Reviewer's report

Title: Non invasive Evaluation of Cardiomechanics in patients undergoing Mitraclip procedure

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Reviewer: Eustachio Agricola

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General comments:
The findings reported by the authors, even though obtained in patients with a relatively new technique “MitraClip”, are not surprising because are data observed after MR correction with any surgical or pecutaneous procedure able to correct MR. I have some remarks regarding the introduction, methods, results and data interpretation, that have to be considered by the authors in any revision.

Major comments:

Introduction
The introduction is very long and difficult to read, therefore initially it needs to be shortened and re-arranged.

The aim of the study should be relocated at the end of the introduction.

The statement “This technique, mimicking Alfieri’s surgical approach, consists of the approximation of the middle scallops of the mitral valve leaflets through the percutaneous delivery of a clip with the creation of a double orifice mitral valve” is not completely correct particularly in view of the new extented applications like paracommissural lesions treatment, zipping technique etc. Thus the concept of middle scallops approximation is quite reducing.

The concept that MitraClip reduces the risk of surgical mortality should be replaced with" the non inferiority of MitraClip device vs standard surgical approach”, that is a different thing.

Methods
All methods should be better specify in depth. The description of echocardiographic methods and patients selection is very superficial.

In the methods, the authors state that only patients who met echocardiographic criteria were considered eligible for MitraClip procedure. The authors refer to reference n. 15 for the criteria. I believe these is an important point and today it is more appropriate to say that "only patients who met EVEREST II echocardiographic criteria were considered eligible for MitraClip procedures. Because the concepts of EVEREST II echocardiographic criteria are almost completely dismissed and more and more patients with defined as negative
EVEREST II criteria were considered eligible for MitraClip. Thus, the authors should be provide the period of the enrollement and how many patients did not meet the criteria and how many were excluded.

Regarding the quantification of MR, the authors say that vena contracta and semiquantitative method were used for quantification. Vena contracta is not considered properly a quantitative method, so what semiquantitative methods were used? Please specify. Furthermore in case of contrasting results what method was used as reference one?

Results

The increase in forward stroke volume independent of a decrease in ejection fraction is quite obvious and it is due to a direct consequence of the reduction of regurgitant volume after an effective MitraClip procedure.

The reduction of MV insufficiency associated with decreases in PAPS and the left ventricular and atrial volumes and amelioration of the NYHA class status are not innovative as stressed in the discussion. In fact, these results are already well described in the literature starting from EVEREST I and II trial.

Discussion

In the first paragraph, what means primary MR?

I partially agree with conclusion of authors that the amelioration of symptoms is related to systolic cardiomechanic indices, since it is well known that the best results in terms of symptoms improvement are obtained through a significant reduction of wedge and pulmonary pressures that are obtained by a reduction of regurgitant volume. In this series the non-invasive evaluation of PCWP and its changes are lacking.

Level of interest: An article of limited interest

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