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Use of the snare technique for crossing a severely calcified bicuspid valve and horizontal aorta

An 87-year-old woman underwent transcatheter aortic valve (AV) implantation. Preprocedural computed tomography showed a type 1 raphe between the right coronary and non-coronary cusps (RCC-NCC raphe) with severe calcification and a large aortic root angle (65°) (Fig. 1a, 1b). After pre-dilatation using a 15-mm balloon, we delivered a 26-mm Evolut Pro+ system (Medtronic). However, the Evolut

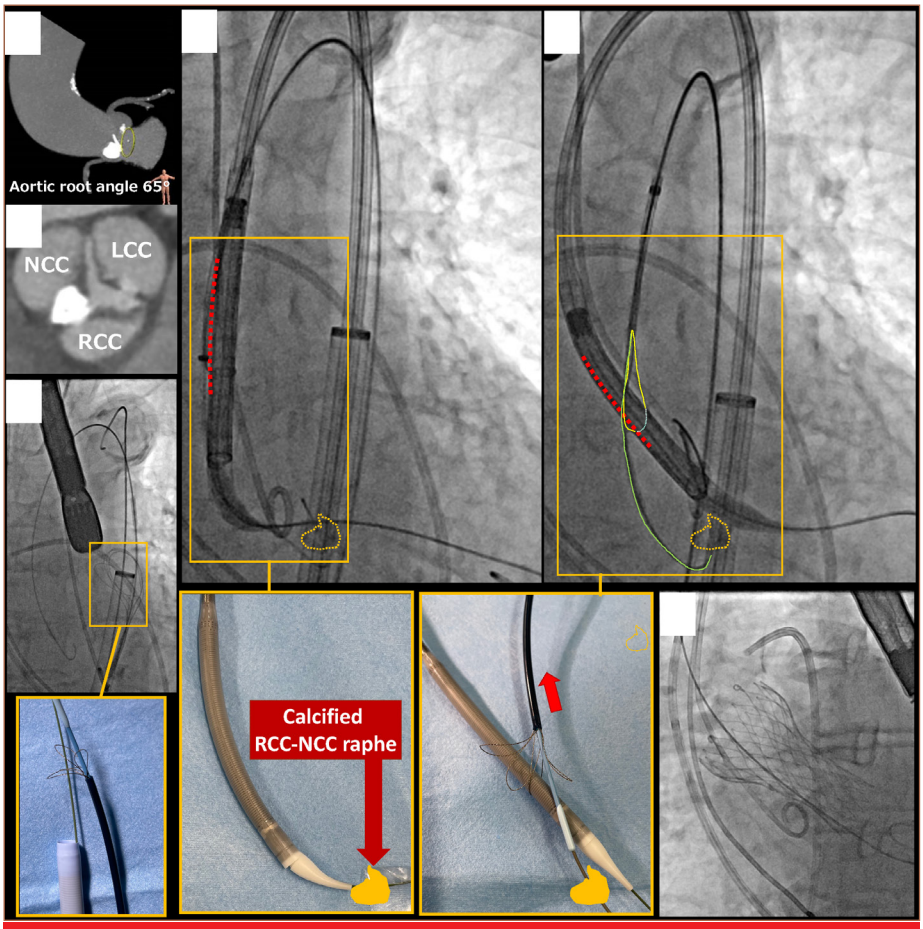

Figure 1. Imaging findings of the patient. (a) Preprocedural CT showing a significantly large aortic root angle (65°) with dilatation of the ascending aorta (39 mm). (b) Type 1 raphe with severe calcification shown on CT. (c) The guidewire from the right femoral sheath snared using the Indy OTW Vascular Retriever (Cook Medical, Bloomington, IN, USA) by left TF approach using a 9-Fr sheath from the beginning. (d) The Evolut Pro+ nosecone on Confida guidewire (Medtronic, Minneapolis, MN, USA) hit the calcified RCC-NCC raphe and could not cross the AV despite several changes in the spine position by rotating the Evolut Pro+ delivery system. (e) The Evolut Pro+ delivery system could cross the AV by changing the pathway of the delivery system away from the major aortic curvature using the snare technique. (f) The Evolut Pro+ successfully implanted.

E-PAGE ORIGINAL IMAGE

Yusuke Oba*
Hiroshi Funayama*
Hisaya Kobayashi*
Kenji Harada*
Kouji Kawahito**
Kazuomi Kario*

*Departments of *Internal Medicine, Division of Cardiovascular Medicine, and **Cardiovascular Surgery, Jichi Medical University School of Medicine; Tochigi-Japan*

Corresponding Author:
Hiroshi Funayama
✉ funahiro@omiya.jichi.ac.jp

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Pro+ nosecone on Confida guidewire (Medtronic) hit the calcified RCC-NCC raphe and could not cross the AV with the right transfemoral (TF) approach despite several changes in the spine position by rotating the Evolut Pro+ system (Fig. 1d, Video 1). Because we anticipated difficulty in crossing the Evolut Pro+ system into the AV, the guidewire from the right femoral sheath was snared using the Indy OTW Vascular Retriever (Cook Medical) by the left TF approach using a 9 Fr sheath from the beginning (Fig. 1c, Video 2). Because the over-the-wire capability of the Indy OTW is compatible with a .035-inch guidewire, we switched to a stiffer Lunderquist® wire (Cook Medical) to make delivery of the retrieval snare easier and enhance stability and trackability. The Evolut Pro+ system could cross the AV by changing the pathway of the delivery system away from the major aortic curvature using the snare technique (Fig. 1e, Video 3). Finally, the Evolut Pro+ was successfully implanted (Fig. 1f). Our case showed that the snare technique is a useful option when the Evolut Pro+ system is unable to cross the AV owing to interference raphe with severe calcification, especially in cases with a very horizontal aorta.

Informed consent: A written informed consent was obtained from the patient.

Video 1. The Evolut Pro+ nosecone hit the calcified RCC-NCC raphe and could not cross the aortic valve.

Video 2. The guidewire from the right femoral sheath was snared using the Indy OTW Vascular Retriever by the left femoral approach.

Video 3. The Evolut Pro+ system could cross the aortic valve by changing the pathway of the delivery system away from the major aortic curvature using the snare technique.