

Real-world case study

Post-implant release predictability you expect:*

The PASCAL Precision System for TR reduction

The PASCAL Precision transcatheter valve repair system with an implant designed to adapt to native anatomies and a catheter with balanced flexibility, ensures that what you see before release is what you can achieve.* Here, Professor Porto from San Martino Hospital in Italy, describes an elderly patient with tricuspid regurgitation (TR), who achieved a successful outcome in tricuspid transcatheter edge-to-edge repair (T-TEER) using the PASCAL Precision system. The predictability of the procedure was enhanced by the implant's advanced optimisation, and the balanced catheter with built-in stability and flexibility.



Professor Italo Porto
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Professor Italo Porto is an interventional cardiologist and Chief of Cardiology at San Martino hospital in Genova, Italy. He also holds professorship in Cardiovascular Medicine at the University of Genova. He specialises in advanced percutaneous procedures including mitral and tricuspid valve treatments, as well as complex coronary angioplasty, favouring the radial approach. Additionally, Professor Porto is actively involved in academic research and education, mentoring the next generation of cardiologists.

*Performance data on file.

The patient

The patient was an 81-year-old woman, referred to us from Rome for a tricuspid intervention. Her medical history included dyslipidaemia, hypertension, atrial fibrillation, chronic anticoagulation therapy and heart failure classified as New York Heart Association (NYHA) class III. She displayed symptoms of effort-related dyspnoea, chronic oedema and bilateral pleural effusion. The heart failure with preserved ejection fraction and long-standing atrial fibrillation likely caused both mitral and tricuspid regurgitation. Cardiac catheterisation revealed mixed pulmonary hypertension with dysfunction of both ventricles, and both mitral and tricuspid regurgitation. Given her complex condition, the local Heart Team decided to perform a T-TEER procedure.

The challenge

The transoesophageal echocardiography (TOE) results showed a moderately large (5mm) anteroseptal (AS) gap, along with the presence of a bi-scallop posterior leaflet; therefore, a type IIIB TR morphology (Figure 1A).



Figure 1. Baseline TOE of the tricuspid valve (A).

The strategy

We chose the PASCAL Precision system because of the flexibility of its features, which provide the necessary precision and tension control during the procedure. This allowed for independent leaflet capture and optimisation. Additionally, the PASCAL Ace with its elongation features, helps with possible entanglement. Its wide range of paddle mobility and full elongation capabilities further assist in maneuvering, reconfiguring and retracting the implant.



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Moreover, the PASCAL Precision system's gentleness and precision provide atraumatic clasp and closure that helps preserve leaflet integrity.[†]

The procedure

We employed independent leaflet capture (Figure 2A). Initially, we captured the anterior leaflet, then swung the system septally to capture the septal leaflet and finally optimised both captures. The first device was implanted anteriorly with a 2–8 clocking orientation. Despite initial tension causing persistent severe TR (Figure 2B), the release of the device reduced the TR grade from 5+ to 2+ (Figure 2C). This significant improvement led us to eliminate the AS component of TR and it allowed us to focus on the remaining central/posterior jet. To address this, we placed a second PASCAL Ace implant in the posterior position with a 3–9 clocking orientation (Figures 2D and 2E), performing independent leaflet capture on the posterior and septal leaflets. This resulted in a stable final TR grade of 1+ (Figure 2F). The patient's diuretic needs were significantly reduced post-procedure and she reported feeling much better at follow-up.

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I have the confidence to achieve a more predictable result, predict where to implant the system and anticipate what will happen after its release.
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Professor Italo Porto

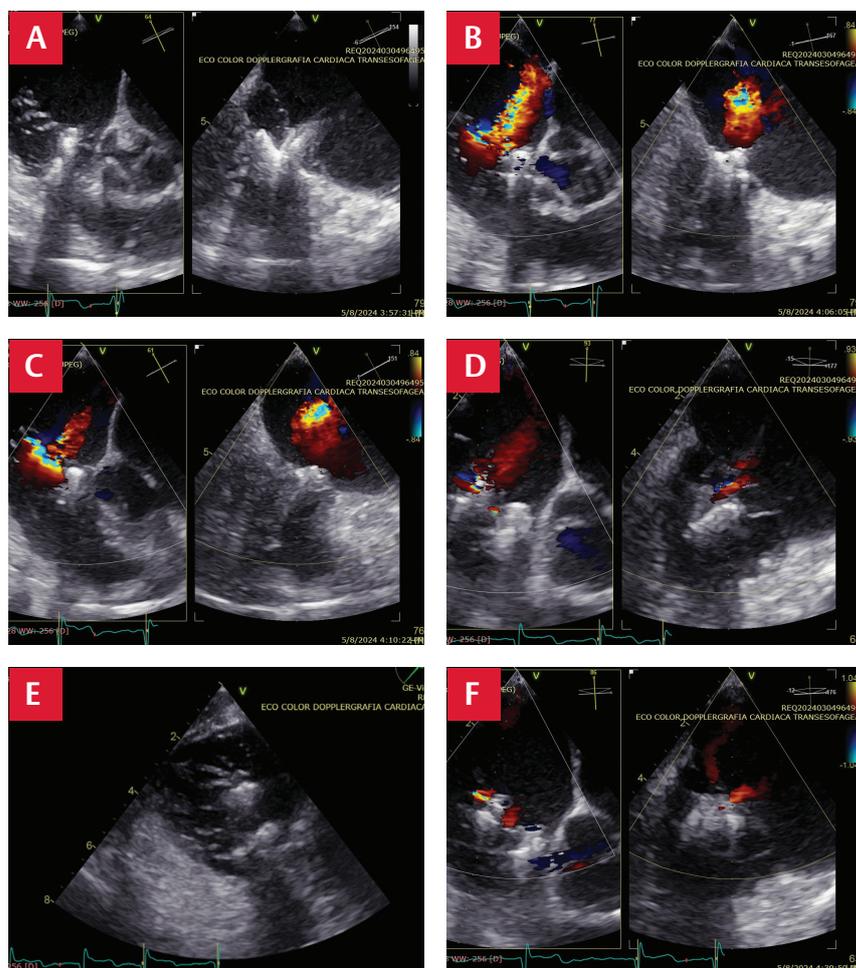


Figure 2. Independent leaflet capture (A); TR before the release of the first PASCAL Ace implant (B) and TR after the release of the first PASCAL Ace implant (C); TOE of the tricuspid valve before release of the second PASCAL Ace implant (D); position and orientation of two PASCAL implants (E); and TR after release of the second PASCAL Ace implant (F).

[†]Performance and simulation data on file.

Key tips

We find utilising the PASCAL Precision system's flexibility and enhanced rotational and clocking capabilities allows for continuous system optimisation. Another tip is to use the elongation feature when needed and initially go from the anterior towards the commissure - this allows you to review the anatomy. It is also important to collaborate closely with imaging colleagues for high-quality preprocedural and intraprocedural visuals essential for reliable planning and execution. Be adaptable to real-time observations and involve an advanced heart failure team for comprehensive patient assessment and improved procedural outcomes.

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