Mitral paravalvular leak detected by three-dimensional transoesophageal echocardiography

Fuite paraprothétique mitrale détectée par échocardiographie transösophagienne 3D

Martina Sordi\textsuperscript{a}, Eric Brochet\textsuperscript{a}, David Messika-Zeitoun\textsuperscript{a,b,*}

\textsuperscript{a} Department of Cardiology, Bichat Hospital, Assistance Publique-Hôpitaux de Paris, Paris, France
\textsuperscript{b} Inserm U698, University Paris 7, Paris, France

Received 23 February 2012; accepted 20 March 2012
Available online 31 January 2013

A 64-year-old man was admitted to our department because of recent onset of weakness and shortness of breath. He had undergone a surgical mitral commissurotomy in 1977 and a bioprosthetic mitral replacement in 2004. The clinical presentation demonstrated normal blood pressure, no signs of congestive heart failure, no fever and a 3/6 systolic mitral murmur; he was in permanent atrial fibrillation.

Transthoracic echocardiography showed severe left atrial enlargement and the presence of a paravalvular leak. Two-dimensional (2D) transoesophageal echocardiography (TEE) clearly demonstrated severe paravalvular regurgitation (Fig. 1A) but real-time three-dimensional (3D) TEE allowed precise location of the paravalvular regurgitant jet at the inferomedial part of the annulus, slightly distant from the prosthetic ring, with a circular and expansive shape (Fig. 1B). On colour-flow Doppler imaging, the area of dehiscence was estimated as being close to 0.7 cm\textsuperscript{2} (Fig. 1C and D). Owing to the high risk of a third surgical procedure, the absence of signs of congestive heart failure or haemolysis and the requirement of only a minor dose of diuretics, the patient was discharged with a scheduled visit at 1 month.

\textit{Abbreviations:} 2D, two-dimensional; 3D, three-dimensional; TEE, transoesophageal echocardiography.

\textsuperscript{*} Corresponding author. AP—HP, Cardiology Department, Bichat Hospital, 46, rue Henri-Huchard, 75018 Paris, France. Fax: +1 40 25 67 32.
\textit{E-mail address:} david.messika-zeitoun@bch.aphp.fr (D. Messika-Zeitoun).

http://dx.doi.org/10.1016/j.acvd.2012.03.008

© 2013 Elsevier Masson SAS. All rights reserved.
Figure 1.  A. 2D TEE showing the severe paravalvular regurgitation. B and C. Real-time 3D TEE allowing precise location of the paravalvular regurgitant jet. D. Planimetry of the area of dehiscence (0.7 cm²).

Real-time 3D-TEE imaging is a useful echocardiographic modality for the localization and quantification of paravalvular leak. It can provide an en face view of the mitral prosthesis, allowing accurate determination of the location and number of paravalvular dehiscences and is crucial during percutaneous intervention. In the present case, the diagnosis was already obvious in 2D TEE but 3D TEE provided nice simple and intuitive visualization of the leak.

Disclosure of interest
The authors declare that they have no conflicts of interest concerning this article.

Appendix A. Supplementary material
Supplementary material (Videos 1–3) associated with this article can be found at http://www.sciencedirect.com, at http://dx.doi.org/10.1016/j.acvd.2012.03.008.