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EDITORIAL

MitraClip implantation in non-obstructive hypertrophic cardiomyopathy: the ever-expanding landscape of transcatheter edge-to-edge repair

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This editorial refers to 'Transcatheter mitral valve repair for the treatment of severe mitral regurgitation and exertional pre-syncope in a patient with non-obstructive hypertrophic cardiomyopathy: a case report', by K. Lucarelli *et al.* doi:10.1093/ehjcr/ytab446.

Reduction of severe mitral regurgitation (MR) can be achieved with transcatheter edge-to-edge repair (TEER) which is also suitable for patients at high or prohibitive surgical risk. The EVEREST-II trial demonstrated that percutaneous repair has similar outcomes when compared with surgery and, most recently, the COAPT trial showed the additional benefit of MitraClip in patients with heart failure and severe MR, on top of guideline-directed optimal medical therapy.[1,2]

Clearly, as evidence from large trials builds up, we are observing a pattern of TEER to expand its indication beyond surgically inoperable subjects and towards new niches of patients that would previously have no therapeutic options (*Figure 1*). The potential of TEER to improve haemodynamics and reduce clinical symptoms in the setting of hypertrophic cardiomyopathy (HCM) was reported in a small case series of six patients, all of them having obstruction of the left ventricular outflow tract (LVOT).[3] Of note, the favourable outcomes were still evident in the follow-up at 15 months.

The case report published by Lucarelli *et al.*[4] in this issue of the journal takes this concept one step further, as the use of MitraClip for HCM without LVOT obstruction is described. A 78-year-old lady with exercise-induced severe MR and no LVOT obstruction showed marked symptomatic improvement after correction of MR with MitraClip implantation. To the best of our knowledge, this is the first report of such use of TEER and marks an important point.

In fact, and despite a common pre-conception, a large proportion (30–40%) of patients with HCM have non-obstructive disease, are often symptomatic (30%) and have a similar prognosis to obstructive HCM but less therapeutic options, as septal reduction therapy and negative inotropes are of limited value in this context.[5–8] As HCM is often accompanied by multiple comorbidities, such as tachyarrythmias, diastolic dysfunction, dyssynchrony, and valvulopathy (mostly affecting the mitral valve) that eventually progress to manifest heart failure, addressing these early on in the evolution of the disease can translate in additive clinical benefits for the patient. Though not specifically addressed in the 2014 ESC clinical practice guidelines for HCM, TEER now has a class IIa recommendation for the treatment of chronic severe secondary MR in the recently released 2021 ESC guidelines for valvular heart disease.[9,10] It is tempting to speculate that the favourable outcomes witnessed in patients with 'disproportionate' MR (i.e. more severe secondary MR in relation to left ventricular dimensions) in the COAPT trial, might be reproducible in HCM patients with severe MR. Low left ventricular end-diastolic volumes in the setting of HCM could effectively lower the prevalence of patients with 'proportionate' secondary MR, a group that did not witness clinical benefit from MitraClip implantation in the MITRA-FR trial.[11]

In this *case report*, the authors explained thoroughly the diagnostic process that led them to identify the MR as the culprit and their pathophysiological reasoning. Clearly, the use of TEER in cases where symptoms are mainly attributed to the MR could be a game-changer, not precluding the option of heart transplantation in the future.[12]

This *case report* exemplifies how new transcatheter devices, and MitraClip in particular, can be employed after careful selection to

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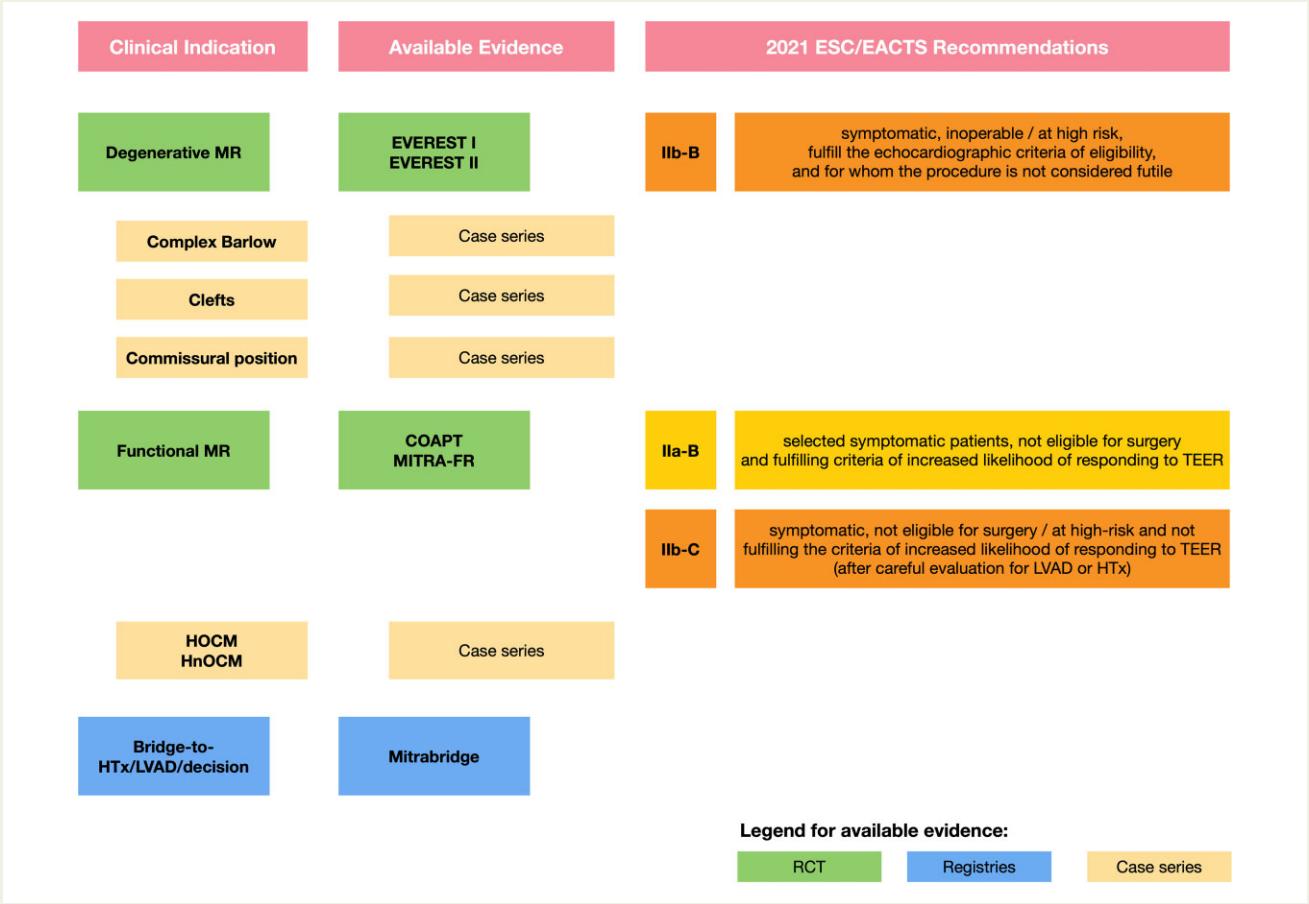

Figure 1 The landscape of transcatheter edge-to-edge repair: current indications, available evidence, and ESC recommendations. The class of recommendation and level of evidence for transcatheter edge-to-edge repair in various subsets of patients with mitral valve regurgitation are shown. The most recent 2021 ESC/EACTS guidelines for the management of valvular heart disease were considered. EACTS, European Association for CardioThoracic Surgery; ESC, European Society of Cardiology; H(n)OCM, Hypertrophic (non) obstructive cardiomyopathy; HTx, heart transplantation; LVAD, left ventricular assist device; MR, mitral regurgitation.

address an unmet clinical need. It also allows the reader to familiarize with a neglected condition (non-obstructive HCM) with few therapeutic options at present. Finally, and bearing in mind the limited generalizability of the findings of a case report, we hope it will stimulate larger registries to ascertain the usefulness and applicability of TEER in this context.

Lead author biography

Dr Montalto graduated with summa cum laude at San Raffaele Vita-Salute University and teaching hospital (Milan) and completed his residency in Cardiology at the IRCCS Policlinico San Matteo and University of Pavia. During these years, he grew an interest for clinical research, in particular in the field of interventional cardiology and acute cardiovascular care. As part of this, he won the ESC ACCA Research Prize 2019. In 2021 he completed a fellowship in interventional cardiology at the Oxford University Hospital NHS Trust. Currently, he is a junior interventional cardiologist at the De Gasperis CardioCenter at Niguarda Hospital in Milan (Italy).

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