



## PLASTIC BRONCHITIS PRESENTING AS HEMOPTYSIS IN ICU


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### ABSTRACT

Plastic bronchitis is the most common cause of bronchial cast. It is associated with diseases causing mucus hyper secretion. They usually take the shape of bronchial tree. It is often expectorated or sometimes requires bronchoscopic removal. This is a case report of 56 years old male presented with complains of pain abdomen and vomiting since 2 days. Found to have superior mesenteric artery thrombosis with small bowel gangrene on contrast CT abdomen and he underwent exploratory laparotomy and bowel resection along with anastomosis. During his stay in hospital he had massive hemoptysis (5-6 episodes) and was shifted to MICU and intubated. Bronchoscopy has done which revealed extensive bronchial casts filling entire trachea and blocking tracheo-bronchial tree. He underwent piece meal removal of the same over two days. Histopathology showed multiple sections reveal sparse moderate inflammatory cells entangled in fibrin. Patient improved symptomatically and discharged with stable hemodynamics.

**Key words:** Cast, Breathlessness, Hypoxia, Hypercoagulable state.

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### INTRODUCTION

Plastic bronchitis is a rare condition characterized by formation of highly viscous bronchial secretion known as casts. Bronchial casts take the impressions of the inner lining of bronchial tree [1]. This is thought to be due to excessive reaction of bronchial airway to infection, inflammation, chemical or foreign body. The outcome depends upon the underlying disease process and its early detection (cast) and management.

### CASE REPORT

This is a case report of 56 years old male, no known comorbidities presented to emergency department with complains of pain abdomen and vomiting since 2

days. On examination, patient was conscious and coherent, pulse rate of 88 beats / minute, blood pressure of 110/80mm Hg, respiratory rate of 22 / minute, no pallor, icterus and cyanosis. Systemic examinations were normal except per abdomen examination showing diffuse tenderness over upper abdomen. Ultrasound abdomen was inconclusive hence CECT abdomen was done which revealed superior mesenteric artery thrombosis with small bowel gangrene. Patient underwent exploratory laparotomy and bowel resection (Small bowel+ Ascending colon) along with anastomosis of remnant jejunum with transverse colon. He symptomatically improved without any immediate postoperative complications. He was on inotropes and was started on supplementary TPN, antibiotics, heparin and other supportive treatments. Postoperatively he was monitored in MICU for 5 days. He was extubated on POD 2. During his stay in hospital he had massive hemoptysis (5-6 episodes) and was shifted to MICU. He was then desaturated hence intubated. In view

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of decreased air entry to left side, His HRCT chest revealed large patchy confluent area of ground glass opacification in the upper lobe of the right lung and collapse consolidation of the posterior basal segment of the lower lobe of the left lung with minimal left pleural fluid collection. Bronchoscopy has done which revealed extensive bronchial casts (Figure-1) filling entire trachea and blocking tracheo-bronchial tree. He underwent piecemeal removal of the same over twodays. Histopathology

showed multiple sections reveal sparse moderate inflammatory cells entangled in fibrin. Inflammatory cells are predominantly neutrophils and no evidence of malignant cells. He underwent multiple sessions of rigid bronchoscopy after which his ventilator parameters improved. He improved with chest physiotherapy. Patient was slowly started on oral feeds along with TPN supplementation. He improved symptomatically and discharged with stable hemodynamics.

**Fig 1. Showing bronchial cast at the level of carina during bronchoscopy**



## DISCUSSION

Plastic bronchitis also known as fibrinous bronchitis or pseudo membranosa; where casts are formed within bronchial tree due to underlying lung, heart or lymphatic problem [2]. Normally these casts come out during coughing, sometimes requires bronchoscopic extraction as seen in our patient. The causes of bronchial casts are due to lung related (Pneumococcal pneumonia, diphtheria, tuberculosis, allergic broncho-pulmonary aspergillosis, bronchiectasis, asthma, cystic fibrosis, chronic bronchitis, foreign body inhalation, inhaled irritants, pulmonary hemorrhage), heart related (cardiac failure, valvular heart disease and constrictive pericarditis) lymph vessel related (lymphangiectasia, lymphangiomatosis) or miscellaneous (sickle cell disease, amyloidosis, rheumatoid arthritis, membranous colitis, lymphoma).

Bronchial casts are classified into type-1 and type-2. In type-1 the cast is made up of fibrin and inflammatory cells which are seen in condition such as barotrauma due to prolonged intubation, inflammation due to gastric aspiration, infection, endo-bronchial lymph leakage, pulmonary lymphatic abnormalities [3] and elevated central venous pressure. In type-2 cast is made up of only mucin without inflammatory cells seen in post surgical patients of cyanotic heart disease [4] and Fontan's procedure (the elevated pulmonary pressure due to diversion of systemic blood causing leakage of proteinacious and lipid rich fluids from lymphatics into bronchial tree). Our patient bronchial cast histopathology showed fibrin strands with few lymphocytes (Type-1).

Clinical features include productive cough, repeated chest infection, dyspnoea, chest pain, hypoxemia and hemoptysis. It is diagnosis by history, chest X-ray, CT chest, sputum and bronchoscopy. Treatment includes supportive treatment such as oxygen, low fat diet, nebulisation with acetyl cysteine and potassium iodide, aerosolisedurokinase and tissue plasminogen, bronchodilators, antibiotics, hydration, chest physiotherapy, postural drainage, decreasing pressure in the pulmonary venous system [5] and thoracic duct ligation [6]. Treatment of underlying disease [4] and therapeutic bronchoscopy is sufficient. Our patient required intubation and mechanical ventilation for increased breathlessness and later bronchoscopy to remove impacted fibrinous bronchial cast.

## STATEMENT OF HUMAN AND ANIMAL RIGHTS

All procedures performed in human participants were in accordance with the ethical standards of the institutional research committee and with the 1964Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

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## DECLARATION OF INTEREST

None declared.

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