MitraClip therapy and surgical edge-to-edge repair in patients with severe left ventricular dysfunction and secondary mitral regurgitation: is the solution here?

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Keywords: MitraClip • Secondary mitral regurgitation • Left ventricular dysfunction • Mitral valvuloplasty

In this issue of the Journal, De Bonis et al. [1], from the Milan group, review their experience with the use of MitraClip for repair of secondary mitral regurgitation (MR) in patients with severe left ventricular (LV) dysfunction. With this aim, they compared the first consecutive patients treated with surgical (n = 65) or percutaneous (n = 55) edge-to-edge repair (Alfieri procedure). Age and logistic EuroSCORE were significantly higher in the MitraClip group, but the remaining characteristics of the patients were similar, hence we can accept the comparison, even if the two series are consecutively rather than contemporaneous, a limitation of this study which, together with other limitations, was duly acknowledged by the authors.

They report freedom from cardiac death at 4 years (80.8 ± 4.9 vs 79.1 ± 5.9%, respectively in the surgical and MitraClip groups), which was not significantly different, but residual MR (≥2+) hospital discharge (7.6 vs 29%) and freedom from MR ≥2+ at 4 years (74.9 ± 5.6 vs 51.4 ± 7.4%) were. In this experience, the use of MitraClip was an independent predictor of recurrence of MR. Hence, they conclude MitraClip therapy is a safe therapeutic option in selected high-risk patients with secondary MR and relevant comorbidities. The surgical edge-to-edge provides higher efficacy, both postoperatively and at mid-term follow-up. This confirms and expands the conclusions of a previous report, also published in the Journal by the same group [2].

Previous studies had demonstrated the feasibility, safety and favourable results with the percutaneous procedure, particularly in this pathology. Early in the clinical experience with this device, Franzen et al. [4] showed that the MitraClip therapy reduces functional MR in patients with end-stage heart failure and marked LV dysfunction and entails clinical benefit at 6 months [3]. However, the EVEREST II study demonstrated that the MitraClip was inferior to surgery for the end-points death, need for mitral valve surgery and MR recurrence grade ≥3 [5]. But the population in the EVEREST II study was relatively younger and less sick than that of the ACCESS-EU observational study that showed that in the real-world, postapproval experience in Europe, patients undergoing the MitraClip therapy are high-risk, elderly patients, mainly affected by functional MR. In this patient population, the MitraClip procedure is effective with low rates of hospital mortality and adverse events [6–8].

The current report by our colleagues from Milan is timely as there is now an ever-increasing enthusiasm surrounding the novel techniques of percutaneous treatment of heart valve pathology. While it is quite clear, and now widely accepted, that these techniques are of benefit to patients who are either not candidates or very high risk for surgery, there is, as yet, no evidence that they may benefit patients who remain surgical candidates.

From these authors’ experience, it is obvious that the percutaneous procedure is much less efficient than surgery. Although there was no difference in cardiac mortality, presumably with a longer follow-up the greater incidence of residual or recurrent MR there would be an impact on survival. In fact, in the current study, the persistence of significant MR (either residual or recurrent) was associated with higher mid-term cardiac mortality in the MitraClip group but not in surgically treated patients, and this was especially relevant in patients with greater degrees of regurgitation, more prevalent in the percutaneous group. The obvious difference between the two modalities of treatment lies in the complement of the annuloplasty used in surgery and as yet not possible with the MitraClip. The Milan group has previously demonstrated that the Alfieri ‘stich’ performs better when associated to an annuloplasty [9].

A major shortcoming of most MitraClip studies performed so far is that they define success as ability to reduce MR to grade ≤2 and the long surgical experience has shown that even mild degrees of residual MR tend to increase in the medium and long term, and are associated to increased need for reoperation and even to late mortality. As the technique is still in its infancy and most of the studies have follow-ups limited to 6 months or 1 year, clearly we are still far from knowing the complete truth. In this series of De Bonis et al., the mean length of the follow-up was 6.2 ± 3.9 years (median: 6.6 years) for the surgical group and 2.9 ± 1.4 years (median: 3.1) for the MitraClip patients. Although this is still short, it is nevertheless longer than in other reports and that may be the main reason for the late differences encountered, especially revealed by a much greater incidence of MR recurrence ≥grade 3.
One important factor that deserves some consideration is the fact that this study deals only with MR secondary to LV dysfunction, whether ischaemic or idiopathic. In these cases, the problem is not the valve but the ventricle. Hence, treating the valve alone can never be the perfect solution, although it may be the only available solution. If that is the case, then a less invasive approach may be more appealing here, because severe ventricular dysfunction is a well-known risk factor for mortality after surgery, and this was quite apparent in this series by the absence of early mortality in the percutaneously treated patients.

It is also important to stress that the authors compare two methods of performing a similar procedure, based on the edge-to-edge concept, which had been developed by the senior author, Alfieri, as a surgical method, whereas all the other studies compared the MitraClip with an array of surgical techniques used for treatment of MR, whether primary or secondary. New techniques for correction of MR in LV cardiomyopathy have been experimented with encouraging results, which may increase the benefit of surgery even further, although more complex procedures may be disadvantageous.

In conclusion, percutaneous mitral valve repair in patients with significant LV dysfunction may be recommended in patients with absolute contraindications or in those considered too ‘prohibitive’ risk for surgery, as also suggested by the 2014 AHA/ACC guidelines for primary MR (class IIb recommendations) [10]. But when surgery is possible, it is clearly a much better alternative, if executed by experienced surgical teams.

REFERENCES