In the manuscript "Comparison of clinical outcomes in patients undergoing mitral valve replacement with mechanical or biological substitutes: a 20 years cohort", Ribeiro et al assessed mortality, bleeding events and reoperation of patients undergoing mitral valve replacement with either mechanical or biological valve. They found that there was no statistical difference between groups in terms of late mortality and freedom from bleeding events; however, as expected, freedom from reoperation was higher in the mechanical group.

The manuscript is well written, clear, the problem is well stated and the literature is updated. However there are some points which require to be addressed.

Major points:

1. this is a retrospective study and therefore is subject to potential bias. Looking at Table 1, baseline characteristics between two groups were different in terms of age, BMI, atrial fibrillation and emergency operation. This variables may affect postoperative and long term outcomes. My suggestion is to develop a propensity score (PS) and adjust your outcomes forcing PS in all crude and adjusted analysis. Doing so, you may reduce bias and improve the quality of your study.

2. Authors state that freedom from bleeding was similar between groups. Because of different baseline characteristics and after adjusting for PS, I would suggest to stratify age of patients for all your outcomes: patients 60-65 yrs, 65-70 yrs, 70-75 yrs and >80 yrs or something like that. I suppose that risk of bleeding is much higher in older population compared to young patients.

Minor point

In the discussion section authors state that in literature, most deaths and complications occurred in the first period of studies. Therefore, I advice to force in you analysis years of surgery as well

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests:

I declare that I have no competing interests