



## Left bundle branch block during antegrade balloon aortic valvuloplasty caused by stiff-wire loop stress

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### Images in cardiovascular intervention

An 88-year-old female with recurrent heart failure due to severe aortic stenosis underwent antegrade balloon aortic valvuloplasty (ant-BAV) using Inoue balloon catheter (Toray, Tokyo, Japan). Preprocedural coronary angiogram revealed no significant stenosis. The stiff wire was across from left atrium, via mitral valve and left ventricle to the descending aorta and captured by the snare catheter (Fig. 1a). The Inoue balloon was advanced over the intra-ventricular wire loop to a position across aortic valve. During this manipulation, holding the stiff wire made the snare fixing point and the wire to be pulled down near to aortic valve, indicating strong wire tension (Fig. 1b). Incidentally, there was a new-onset left bundle branch block (LBBB) (Fig. 1c). Her hemodynamic state was stable and

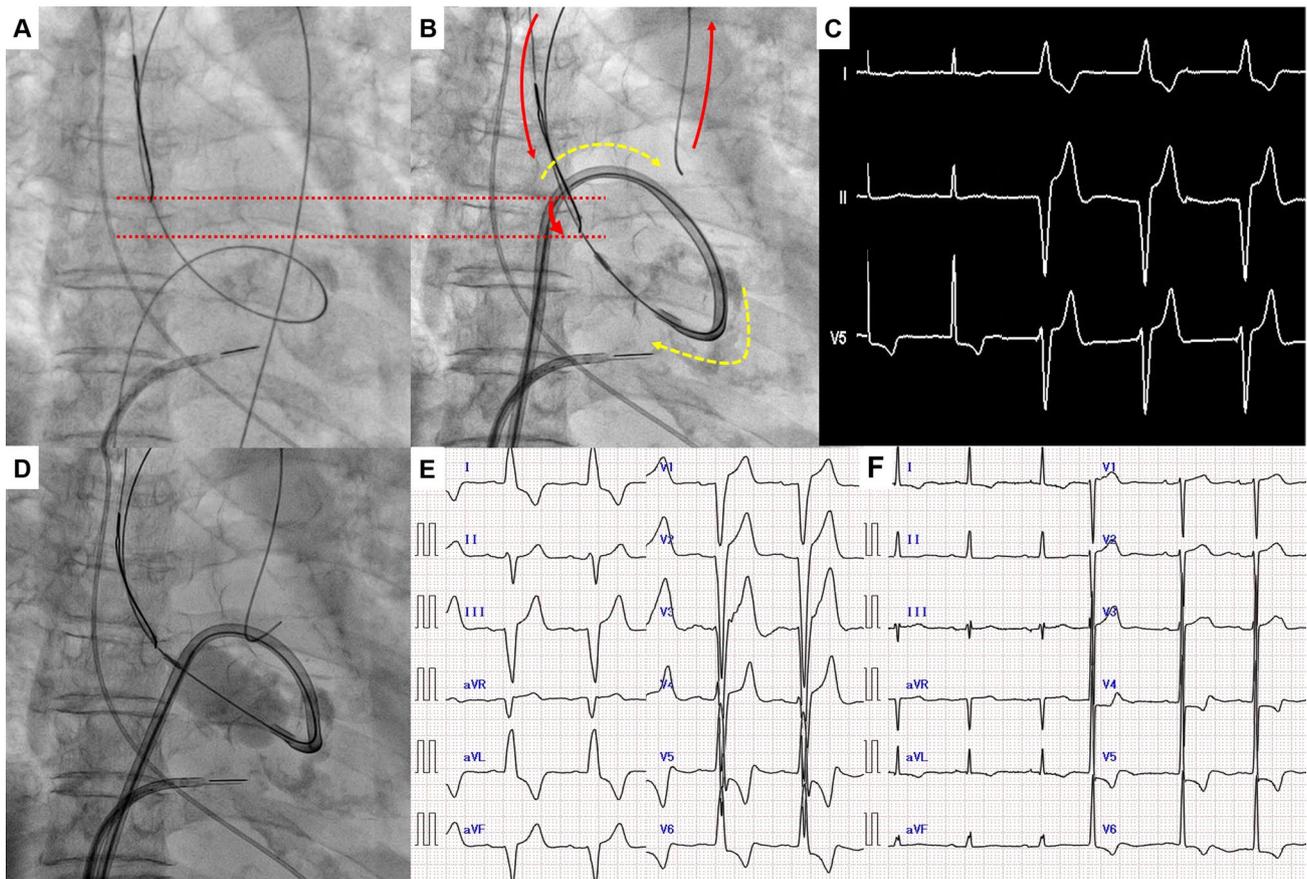
then, dilatation was performed using stepwise technique (Fig. 1d). Even though the LBBB was continued during the procedure, it was improved after 6 h without advancement to atrioventricular block (Fig. 1e, f). The successful reduction in transaortic valve gradient and increase in AV area resulted in improvement of her clinical condition.

Cardiac conduction disturbances while retrograde BAV (retro-BAV) and transcatheter aortic valve implantation are previously reported and associated with balloon oversizing [1]. In this case, the mechanical stress by stiff-wire intra-ventricular loop during advancement of the Inoue balloon caused the new-onset LBBB regardless of balloon inflation. Although the maximum characteristic of ant-BAV the stiff-wire loop with snare fixing offers several advantages over retro-BAV, this procedure gives stronger wire-loop stress for intra-ventricular conduction systems. In positioning of the

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**Fig. 1** **a** The stiff wire was placed in the intra-ventricular loop and captured by the snare catheter in the ascending aorta. **b** Holding the stiff wire during advancement of Inoue balloon catheter (yellow arrow) made the snare fixing point and the wire to be pulled down near to aortic valve (red arrow), indicating significant wire tension. **c** Incidentally, new left bundle branch block (LBBB) appeared before

balloon, snare fixing point is pulled down near to AV indicating significant wire tension. The operators should keep this complication in mind and make effort not to lose the shape of wire loop.

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### Compliance with ethical standards

**Conflict of interest** No author has a conflict of interest to declare.

inflation. **d** Multiple times of inflations with stepwise increased balloon diameters were performed, resulting in remarkable improvements in clinical conditions. **e** A standard 12-lead electrocardiogram after the procedure revealed complete LBBB. **f** After 6 h, the LBBB was resolved without complications

**Ethical approval** This study was approved by the ethical standards of the institutional research committee.

**Informed consent** Informed consent was obtained from the patient for publication of this report.

### Reference

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