Letter to the Editor

Y-graft and proximal LIMA flow adaptability: the surgical wisdom of iatrogenics

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Through their recent article, Lemma et al. [1] reported gratifying adaptability to the flow of proximal LIMA when using Y-graft revascularisation, corroborating previous investigation in this field [2], and on which the authors should be congratulated.

Although the authors concluded that the distal flow of LIMA is similar between Y-graft and single graft groups, exclusive Y-graft revascularisation may raise concerns over attendant physiological disturbances afflicted to the integrated perfusion of coronary systems and their interplay. Apart from successfully measuring the relative flow and demonstrating technical feasibility, the exclusive T- or Y-graft nonetheless results in a perfusion pattern similar to a left-dominant coronary system.

It is well documented that the systolic antegrade flow of LAD is composed by antegrade flow from left Valsalva sinus and systolic retrograde given way by its collaterals such as septal and diagonal arteries [3]. Although being slighted in routine practice, the functional role of the latter is crucial. When occluding LAD with balloon, the amount of systolic recruitable collateral flow in LAD increases proportional to increasing flow in contralateral artery [4].

Such a collateral flow that is dependant on myocardium contractility [5], myocardial collateral pump, gives horizon to new integrated insights in coronary physiology, consequences of which should be taken surgically in good advantage.

Therefore, LAD can be seen as having two potential inflows, double-LAD inflow, the importance of which is obvious in clinical practice, such as in the setting of occluded LAD and myocardial hypertrophy where the amount of systolic recruitable flow is increased. Similarly, the loss of contractility by septal infarction that blunt myocardial collateral pump could be an explanation to the poor outcome carried by.

As an added level of complexity, one should integrate the coronary dominance with the above quoted considerations. A left-dominant coronary system should be though seen as providing the most amount of systolic LAD perfusion through a single system inflow, left coronary ostium; a pattern that can be deemed as singly double-LAD inflow while the right dominant or co-dominant coronary systems can potentially feed LAD by two separate inflow (right and left coronary ostia), doubly double-LAD inflow. A more potentially restrictive flow offered by singly double-LAD inflow compared with doubly double-LAD inflow pattern can, therefore, support the higher clinical incidence of angina in patients presenting with aortic stenosis, normal epicardial arteries, and left-dominant coronary system.

Provided that surgical revascularisation results in resuming normal physiological coronary flow, coronary bypass grafting should be considered as an opportunity to offer patients to be provided with a doubly double-LAD inflow pattern, even in the case of patient’s left-dominant coronary system, and not to transform routinely a native doubly double-LAD inflow into a potentially restrictive singly double-LAD inflow by exclusive T- or Y-grafting [2], even though the proximal LIMA flow displays some amount of adaptability.

References


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