LOBO® Vascular Occlusion System

CASE REVIEW

Treatment of PAVM Persistence After Coil Embolization

Brian Funaki, MD
Professor and Chief
Vascular and Interventional Radiology
University of Chicago Medicine

History

A previously healthy 35 year-old man suffered 3 consecutive strokes over several months and was discovered to have a pulmonary arteriovenous malformation and paradoxic emboli. He underwent coil embolization at an outside hospital (Figure 1) and then was referred to our Hereditary Hemorrhagic Telangiectasia (HHT) Center of Excellence for further evaluation. He underwent CT scanning which revealed persistent flow through the coil pack into the malformation (Figure 2).

Intervention

Prior to the procedure, embolization was discussed at length with the patient in our IR clinic including its risks, benefits and alternatives. An informed written consent was obtained. The patient was placed supine on the angiography table and was prepped with chlorhexidine and covered with a full body drape in the usual sterile fashion. Local anesthesia was obtained by 1% lidocaine. Real time ultrasound guidance was used to access the right common femoral vein with a 5 French micropuncture set. A guidewire was advanced into the IVC under fluoroscopic guidance and a 7 French sheath was placed. The main pulmonary artery was catheterized using a pigtail catheter. The catheter was positioned in the left main pulmonary artery and an angiogram was obtained (not shown). Subsequently, the feeding artery to the persistent PAVM was catheterized with a coaxial 7 French guiding catheter and 5 French MPA catheter. A digital subtraction angiogram confirmed flow through the coil pack (Figure 3).

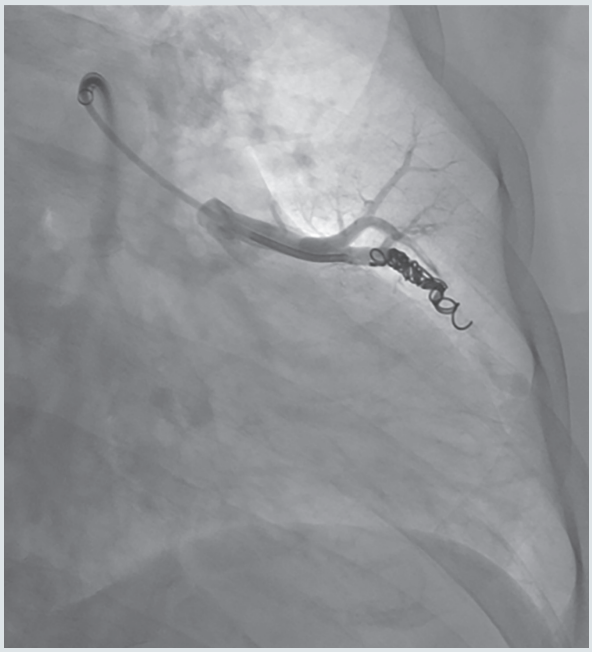

Figure 1. Digital subtraction angiogram showing coil embolization of PAVM performed at an outside hospital.

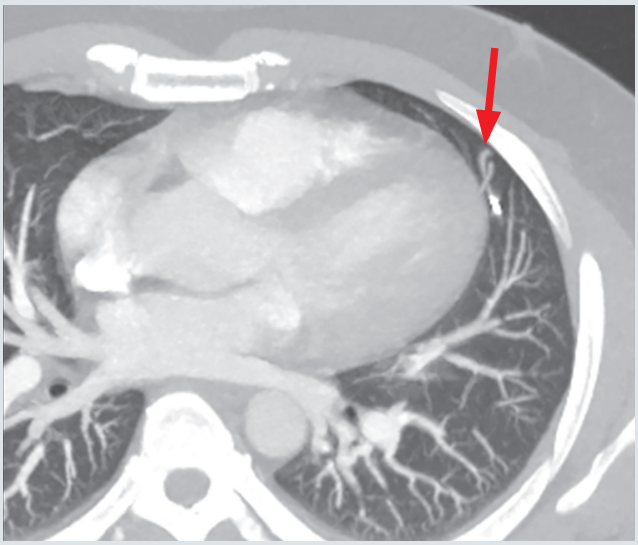

Figure 2. CTA showing persistent flow (red arrow) through coil pack.

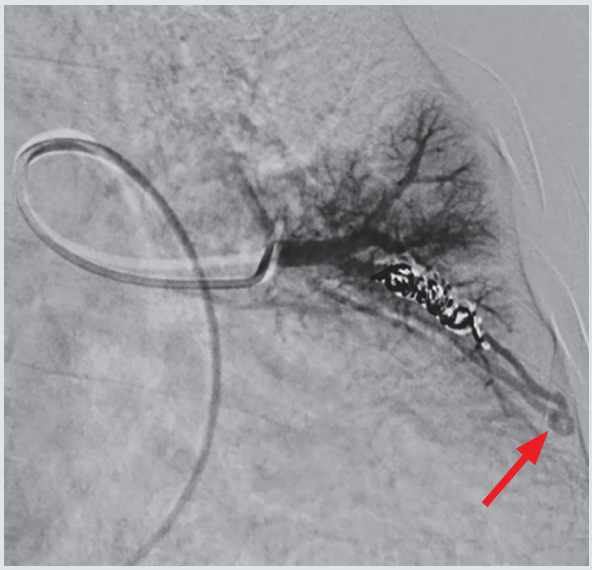

Figure 3. Digital subtraction angiogram confirming CTA finding of perfusion (red arrow) through coil pack.

Okami MEDICAL®

Embolization with LOBO

Embolization was planned using the LOBO (LOw-profile Braided Occluder). This device was chosen for several reasons. First, the LOBO device has excellent radial strength and an overall geometry that enabled precise deployment in this small landing zone proximal to the coil pack. Second, persistence of PAVMs is a known risk that occurs in up to one-quarter of treated lesions, and is thought to be more common with coil embolization compared to plug embolization; a coil plug combination is thought to be less prone to reperfusion. The tight braiding of the LOBO device with 3 occlusive disks results in immediate mechanical obstruction which should minimize risk of persistence without need to use additional embolic devices. Additionally, the radiopacity of the device also enables accurate assessment with follow up CT scanning. Third, in this case, the device was required to track through tortuous anatomy; the LOBO device articulates which allows the occluder to track around curves without causing catheter retraction. And fourth, the landing zone was quite complex and the geometry of the LOBO enabled it to be situated in the orifice of the vessel immediately adjacent to previously deployed coils and still provide durable occlusion.

A 2.8 French microcatheter was advanced through the 5 French catheter and used to select the orifice of the previously embolized feeding artery to the malformation (Figure 4). A single LOBO-3 vascular occluder was deployed immediately adjacent to the coil pack (Figure 5). There was complete and immediate occlusion of the malformation (Figure 6). Total fluoroscopy time was 18.4 minutes and air kerma was 1124 mGy. The patient was discharged without further intervention and was asymptomatic on 1 week follow up.

Conclusion

Endovascular embolization is the treatment of choice for PAVMs with an excellent and proven record of safety and efficacy. Vascular plugs have advantages over coils (including being less prone to persistence) and have become the preferred embolic device by many interventional radiologists treating patients with these lesions. The LOBO device has many desirable attributes including immediate occlusion, flexible sizing, precise placement, radial strength to preclude migration, reduced streak artifact on follow up CT, and excellent trackability in tortuous vessels.

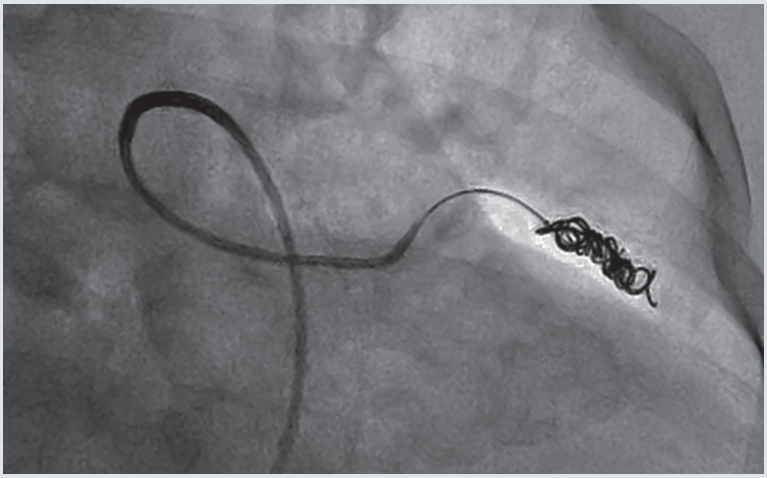

Figure 4. Fluoroscopic image showing catheterization of orifice of previously embolized feeding vessel with microcatheter.

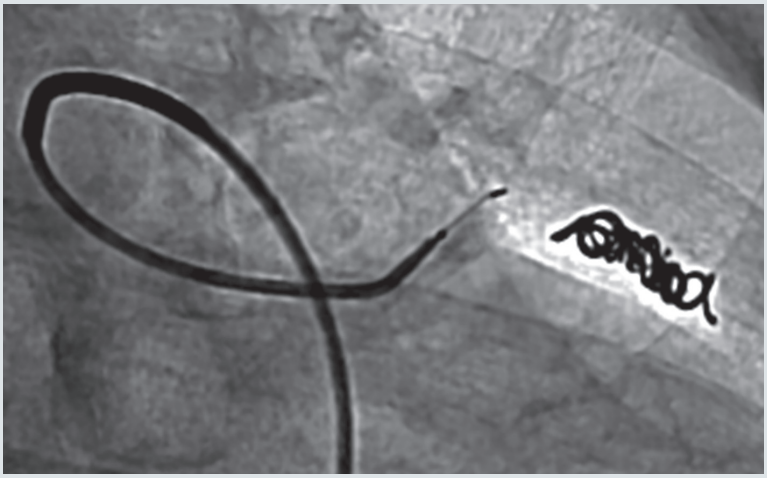

Figure5. Fluoroscopic image showing deployed LOBO-3.

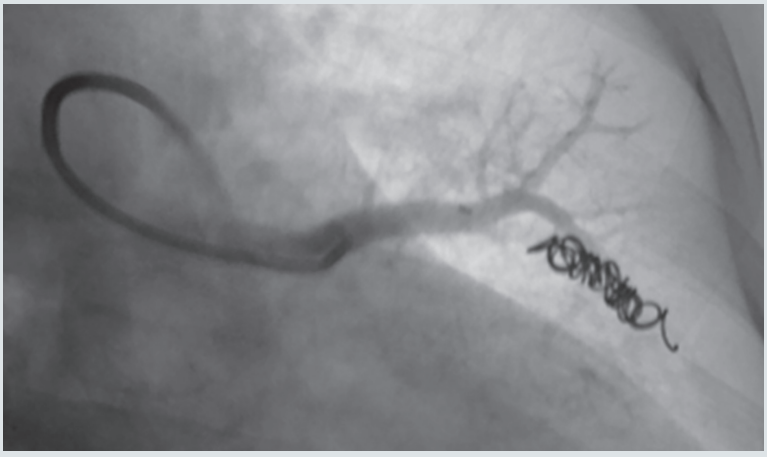

Figure 6. Subselective angiogram showing occlusion of PAVM.

Okami MEDICAL®

8 Argonaut, Suite 100
Aliso Viejo, CA 92656

info@okamimedical.com
949-446-9710

www.okamimedical.com

See Instructions for Use for a complete list of warnings, precautions, and contraindications.