



Vascular Injury Caused by Retrieval of Ruptured and Detached Balloon Valvuloplasty Catheter During Transcatheter Aortic Valve Replacement

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An 88-year-old woman underwent transcatheter aortic valve implantation using a SAPIEN 3 valve (Edwards Lifesciences, Irvine, California) for symptomatic severe aortic stenosis. Pre-procedural examinations showed an aortic valve area of 0.39 cm² and severe calcification of the leaflets. During pre-dilatation using a 20-mm balloon valvuloplasty catheter (Edwards Lifesciences), balloon rupture occurred at the calcified leaflet (**Figure 1**). We pulled the balloon catheter back to the eSheath (Edwards Lifesciences) and removed it together with the eSheath through the right femoral artery. The ruptured balloon was, however, completely detached and a part of the balloon remained in the artery (**Figure 2A**). Iliac angiography showed the right external iliac artery occluded with the detached balloon (**Figures 2B and 2C**). After the heart team discussion, we cut down the groin and successfully retrieved the detached ruptured balloon (**Figures 2D and 2E**). Then, a 23-mm SAPIEN 3 valve was implanted via left femoral access. After percutaneous closure of the left femoral access site, the right limb appeared to have developed cyanosis. Right limb angiography revealed that the superficial femoral

artery was occluded due to embolization (**Figure 3A**). After removal of the embolized material through the cutdown site, the right superficial femoral artery was recanalized (**Figure 3B**) and the cyanosis improved. The retrieved material was pathologically proven to be an arterial intima (**Figure 3C**). This finding indicates that a ruptured balloon caused vascular injury in the process of retrieval, and the dissected free arterial intima embolized the right femoral artery.

Balloon rupture can occur during valvuloplasty of a severely calcified aortic valve (1). In this case, we tried to pull out the ruptured balloon catheter, which resulted in complete detachment of the balloon, arterial injury, and subsequent embolization with a resected arterial intima. Retrieval of a ruptured balloon valvuloplasty catheter is occasionally challenging, and careful management is required to prevent serious vascular complications.

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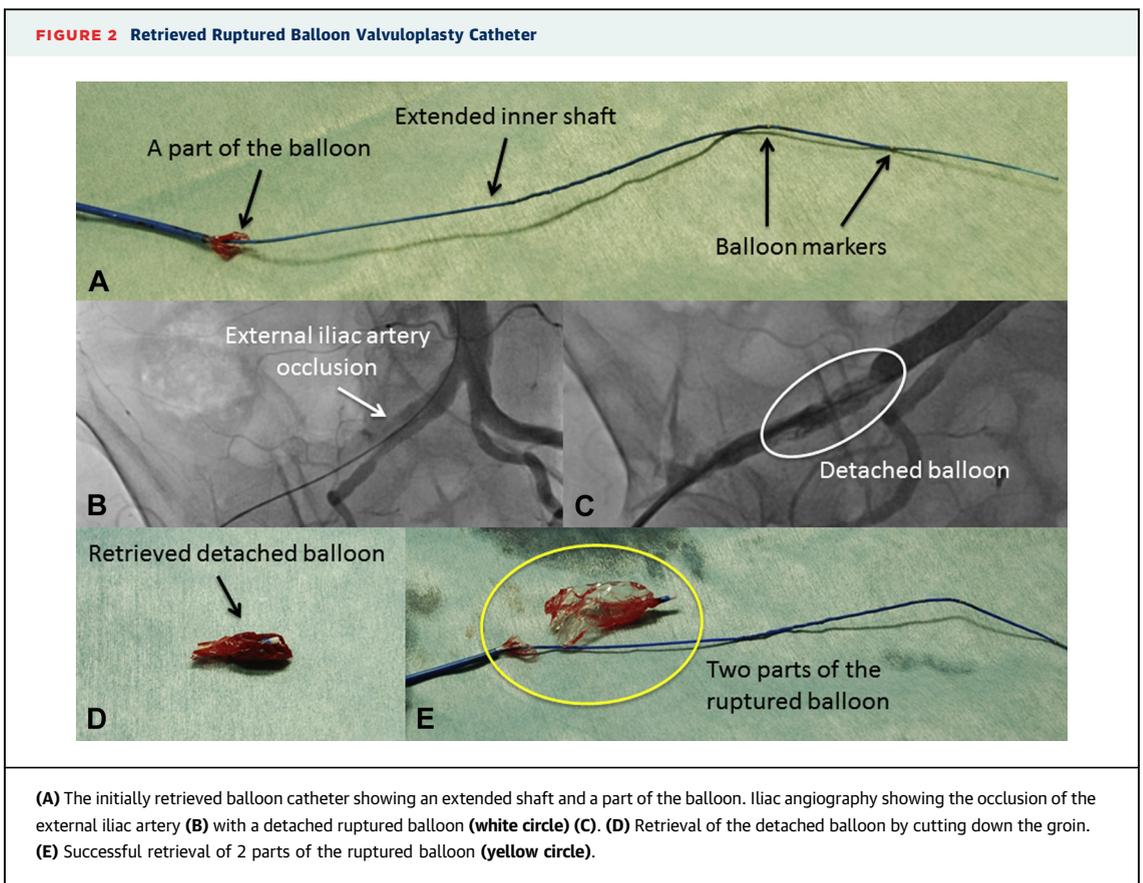
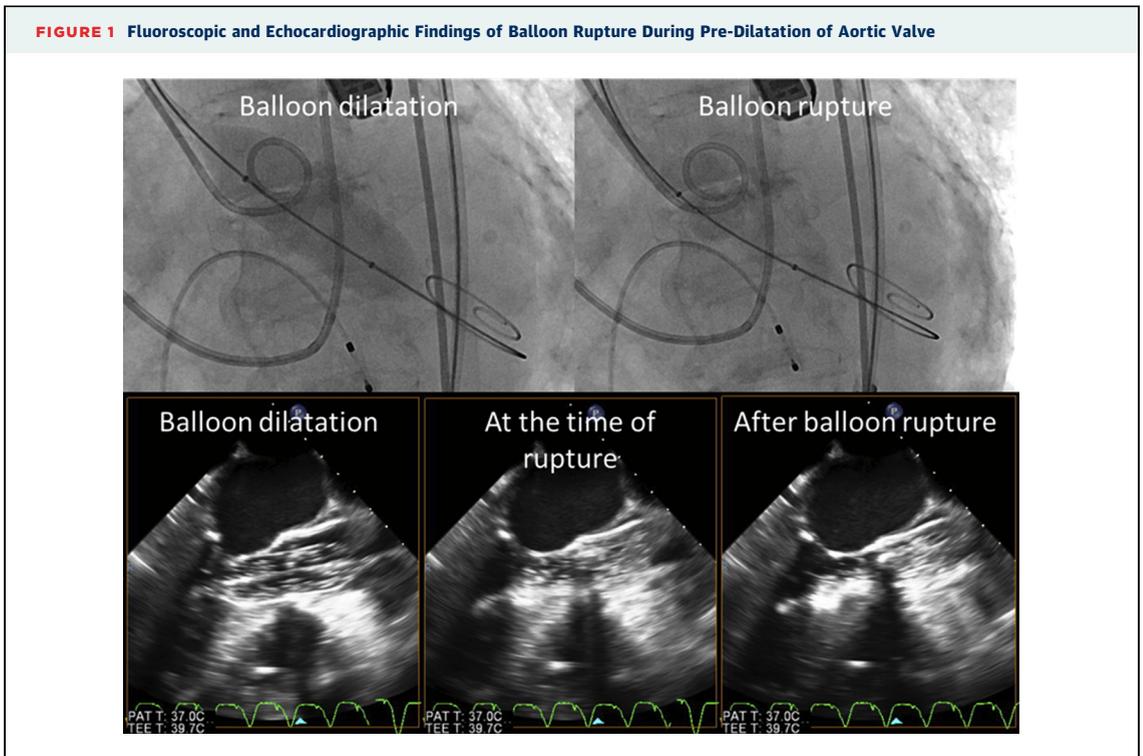
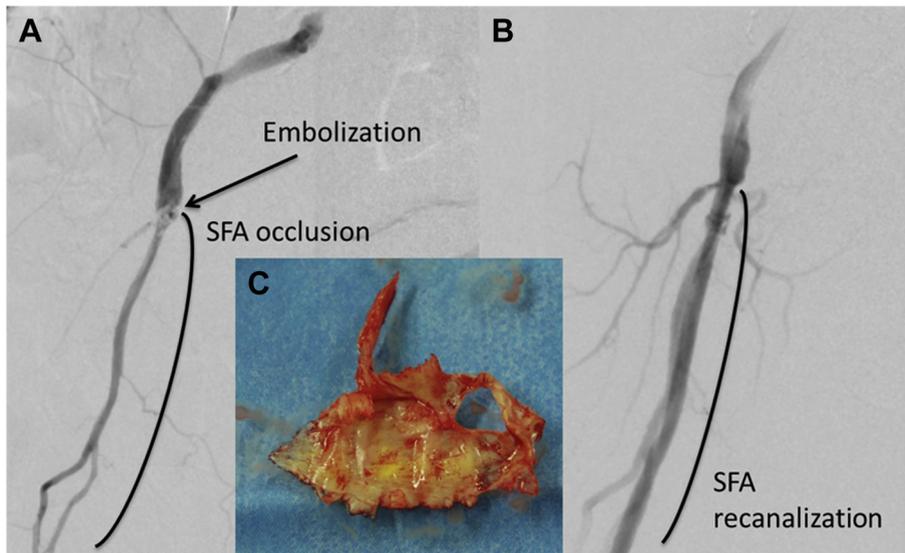


FIGURE 3 SFA Occlusion Due to Arterial Intimal Embolization



(A) Right femoral angiography showing superficial femoral artery (SFA) occlusion due to embolization. **(B)** After removal of the embolized material, the SFA was successfully recanalized. **(C)** Removed embolized material indicating an arterial intima.

REFERENCE

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