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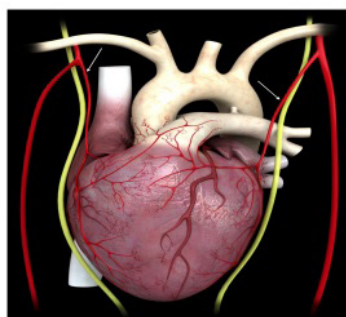


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The hypothesis of enhancement of noncoronary collateral myocardial blood flow and endovascular internal mammary artery occlusion in refractory angina: A new research field

Noncoronary collateral myocardial blood flow (NCCMBF) or noncoronary collateral circulation (NCCC) is a virtually ignored topic. Few studies have been published to date and we still know little of its nature and almost nothing of its potential benefits in clinical applications. It consists of a micro-vascular network arising from mediastinal, esophageal, bronchial, and intercostal arteries. Blood reaches the myocardium through small channels connected with aortic and pulmonary artery vasa vasorum, and with channels located within the pericardial reflections surrounding the pulmonary and systemic veins. Some phenomena suggest the existence of alternative ways for blood to reach the heart, for no other easy explanation exists. For example, during aortic valve surgery, arterial blood can be seen to flow out from the coronary ostia, while during coronary surgery blood may flow out from the incised coronary artery, despite adequate venting and correct aortic cross-clamping. It is not even rare for patients to show an ejection fraction equal to or greater than 55%, despite occlusion of the right coronary artery and sub-occlusion of the left main artery. It has been demonstrated that collateral branches of the internal thoracic arteries (ITAs) are a source of NCCMBF. In fact, connections exist between ITAs and native coronary arteries both in living patients and cadavers. One study demonstrated these connections by postmortem angiography in 12% of cases. Furthermore, several examples show the potential of the ITAs for developing collateral vessels spontaneously in the presence of an ischemic stimulus. Currently, not all patients suffering from ischemic heart disease benefit from conventional myocardial revascularization techniques; and it is in this context that the concept of ITA occlusion has been promoted again since 2010. May NCCMBF represent a valuable alternative source of myocardial blood supply for no-option patients? Herein, the nature and hypothetical benefits of NCCMBF are discussed.



Biography

Marco Picichè completed his degree in Medicine at University of Florence in 1995 and Cardiac Surgery Residency at University of Rome Tor Vergata in 2000. He has worked as an Assistant at Saint Luc Hospital, Catholic University of Louvain, Brussels from 1999 to 2001 and as a Clinic Head/Hospital Assistant at University of Clermont-Ferrand (2003–2004) and in Montpellier from 2004 to 2007. He held regular teaching appointments at University of Montpellier School of Medicine, obtained certification by the French Board in Cardiac Surgery (Paris, 2007), earned his Research Master in Surgical Science (Paris, 2007). In Canada, he authored a research project on “Noncoronary collateral circulation” which was submitted to the annual research competition at Québec Heart & Lung Institute, Laval University, and received the competition's highest grant. In September 2011, he completed his PhD in Therapeutic Innovations from University of Paris-Sud. He is the Editor in Chief of the book: Dawn and Evolution of Cardiac Procedures: Research Avenues in Cardiac Surgery and Interventional Cardiology. Currently, he is a Consultant Cardiac Surgeon in Italy.

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