# Understanding the aortic regurgitation mechanism – patient screening for valve reconstruction

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According to the recent European Society of Cardiology (ESC) guidelines aortic valve (AV) repair is the preferred surgical treatment in younger patients with severe aortic regurgitation (AR) and/or proximal aorta aneurysm. However, this surgical option is still underused in clinical practice so close cooperation between dedicated and expert surgeons and echocardiographers is mandatory to achieve best results[1]. Careful echocardiographic examination with 3D transesophageal echocardiography is needed to determine aortic root and cusp pathology as well as disease of proximal ascending aorta. This includes definition of the aortic phenotype, which relies on the measurement of the aortic annulus, the sinuses of Valsalva, the sinotubular junction and the ascending aorta. AV disease is based on the distinction between a bicuspid and a tricuspid valvular phenotype. The assessment of valve dysfunction is based on cusp motion and jet characteristics. There are three types of valve dysfunction: type I characterized by normal cusp motion, associated with root/ascending aorta dilatation (central jet), type II defined as cusp prolapse (eccentric jet) and type III characterized by cusp restriction, associated with poor tissue quality and or quantity. Additional measurements could favor successful repair: valve retraction (a geometric height <16 mm in a tricuspid AV or <19 mm in a bicuspid valve) contraindicates the repair; preoperative effective height <9 mm helps with the decision of cusp resuspension. Also, a coaptation length ≥5 mm post AV repair predicts a more durable result. The effective height is the orthogonal distance from the annulus to the middle of the free margin of the cusp and the geometric height, also known as the cusp height, is defined as the distance between the cusp nadir and the middle of the free margin. The coaptation height, also called the coaptation length), is defined as the distance of cusp apposition in diastole[2]. Heart team cooperation can improve patient selection for aortic valve repair and post-repair durability of competent aortic valve.

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## LITERATURE

1. Baumgartner H, Falk V, Bax JJ, De Bonis M, Hamm C, Holm PJ, et al; ESC Scientific Document Group. 2017 ESC/EACTS Guidelines for the management of valvular heart disease. Eur Heart J. 2017 Sep 21;38(36):2739-2791. https://doi.org/10.1093/eurheartj/ehx391
2. Berrebi A, Monin JL, Lansac E. Systematic echocardiographic assessment of aortic regurgitation-what should the surgeon know for aortic valve repair? Ann Cardiothorac Surg. 2019 May;8(3):331-341. https://doi.org/10.21037/acs.2019.05.15