the pectoralis flap is the main treatment for tissue flap repair today(6).

The patient reported in this case had a bronchopleural fistula, a complication of a pneumonectomy, for more than a year; in this particular case, surgery was considered necessary.

Figure No.1 Parasternal border with mucus outlet

Figure No.2 Marking of the area where the flap was made

Figure No.3a Left pectoral dissection from where the flap was taken

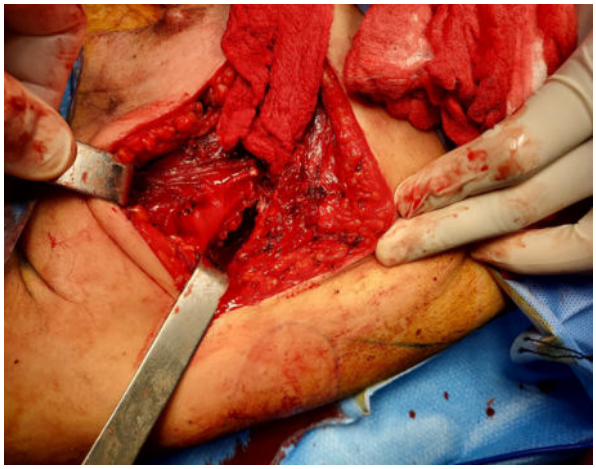

Figure No.3b Dissection to find a lumen and separate the components leading to the fistula

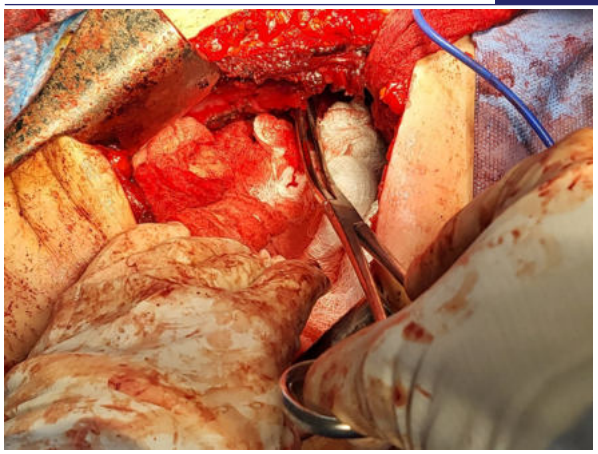

Figure No.3c Fistula communication

Figure No.4 Evidence of communicating fistula

Figure No. 5 Rotation of the pectoralis major flap covering the pectoralis from the left side to the right side

Figure No.6 skin closure

Figure No.7 20 days after surgery

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