

Image in cardiology

# Echo-X Ray Fusion in Paravalvular Leak Closure



## Fusión eco-escopía en el cierre de fugas perivalvulares

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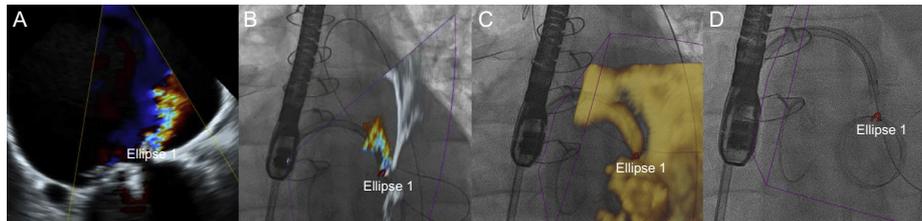


Figure 1.

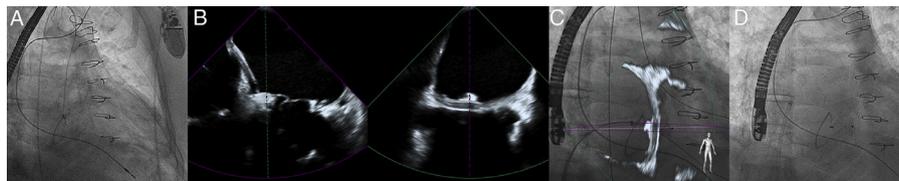


Figure 2.

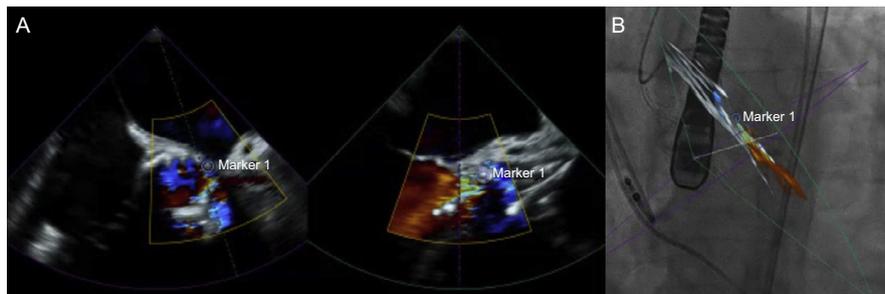


Figure 3.

In patients with paravalvular leaks, between 1% and 5% experience clinical events, and the most common indications for closure are heart failure and hemolysis. The percutaneous approach reduces morbidity and mortality and has become the first-line option. Coordination of echocardiography and fluoroscopy monitoring is made easier with the use of a real-time fusion system (EchoNavigator, Philips). The movement of the C-arm is synchronized with the transesophageal probe, allowing the 2 techniques to be overlaid. The 2-dimensional or 3-dimensional echocardiographic view is automatically shown on the fluoroscopy screen, according to the position of the X-ray tube. The paravalvular leak is located using color Doppler (Figure 1A and Figure 1B) and can be marked: the marker appears overlaid on the fluoroscopy screen (Figure 1C and Figure 1D) and maintains its 3-dimensional position independently of the movement of the C-arm.

This system is especially useful in more complex cases, such as closure of a paravalvular leak around a radiolucent bioprosthesis (Figure 2A and Figure 2D). For example, through the use of 2-dimensional orthogonal (X-plane) echocardiography, the fusion system can provide the interventional cardiologist with a reference plane at the moment of fitting and deploying the closure device (Figure 2B and Figure 2C). Another situation that could potentially make use of this technology is the treatment of residual paravalvular leaks after transcatheter aortic valve implantation (Figure 3), as the presence of such leaks affects survival and readmission at follow-up.

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