




Images in
Cardiovascular Medicine



Successful Use of an eSheath for Failed Introduction of the Evolut R Valve during Transfemoral Transcatheter Aortic Valve Implantation

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Received: Oct 1, 2019

Accepted: Nov 19, 2019

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Conflict of Interest

The authors have no financial conflicts of
interest.

An 86-year-old man with severe, symptomatic aortic stenosis underwent a 29 mm Evolut R (Medtronic, Minneapolis, MN, USA) implantation using the right femoral artery approach. Pre-procedural computed tomography angiography showed significant tortuosity, but adequate diameters (>7.0 mm) and minimal calcification in both external iliac arteries (**Figure 1A**). After a Lunderquist Extra-Stiff Wire Guide (Cook Medical, Bloomington, IN, USA) was inserted to straighten the anatomy and increase stability, neither the 14Fr Inline nor 18 Fr sheath could be inserted into the right iliac artery due to strong resistance. The angiography showed a severe accordion phenomenon in the right iliac artery that prevented device insertion (**Figure 1B**). To overcome the phenomenon, a 14Fr eSheath (Edwards Lifesciences, Irvine, CA, USA) was successfully inserted with some resistance. A 29 mm Evolut R e-Sheath was then smoothly implanted without any major vascular complications (**Figure 1C-E**).

An extremely tortuous iliac artery is one of the major limitations of a transfemoral approach during transcatheter aortic valve implantation, and carries the risk of serious complications including arterial dissection or rupture. To overcome the tortuosity of the access route, straightening the tortuous vessel with stiff wire is useful.¹⁻³⁾ Nevertheless, after guidewire insertion, tortuous vessels (especially with little calcification) can induce an accordion phenomenon which may prevent device advancement due to the invagination of the straightened vessel wall causing severe lumen narrowing.⁴⁾ However, the InLine sheath delivery system for the Evolut R valve fit through the eSheath and was successfully implanted through a tortuous ileo-femoral vessel.

Author Contributions

Conceptualization: Kobayashi K, Hachinohe D; Investigation: Mitsube K; Methodology: Furugen A, Kawamura T; Supervision: Koshima R, Fujita T; Writing - original draft: Kaneko U.

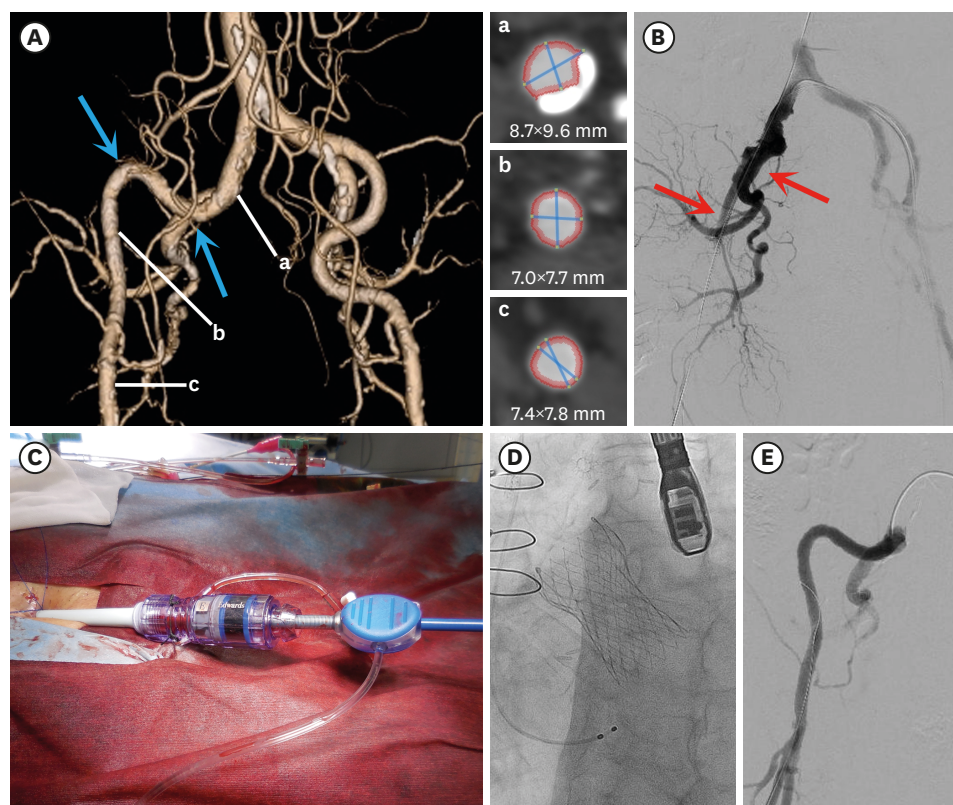


Figure 1. Computed tomographic, fluoroscopic, and intraprocedural images. (A) Pre-procedural multi-detector computed tomography revealed good caliber (>7.0 mm) with little calcification (a-c), but severe tortuosity in both external iliac arteries (blue arrows). (B) After stiff wire insertion, angiography showed a severe accordion phenomenon (red arrows). (C, D) Smooth delivery and implantation of a 29 mm Evolut R through the eSheath was successful. (E) Final angiography confirmed no major vascular complications.

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