Reply to the Letter to the Editor

Reply to Lunkenheimer et al.

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I have read with great attention the comments sent by Paul Lunkenheimer, Klaus Redmann and Robert Anderson, on my Letter ‘Ventricular myocardial band and Ross operation’ [1]. Despite I have repeatedly analyzed their comments, the only argument with some connection with the text of my letter was referring my final comment ‘the new concepts on cardiac anatomy and physiology proposed by Dr Francisco Torrent-Guasp deserve for further and deeper investigations, performed with adequate curiosity, and without nihilism’ [1].

I agree with Lunkenheimer and colleagues that the new concepts of anatomy and physiology supported by Dr Francisco Torrent-Guasp are in full disagreement with centuries of previous observations, but I respectfully disagree that only because of this reason they should automatically be disregarded as ‘spurious’.

The invitation to thoroughly investigate the matter, instead of blindly refusing the new observations simply because in disagreement with the previous knowledge, came not only by ourselves [2], but also by other scientists writing on the same topic [3,4].

Furthermore, these were also the conclusions of the scientific meeting ‘The new concepts of cardiac anatomy and physiology. The Torch of Francisco Torrent-Guasp’, organized in Liverpool, England, on May 28th, 2005 (http://www.alderhey.com/Cardiac2005/), where Paul Lunkenheimer was a member of the Faculty.

Finally, none of the specific comments criticizing a recent paper by Castella and colleagues on anatomical and physiological observations on the structure/function cardiac interface based on microsonometric findings [5] was addressed to the specific topic of my Letter, namely the surgical anatomy of the ventricular outflow tract and its implication for the pulmonary autograft preparation during the Ross operation.

References


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Letter to the Editor

Skeletonized bilateral internal mammary arteries in unstable angina: a paradigm shift

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Bonacchi et al. [1] deserve credit for presenting their experience of using skeletonized bilateral internal mammary arteries (BIMA) for urgent/emergent surgical revascularization in unstable angina (UA). Their study is significant not only for advocating urgent or emergent surgical intervention in UA but more importantly for validating the safety and efficacy of the use of skeletonized BIMA in this potentially high-risk scenario.

Several studies have been reported over the past few years showing survival benefit, lower reintervention rate, and better angina-free survival after BIMA grafting when compared with the use of a single IMA [2]. However, concerns about sternal wound infection [3] and the suboptimal use of pedicled right IMA as a free graft, because it is not always long enough to reach the branches of the left or right coronary artery without tension [2], led to the development of a surgical technique in which the IMA is dissected as a skeletonized vessel [4]. This harvesting technique bestowed the advantages of greater length and greater spontaneous blood flow of a skeletonized vessel compared to pedicled IMA [2]. The use of skeletonized BIMA allows the use of both IMAs as grafts to practically all coronary vessels requiring surgical revascularization, thus obtaining complete arterial revascularization without the need for harvesting additional conduits [2]. Furthermore, preservation of collateral blood supply to the sternum and decreased risk of infection, decreased postoperative chest wall pain, better judgment of graft length with thorough visual inspection to identify spastic or damaged areas that can, otherwise, be obscured by perivascular fat, are some of the additional advantages [2] that make skeletonized BIMA a highly attractive technique in nearly all types of patients presenting for surgical myocardial revascularization.

Surgical myocardial revascularization in UA is indicated when the conservative therapies fail or when the clinical-anatomical situations necessitate the surgical alternative such as in cases with left main coronary artery disease, large atherosclerotic burden and diffuse disease involving all the coronary arteries or unstable hemodynamics unresponsive to intra aortic balloon pump. However, very little is known about the timing of surgical intervention, optimal revascularization strategy and techniques of myocardial protection in this high-risk subset of patients. More importantly, there is a reluctance to use arterial conduits/BIMA in UA patients undergoing non-elective surgery secondary to longer harvesting IMAs’ time vs saphenous vein [5]. The study by Bonacchi et al. [1] provides useful insight into these unresolved issues. Their BIMA harvesting as well as myocardial protection and
Why skeletonized BIMA for unstable angina?

For skeptics who have always objected to the use of arterial conduits let alone skeletonized BIMA in non-elective surgery, owing to the longer dissection time, the potential for cardoplegia maldistribution, the longer cross clamp time, and initial inadequacy of flow, the message from Bonacchi et al. [1] is loud and clear. It is time for a paradigm shift.

References


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Reply to the Letter to the Editor

Reply to Raja

Why skeletonized BIMA for unstable angina?

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Keywords: Coronary arteries; Free flow; Internal mammary arteries

We appreciate the comments of Dr Shahzad G. Raja about our paper concerning the use of skeletonized bilateral internal mammary arteries (BIMA) for urgent/emergent surgical revascularization in unstable angina (UA) [1]. Skeletonization of internal thoracic arteries for myocardial revascularization offers several proven advantages such as decreased incidence of sternal wound infection, greater length, and multiple arterial anastomoses [2,3].

In our paper, we have demonstrated that this technique can be safely used also for urgent/emergent surgical revascularization in unstable angina (UA) since it does not increase operative mortality but improves late outcomes.

Global ischemic time plays a very important role in operative mortality in patients with UA therefore, it is important to obtain early and adequate reperfusion following the onset of symptoms as quickly as possible. Our results at immediate and late follow-up with improved freedom from cardiac death, from coronary reintervention and from myocardial infarction may relate to the increased conduit diameter and blood flow reported in skeletonized compared with pedicled mammary grafts. In fact the free blood flow from the skeletonized LIMA is, almost twice as high as that from the non-skeletonized one and comparable to the vein graft [3,4]. Thus, greater immediate spontaneous blood flow to the ischemic heart may reduce the incidence of low cardiac output syndrome and operative mortality.

Despite these advantages there is reluctance to use skeletonized internal mammary arteries because the potential risk of damage during the harvesting [5]. In emergent/urgent surgery, moreover, the main objection is the longer harvesting time. Technically skeletonization may be more demanding than pedicled IMA harvesting and certainly there is a learning curve like anything else in surgery. For this reason, first we have started to employ bilateral skeletonized IMA for grafting the left coronary system in elective surgery and, later on, we have expanded that use also in urgent/emergent situation. We found a significant 15-min increase in operating times for one AMI skeletonization compared to pedicled (42 ± 21 vs. 25 ± 9.5 min, p < 0.001). Moreover, we have divided the skeletonized group in two additional groups according to the harvesting time (correlated to two groups of surgeons: those more experienced than the others): the FAST group, with a mean harvesting time of 21 ± 5 min (range 19–29 min) and the SLOW with a mean harvesting time of 36 ± 8 min (range 26–45 min). The difference in mean harvesting time between the two groups was statistically significant (p < 0.05). The mammary harvesting time variable, however, when entered in the logistic model, was not a risk factor for operative mortality or perioperative complications.

In conclusion, in emergent/urgent myocardial revascularization with careful patients management it is possible to spend some few minutes more for both IMAs’ harvesting as skeletonized technique, knowing the important early and long-term advantages of this conduit such as early improved flow/reperfusion and freedom from late atherosclerotic disease also in UA patients [3].

We concur with Dr Raja and encourage for a paradigm shift in the use of arterial conduit in UA.

References


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