

- New deeper TAVI to reduce the LVOTO. Very few cases have been published, all with CoreValve, in an attempt to avoid SAM (reported after TAVI and transcatheter implantation of mitral valves). A case of CoreValve collapse due to dynamic obstruction treated with a new CoreValve implanted a little deeper has been reported.
- MitraClip to treat SAM (reported in some of the cases published). This is difficult to perform in an emergency procedure.
- Emergency surgical myectomy: given the patient's age and past medical history, it does not seem indicated.

Although rare, dynamic obstructions following TAVI can be a complication not easy to solve. The cases with echocardiographic criteria of suspicion should be prevented by implementing the following measures:¹

- Proper hydration prior to the implant. Avoid diuretics.
- Use rigid guidewires with not very small curves and place them in the middle of the ventricle.
- Cardioselective IV beta-blockers without vasodilator effects (metoprolol) and keep a low heart rate.
- Avoid positive inotropic drugs.
- Pacing should be performed with a pacemaker in the right cavities and pacing with the guidewire in the LV should be avoided. Atrioventricular sequential pacing should be ready for use.

In the case presented here, if shock persists with the use of the optimal medical treatment and atrioventricular sequential pacing even in the absence of systolic anterior motion (SAM) of the mitral valve, the septal ablation of 1 or several septal branches should be taken into consideration.

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CONFLICTS OF INTEREST

M. Larman is proctor for Edwards Lifesciences and Boston Scientific.

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Shock after immediate TAVI implantation. Do we know what we are dealing with? Case resolution



Shock tras implante inmediato de TAVI. ¿Sabemos a qué nos enfrentamos? Resolución

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CASE RESOLUTION

Immediate shock after transcatheter aortic valve implantation (TAVI) is a rare complication that requires quick diagnosis and treatment.

The causes are alterations of the area adjacent to the implant (aortic regurgitation, aortic annulus complications or ischemia due to occlusion or coronary artery embolism), complications distant from the implant area (perforations associated with the pacemaker or the support guidewire in the left ventricle or mitral apparatus alterations) or vascular complications (in the femoroiliac access or the aorta). All of these complications were discarded in our female patient.

The videos of the case presentation suggested a suspected rare cause for the shock: suicide left ventricle consisting of ventricular collapse that triggers dynamic obstruction (video 1 of the supplementary data). The intraventricular gradient (figure 1) can generate anterior systolic movement of the mitral valve and severe mitral regurgitation (figure 2). A catheter was advanced to the apex that confirmed the severe intraventricular dynamic gradient (figure 3).

Targeted therapy with fluid therapy was used to optimize preload followed by IV esmolol, and phenylephrine. Also, the rhythm itself was optimized in order to keep atrioventricular synchrony and extend the diastolic filling period. This made the gradient go away (figure 4) and improved the patient's hemodynamic situation.

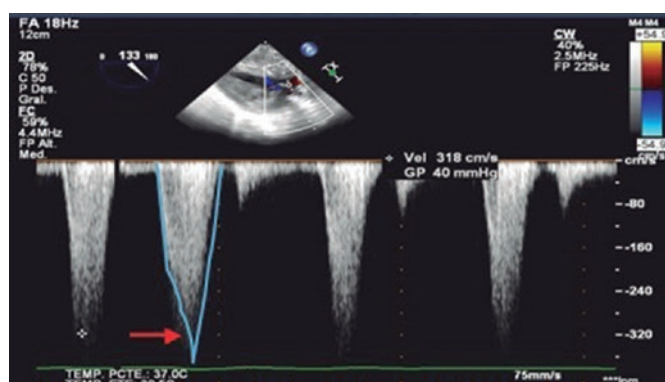


Figure 1. Intraventricular dynamic gradient with late peak (arrow).

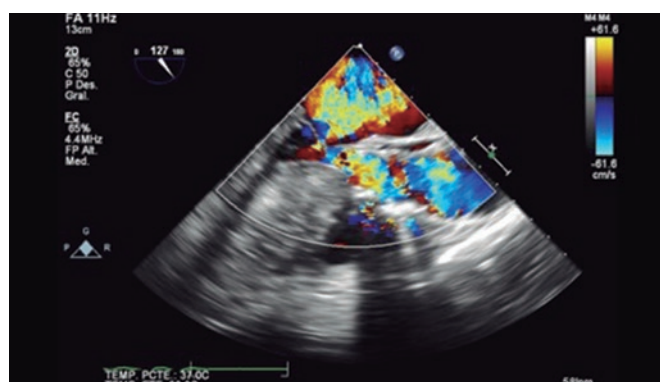


Figure 2. Flow acceleration due to dynamic obstruction, anterior systolic movement of the mitral valve, and severe mitral regurgitation.



Figure 3. Registry of aortic and left ventricular pressures immediately after TAVI: intraventricular dynamic gradient with late peak (arrows). No withdrawal, multimodal diagnosis.



Figure 4. Registry of aortic and left ventricular pressures after treatment; gradient resolution.

Progression was good and sustained in time. The control echocardiography performed at the hospital discharge showed a minimum dynamic gradient without anterior systolic movement of the mitral valve treated with atenolol (25 mg/day).

The chronic increase of ventricular postload due to aortic stenosis can trigger myocardial hypertrophy and intraventricular gradient that are masked by a fixed valvular obstruction.¹ However, after implanting the valve it triggers a series of hemodynamic changes that can unmask this gradient² and eventually lead to hemodynamic collapse.^{1,3}

The importance of the case is that in the presence of sudden hypotension, vasopressor drugs are often used. However, they can deteriorate both the intraventricular gradient and hypotension by increasing inotropism; that is why it is essential to be aware of this condition and use beta-blockers.¹

There are echocardiographic data available on the baseline study to predict the higher risk of developing suicide left ventricle:^{1,3} small end-diastolic diameter, hyperdynamic left ventricular ejection fraction, asymmetric hypertrophy (septal predominance) and very high valvular gradients. We should mention that, once the acute phase is over, ventricular hypertrophy decreases within the first month, and in 94% of the patients, the dynamic gradient is solved at the 3-month follow-up.¹

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AUTHORS' CONTRIBUTION

All authors prepared and revised the article.

CONFLICTS OF INTEREST

None declared.

SUPPLEMENTARY DATA



Supplementary data associated with this article can be found in the online version available at <https://doi.org/10.24875/RECICE.M20000161>.

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