Intraoperative Assessment of Mitral Regurgitation: Role of Phenylephrine Challenge.


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Introduction:  
Severity of mitral regurgitation (MR) has been known to be underestimated under general anesthesia (GA). This study was done to prospectively to compare the effects of GA on the assessment of severity of MR with the awake state hemodynamics. Furthermore, phenylephrine boluses were given intraoperatively to increase the after-load to preoperative levels and then assess the severity of MR.

Materials and Methods:  
Fifty seven consecutive patients underwent preoperative (PREOP) and intraoperative (IOP) transesophageal echocardiography (TEE). There were 29 males, 27 females, average age 69 +/- 10 years and all cases were scheduled electively. The PREOP TEE’s were performed under conscious sedation with midazolam and meperidine, non-invasive blood pressure (NIBP) was measured every three minutes and mitral valve was assessed with two-dimensional (2D) echo and color flow Doppler and the NIBP readings during MR evaluation were averaged. The patients were next evaluated with TEE intraoperatively under GA. The mean time interval between the PREOP TEE and IOP TEE was 6.2 +/- 7.6 days. Intraoperatively under GA and, when there is discordant data, loading conditions by examining the patients prospectively and conducting the TEE exams with in a week under standardized circumstances. However, the authors did not comment on any of these parameters either in the study. It would have also been extremely helpful to know the effects of a phenylephrine challenge on the severity of MR due to a prolapsed, flail or perforated leaflets. Because MR that is due to structural abnormalities of mitral valve does not seem to decrease due to alterations of loading conditions e.g. induction of GA(2,4). Also, other than the MAP, there is no information about the heart rate during periods of MR assessment. This could be important if the patients were ischemic during the periods of assessment of MR either during the PREOP or the IOP period.

Mitral leaflets are considered a part of a more complex anatomical structure referred to as the mitral valve apparatus and dysfunction of any of the components of the apparatus can lead to valve failure and regurgitation. Also, afterload is only one of the determinants of the function of mitral valve; alterations in pre-load, rate and rhythm and contractility can also contribute to mitral regurgitation(6). The authors did not comment on any of these parameters either in the PREOP or the IOP TEE study.

Nevertheless, this study does highlight the fact that MR can be underestimated under GA and, when there is discordant data, loading conditions can be altered to mimic the “awake state” hemodynamics to facilitate decision making.

References:  
