An 81-year-old man with interstitial pneumonia and severe aortic stenosis, was diagnosed with rectal carcinoma. We performed percutaneous balloon aortic valvuloplasty (BAV) using 22-mm INOUE balloon catheter (Toray, Tokyo, Japan) via antegrade approach before operation for rectal cancer. Balloon dilatation had to be done three times to achieve adequate valve opening. Trans-aortic peak pressure gradient of 72 mmHg decreased to 39.7 mmHg after BAV, and he successfully received abdominoperineal resection. Computed tomography (CT) clearly visualized aortic valve calcification and movement before (Figures 1A,C; Movie S1), and after BAV (Figures 1B,D; Movie S1). CT after BAV showed improvement of valve motion due to leaflet fracture of left coronary cusp (LCC; Figure 1D), but there was no significant change in the right coronary cusp (RCC), and non-coronary cusp (NCC). Six months after abdominal surgery, the patient developed aspiration pneumonitis and died. Necropsy findings showed fracture of valvular calcic deposits in NCC, but there were no apparent fractures of calcific deposits in LCC, and RCC (Figure 2).

BAV is not performed frequently now, but the recent popularization of transcatheter aortic valve implantation reminds us of the efficacy of BAV. The present patient also had a large fracture of valvular calcific deposits in the most severely calcified RCC, seen on necropsy (Figure 2), but CT showed that the major improvement of aortic valve opening was due to improvement of the anatomically non-severely calcified left valve leaflet movement. This implies that BAV might also be useful for non-severely calcified coronary cusp.

Figure 1. Visualization of aortic valve on computed tomography. Post-balloon aortic valvuloplasty (BAV) images showed significant improvement of aortic valve opening. (A) Before BAV, diastole; (B) after BAV, diastole; (C) before BAV, systole; (D) leaflet fracture after BAV (arrowhead), systole. LCC, left coronary cusp; NCC, non-coronary cusp; RCC, right coronary cusp.
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underlying reasons for the effectiveness of BAV. Recent progress in CT has enabled clear visualization of the real movement of the aortic valves after BAV during the heart cycle, as in the present case.

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Disclosures

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References


Supplementary File

Supplementary File 1

Movie S1. Aortic valve movement on computed tomography (Left) before and (Right) after balloon aortic valvuloplasty.

Please find supplementary file(s):