EDITORIAL

Respect or Resect or Resect with Respect

Respetar o resecar o resecar con respeto

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The art of mitral valve repair has constantly evolved over the past years. There is general agreement that independently of the chosen technique for mitral repair, a perfect result includes a line of coaptation below the annulus, at least 2/3 anterior leaflet to 1/3 posterior leaflet ratio, sufficient coaptation length (6-8mm), and a geometric remodeling of the mitral annulus by means of annuloplasty without causing any inflow gradient. In order to achieve these goals prolapsing leaflet segments need to be shortened in height by either resection techniques or by placing artificial chordae. Both approaches can yield excellent short and long-term outcomes if performed in expert centers as is once more demonstrated by the elegant paper of Domenech et al in this issue of the Journal. (1)

Some of the potential disadvantages of the resection technique are: impaired leaflet mobility (in extensive resections the posterior leaflet is shortened, becomes largely immobile and the valve often has the appearance of a "monocusp" valve), limited depth of coaptation (due to removal of tissue), and a change in the annular geometry of the posterior annulus (especially with quadrangular resections without sliding plasty). Conversely, the "respect" technique according to Patrick Perrier, who pioneered this concept, serves the aim of "transforming the posterior leaflet into a smooth, regular, and vertical buttress parallel to the posterior wall of the left ventricle against which the anterior leaflet will come in apposition". (2) In an experimental set-up, Padala et al. have shown that a complete restoration of normal coaptation length is only possible with a chordal replacement technique. (3) Longer coaptation length has also been shown clinically both in short- and long-term observations. (4, 5) Due to unrestricted leaflet mobility and enough redundant tissue, there is less tendency to downsize the annuloplasty ring. Seeburger (4) as well as Lange (5) have shown that with a "respect" technique bigger ring sizes are implanted as compared to the "resect" technique. As a result, the remaining valve orifice is larger and the mean gradient across the repaired mitral valve may be lower. (4) While at rest the observed differences may not be clinically important, these may become relevant under exercise conditions. Systematic analyses are unfortunately lacking. Interestingly, chordal replacement may also offer better ventriculo-arterial coupling and left ventricular performance (6). In a meta-analysis of 8 studies comprising 1,922 patients at a mean follow up of 2.9±2.8 years, chordal replacement for P2 prolapse was associated with a significantly larger mitral valve orifice area, a lower trans-mitral gradient and reduced risk of reoperation, as compared to P2-resection. There was, however, no difference in operative mortality or complications. (7)

The series by Domenech et al. (1) has to be interpreted along these lines. They found no difference in terms of mortality, freedom from reoperation and freedom from significant mitral regurgitation between both techniques. The groups were, however, quite different with respect to the underlying pathology, with more "complex" disease in the chordal replacement group: 92% of patients had a posterior prolapse in the resect group, as compared to only 65% in the chordal replacement group. Thirty-four percent of the patients in the latter group had either anterior or bi-leaflet prolapse. One could therefore argue that a similar outcome with regard to the freedom from reoperation and the recurrence of severe mitral regurgitation, despite a more challenging pathology in the chordal replacement group, would in principle support the concept of "respect" rather than "resect".

An additional advantage of the chordal replacement technique is that corrective means are optional should the initial result of the repair show residual mitral insufficiency or prolapse. Conversely, after resection and without any redundant tissue left, the options of re-repairing the valve either immediately or later during follow-up are limited.

In the same issue of the Journal, Vaccarino et al. present their initial series with the use of premeasured PTFE-loops for chordal replacement in mitral valve repair. (8) This technique, which has simpli-

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fied the use of neochordae and avoids the problem of unintended shortening of artificial chords during knot-tying, can be easily adopted and yields excellent results. Interestingly, they have combined neochords for repair of the anterior and a resection technique for repair of the posterior leaflet, a technique that is particularly useful in cases of Barlow's disease with excessive redundant leaflet tissue. This "combined" approach illustrates once more that being undogmatic but flexible is the key for success in mitral valve repair.

Transapical beating heart techniques for chordal replacement are currently evaluated in clinical trials and may soon become an alternative to the current repair standard which is minimally invasive mitral valve repair. (9)

As for now, multiple surgical repair techniques for type II mitral valve pathologies are at our hands. Whatever technique we chose, we should keep in mind how the godfather of mitral valve repair, Alain Carpentier, valued a good repair: "*In the end, the valve has to smile at you*".

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