Volume 5, issue 2, 2016 • e-ISSN: 1857-8187 • p-ISSN: 1857-8179

Case Study

Atelectasis is Common Pulmonary Complication in Patients Following Thoracic Surgery

Healthcare

Keywords: PPCs, Atelectasis, Anaesthesia, bronchospasm, treatment, patients, etc.

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Introduction

Continued advances in anesthesia, surgery and perioperative medicine have improved postoperative outcome. Despite these advances postoperative pulmonary complications (PPCs) remain a significant problem. Pain and surgical trauma after thoracic operations lead to abnormal diaphragm function, lessened intercostals muscle tone and pulmonary disfunction. Our duty is how to grade the risk, prepare and manage patients to minimize the risk of PPCs.

Aim of Study

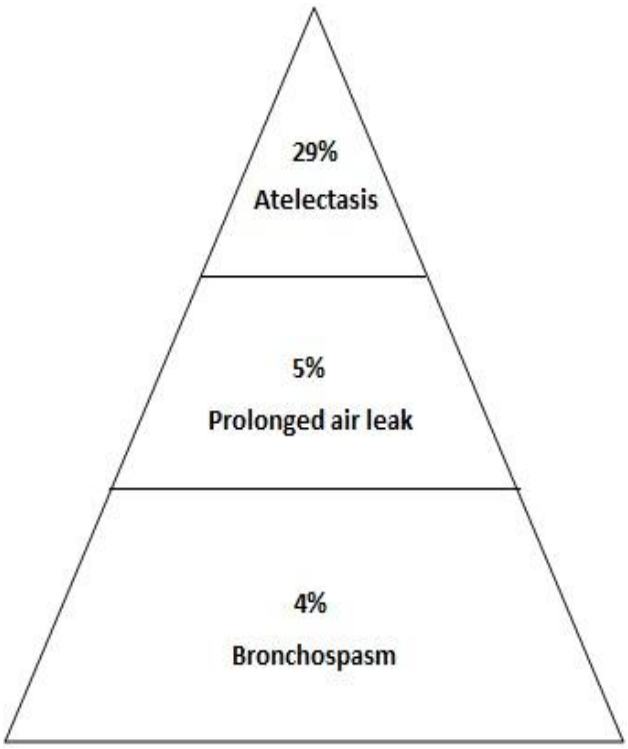
To assess the incidence and clinical implications of PPC-s after thoracotomia and to identify possible risk factors. This is retrospective study.

Materials and Methods

Patients (totally 80 patients) undergoing thoracotomia during 2013-2014. Physical status: ASAI, ASAII. Nonsmoking > 8weeks. PO2 > 60mmHg. PCO2 < 45mmHg. FEV1 > 75%. FEV1/FVC > 75%. All patients admitted to the ICU who had received mechanical ventilation after lung surgery were potentially eligible for the study. The study population consisted of 80 patients (age > 18) who for at least 48 hours at any point had received mechanical ventilation during their ICU stay. The diagnosis of Atelectasis was defined as the occurrence of radiographic infiltrate, appearing on chest radiograph. The duration of mechanical ventilation was longer among patients who suffered VAP compared with the patients who did not develop VAP (17.5 ± 6.7 days versus 6.81 ± 6.3 days, $p < 0.01$.)

Surgical Intervents	
Sex-Male	67 patients
Sex-Female	13 patients
Age	40-75
Pneumonectomia	10 patients
Bilobectomia	15 patients
Lobectomia	26 patients
Wedge Resection	22 patients
Segmentectomia	7 patients
Totally	80 patients

Pulmonary Complications		
Complications	No	Total patients (80 patients) %
Atelectasis	23	29
Prolonged air leak	4	5
Bronchopleural fistula	1	1
Acute respiratory failure	1	1
Bacterial pneumonia	-	-
Pulmonary embolism	1	1
Acute pulmonary edema	2	2
Bronchospasm	3	4
Purulent pleuritis	1	1
Pneumothorax	2	2
Total	38	46

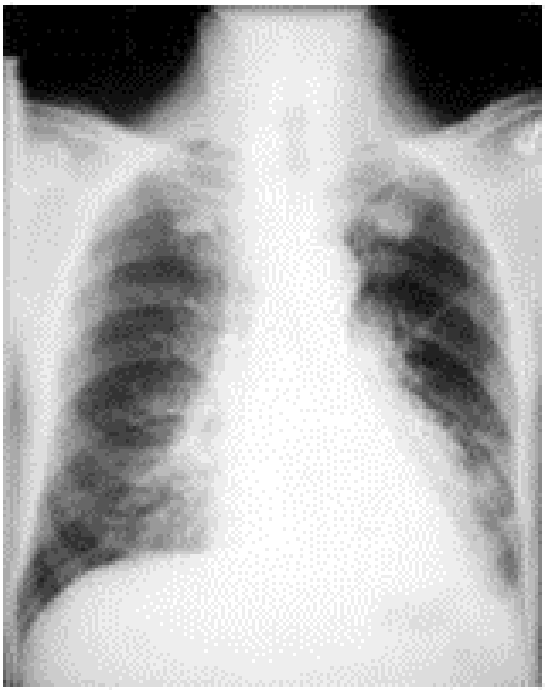


Atelectasis is the commonest pulmonary complication following thoracotomia. It may be due to: a) incomplete reinflation of the operative lung following one-lung ventilation. b)Bronchial obstruction by secretions. Lobar or whole lung Atelectasis evidenced on chest radiograph and requiring bronchoscopy. Atelectasis is a common pulmonary complication in patients following thoracic and upper abdominal procedures. General anesthesia and surgical manipulation lead to Atelectasis by causing diaphragmatic dysfunction and diminished surfactant activity. The Atelectasis is typically basilar and segmental in distribution.

Atelectasis is a total or partial collapse of the air sacs (alveoli) in the lung causing a lack of air to the affected area of the lung. The symptoms include: Shortness of breath; Thick secretions with changes in color; possible pain; Feeling of tightness in chest, and/or Fever.

Atelectasis. Left lower lobe collapse.
The opacity is in the posterior inferior location.

Atelectasis. Loss of volume on the left side
An elevated and silhouetted left diaphragm



Atelectasis. Left upper lobe collapse showing opacity contiguous to the aortic knob, a smaller left hemithorax, and a mediastinal shift.

Results

a) Atelectasis is the commonest pulmonary complication following thoracotomia. It may be due to a) incomplete reinflation of the operative lung following one-lung ventilation.

b) Bronchial obstruction by secretions. Lobar or whole lung Atelectasis evidenced on chest radiograph and requiring bronchospy.

The treatment includes:

a) Coughing.

b) Deep breathing.

c) Incentive spirometry.

d) Intermittent positive pressure breathing.

e) CPAP.

Atelectasis is the commonest pulmonary complication 29% patients) Prolonged air leak-5%. c) Bronchospasm-4% patients.

a) Atelectasis – 23 patients. b) Prolonged air leak - 4 patients. c) Bronchopleural fistula - 1 patient. d) Acute respiratory failure - 1 patient. e) Pulmonary embolism - 1 patient. f) Acute pulmonary edema - 2 patients. g) Bronchospasm - 3 patients. h) Purulent pleuritis - 1 patient.
i) Pneumothorax - 2 patients.

Conclusions

PPC-s are frequent and can cause severe morbidity or mortality and increase the cost of care. During surgery PPC-s may be reduced by minimally invasive surgery, short acting anesthetics and careful use of neuromuscular relaxants.

Treatment is directed at correcting the underlying cause. Post-surgical Atelectasis is treated by physiotherapy, focusing on deep breathing and encouraging coughing. An incentive spirometer is often used as part of the breathing exercises. People with chest deformities or neurologic conditions that cause shallow breathing for long periods may benefit from mechanical devices that assist their breathing. One method is continuous positive airway pressure, which delivers pressurized air or oxygen through a nose or face mask to help ensure that the alveoli do not collapse, even at the end of a breath. This is helpful, as partially-inflated alveoli can be expanded more easily than collapsed alveoli. Sometimes additional respiratory support is needed with a mechanical ventilator. The primary treatment for acute massive Atelectasis is correction of the underlying cause. A blockage that cannot be removed by coughing or by suctioning the airways often can be removed by bronchoscopy. Antibiotics are given for an infection.

Chronic Atelectasis often is treated with antibiotics because infection is almost inevitable.
In certain cases, the affected part of the lung may be surgically removed when recurring or chronic infections become disabling or bleeding is significant. If a tumor is blocking the airway, relieving the obstruction by surgery, radiation therapy, chemotherapy, or laser therapy may prevent Atelectasis from progressing and recurrent obstructive pneumonia from developing.

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