

## Veröffentlichungen:

Prof. Dr. med. Michael Becker  
Facharzt für Innere Medizin und Kardiologie

- **Becker M**, Bilke E, Kuehl H, Katoh M, Kramann R, Franke A, Buecker A, Hanrath P, Hoffmann R. Analysis of myocardial deformation based on pixel tracking in 2 D echocardiographic images allows objective assessment of regional left ventricular function. Heart 2006; Volume 92: 1102-1108
- **Becker M**, Hoffmann R, Kuehl H, Grawe H, Katoh M, Kramann R, Buecker A, Hanrath P, Heussen N. Analysis of Myocardial Deformation Based on Ultrasonic Pixel Tracking to Determine Transmurality in Chronic Myocardial Infarction. Eur Heart J 2006; 27: 2560-2566
- **Becker M**, Franke A, Breithardt O, Kramann R, Knackstedt C, Stellbrink C, Hanrath P, Schauerte P, Hoffmann R. Impact of Left Ventricular Lead Position on the Efficacy of Cardiac Resynchronization Therapy. A Two-Dimensional Strain Echocardiography Study. Heart 2007; 93: 1197-203
- **Becker M**, Kramann R, Dohmen G, Lückhoff A, Autschbach R, Kelm M, Hoffmann R. Impact of Left Ventricular Loading Conditions on Myocardial Deformation Parameters. Analysis of Early and Late Changes of Myocardial Deformation Parameters after Aortic Valve Replacement. J Am Soc Echocardiogr 2007; 20: 681-9
- **Becker M**, Kramann R, Franke A, Breithardt O, Knackstedt C, Stellbrink C, Schauerte P, Kelm M, Hoffmann R. Impact of Left Ventricular Lead Position in Cardiac Resynchronization Therapy on Left Ventricular Remodeling. A Circumferential Strain Analysis Based on 2D Echocardiography. Eur Heart J 2007; 28, 1211-1220
- **Becker M**, Hoffmann R, Schmitz F, Kühl H, Schauerte P, Kelm M, Franke A. Relation of Optimal Lead Positioning as Defined by 3D-Echocardiography to Long-Term Benefit of Cardiac Resynchronization. Am J Cardiol 2007; 100: 1671-1676
- [Knackstedt C](#), [Mischke K](#), [Frechen D](#), [Gramley F](#), [Schimpf T](#), [Becker M](#), [Franke A](#), [Kelm M](#), [Schauerte P](#). The role of intracardiac echocardiography in interventional electrophysiology. [Minerva Cardioangiol.](#) 2007; 55: 755-70
- **Becker M**, Lenzen A, Ocklenburg C, Stempel K, Kühl H, Neizel M, Katoh M, Kramann R, Wildberger J, Kelm M, Hoffmann R. The Use of Myocardial Deformation Imaging Based on

Ultrasonic Pixel Tracking to Identify Reversible Myocardial Dysfunction. *J Am Coll Cardiol* 2008; 51: 1473-81

- **Becker M**, Erdmann N, Stegemann E, Schauerte P, Schäfer W, Autschbach R, Kelm M, Koch KC. Survival and Quality of Life of Patients with severe Chronic Heart Failure and Heart Transplant Recipients within a Comprehensive Heart Failure Management Program. *J Heart Lung Transplant* 2008; 27: 746-752
- Breithardt O, **Becker M**, Kälsch T, Haghi D. Follow-Up in Takotsubo Cardiomyopathy by Real-Time 3D Echocardiography. *Heart* 2008; 94: 210
- Hoffmann R, Lenzen A, Kühl H, Katoh M, Stempel K, Wildberger J, Kelm M, **Becker M**. Integration of Cardiac Morphology and Function for Improved Identification of Reversible Myocardial Dysfunction. *Coron Artery Dis.* 2009; 20: 21-26
- Adamu U, Schmitz F, **Becker M**, Kelm M, Hoffmann R. Advanced Speckle Tracking Echocardiography Allowing a Three Myocardial Layer Specific Analysis of Deformation Parameters. *Eur J Echocardiogr.* 2009; 10: 303-8
- Leano R , Brown J, Sun J, Hoffmann R, Lysyansky P, **Becker M**, Thomas J, Marwick T. Myocardial Strain Measurement Using Two-Dimensional Speckle Tracking Echocardiography: Definition of Normal Range. *JACC Cardiovasc Imaging* 2009; 2: 80-4
- **Becker M**, Fütting A, Balzer J, Krombach G, Ocklenburg C, Kühl H, Kelm M, Hoffmann R. Impact of Infarct Transmurality on Layer Specific Impairment of Myocardial Function. A Myocardial Deformation Imaging Study. *Eur Heart J* 2009; 30: 1467-76
- **Becker M**, Frings D, Schröder J, Ocklenburg C, Mühler E, Hoffmann, Franke A, Lepper W. Impact of Occluder Device Type on Success of Percutaneous Closure of Atrial Septal Defects - a Medium-Term Follow-Up-Study. *J Inter Cardiol* 2009; 22: 503-510
- Mischke K, Knackstedt C, Schmid M, Hatam N, **Becker M**, Spillner J, Fache K, Kelm M, Schauerte P. Initial experience with remote magnetic navigation for left ventricular lead placement. *Acta Cardiol* 2009; 64: 467-475
- **Becker M**, Hümpel C, Ocklenburg C, Muehler E, Schroeder J, Eickholt C, Hoffmann R, Marx N, Franke A. The Right Ventricular Response to High Afterload: Comparison between Healthy Persons and Patients with Transposition of the Great Arteries. A 2D Strain Study. *Echocardiography* 2010; 27: 1256-62
- **Becker M**, Altiok E, Ocklenburg C, Hoffmann R, Adams D, Lysansky M, Meyer C, Vogel B, Schauerte P, Knackstedt C, Kelm M, Hoffmann R. Analysis of Left Ventricular Lead Position in

Cardiac Resynchronization Therapy Using Different Imaging Modalities. JACC Cardiovasc Imag 2010; 3: 472-481

- Grabskaya E, Spira C, Hoffmann R, Altiok E, Ocklenburg C, Lee M, Hoffmann R, **Becker M**. Analysis of Myocardial Rotation Using Speckle Tracking Echocardiography is Transducer Angle Dependent. Echocardiography 2010; 27: 809-14
- Zwicker C, **Becker M**, Lepper W, Koch KC, Westenfeld R. Cardiogenic Shock due to Tachycardiomyopathy after Heart Transplantation: Successful Treatment with Ivabradine. Cardiology 2010; 116:174-177
- Altiok E, **Becker M**, Hamada S, Grabskaya E, Reith S, Marx N, Hoffmann R. Real-Time 3D Transesophageal Echocardiography for Optimized Guidance of Percutaneous Edge-to Edge Repair of the Mitral Valve. JACC Cardiovasc Imaging 2010; 3: 1196-1198
- Meyer C, Rana O, Saygili E, Gemein C, **Becker M**, Nolte K, Weis, J, Schimpf T, Knackstedt C, Mischke K, Hoffmann R, Pauza D, Kelm M, Schauerte P. Augmentation of Left Ventricular Contractility by Cardiac Sympathetic Neural Stimulation. Circulation 2010; 121: 1286-1294
- **Becker M**, Altiok E, Ocklenburg C, Otten S, Friedman Z, Adams D, Hoffmann R, Koos R, Krombach G, Hoffmann R. Layer Specific Analysis of Myocardial Function for Prediction of Reversible Ischemic Dysfunction in Intermediate Viability Defined by ceMRI. Heart 2011; 97: 748-56
- Altiok E, Paetsch I, Jahnke C, Brehmer K, Reith S, **Becker M**, Marx N, Hoffmann R. Percutaneous Edge-to-Edge Mitral Valve Repair-Assessment of intermediate Postprocedural Treatment Effect Using Color 3D Transoesophageal Echocardiography and Cardiac Magnetic Resonance Imaging. J Am Coll Cardiol. 2011; 58: e21
- Altiok E, **Becker M**, Hamada S, Reith S, Marx N, Hoffmann R. Optimized guidance of percutaneous edge-to-edge repair of the mitral valve using real-time 3-D transoesophageal echocardiography. Clin Res Cardiol. 2011; 100: 675-81
- Altiok E, Hamada S, Van Hall S, Hanenberg M, Dohmen G, Almalla M, Grabskaya E, **Becker M**, Marx N, Hoffmann R. Comparison of Direct Planimetry of Mitral Valve Regurgitation Orifice Area by three-dimensional Transoesophageal Echocardiography to effective regurgitant orifice area obtained by proximal flow convergence method and vena contracta area determined by color Doppler echocardiography. Am J Cardiol 2011; 107: 452-458

- **Becker M**, Zwicker C, Kaminski M, Napp A, Altiok E, Ocklenburg C, Friedman Z, Adam D, Schauerte P, Marx N, Hoffmann R. Dependency of Cardiac Resynchronization Therapy on Myocardial Viability at the LV Lead Position. *JACC Cardiovasc Imag*, 2011; 4:366-374
- Altiok E, Hamada S, Brehmer K, Kuhr K, Reith S, **Becker M**, Schröder J, Almalla M, Lehmacher W, Marx N, Hoffmann R. Analysis of procedural effects of percutaneous edge-to-edge mitral valve repair by 2D and 3D echocardiography. *Circ Cardiovasc Imaging*. 2012; 5(6):748-55
- Knackstedt C, **Becker M**, Mischke K, Pauling R, Brunner-La Rocca HP, Schauerte P. A dedicated cardioversion unit for the treatment of atrial fibrillation. Reducing costs by optimizing processes. *Herz*. 2012;37: 518-26.
- Altiok E, Koos R, Schröder J, Brehmer K, Hamada S, **Becker M**, Mahnken AH, Almalla M, Dohmen G, Autschbach R, Marx N, Hoffmann R. Comparison of two-dimensional and three-dimensional imaging techniques for measurement of aortic annulus diameters before transcatheter aortic valve implantation. *Heart* 2011; 97:1578-84
- Altiok E, Neizel M, Tiemann S, Krass V, Kuhr K, **Becker M**, Zwicker C, Koos R, Lehmacher W, Kelm M, Marx N, Hoffmann R. Quantitative analysis of endocardial and epicardial left ventricular myocardial deformation-comparison of strain-encoded cardiac magnetic resonance imaging with two-dimensional speckle-tracking echocardiography. *J Am Soc Echocardiogr*. 2012; 25: 1179-88
- Peuckmann-Post V, Eickhoff R, **Becker M**, Von der Laage D. EKG-Veränderungen bei Patienten mit chronischen Nichttumorschmerzen. Eine prospektive Beobachtungsstudie. *Der Schmerz* 2012; 26: 419-424
- Altiok E, Neizel M, Tiemann S, Krass V, **Becker M**, Zwicker C, Koos R, Kelm M, Kremer N, Schoth F, Marx N, Hoffmann R. Layer Specific Analysis of Myocardial Deformation for Assessment of Infarct Transmurality: Comparison of Strain-encoded Cardiac Magnetic Resonance Imaging with 2D Speckle Tracking Echocardiography. *Eur Heart J Cardiovasc Imaging*. 2013; 14: 570-8
- Roehl AB, Funcke S, **Becker M**, Goetzenich A, Rossaint R, Steendijk P, Hein M. Xenon but not isoflurane reduced left ventricular remodeling after myocardial infarction in the rat. *Anesthesiology*. 2013; 118: 1385-94

- **Becker M**, Goetzenich A, Roehl AB, Hübel C, De la Fuente, M, Dietz-Laursonn K, Radermacher K, Rossaint R, Hein M. Myocardial Effects of local shock wave therapy in a Langendorff model. *Ultrasonics*. 2014; 54: 131-6
- **Becker M**, Roehl AB, Siekmann U, Koch A, de la Fuente M, Roissant R, Radermacher K, Marx N, Hein M. Simplified detection of myocardial ischemia by Seismocardiography: differentiation between causes of altered myocardial function. *Herz* 2014; 39: 586-92
- Kramann R, Erpenbeck J, Schneider RK, Röhl AB, Hein M, Brandenburg VM, van Diepen M, Dekker F, Marx N, Floege J, **Becker M**, Schlieper G. Speckle tracking echocardiography detects uremic cardiomyopathy early and predicts cardiovascular mortality in ESRD. *J Am Soc Nephrol*. 2014; 25: 2351-65
- Sonntag SJ, Li W, **Becker M**, Kaestner W, Büsen MR, Marx N, Merhof D, Steinseifer U. Combined computational and experimental approach to improve the assessment of mitral regurgitation by echocardiography. *Ann Biomed Eng*. 2014; 42: 971-85.
- Hoffmann R, Altiok E, Friedman Z, **Becker M**, Frick M. [Myocardial deformation imaging by two-dimensional speckle-tracking echocardiography in comparison to late gadolinium enhancement cardiac magnetic resonance for analysis of myocardial fibrosis in severe aortic stenosis](#). *Am J Cardiol*. 2014; 114: 1083-8
- Altiok E, Frick M, Meyer CG, Al Ateah G, Napp A, Kirschfink A, Almalla M, Lotfi S, **Becker M**, Herich L, Lehmacher W, Hoffmann R. Comparison of two- and three-dimensional transthoracic echocardiography to cardiac magnetic resonance imaging for assessment of paravalvular regurgitation after transcatheter aortic valve implantation. *Am J Cardiol*. 2014; 113: 1859-66
- Altiok E, Tiemann S, **Becker M**, Koos R, Zwicker C, Schroeder J, Kraemer N, Schoth F, Adam D, Friedman Z, Marx N, Hoffmann R. Myocardial deformation imaging by two-dimensional speckle-tracking echocardiography for prediction of global and segmental functional changes after acute myocardial infarction: a comparison with late gadolinium enhancement cardiac magnetic resonance. *J Am Soc Echocardiogr*. 2014; 27: 249-57
- **Becker M**, Goetzenich A, Roehl AB, Huebel C, de la Fuente M, Dietz-Laursonn K, Radermacher K, Rossaint R, Hein M. Myocardial effects of local shock wave therapy in a Langendorff model. *Ultrasonics*. 2014; 54: 131-6.

- **Becker M**, Roehl AB, Siekmann U, Koch A, de la Fuente M, Roissant R, Radermacher K, Marx N, Hein M. Simplified detection of myocardial ischemia by seismocardiography. Differentiation between causes of altered myocardial function. *Herz*. 2014; 39: 586-92
- Bisplinghoff S, Hänisch C, **Becker M**, Radermacher K, de la Fuente M. Fusion of coronary angiography and stress echocardiography for myocardial viability evaluation. *Int J Comput Assist Radiol Surg*. 2015 ; 10: 11-7.
- Knackstedt C, Hildebrandt U, Schmidt K, Syrocki L, Lang A, Bjarnason Wehrens B, Schummers G, Stapf D, **Becker M**, Predel HG. Analysis of right and left ventricular deformation in former world class swimmers - evaluation using speckle tracking. *J Sports Med Phys Fitness*. 2015; 55: 978-87.
- **Becker M**, Hundemer A, Zwicker C, Altiok E, Krohn T, Mottaghy FM, Lente C, Kelm M, Marx N, Hoffmann R. [Detection of coronary artery disease in postmenopausal women: the significance of integrated stress imaging tests in a 4-year prognostic study](#). *Clin Res Cardiol*. 2015; 104: 258-71
- Schroeder J, Hamada S, Gründlinger N, Rubeau T, Altiok E, Ulbrich K, Napp A, Keszei A, Marx N, **Becker M**. Myocardial Deformation by Strain Echocardiography Identify Patients with Acute Coronary Syndrome and non-diagnostic ECG Presenting in a Chest Pain Unit: a prospective study of diagnostic accuracy. *Clin Res. Cardiol* 2016; 105: 248-256
- Hamada S, Schroeder J, Hoffmann R, Altiok E, Keszei A, Napp A, Marx N, **Becker M**. Prediction of Outcome in Patients with Chronic Ischemic Cardiomyopathy by layer specific strain Echocardiography compared to Magnetic Resonance Imaging. *J Am Soc Echocardiogr* 2016; 29: 412-420
- Kirschfink A, Frick M, Reinartz S, **Becker M**. [An undiagnosed double aortic arch hampers a coronary angiography in a patient with LIMA graft](#). *Eur Heart J*. 2016; 37(14):1169
- Schröder J, Hamada S, Altiok E, Almalla M, Koutziampasi C, Napp A, Keszei A, Hein M, **Becker M**. Detection of acute changes in left ventricular function by myocardial deformation analysis after excessive alcohol ingestion. [J Am Soc Echocardiogr](#). 2017 Mar; 30(3):235-243.
- Schuh A, Karayusuf V, Altiok E, Hamada S, Schröder J, Keszei A, Kelm M, de la Fuente M, Frick M, Radermacher K, Marx N, **Becker M**. **Intra-procedural Determination of Viability by**

**Myocardial Deformation Imaging: a Randomized Prospective Study in the Cardiac Catheter Laboratory.** Clin Res Cardiol. 2017 Aug;106(8):629-644.

- Hoffmann R, Langenbrink L, Reimann D, Kastrati M, **Becker M**, Piatkowski M, Michaelsen J. Image Noise Reduction Technology Allows Significant Reduction of Radiation Dosage in Cardiac Device Implantation Procedures. [Pacing Clin Electrophysiol.](#) 2017 Dec;40(12):1374-1379
- Vishal R. Kaley, Nagib Dahdah, Amal El-Sisi, Jochen Grohmann, Eric Rosenthal, Matthew Jones, Gareth Morgan, Nicholas Hayes, Ashish Shah, Cemsit Karakurt, Masood Sadiq, Matthias Sigler, Hans Figulla, **Michael Becker**, Nikolaus A. Haas, Eustaquio Onorato, Angel Puentes Rico, Supaporn Roymanee, Anselm Uebing, Walter Wibe, Bennett P. Samuel, Ziyad M. Hijazi, Joseph Vettukattil. Atrial septal defect associated pulmonary arterial hypertension: Outcomes of closure with a fenestrated device. In review