**INTRAOPERATIVE GRAFT VERIFICATION IN CORONARY SURGERY: WHY, WHEN AND HOW SHOULD WE VERIFY CORONARY ARTERY BYPASS GRAFTS**

**G. Di Giammarco**, D. Marinelli, M. Foschi, M. Di Mauro, M. Di Natale

University "G.D'Annunzio", Chieti, Italy

The incidence of perioperative graft failure has been estimated to range from 5% to 11%. Early graft failure is related to technical error during anastomosis construction. The use of intraoperative graft verification procedures is able to reduce the number of failures and improve both the patient and graft outcome as reported on many papers in the literature. Transit-Time Flow Measurement (TTFM) is a fast, easy to use and well reputed method to check the flow of coronary artery bypass grafts the main limitation being the low positive predictive value that may lead to a high number of undue anastomotic revisions. We started to use TTFM in 1995 and from 2009 we added high resolution imaging to TTFM with the aim to improve the predictive power of this technology. Our policy had been since the beginning to verify all the coronary grafts, either in isolated and after combined Coronary Artery Bypass Grafting (CABG) procedures. On the practical point of view we usually measure sequentially the graft flow with a different protocol according to the surgical strategy adopted, if on- or off-pump. In ON-pump procedures we measure after aortic cross-clamp removal and after protamine administered; in OFF-pump CABG we check the conduit immediately after anastomosis completed and after protamine administered. Using both methods we noticed an improvement of diagnostic accuracy of the procedure that came close to 100%. On the basis of our experience we developed a flow chart with the aim to provide a easy and fast tool to check conduits, coronary anastomoses and to predict the fate of the grafts according to distal runoff. A low MGF (<<15ml/min) with an high PI (>>3) and very low %BF (=0) represents the picture of anastomotical error; a low MGF (<15 ml/min), high PI (>>3) and very high %BF (>>3%) is the picture of a conduit grafted downward a not critical native stenosis. A MGF >15 ml/min, PI <3, %BF (>0<3) is the picture of a well functioning graft. Intraoperative Dobutamine Test (20mcg/Kg in a single bolus injection) may help to check the competitive flow reversal and to assess the fate of the graft at a late followup. In conclusion, the method a valid help to accomplish a reliable intraoperative graft verification in coronary surgery proving the correctness of the surgical technique.