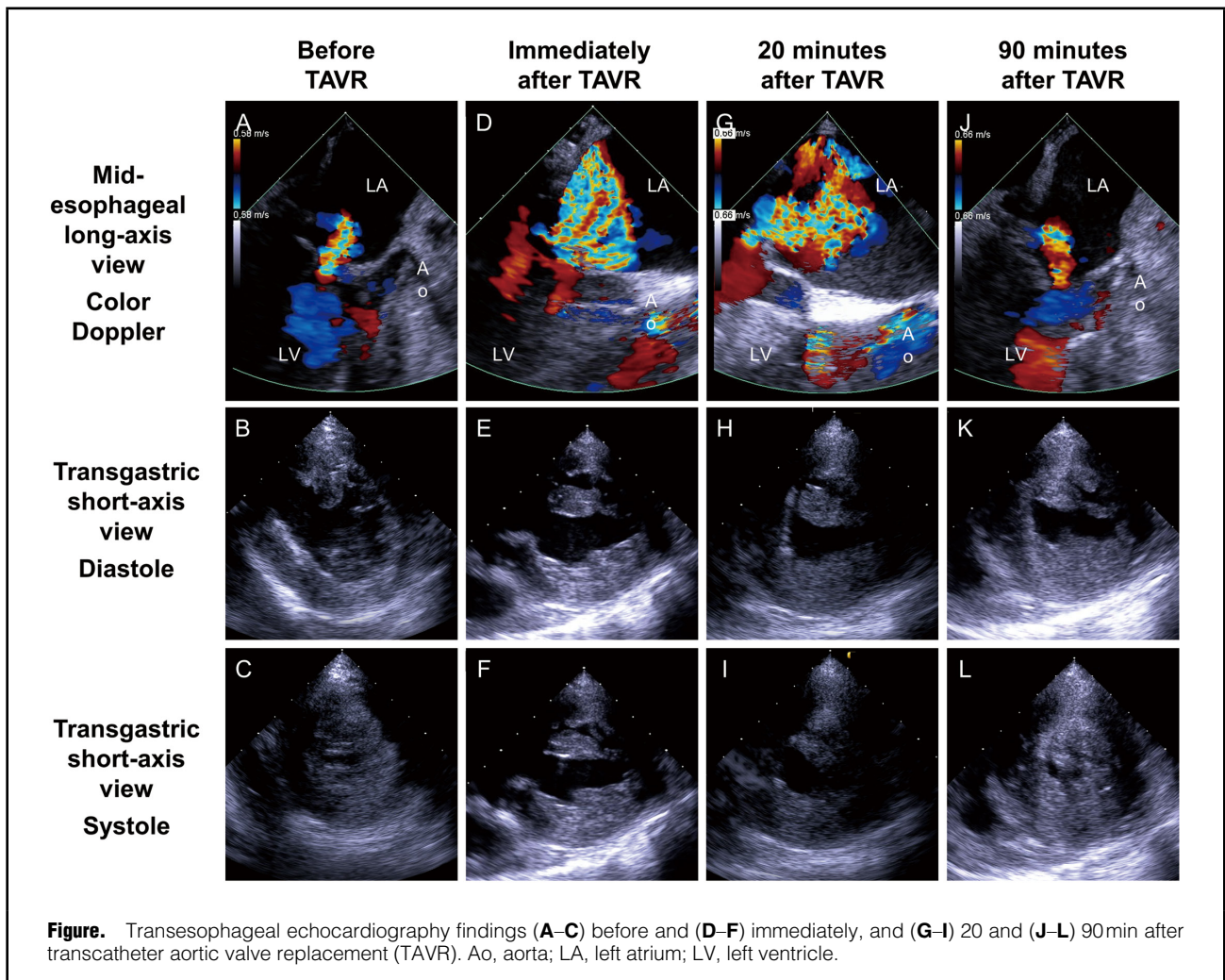


Myocardial Stunning With Severe Functional Mitral Regurgitation in Transcatheter Aortic Valve Replacement

— Temporal Change in Transesophageal Echocardiographic Findings —

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An 86-year-old woman with symptomatic severe aortic stenosis was referred to Kobe University Hospital. After discussion with the cardiac team, transcatheter aortic valve replacement (TAVR) was performed with transesophageal echocardiography (TEE) under general anesthesia. At the beginning of the procedure and after the balloon aortic valvuloplasty, TEE confirmed normal left ventricular (LV) contraction with mild mitral regurgitation (MR; **Figure A–C**; **Supplementary Movies 1,2**). Immediately after a 23-mm SAPIEN3 transcatheter valve (Edwards Lifesciences, Irvine, CA, USA) was deployed with nominal volume under rapid ventricular pacing at 180 beats/min for 20s, the patient's hemodynamic state collapsed. TEE revealed severe LV systolic dysfunction with severe functional MR (**Figure D–F**; **Supplementary Movies 1,2**). There was no evidence of coronary obstruction on coronary angiography. Cardiopulmonary resuscitation was commenced with venoarterial extracorporeal membrane oxygenation (VA-ECMO). Subsequently, LV function and functional MR improved gradually (**Figure G–L**; **Supplementary Movies 1,2**). VA-ECMO was withdrawn in the operating room, and the patient was discharged 13 days after the procedure without sequelae.

In this case, TEE clearly showed the changes in myocar-

dial stunning over time accompanied by severe functional MR during the TAVR procedure. The etiology of myocardial stunning has not been fully elucidated, but the rapid ventricular pacing may be involved in this event.¹

Although myocardial stunning is transient, this case suggests that expeditious cardiopulmonary resuscitation with VA-ECMO contributes to full recovery from this devastating state. Myocardial stunning is a rare but noteworthy complication. Any physician involved in TAVR should be aware of it.

Reference

1. Fabbro M, Goldhammer J, Augoustides JG, Patel PA, Frogel J, Ianchulev S, et al. CASE 1 – 2016 problem-solving in transcatheter aortic valve replacement: Cardiovascular collapse, myocardial stunning, and mitral regurgitation. *J Cardiothorac Vasc Anesth* 2016; **30**: 229–236.

Supplementary Files

Supplementary Movie 1

Supplementary Movie 2

Please find supplementary file(s);
<http://dx.doi.org/10.1253/cirerep.CR-22-0065>