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Commentary: Double, double, coil, and trouble: Percutaneous options for managing pulmonary artery hemorrhage

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Pulmonary thromboendarterectomy (PTE) has eclipsed lung transplantation as the gold standard for treating chronic thromboembolic pulmonary hypertension. However, acute pulmonary hemorrhage is a rare but feared complication of PTE, along with the more commonly seen complications of recalcitrant pulmonary hypertension and reperfusion pulmonary edema.¹ Pulmonary hemorrhage is potentially fatal if not treated in a timely, appropriate manner.

In an interesting case report, Mangukia and colleagues² describe the use of percutaneous coil embolization to treat an intractable case of pulmonary hemorrhage after PTE of the left lower lobe and right upper lobe. Because their patient was unable to be weaned from venoarterial extracorporeal membrane oxygenation (VA-ECMO) and had failed 2 endobronchial blocker deflation trials, the authors opted to coil embolize the main artery of the left lower lobe, along with 3 basilar arteries. Some advantages are to be noted with this approach. Prolonged VA-ECMO after PTE increases the risk for re-thrombosis of pulmonary vessels. If successful, coil embolization enables cardiothoracic surgeons to avoid prolonged use of VA-ECMO. Moreover, coil embolization is a percutaneous treatment modality that spares



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CENTRAL MESSAGE

Percutaneous coil embolization may be a safe and effective option for managing intractable pulmonary artery hemorrhage after pulmonary endarterectomy.

patients from surgical intervention. And, in this particular instance, coil embolization may have avoided the potential need for pneumonectomy, which would be highly morbid in the setting of this patient's underlying cardiopulmonary disease. The authors should be congratulated for a successful outcome.

However, it should be noted that VA-ECMO, endobronchial blocking, therapeutic reversal of coagulopathies, and topical therapies are usually satisfactory to manage pulmonary artery hemorrhage.¹ Moreover, much of the justification for coil embolization over surgical intervention, in this case, was the anticipated need for pneumonectomy—the likelihood of which is uncertain. And, if lobectomy was found to be adequate to manage this patient's condition, it is unclear the superiority of coil embolization over surgical intervention. Finally, in addition to the highly collateralized pulmonary vasculature, this patient's concurrently successful endarterectomy of the right upper lobe increased this patient's overall pulmonary blood flow, which may have contributed to the successful outcome in this particular case—whether the patient was treated with coil embolization or by surgical lobectomy. Thus, we should be cautious about generalizing this potential intervention for all cases of pulmonary artery hemorrhage after PTE. Moreover, there is a paucity of data reporting outcomes of coil embolization in other settings of endobronchial bleeding, such as rupture of iatrogenic pseudoaneurysms after Swan-Ganz catheter placement or infection of the pulmonary arteries.

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Although much remains uncertain, this case represents the kind of innovation that may improve outcomes in critically ill cardiothoracic surgery patients. Pending further evidence, this successful use of coil embolization may afford cardiothoracic surgeons with additional options in these rare, but complicated postoperative circumstances.

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