**ECHOCARDIOGRAPHIC QUANTITATION OF AORTIC REGURGITATION**

**H. Chaliki**

Mayo Clinic College of Medicine, Mayo Clinic, Scottsdale, AZ, USA

Aortic regurgitation (AR), either acute or chronic, can be due to valvular pathology or aortic root pathology or a combination. Currently, echocardiography is used in most cases to determine the etiology and severity of AR. Although, semi-quantitative methods such as color flow jet area or jet width are used for AR assessment, they are less reliable. Density of the AR regurgitation continuous wave Doppler jet signal, diastolic flow reversals in the descending thoracic aorta, size of the left ventricle when used in conjunction additional parameters such as width of the vena contracta will improve the assessment of the severity of AR. Specifically, vena contracta width of >6 mm is highly specific and sensitive for the diagnosis of severe chronic AR.

Quantitative methods such as continuity method and Proximal Isovelocity Surface Area (PISA) method are clinically more useful given their ability to more precisely determine the AR severity. Specifically, one can estimate the AR volume and effective regurgitant orifice area. When AR volume exceeds 60 mls and effective regurgitant orifice area exceeds 0.3 cm2, one is considered to have severe AR based on American society of echocardiography and American college of cardiology guidelines.

Three dimensional (3D) echocardiography now make it possible to not only visualize the aortic valve anatomy better but also measure the vena contracta area and proximal isovelocity surface area without the need for geometric assumptions. Recent studies demonstrated that vena contracta area measurement using 3D color Doppler echocardiography improved quantitation of AR when compared to 2D vena contra area or conventional echo-Doppler methods when magnetic resonance imaging was used as gold standard. Further advances in 3D echocardiography will make it possible to improve the quantitation of AR even further.