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Staged Endovascular Intervention of Bilateral Pulmonary Artery Stenosis

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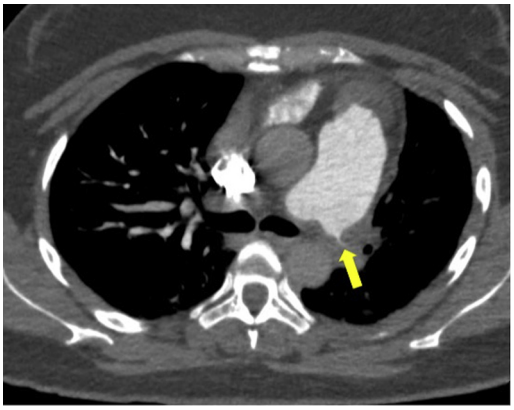
A 29-year-old woman with a history of clinically diagnosed sarcoidosis presented with acute onset dyspnea and chest pain. Chest computed tomography showed bilateral pulmonary artery (PA) stenosis, with complete occlusion of the left PA (LPA) (Figure 1) and 50% stenosis of the right PA (RPA) (Figure 2).

Catheterization was performed revealing a PA systolic pressure of 140 mm Hg, compared with systemic systolic pressure of 120 mm Hg. Severe stenosis of the mid-RPA was seen (Figure 3, image A). Mean main pulmonary artery (MPA) and distal RPA pressures were 68 mm Hg and 30 mm Hg, respectively. Stent angioplasty of the RPA was performed using a Genesis 3910B stent (Cordis Corp., Milpitas, California) post-dilated to 12 mm (Figure 3, image B) with improvement of mean MPA and mean distal RPA pressures to 35 mm Hg and 30 mm Hg, respectively. No attempt at recannulation of the LPA was made.

The patient returned 7 weeks later for the second stage of intervention (Figure 3, image C). A 4.5-mm covered Mounted CP Stent (NuMED Inc., Hopkinton, New York) pre-mounted on an 18-mm balloon-in-balloon catheter was placed within the existing RPA stent (Figure 3, image D). Post-stenting, mean pressure was 30 mm Hg in both the MPA and distal RPA, leaving no residual obstruction. The LPA was investigated but could not be recannulated.

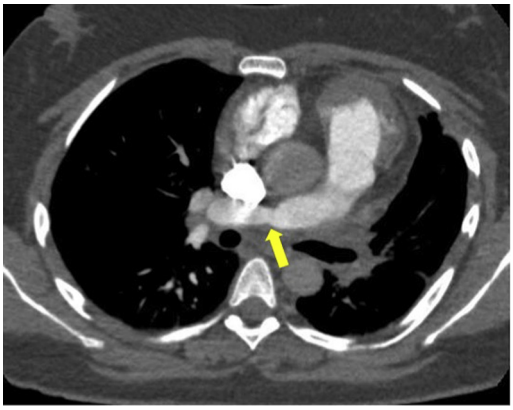
The patient returned in 7 weeks for the third stage of intervention to attempt recannulation of the LPA. Initial angiography showed total occlusion of the LPA (Figure 3, image E) although a proximal

FIGURE 1 Stenosis of Left Pulmonary Artery



Computed tomography axial view of the main pulmonary artery and left pulmonary artery showing complete occlusion of the proximal left pulmonary artery **(yellow arrow)**.

FIGURE 2 Stenosis of Right Pulmonary Artery



Computed tomography axial view of the main pulmonary artery and right pulmonary artery showing significant stenosis of the mid-right pulmonary artery **(yellow arrow)**.

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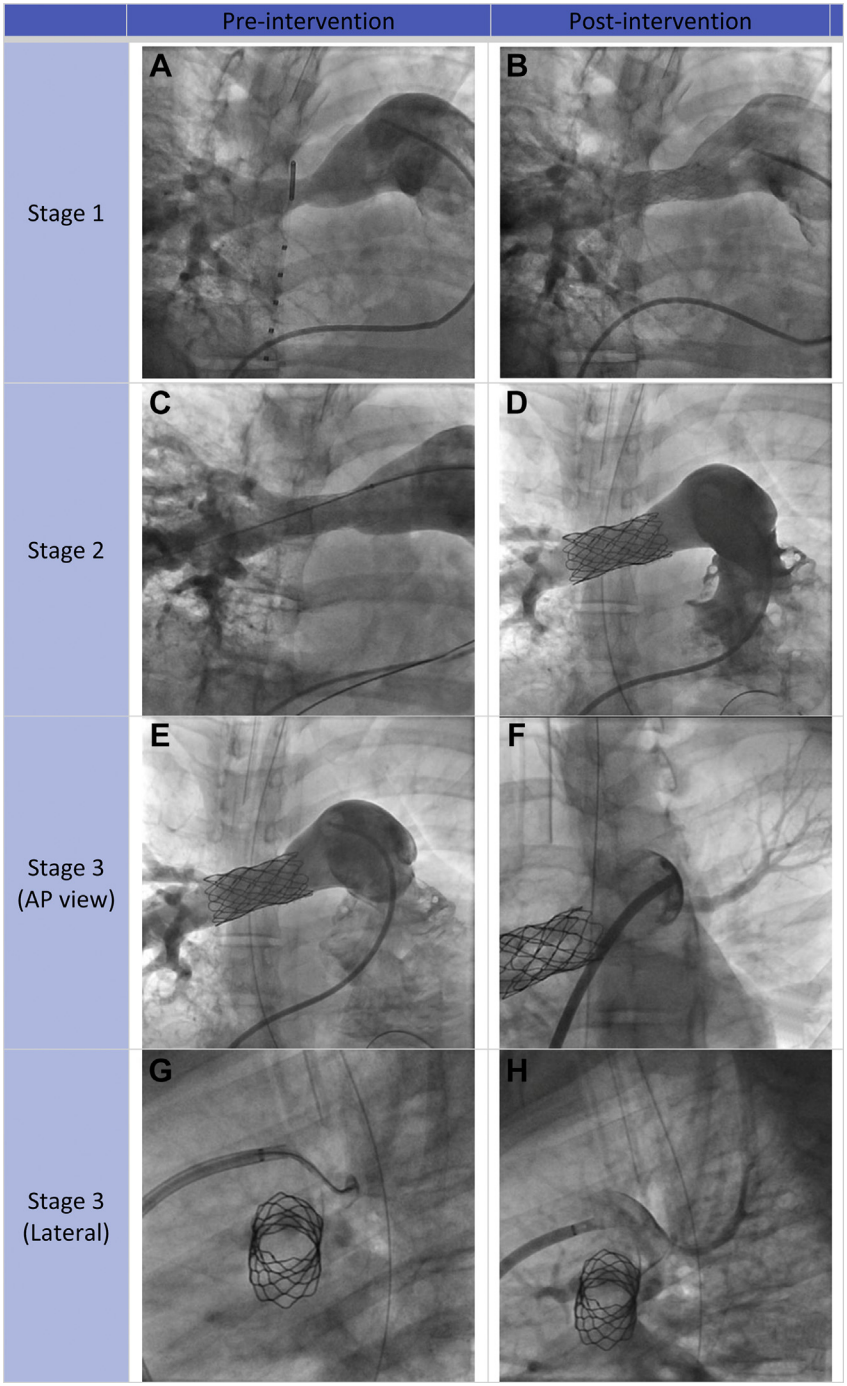
FIGURE 3 Staged Intervention of Bilateral Pulmonary Artery Stenosis



Initial angiography of the right pulmonary artery (RPA) showed significant stenosis of the mid-RPA **(A)**, which was improved after stent angioplasty dilation to 12 mm **(B)**. Stage 2 of the intervention 7 weeks later showed sustained improvement in RPA caliber **(C)**, and a covered stent was placed in the existing RPA stent and balloon dilated to 18 mm **(D)** to ameliorate the remaining stenosis. Stage 3 of the intervention 7 weeks later showed maintenance of RPA caliber **(E)** and visualization of a completely occluded left pulmonary artery by localization of a proximal stump on the lateral view **(G)**. Return of blood flow to the upper lobe branch of the left pulmonary artery can be seen after serial balloon dilations over a guidewire **(F, H)**. AP = anterior-posterior.

stump could be seen on lateral view (**Figure 3**, image G). A guidewire was directed across the upper lobe branch and positioned distally. Serial balloon dilations of the LPA led to improvement in flow (**Figure 3**, images F and H). The procedure was terminated with plans to later attempt cannulation of the left lower lobe branch.

The patient returned in 9 weeks and angioplasty of the lower branch was attempted, but it was found to be completely occluded and not amenable to intervention.

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