Implications of new ESC/EACTS guidelines on myocardial revascularisation for patients with multi-vessel coronary artery disease

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The Guidelines for Myocardial Revascularisation of the European Society of Cardiology (ESC) and European Association of Cardiac and Thoracic Surgery (EACTS) are unique as they are the very first reported consensus document, by a writing committee balanced between non interventional and interventional cardiologists as well as cardiac surgeons, on this specific issue [1]. Given the strong impact that ischemic heart disease has on the survival and quality of life of the individual as well as the economic implications for society, the importance of the ESC/EACTS guidelines is obvious.

At first glance, three general features of the guidelines are notable. First is its wide ranging perspective; the guidelines address most of the possible clinical scenarios that a clinician may encounter when evaluating the need for myocardial revascularisation in a broad spectrum of patients. Second is acknowledgement of the importance of the Multidisciplinary/Heart Team, to exchange opinions among relevant experts to ensure the highest standards of care for all patients. Third, but again for the first time, is the importance given to the process of patient information, an aspect that, despite its crucial ethical importance, has previously been largely neglected in patients undergoing non-emergency interventions.

Another strength of the ESC/EACTS guidelines is their complete independence from economic and/or industry influence encouraging interventional recommendations based solely on the best available clinical, ethical and technical evidence. The Task Force with its balanced composition of Surgeons and Cardiologists, is committed to the principles of best patient care, medical education and clinical research underpinned by the most evidence based recommendations.

The results of this endeavour are new ESC/EACTS guidelines whereby almost 70% of current recommendations were not available in previous ESC guidelines for the treatment of patients with stable coronary artery disease (CAD) [2], acute coronary syndromes (ACS) [3], non-ST elevation myocardial infarction (NSTEMI) [4] and Percutaneous Coronary Interventions (PCI) [5]. Furthermore, 20% of the current recommendations have been revisited (either up-or-down-graded) compared to previous recommendations. Considering that the guidelines contain such substantial new information, it is somewhat predictable that they might fuel discrepancies, disagreements, criticisms, and even some scepticism. However, beyond these naturally instinctive first reactions, the new guidelines certainly represent a new starting point for the decision making and treatment of patients with CAD. However, a great deal of effort of the Task Force was concentrated on the rigorous scientific evaluation and objective grading of the available evidence. While this statement may sound a necessary prerequisite for guidelines it is less obvious when discussion, debate and agreement have not taken place between relevant experts over several years.

1. What interventional cardiologists should know

It can be anticipated that some chapters and recommendations of the new guidelines may make uncomfortable reading for some cardiologists. Indeed, in several passages of the text it is stated, categorically, that 'surgery should be considered as the preferred treatment’, e.g. for revascularisation in patients with stable CAD and multi-vessel disease (MVD), or with diabetes, chronic kidney disease (CKD), associated valvular heart disease, or with peripheral arterial disease (PAD). Although this evidence has actually been available for some time what is new is that it is now clearly agreed by the representatives of the cardiology community.

Indeed cardiologists should remember that previous recommendations for the use of PCI in patients with MVD, given the highest level of evidence (A), were based on randomised clinical trials of CABG and PCI which reported no difference in terms of survival or re-infarction, but only a higher need for re-intervention with PCI. The fact that most of the patients enrolled in these studies (ARTS and SOS included) had normal left ventricular function, none had left...
main disease, and fewer than 40% had three-vessel CAD was largely ignored. Patients with more severe MVD or impaired ventricular function and/or other important prognostic comorbidities were largely excluded. Furthermore, analyses on propensity matched sub-groups or in large registry studies have consistently demonstrated the superiority of CABG over the long-term. As has been previously discussed, such information has been misinterpreted for years [6] and so cardiologists should not be surprised that surgeons have continually disputed that there is any real evidence favouring PCI over CABG in patients with MVD.

Only recently, the SYNTAX trial has provided a real direct comparison between CABG and PCI in ‘real-life’ patients with MVD and Left main disease [7]. At 3 years, in all 1095 patients with 3 vessel disease, overall mortality was 5.7% for CABG and 9.5% for PCI (p = 0.02) and with a similar incidence of stroke at 2.9% and 2.6%, respectively (p = 0.64) [8]. In contrast, for all 705 patients with left main stenosis the respective mortalities were 8.4% and 7.3% (p = 0.64) [8]; however, in contrast to MVD where CABG had a consistently lower mortality against all severities of SYNTAX score, in patients with left main disease the mortality was significantly lower for stents than CABG in those with SYNTAX scores <33 while the reverse was true for those with SYNTAX scores >32.

Furthermore, and in contrast to three vessel disease, for all categories of left main stenosis the incidence of stroke was higher with CABG (4% vs 1%) whereas a reduction in repeat revascularisation for CABG was only seen in those with the highest SYNTAX scores.

Another potentially ‘difficult’ passage of the ESC/EACTS guidelines for cardiologists is the chapter dedicated to patient information [1]. In many cases, interventional recommendations can be made in an algorithmic fashion by following local protocols based on the guideline recommendations without the need for formal discussions. However, with few exceptions, the guidelines also recommend against ‘ad hoc’ PCI as the standard of care recognizing not only the potential conflict of systematic self-referral but that patients need appropriate time to consider the therapeutic alternatives including the possibility of surgery. A tendency to place a stent in a coronary artery a few minutes after a diagnostic coronary angiogram to transform a patient with MVD to one with single or double-vein CAD, can then be addressed with a staged second PCI, is not tenable to sincere and open discussion within a Heart Team. Needless to say for elective patients with severe MVD, as expressed by a high Syntax score, or with complex lesions of the proximal LAD the guidelines should be followed and patients should have appropriate surgical consultation.

2. What cardiac surgeons should know

Conventional CABG, performed on-pump using a single internal mammary artery (IMA) plus additional vein grafts, although absolutely valid in terms of survival, is increasingly perceived by the cardiology community as an outdated technique that has not evolved in 40 years. Although the clinical advantages of conventional surgery using an IMA in terms of survival over several decades are persuasive [9], the widespread use of vein grafts still exposes the patient to a rather high risk of ischemic recurrences including myocardial infarction [9], and this risk may not be much lower than the risk of late stent thrombosis or the need for repeat PCI after the implantation of new generation DES.

Cardiologists perceive the use of vein grafts, used in 80—90% of CABG procedures worldwide, as an obsolete approach. Although there is evidence that the use of two mammary arteries is better than one [9] and that this can be performed as safely as using a single IMA graft [10] fewer than 10% of European patients and fewer than 5% of North American patients actually receive two IMA grafts. Even in the Syntax trial which hoped to encourage a high use of bilateral internal mammary artery grafts, this was achieved in only 28% of patients [7]. Furthermore, new concepts are now challenging the classical concept of ‘complete revascularisation’ by the assessment of the functional significance of coronary stenoses with fractional flow reserve. FAME [11] opened the perspective of a new concept of interventions demonstrating that better functional assessment and its implications for objective assessment of ischemia resulted in fewer stents, less cost and less risk to patients.

Philosophically, interventional cardiologists— and to an increasing extent, patients— embrace the conviction ‘that a more technological approach is intrinsically better than one that is less technological unless, or perhaps even if, there is strong evidence to the contrary’ [12]. Consequently, because of a natural tendency to innovation allied to the desire for less invasiveness, cardiologists have increasingly trespassed the boundaries of certainty defined by evidence-based medicine. Today many patients benefit from the advantages of endovascular techniques within better defined limits of safety and efficacy dictated by currently available technology and the complexity of the coronary anatomy. Indeed, studies like the Syntax trial would never have been possible without a constant dedication to continuous evolution.

3. What patients should know

Most patients ask the doctor for advice with regards to best treatment. It is vital therefore that information delivered to the patient is transparent, evidence based and robust. Any external party should therefore be able to readily follow how a decision for a particular intervention was proposed by the Multidisciplinary/Heart Team and recommended to the patient. Within this recommended process the case workload of both, the surgical and the cardiologic team should be explicit as there is little doubt that quality is the by-product of experience, and experience derives from exposure to a high workload. Large volume centres are referred large number of patients where a busy cardiologist should not hesitate to refer a patient to the surgeon, and vice versa. On the contrary, there are suspicions that less busy specialists or those motivated by economic compensation, may put their own institutional or personal interests first. Although this may happen anywhere, and all doctors are susceptible to such pressures, doctors working in low-volume centres and/or those without cardiac surgery may be even more susceptible to such external considerations.
The concept of creating a local Multidisciplinary/Heart Team, even in non-academic Institutions or those without cardiac surgeons on site, is fundamental to the concept of offering patients with stable MVD CAD the best alternatives of treatment, and at the same time, enriching the cultural and professional levels of physicians working in all institutions.

It is therefore an absolute need for the implementation of these Guidelines and for the performance of good medical care that patients also play their role in asking to be informed not only about the local facilities and alternative strategies, but also about the case workload and outcomes of the Institution and its individual interventionists and surgeons.

4. The challenge for the future: divulgence and implementation of the guidelines

Doctors are entrusted with patients’ most valuable asset, their lives and health. It is therefore axiomatic that surgeons and cardiologists should work together to ensure that patients are offered the best options for treatment in a transparent and robustly evidence based fashion. Clinical and interventional cardiologists along with surgeons should formalize local protocols underpinned by the guidelines and taking account of individual patient preferences and comorbidities. Off label and/or challenging and innovative interventions.

Implementation of the guidelines demands the local creation, and effective activation of the Multidisciplinary/Heart Team. Establishing dialogue, based on the guidelines, and with a philosophy of putting patients, and not the Heart Team. Establishing dialogue, based on the guidelines, and effective activation of the Multidisciplinary/Heart Team, even in non-academic Institutions or those without cardiac surgeons on site, is fundamental to the concept of offering patients with stable MVD CAD the best alternatives of treatment, and at the same time, enriching the cultural and professional levels of physicians working in all institutions.

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Keynote messages of the new ESC/EACTS guidelines on myocardial revascularisation:

- The ESC/EACTS guidelines have NOT been written on the interest of cardiologists.
- The ESC/EACTS guidelines have NOT been written on the interest of surgeons.
- The ESC/EACTS guidelines have been conceived and based on the best interests of the patient.

References


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