

# Acute Complication and Prompt Resolution During Valve in Valve Mitral Procedure

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## Abstract:

The valve in valve technique is undoubtedly a new procedure that will serve frail, elderly patients and those at high risk of mortality during the procedure. The enthusiasm to indicate the procedure for selected patients should also count on a portion of caution due to possible complications. In this case report, we identified soon after the successful release of the valve in valve and disappearance of mitral regurgitation due to insufficient valve, spontaneous contrast formation in high proportions and acute formation of a small thrombus in the left atrium. Once the problem was identified, it was treated with anticoagulation, avoiding severe embolic outcomes. We warn you to pay attention to what happened so that its identification in other procedures can avoid complications.

**Key words:** mitral regurgitation; spontaneous contrast; small thrombus

## Case Report

Female patient, 77 years old, with previous mitral valve surgery. Admitted with peripheral edema, dyspnea, pulmonary congestion and NYHA (New York Heart Association) class III. Echocardiography showed mitral prosthesis severe regurgitation, with left and right ventricles preserved function and 45mmHg pulmonary artery systolic pressure, tricuspid severe regurgitation was also observed. An angiotomography was performed and measurements were suitable for mitral transcatheter valve in valve implantation. Patient was categorized as high risk for conventional surgery (STS score 9% and EuroScore II 15,7%). After a Heart Team discussion, including the family, transcatheter therapy was decided.

A MyVal 29mm™ (Meril Life Sciences, Vapi, Gujarat, India), was elected.

Femoral veins puncture were performed guided by ultrasound, 7 french sheaths were positioned and BRK needle™ (St. Jude Medical, Saint Paul, MN, USA) was advanced through a Swartz™ introducer (St. Jude Medical, Saint Paul, MN, USA).

BRK was advanced without resistance through inferior and medial interatrial septum. Position was confirmed by TEE3-5.

An Amplatzer SuperStiff 260cm (Boston Scientific, Natick, Mass) was positioned into the superior left pulmonary vein and Agilis NXT™ (St. Jude Medical, St Paul, MN, USA), was advanced into the left atrium. Mitral valve was crossed and pre-shaped extra-stiff Safari XS (Boston Scientific, MA, USA) was positioned in the left ventricle.

Due to severe dilated right and left atrium, predicting difficulties to cross the septum, operator decided to leave an Amplatzer SuperStiff into the

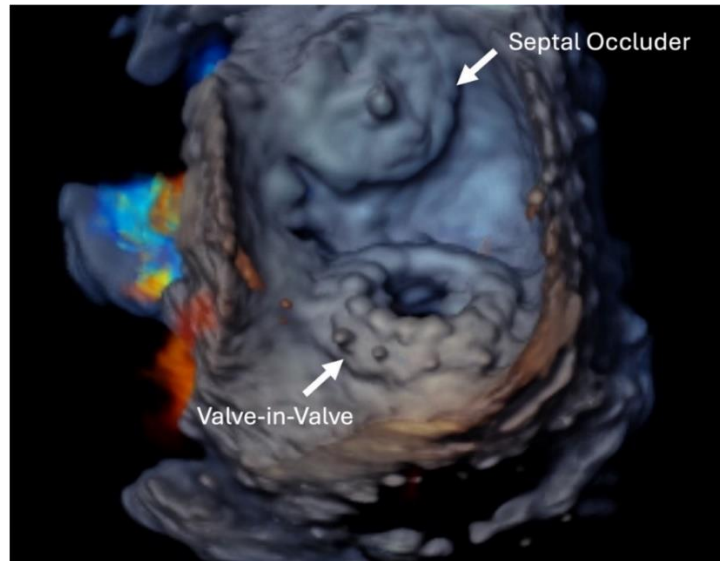
left pulmonary vein. Atrial septostomy was performed with a Powerflex Pro 14 mm x 4 cm (Cordis, Santa Clara, EUA).

MyVal 29mm was introduced through a Python Sheath (Meril Life Sciences, Vapi, Gujarat, India), and Safari guidewire, but despite of Buddy Wire technique, "kinking" was observed inside left atrium. After multiple attempts, Power Flex Pro was advanced simultaneously using the pulmonary vein positioned Amplatzer guide were, offering more support to cross. Even using this maneuver, valve could not cross the previous implanted valve. Safari XS wire has been changed, and a Lunderquist ExtraStiff Wire (Cook Medical, Bloomington, US), after that, prosthesis

was positioned and implanted using rapid pacing trough the Lunderquist wire.

TEE Echo demonstrated 2 mmHg final mean gradient with no regurgitation, confirmed by ventriculography and pressure measurements.

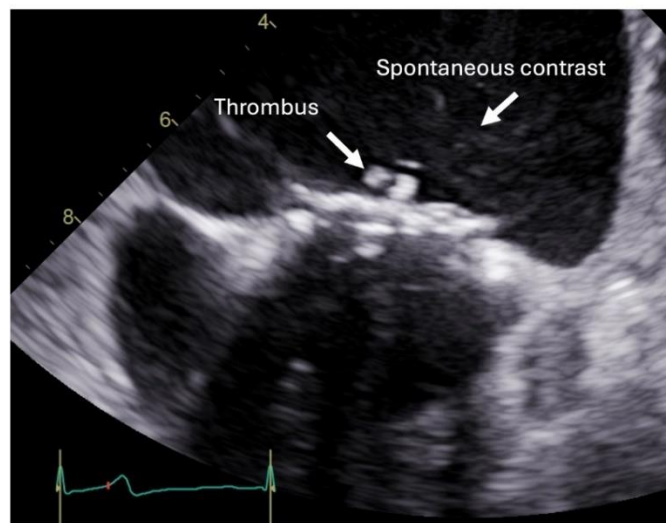
At the end procedure, interatrial communication was observed, with bidirectional shunt, probably related to severe tricuspid regurgitation. Patient presented low arterial saturation (**figure 1**).



**Figure 1:** 3D transesophageal echocardiogram showing the occluder device in the interatrial septum and the prosthesis in mitral position (Valve-in-Valve).

Heart team decided to close the interatrial septum puncture site with a Cardioform 30mm (WL Gore, Flagstaff, Arizona), with immediate arterial saturation recover. Spontaneous contrast was observed in left

atrium, with an immediate small thrombus formation, related to left atrial face of the Cardio form (**figure 2**). More heparin was administrated and full dose enoxaparin anticoagulation started after procedure.



**Figure 2:** Transesophageal echocardiogram showing intense spontaneous contrast in the left atrium and a small thrombus on the left atrial surface of the occlude device in the interatrial septum.

Patient was discharged seven days after the procedure with anticoagulation (rivaroxaban 20mg/day, with no abnormalities on the control echocardiography, thrombus was not observed anymore, and

tricuspid regurgitation reduced to moderate. NYHA at discharge was Class I.

The appearance of spontaneous contraction and small thrombus in the left atrium occurred acutely due to the disappearance of mitral insufficiency, which, due to high pressure and speed, prevented blood stasis. It is important to consider this condition to start early anticoagulation and avoid serious complications.

The indications for the treatment of prosthetic insufficiencies in the mitral position will increase worldwide as it is a condition indicated for patients who are not eligible for traditional surgery. This report showed an acute complication, the formation of large spontaneous contrast agents and a small thrombus, which were immediately treated with systemic anticoagulation with resolution of the problem and avoidance of embolic complications. We warn that this event should be observed with great discretion throughout the world.

## Conclusion

Mitral valve in valve is a current resource for the treatment of valve dysfunctions, we cannot forget acute complications that may impact the success of this procedure.

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