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Catch me if you can: a rare case of two-staged MitraClip detachment

Bucci MG.¹; Previtali M.¹; Araujo Dos Anjos MC.¹; Binda G.¹; Mazzola A.¹; Airoldi F.¹; Tavano D.¹; Michev I.¹; Bianchi M.¹; Vicinelli D.¹; Ambrosio G.²; De Servi S.¹

¹IRCCS Multimedica of Milan, Cardiovascular Department, Milan, Italy

²University of Perugia, Department of Cardiology and Cardiovascular Pathophysiology, Perugia, Italy

Case report: A 74-year-old man presented with acute heart failure and chronic obstructive pulmonary disease exacerbation. His medical history revealed: anterior myocardial infarction in 2005, treated with primary PCI of left anterior descending coronary artery followed by triple coronary artery bypass, atrial fibrillation, hypertension, diabetes mellitus and obesity. Transthoracic and transesophageal echocardiography (TEE) showed severe functional ischemic mitral regurgitation (MR) with multiple jets, the main one involving the A2-P2 scallops due to asymmetric tethering of the posterior leaflet. The vena contracta diameter (VC) was 8 mm, the effective regurgitant orifice area (EROA) 0.53 cm². Global left ventricular (LV) function was preserved with inferior-posterior wall akinesis.

After "Heart Team" discussion, due to high surgical risk, the patient was referred for percutaneous mitral valve repair (PMVR) using MitraClip (MC) system (Abbott Vascular, Illinois). One clip (MC-XTR) was placed at the A3-P3 segments; subsequently, prior to releasing a second clip (MC-XTR), the first one partially detached from the posterior leaflet (Fig A). A third clip (MC-NTR) was implanted medially. The grasp was challenging but at the end of the procedure, the first clip appeared stable and marked reduction of MR was achieved (Fig B).

7 days later, the patient became symptomatic for resting dyspnea and worsened his clinical status. A control 2D-3D TEE revealed a complete detachment of the first implanted clip, visible distally into the LV, trapped in the mitral valve subchordal apparatus (Fig C). This resulted in massive MR (VC: 12 mm, EROA: 0.91 cm²) with an eccentric posteriorly directed regurgitant jet (Fig D). The patient underwent emergency surgical retrieval of the migrated clip, and removal of the torn mitral valve anterior leaflet. The other two clips were also removed (Fig E), and a bioprosthetic mitral valve was implanted. The procedure was completed uneventfully and the patient is in stable conditions at 2-months follow-up.

Discussion: The constant stretching and whip effect of the mitral leaflets captured between the clips arms, used in PMVR, can lead to complications. Partial clip detachment is a rare adverse event described in ~0.7-4.9% of patients within 30 days after MC intervention*. We experienced a two-staged MC detachment that is an even rarer complication and requires emergency surgery. In addition, we highlights the usefulness of 3D TEE for early diagnosis and better imaging characterization in patients who develop complications after MC procedure.

No conflict of interest. *Puls M, Lubos E, Boekstegers P, von Bardeleben RS, Ouarrak T, Butter C, Zuern CS, Bekeredjian R, Sievert H, Nickenig G, Eggebrecht H, Senges J, Schillinger W. One-year outcomes and predictors of mortality after MitraClip therapy in contemporary clinical practice: results from German transcatheter mitral valve interventions registry. Eur Heart J 2016;37:703-12.

Abstract 1635 Figure.

