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PURPOSE:

Clips can be utilized in patient with severe mitral regurgitation secondary to left ventricular dysfunction. Lack of efficacy of the procedure and/or disease progression may lead to refractory heart failure requiring left ventricular assist device (LVAD) implantation. Up to now, no data regarding the safety of LVAD implantation in patients with mitral clips have been reported.





Based on two series from two hospitals in Europe, we identified 5 patients (2 females, median age 61 years, 2 with dilated cardiomyopathy and 3 with ischemic heart disease) who had been treated with mitral clips (3 cases with 2 clips, 2 cases with 1 clip) and subsequently received a continuous-flow centrifugal LVAD between 2013 and 2017. We describe preoperative characteristics of the mitral valve and patient outcome after LVAD implantation.

FIGURE 1. Transesophageal echocardiogram of a patient with 1 clip at the level of the mitral valve and a centrifugal left ventricular assist device



RESULTS:

At LVAD implant, all the patients had severe LV dysfunction (median ejection fraction 22%, enddiastolic volume index 304 ml/m2) and preserved or mildly reduced right ventricular function. Mean mitral gradient was 4 mmHg, mean valve area was 3.2 cm2, and residual or recurrent moderate mitral regurgitation was present in all cases. Time from percutaneous mitral valve procedure to LVAD implant was 460 days (interquartile range 60 to 517 days). In 3

FIGURE 2. Chest X-ray projections of a patient treated with 2 clips and a centrifugal left ventricular assist device



cases the surgeon closed the residual atrial septal defect.

Median time on LVAD support was 401 days (interquartile range 228 to 758 days); 2 patients underwent heart transplantation; 2 died, one due to right ventricular failure and the other due to intracranial bleeding; and one patient is still on support with approximately 3 years of follow-up. No complications related to the mitral device were observed. In no case mitral regurgitation worsened, on the contrary there was a reduction to mild degree in all the patients. Pulmonary capillary wedge pressure was normal (< xx mmHg) in patients who underwent right heart catheterization after LVAD implant (n=X). No clip displacement although pre-existing partial occurred, detachment of one element from the mitral leaflets had been described in 2 cases before



FIGURE 3. Overall survival of patients who initially underwent a percutaneous mitral repair with clips and later were implanted with a centrifugal left ventricular assist device without replacing the mitral valve

Authors' Disclosures

• NONE

LVAD implantation. Figure shows chest X-ray of a patient supported by a LVAD with 2 clips attached to the mitral leaflets.

CONCLUSIONS:

Implantation of centrifugal continuous-flow LVAD appears safe in patients with previously positioned mitral clips, with no need for additional mitral valve surgery. Thus, the presence of mitral clips does not appear to represent a contraindication or a risk factor for LVAD implantation.