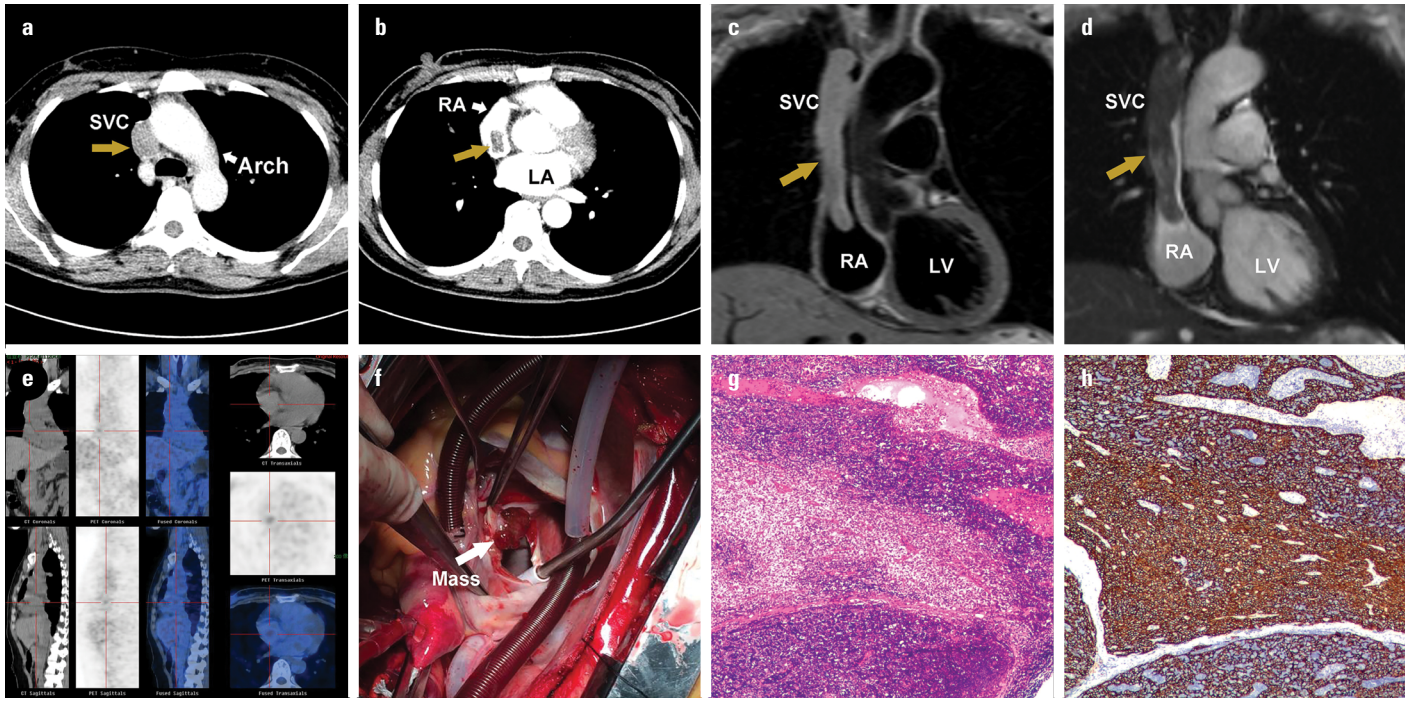

Figure 2. Contrast-enhanced computed tomography (CT) showing a mass within the (a) superior vena cava and (b) right atrium. The mass appears to be isointense on the (c) T1-weighted images and hyperintense on the (d) T2-weighted images of cardiac magnetic resonance scans. (e) Positron emission tomography (PET)/CT scan indicating a mass with no significant uptake of 18F-fluorodeoxyglucose. (f) Intra-operative photograph showing the mass in the right atrium. (g, h) Histopathological examination of the mass revealing a thymoma
SVC - superior vena cava; RA - right atrium; LA - left atrium; LV - left ventricle

#These authors contributed equally to this manuscript.

Address for Correspondence: Yuman Li, MD, PhD
Department of Ultrasound,
Union Hospital,
Tongji Medical College,
Huazhong University of Science and Technology,
and Hubei Province Key Laboratory of Molecular Imaging;
Wuhan-*China*
Phone: 18986067682
E-mail: liym@hust.edu.cn

DOI:10.14744/AnatolJCardiol.2020.61680

Clear demonstration of the different mechanisms of severe mitral regurgitation caused by mitral ring dehiscence during transesophageal echocardiography

A 55-year-old man was admitted to the outpatient clinic with dyspnea that occurs with minimal effort. He had a mitral repair with a Memo annuloplasty ring due to severe mitral regurgitation (MR) associated with annular dilation caused by atrial fibrillation 3 years ago and there was no residual MR in the postoperative echocardiography. Transthoracic echocardiography revealed a left ventricular ejection fraction of 55% and moderate-severe MR. Transesophageal echocardiography (TEE) was decided as a next step. Rocking prosthetic ring and dehiscence were present in the TEE views respectively, with a severe MR (Fig. 1a, Video 1, 2). There were two MR jets. As observed in the TEE views, the first jet originated from the perimitral ring, while the second jet came from the basal portion of the posterior mitral leaflet (PML), which was suitable with the location of the mitral ring suture (Fig.1b, Video 3). Interestingly, mitral ring dehiscence possibly led to the occurrence of a defect in the PML of the junction zone, and this defect emerged as another source of MR (Fig. 1c, 1d, Video 4). Another surgical treatment was planned.

Ring dehiscence is a rare clinical entity that usually leads to severe MR and requires urgent or emergent surgical reoperation (1). Endocarditis, trauma, or procedure-related issues may be responsible for triggering the dehiscence process, and progressive left ventricular geometric remodeling may also provoke the recurrence (2, 3). The characteristics of the tissue at the ring attachment areas are another important factor; therefore, weak and calcified tissues are more prone to separation from the ring (3). Also, attachment of the mitral ring to the basal portion of the PML in the previous surgery may lead to a predisposition for ring dehiscence, and the suture site on the PML served as an independent source of MR besides the jet from the perimitral ring. In this case, the TEE demonstrative images are presented to highlight this rare clinical condition.

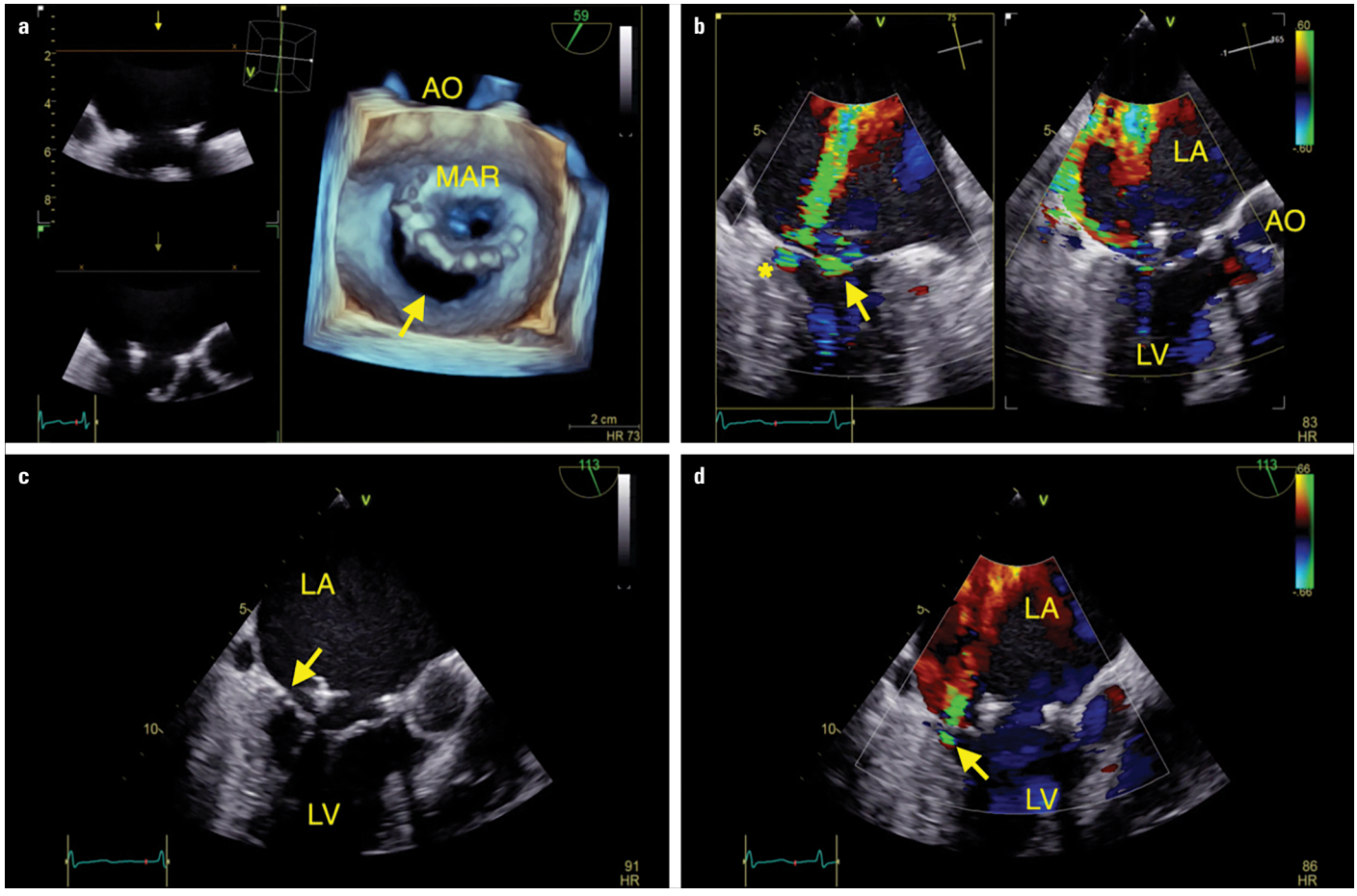

Figure 1. (a) Three-dimensional transesophageal echocardiography imaging of the mitral ring dehiscence. (b) The first jet originated from the perimitral ring (arrow) and the second jet (asterisk) came from the basal portion of the posterior mitral leaflet. (c) Image of the defect in the basal portion of the posterior mitral leaflet in the mid-esophageal transesophageal echocardiography view. (d) Increase of the mitral regurgitation jet from the defect in the basal portion of the posterior mitral leaflet, which possibly occurred after the separation of the mitral ring suture

Informed consent: The informed consent was obtained from the patient for this study.

References

1. Noack T, Kiefer P, Vivell N, Sieg F, Marin-Cuartas M, Leontyev S, et al. Annuloplasty ring dehiscence after mitral valve repair: incidence, localization and reoperation. Eur J Cardiothorac Surg 2020; 57: 300-7. [CrossRef]
2. Mashicharan M, Loke I, Zlocha V, Khoo J. Separation anxiety: Extreme dehiscence of a mitral annuloplasty ring. Echocardiography 2019; 36: 1219-21. [CrossRef]
3. Aggarwal G, Schlosshan D, Mathur G, Wolfenden H, Cranney G. Recurrent ischaemic mitral regurgitation post mitral annuloplasty due to suture dehiscence evaluated using real time three dimensional transoesophageal echocardiography. Heart Lung Circ 2012; 21: 844-6.

Video 1. Rocking motion of the prosthetic mitral ring was present in the bicommissural transesophageal echocardiography view.

Video 2. Three-dimensional transesophageal echocardiography imaging of the mitral ring dehiscence.

Video 3. Severe mitral regurgitation was observed in the mid-esophageal transesophageal echocardiography views with two distinct jets: the first mitral regurgitation jet originated from the perimitral ring (asterisk) and the second one arose from the basal portion of the posterior mitral leaflet (arrow), which was suitable with the location of the mitral ring suture.

Video 4. Dehiscence of the mitral ring possibly caused the occurrence of the defect in the posterior mitral leaflet of the junction zone, and this defect emerged as another source of mitral regurgitation.

Ferhat Mustafa Keten, Berhan Keskin, Ahmet Karaduman, İsmail Balaban, Gökhan Kahveci
Department of Cardiology, Faculty of Medicine, Health Sciences University; İstanbul-*Turkey*

Address for Correspondence: Dr. Ferhat Mustafa Keten,
Sağlık Bilimleri Üniversitesi Tıp Fakültesi,
Kardiyoloji Anabilim Dalı,
İstanbul-*Türkiye*
Phone: +90 216 500 15 00
E-mail: ferhat_keten@hotmail.com

DOI:10.14744/AnatolJCardiol.2020.69091