Echo-navigation to guide transfemoral tricuspid edge-to-edge repair

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The EchoNavigator®-system (Philips Healthcare, Best, the Netherlands) allows to merge echocardiographic and fluoroscopic images on the same display in real-time.

Intraprocedural guidance of interventional tricuspid valve (TV) therapies remains an issue.

We performed three successful cases of TV clipping through the transfemoral route to treat functional tricuspid regurgitation (TR) using the EchoNavigator® to guide the procedure.

A 63-year-old woman presented with signs of right heart failure and severe TR. A compassionate procedure of TV clipping using the MitraClip system was planned.

The therapeutic target for the implantation of the clip was identified using transoesophageal echocardiography between the anterior and the septal leaflet. The two-facing targeted leaflets to clip were marked using the EchoNavigator in the 3D echocardiogram at the ideal location for grasping. The two markers were then automatically displayed on the fluoroscopy image after appropriate co-registration (A the septal -violet- and anterior -yellow- leaflets are marked in the 3D echocardiography and then automatically updated on the fluoroscopy image). The C-arm was positioned in order to have the two markers aligned, so that the clip was oriented to markers under fusion-imaging. One single clip was implanted between the anterior and the septal leaflet. Tricuspid regurgitation was reduced from severe to mild (Panels B and C).

The use of the EchoNavigator® may help to overcome the intrinsic limits of imaging guidance in TV interventions. The use of simultaneous markers in echo and fluoroscopic views to define the target zone increases tremendously the chance of procedural success even in less experienced operators.

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