

Publication

Mitral Annular Shape, Size, and Motion in Normals and in Patients with Cardiomyopathy : Evaluation with computed tomography

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 1195485**Author(s)** Alkadhi, Hatem; Desbiolles, Lotus; Stolzmann, Paul; Leschka, Sebastian; Scheffel, Hans; Plass, André; Schertler, Thomas; Trindade, Pedro Trigo; Genoni, Michele; Cattin, Philippe; Marincek, Borut; Frauenfelder, Thomas**Author(s) at UniBasel** [Cattin, Philippe Claude](#) ;**Year** 2009**Title** Mitral Annular Shape, Size, and Motion in Normals and in Patients with Cardiomyopathy : Evaluation with computed tomography**Journal** Investigative radiology**Volume** 44**Number** 4**Pages / Article-Number** 218-25**Keywords** mitral annulus, computed tomography, cardiomyopathy, motion

OBJECTIVE: To assess prospectively, in healthy subjects and in patients with dilated cardiomyopathy (DCM) and hypertrophic obstructive cardiomyopathy (HOCM), the 3-dimensional (3D) shape, size, and motion of the mitral annulus (MA) using computed tomography (CT). **MATERIALS AND METHODS:** Twenty patients with no cardiac abnormalities (referred to as normals), 15 with DCM, and 15 with HOCM as determined by echocardiography underwent contrast-enhanced, retrospectively electrocardiography (ECG)-gated 64-slice CT of the heart. The MA was manually segmented in 1 of the RR interval with dedicated 3D software employing the point-wrap algorithm. The MA shape, area size, change of the MA area, and apicobasal MA motion throughout the cardiac cycle was determined and compared between the groups. Intercommissural distances were measured with CT and compared with findings during surgery in 9 patients undergoing ring annuloplasty. **RESULTS:** The MA was nonplanar in all phases and subjects, being largest in diastole and smallest in systole. The MA area was significantly ($P < 0.001$) larger in patients with DCM (11.5 ± 4.1 cm/m) as compared with normals (5.5 ± 0.9 cm/m) and HOCM (4.7 ± 0.9 cm/m). The change of MA area throughout the cardiac cycle was significantly ($P < 0.017$) smaller in patients with DCM (12.2 ± 3 . HOCM (20.5 ± 7 . ($P < 0.017$) smaller in patients with DCM (2.2 ± 1.0 mm/m) as compared with normals (3.6 ± 0.8 mm/m) and HOCM (2.7 ± 0.7 mm/m). Intercommissural distances as determined by CT showed a good correlation ($r = 0.68$, $P < 0.05$) with intraoperative measurements (mean difference, 0.44 mm; limits of agreement, -2.73-3.62 mm). **CONCLUSION:** Our study provides in vivo human data on the 3D shape, size, and motion of the MA in healthy subjects. Significant changes in size and motion of the MA were noted in patients with HOCM.

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