

Case report

Pulmonary vein occlusion and remodeling after electrical isolation treatment for atrial fibrillation : a case report

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Pulmonary vein (PV) stenosis or occlusion is a recently described complication of radiofrequency ablation for atrial fibrillation (AF), though favorable results of PV ostial ablation have fueled great enthusiasm.^{1 2} The presenting symptoms include dyspnea , cough , hemoptysis , pleural infusion and pulmonary consolidation.³

We report a case with left PVs occlusion after ablations , treated with the surgical operation for the PV reconstruction. All the symptoms including the left pleural effusion were relieved after the operation. To our knowledge , the case we present here is the first surgical operation for PVs occlusion in Mainland China , which will extend the understanding of the pulmonary complications and provide an effective strategy for removing the PV occlusion.

CASE REPORT

The 69-year-old man underwent PV ablation for the drug refractory , symptomatic AF in June 2002 for the first time. PVs were proved no stenosis and atrial thrombus was excluded by spiral computed tomography (SCT) with 3-dimensional reconstruction. PV angiography was taken to identify the ostium of the pulmonary veins via a transeptal approach. PVs were mapped and ablated with cool-tipped catheter in segmental isolation mode successfully.^{4 5}

The routine follow-up visits were made at the 1st , 3rd , 6th , 12th , 18th month after the procedure , and anticoagulant was required to be taken for three months.⁶ All the details , such as the symptoms , the medicine obtained , predictive factors , the

examination results of ECG and CT scan were well documented every visit. AF recurrence was detected by ECG examination in the second visit , about 3 months after the procedure. The patient accepted the second ablation in November 2002. Routine follow-up visits were continued and everything was okay until the asymptomatic stenosis was detected by CT scan [left superior pulmonary vein (LSPV) 70% , left upper pulmonary vein (LUPV) 70%] in April 2003. The stenosis was proved no change 6 months later , thus he gave up the anticoagulant he had taken since the stenosis was detected. In November 2004 , the patient was readmitted to hospital with cough and pleural effusion for 3 months , and the left PVs were found totally occlusive. The examinations such as the V/Q , the pulmonary pressure and the blood gas analysis were proved normal. He was discharged after pleural drainage. After that , he accepted another pleural drainage in January 2005.

The patient received surgical operation for the PVs reconstruction in February 2005 , about 32 months after the initial ablation. Circumferential scar around the ostium of both left PVs was exposed in the operation. The PVs were cut open and no thrombus was found after temporary occlusion of proximal and distal of the scared PVs. Removing the distal occlusion of PV proved normal PV drainage , and two pieces of pericardium patch were adopted to

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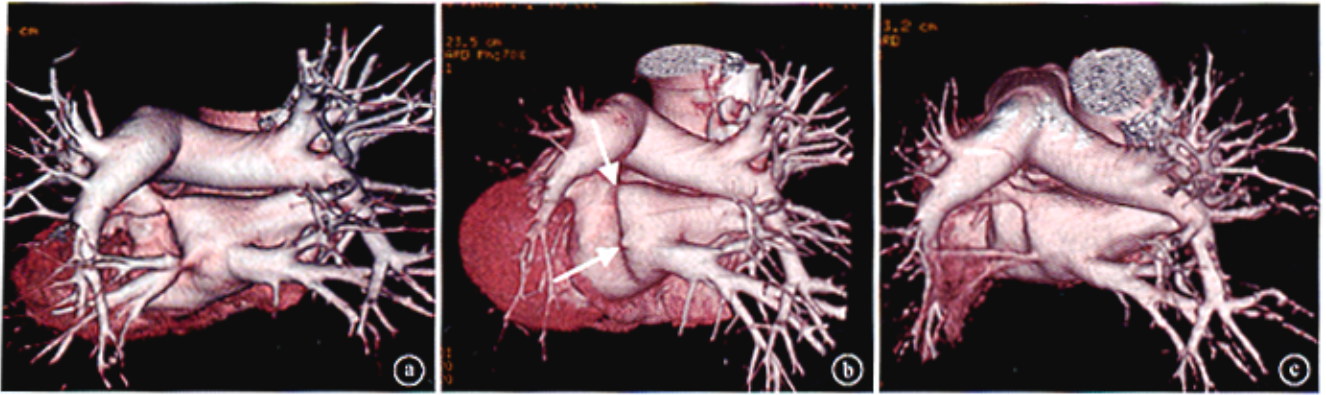


Fig. This chest computed tomogram shows (a)stenosis of the left pulmonary veins 13 months after the initial ablation , (b) occlusion totally of the left pulmonary veins ,(c) occlusion removed after surgery intervention.

dilate the left PVs. The left PVs remain unobstructed , about 3 months after the operation , proved by CT scan (Figure). All the symptoms including the left pleural effusion disappeared after the surgery recovery.

DISCUSSION

Stenosis approaching 70% of the PV lumen can lead to severely decreased flow to the affected lung.^{7,8} Many measures were reported to abolish stenosis and dilate the stenosed PV , but the restenosis rate was proved very high even if the stent was adopted.^{9,10} The case reported here suggests that adopting pericardium patch to dilate the stenosed PV is a meaningful exploration.

The pressure of pulmonary maintains normal in spite of the left PVs total occlusion in this case. Why? PVs connect with bronchial veins by some small bypasses , and the latter conjunct with the right atrium via azygos vein or intercostals vein. The backflow can get to the right atrium by this way , which alleviates the pressure of the pulmonary.

As to why the PV stenosis occurs and progresses without thrombosis after the second procedure , it might leave to the further studies on histology and anatomy. We just present here a retrospective case , additional studies in larger series are required to elucidate the definitive hemodynamic consequences. However , we think surgical operation for the PV reconstruction is a meaningful treatment for the patients with severe stenosis , especially for those PVs are occluded totally.

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