

Anatomy and Pathophysiology of the
coronary venous circulation

Anatomy and Pathophysiology of the coronary venous circulation

Edited by W. Mohl

Abe, H., Böck, J., Corday, E., Glogar, D., Goto, M., Haendchen, R. V., Heintzberger, Ch. F. M., Hellige, G., Hiramatsu, O., Hoeft, A., Hori, M., Ino, T., Inoue, M., Kagiyama, M., Kajiyama, F., Kamiński, M., Karagueuzian, H. S., Kenner, T., Kodama, K., Kolff, W. J., Korb, H., Koretsune, Y., Kreimeier, U., Kronholz, H.-L., Lametschwandtner, A., Lechleuthner, A., Levantesi, D., Levesque, M. J., Lüdinghausen, M. v., Lunkenheimer, A., Lunkenheimer, P. P., Mandel, W. J., Marzilli, M., Maurer, G., McCullen, A., Meerbaum, S., Meesmann, M., Merker, J., Mishima, M., Mito, K., Mohl, W., Moser, M., Nakai, M., Nanto, S., Nerem, R. M., Ogasawara, Y., Peter, T., Punzengruber, C., Rabinovitz, R., Ratajczyk-Pakalska, E., Sabbah, H. N., Schütz, J., Stein, P. D., Tadaoka, S., Tiedt, N., Tomonaga, G., Torres, M. A. R., Tschabitscher, M., Tsujioka, K., Wada, Y., Wagiel, J., Wiesner, T., Wolpers, H. G.

Copyright © 2002 society of coronary sinus interventions
Editor: W. Mohl

A. Holzhausens Nfg.

Printed in AUSTRIA

ISBN-Nr.: 3-902316-00-4

Facsimile and re-edited from:
Clinics of CSI
The Coronary Sinus
CSI – A new Approach to Interventional Cardiology

Contents

Editorial	1
Nomenclature: Venae cardiacae – cardiac veins	
Lüdinghausen, M. v., Ratajczyk-Pakalska, E., Tschabitscher, M., Maurer, G., Glogar, D., and Mohl, W.	3
Nomenclature and distribution pattern of cardiac veins in man	
Lüdinghausen, M. v.	7
Anatomy of the Coronary Arteries and Veins	
Lüdinghausen, M. v.	27
Anatomy of Coronary Veins	
Tschabitscher, M.	30
The so-called “silent zone” of the coronary sinus	
Tschabitscher, M.	49
The functional architecture and clinical significance of the cardiac venous system with special reference to the venous valves and Thebesian veins	
Lechleuthner A., and Lüdinghausen, M. v.	53
Anatomical Basis for the Coronary Venous Outflow	
Ratajczyk-Pakalska, E., and Kolff, W. J.	50
Thebesian veins in the human hearts with atherosclerotic lesions in the coronary arteries	
Ratajczyk-Pakalska, E.	67
The Microcirculatory Vascular Bed of the Dog’s Heart. A Scanning Electron Microscopy Study of Vascular Corrosion Casts	
Lametschwandtner, A., and Mohl, W.	72
Automated Image Analysis for Measurement of Area of the Smallest Cardiac Veins in Ventricular Myocardium	
Ratajczyk-Pakalska, E., Wagielski, J., Kamiński, M., and Kolff, W. J.	79

Functional Anatomy of the Coronary Sinusoids	
Lunkenheimer, A., Merker, J., and Lunkenheimer, P. P.	87
The Vascularization Pattern in the Ventricular Wall in Different Species During Development	
Heintzberger, Ch. F. M.	95
Congenital occlusion of the coronary sinus	
Lechleuthner, A., and Lüdinghausen, M. v.	101
Coronary Fluid Dynamics	
Nerem, R. M., Levesque, M. J., Rabinovitz, R., and Wiesner, T.	106
Inflow, outflow and pressures in the coronary circulation	
Kenner, T., Moser, M., Mohl, W., and Tiedt, N.	113
Wave Reflections and Pressure Flow Relations in the Coronary Circulation	
Kenner, T., Moser, M., and Mohl, W.	126
Origin of Phasic Coronary Venous Flow and the Capacitance of Intramyocardial Coronary Vein	
Tsujioka, K., Tomonaga, G., Ogasawara, Y., Nakai, M., Tadaoka, S., Goto, M., and Kajiya, F.	140
Coronary venous retroinjection: the role of pressure gradients during selective distribution to ischemic myocardium	
Meesmann, M., Karagueuzian, H. S., Ino, T., McCullen, A., Mandel, W. J., and Peter, T.	147
Functional transport properties of the arterial and venous coronary tree	
Hoeft, A., Korb, H., Böck, J., Wolpers, H. G., and Hellige, G.	149
Fluid Dynamics in Proximal and Distal Coronary Artery Measured by Laser Doppler Velocimeter	
Kajiya, F., Tsujioka, K., Tomonaga, G., Ogasawara, Y., Tadaoka, S., Goto, M., Wada, Y., Kagiyama, M., and Mito, K.	157
Dynamic Characteristics of Diastolic Pressure – Flow Relation in the Canine Coronary Artery	
Tomonaga, G., Tsujioka, K., Ogasawara, Y., Nakai, M., Mito, K., Hiramatsu, O., and Kajiya, F.	163

Determinants of Cardiac Pump Efficiency. Comparison of a Theoretical Model With Experimental Data of Normo- and Hypothermic Dogs	
Hoeft, A., Korb, H., Wolpers, H. G., and Hellige, G.	170
Determination of Myocardial Blood Flow with Transcoronary Dye Dilution	
Hoeft, A., Korb, H., Wolpers, H. G., and Hellige, G.	178
Diastolic Distribution of Intramural Pressure in the Canine Left Ventricle	
Marzilli, M., Sabbah, H. N., Levantesi, D., and Stein, P. D.	185
Is Intramyocardial Pressure Measurable?	
Kreimeier, U.	190
Cardiodynamics Governed by Intramyocardial Hydraulics	
Lunkenheimer, A., Lunkenheimer, P. P., Kronholz, H.-L., and Schütz, J. . .	197
The Evaluation of Collateral Function by Contrast Medium-Induced Hyperemia	
Koretsune, Y., Hori, M., Inoue, M., Kodama, K., Nanto, S., Mishima, M., and Abe, H.	200
Penetration of Coronary Venous Injections into Ischemic Myocardium	
Maurer, G., Punzengruber, C., Haendchen, R. V., Torres, M. A. R., Meerbaum, S., and Corday, E.	213