[NM-315] Bronchial neovascularization post lung transplant – need for system-based practice

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My patient is a 12-year-old girl with history of scleroderma complicated by end-stage lung disease who required lung transplantation in 2012. Her course was complicated by recurrent episodes of major bronchial stenosis requiring stent placements and dilations. She had undergone three bronchoscopy-guided dilation procedures since her transplant. However, each procedure was complicated by hemodynamically significant pulmonary hemorrhage requiring resuscitation and post-intervention mechanical ventilation.

During her first procedure, an Air-Q LMA was used to manage her airway. The interventional radiologist used dilator balloons to dilate “very tight stenotic region which resulted in significant bleeding, significant hypoxemia and bradycardia.” During this time ETT was emergently placed to secure the airway. The procedure was abandoned and the patient was transported to the PICU intubated.

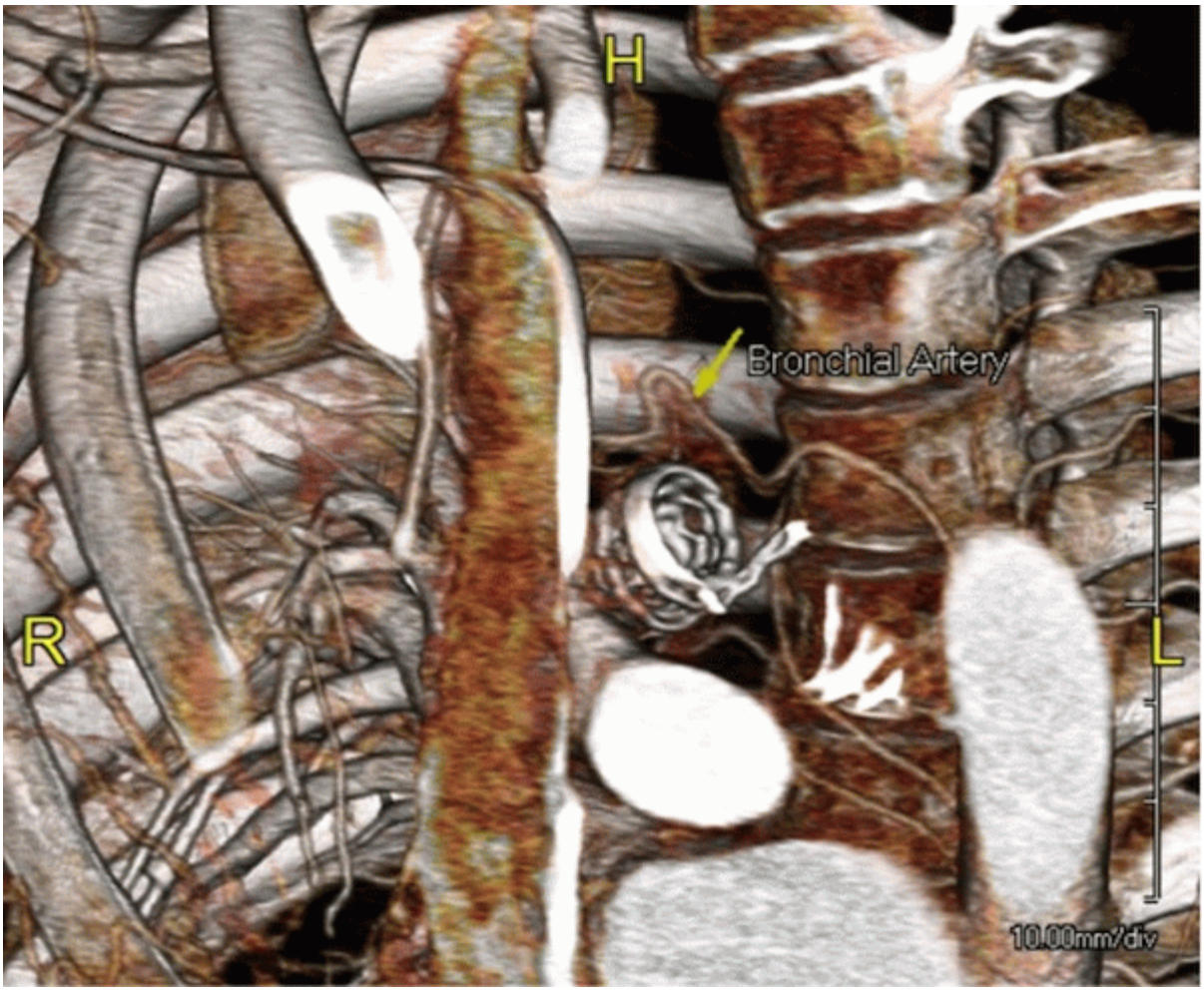
During her second procedure, pulmonary hemorrhage was anticipated and an endotracheal tube was placed. As the surgeons dilated the right main bronchus, “significant bleeding occurred with poor lung compliance and difficulty ventilating that resulted in bradycardia and hypoxia.” Thus, the procedure was once again aborted. A more prolonged resuscitation requiring transfusion of blood products and use of inotropic agents was performed.

After one month, patient again suffered a decline in pulmonary function from recurrent bronchial stenosis. Prior to bronchoscopy and dilation, a CT angiogram was performed demonstrating a “prominent right bronchial artery seen coming off the proximal descending aorta at the level of the left pulmonary artery which ends at the level of the right main bronchus.”

Prior to the next bronchial dilation, a planned embolization of bronchial artery was successfully completed. Further bronchoscopies for biopsies and dilations have been uncomplicated.

Reported incidences of airway anastomotic complications range from 2 to 33 percent. In a retrospective series of 232 lung transplants, 57 airway complications developed. It is well known that the most vulnerable site for operative complication of lung transplantation is at the airway anastomosis. Thus, one of the common complications of lung transplantation at the site is bronchial stenosis. Others include bronchial necrosis and dehiscence, excess granulation tissue, tracheobronchomalacia, and fistula formation. A case report of broncho-aortic neovascularization has been described in literature.

It is possible that an interdisciplinary meeting with the primary service, interventional radiologist, pulmonologist and anesthesiologist would have led to an intervention that may have prevented the second, more complicated hemorrhage. This case highlights the need for a system based practice to understand the root cause of a significant critical incident with a view to reducing further risks.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