

## Medical Image of the Week: Plastic Bronchitis in an Adult Lung Transplant Patient

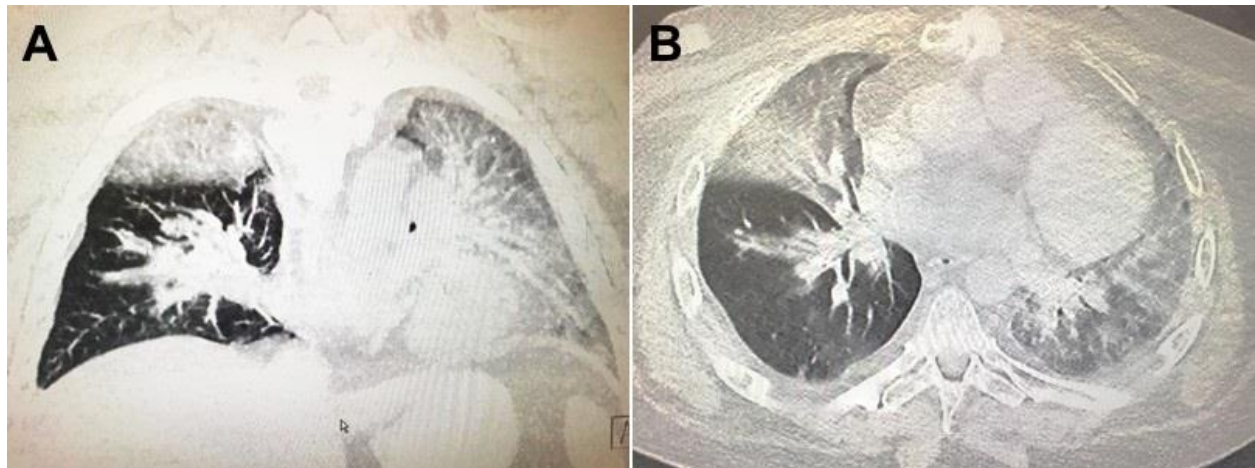


Figure 1. Representative coronal (A) and axial (B) views of the thoracic CT scan in lung windows revealing bilateral dense consolidations and bronchial filling.



Figure 2. Photograph of bronchial gelatinous casts after bronchoscopic forceps removal.

Plastic Bronchitis is a rare condition characterized by the formation of branching gelatinous casts of the bronchial tree which lead to regional airway obstruction. There are thought to be two classifications of casts; type I being the formation of cellular

inflammatory casts while type II are acellular. This entity is a well described complication of the Fontan procedure, a therapeutic intervention in pediatric patients with univentricular congenital heart disease (1). The condition is less well reported and thus recognized in adult populations (2).

Our patient is a 37-year-old man who is status post bilateral lung transplantation undertaken for severe workplace inhalation injury complicated by constrictive bronchiolitis-obliterans. Post-transplant, the patient suffered from refractory severe persistent asthma of the donor lung and therefore was scheduled for elective initial bronchial thermoplasty. Post-procedure the patient developed progressive respiratory distress and ultimately extremis requiring mechanical ventilation. Pulse-dose corticosteroids were initiated given a suspected etiology of acute rejection, although response to therapy was poor. Bronchoscopy was conducted which revealed diffuse fibrin casts of the right lung consistent with the development of plastic bronchitis. Symptoms significantly improved with removal of these casts, although a repeat bronchoscopy with cast removal was necessary shortly afterward. Our patient's cast formation is unique given that it likely has components of both etiologies given his underlying bronchial hyper-secretory disorder and lymphatic disruption after lung transplant. For this reason, we consider this a unique case in its ability to highlight the overlap of these two pathologic processes in an otherwise unlikely demographic to develop bronchial casts. In our comprehensive literature search, we were unable to find significant description of this disorder in adult lung transplant. However, given the disruption in lymphatics, host vs graft inflammatory factors, and infectious inflammatory factors, it would seem to be a perfect setup pathologically. The underlying pathophysiologic mechanism of plastic bronchitis is believed to be cast formation via pulmonary lymphatic disruption by either surgical intervention or inflammatory processes. Gelatinous casts are formed by way of alveolar capillary leak of proteinaceous material, lymphatic seepage, and exudate accumulation from airway inflammation. The majority of literature regarding this disease processes has been described in pediatric thoracic surgery. Lung transplant, especially in the setting of acute rejection, seems to be a setup for this condition in adult populations.

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### ***References***

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2. Eberlein M, Parekh K, Hansdottir S, Keech J, Klesney-Tait J. Plastic bronchitis complicating primary graft dysfunction after lung transplantation. *Ann Thorac Surg.* 2014 Nov;98(5):1849. [\[CrossRef\]](#) [\[PubMed\]](#)