Reviewer’s report

Title: Mid-term effect of balloon aortic valvuloplasty on mitral regurgitation in aortic stenosis

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Reviewer: Akiko Goda

Reviewer's report:

The authors investigated the mid-term effect of BAV on mitral regurgitation in patients with severe AS. They retrospectively investigated 83 patients who lived and could be followed at 3 months after BAV. They showed that MR jet area decreased after BAV in patients with significant MR at baseline and NYHA class improved in both with and without MR. The authors made good attempt to focusing on the effect of BAV on MR because there are small number of evidences. There are some aspects that should be considered by the authors.

Major aspects
1. P2, L15-17: Result in Abstract, "The prevalence of NYHA class III or IV and BNP level also decreased at 1 and 3 months after BAV in the MR group but not in the non-MR group."
   This is not correct. The authors showed the NYHA class was improved in non-MR group as well in Figure 2.

2. Figure 4
   The authors did not show the actual number and dispersion of MR jet area in each etiology. Show the numbers or change the figure to box plot.

3. P8, L20: "significant MR persisted in 15 patients"
   How many patients were there whose MR degree did not improve?

4. Table3
   I assume that mitral annular dimension, tenting height and tenting area will affect the remaining MR. How was the result of univariate analysis of these parameters? The change of these parameters will affect as well.

5. P9, L21: Place of BAV in the TAVR era "we demonstrate that good clinical outcomes can be achieved at 1 and 3 months after BAV"
   I have a feeling of wrongness on this expression of "good outcome". Thirty two of 140 patients (23%) were died in 3 months, and it is almost same as previous report. What is the ground of good outcome? The author's insistence can be applicable only for the patients who lived at 3 months after BAV.
   P11, L17: Clinical Implications "to improve quality of life and prognosis"
   Same as above, the authors did not investigate the prognosis in this study, they showed that the functional class of heart failure was improved after BAV.
Minor aspects
1. P2, L10: Result in Abstract, "BAV improved MR at 1 and 3 months after procedure"
   We cannot know if only BAV improved MR. Change the representation.

2. P8, L3 "significantly improved at 1 and 2 months after BAV"
   This must be 1 and 3 months after BAV.

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