

## Image in cardiology

## Bioprosthetic aortic valve fracture: evaluation by serial cardiac CT

## Fractura de bioprótesis aórtica quirúrgica: valoración mediante TC seriada

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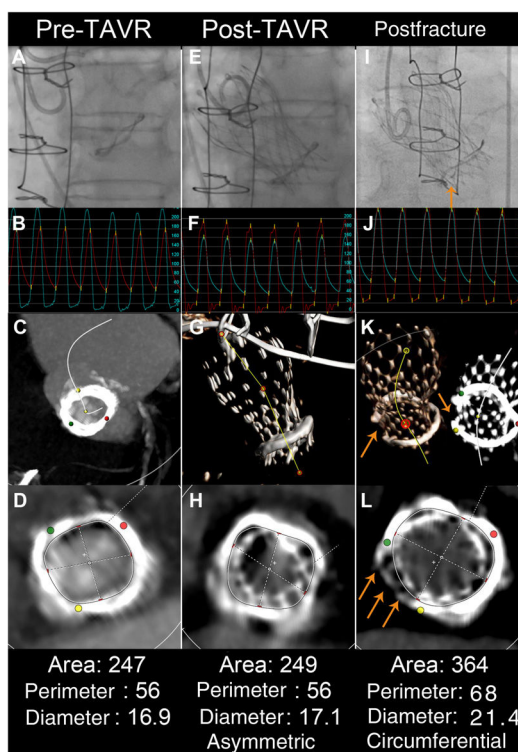


Figure 1.

Bioprosthetic aortic valve fracture during transcatheter valve-in-valve implantation has recently been reported to reduce mismatch and avoid elevated residual gradients after implantation. However, the extent of the benefit in terms of expansion or area gained is not known. Computed tomography (CT) can be a useful tool to obtain this information.

We present the case of an 83-year-old woman with a degenerated Mitroflow 21 mm bioprosthetic valve (Livanova, United Kingdom) (mean gradient, 51 mmHg) (figure 1A-D), treated by transcatheter implantation of an Evolut-R 23 mm self-expanding valve (Medtronic, United States) (figure 1E). After the procedure, the increased gradients persisted (figure 1F) and a new CT 2 days later demonstrated incomplete and asymmetric expansion of the prosthesis, limited by the ring of the surgical bioprosthesis (figure 1G,H). In view of these findings, prosthetic ring fracture was decided in a deferred procedure with a True 22 mm balloon (Bard, United States) (figure 1I,J). The patient remained asymptomatic and a third CT 8 months later showed fracture of the bioprosthesis (orange arrows), complete and circular expansion of the prosthesis (figure 1K,L), and an increase in area of 46% and an increase in diameter of 25%.

This is the first report of serial CT assessments of a bioprosthetic valve fracture procedure, as well as the first quantification of the area gained. It illustrates a new use for CT to guide the valve-in-valve procedure. Severe underexpansion or asymmetric expansion can be treated by a fracture procedure, and the extent of diameter gained could allow implantation of larger prostheses than those recommended.

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