

# CHALLENGES OF PULMONARY ENDARTERECTOMY AFTER FAILED PULMONARY BALLOON ANGIOPLASTY

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## INTRODUCTION:

Pulmonary endarterectomy (PEA) is the treatment of choice for chronic thromboembolic pulmonary hypertension (CTEPH). Balloon pulmonary angioplasty (BPA) is an emerging technique for the treatment of “inoperable” CTEPH. However, there’s a potential difficulty of this treatment option, particularly if performed in operable patients. We present a case of a 15 year old male with operable CTEPH who underwent BPA before he was referred for PEA surgery.

## CASE DESCRIPTION:

A 15 year old previously healthy male presented with shortness of breath and cough in January 2012. He was initially treated for pneumonia and bronchitis. In April 2012 he developed hemoptysis, and was found to have an irregular heart rate and an enlarged heart; a diagnosis of pulmonary embolism was made. He was treated with thrombolytics, anticoagulation, and oral sildenafil. Over the ensuing year he underwent multiple pulmonary angiograms, and on two separate occasions, BPA’s were performed in the right middle and lower lobe vessels. Due to progression of symptoms and persistence of CTEPH, he was referred for surgery in July 2013. Attempts at BPA unnecessarily delayed his referral for definitive therapy for over one year.

PEA was performed using established techniques under circulatory arrest. Intra-operative findings were indicative of pulmonary artery (PA) vessel wall tearing and rupture with secondary healing and obliteration of the plane of dissection in the areas of previous BPA (figure 1). The obliteration of the plane of dissection altered the endarterectomy, necessitating meticulous separation of the scar-like material from the remaining adventitia. As a result, circulatory arrest times were much longer than usual, for a total of 64 minutes, (right 20+14, left 20+10, c/w an average of 17 min for each side). The patient developed temporary but significant delirium following surgery attributed to the prolonged circulatory arrest times. Despite a technically challenging operation, the patient ultimately did well following the procedure, and was discharged to home without additional complications.

## DISCUSSION:

Pulmonary endarterectomy is the treatment of choice for CTEPH, with excellent long-term outcomes. Since BPA was first described in 2001 (Feinstein JA et al 2001 Circulation), the technique has garnered growing interest for the treatment of CTEPH in patients deemed inoperable. Our case raises concerns about the risk of PEA following attempts with BPA by altering the chronic thromboembolic material and vascular architecture making the surgery more difficult and exposing the patient to additional risks, not to mention the delay in definitive treatment. Accordingly, we urge caution with BPA patient selection and recommend that BPA

only be considered in patients who have been deemed a nonsurgical candidate at an experienced PEA center.

**Figure Legend:**

Figure 1 – Picture of the specimen removed at the time of endarterectomy. The corresponding AP projections of the pulmonary angiogram are shown. The magnified boxes correspond to the areas of multiple failed balloon pulmonary angioplasties, and disruption of the pulmonary artery.

