

ARTIFICIAL CHORDAE FOR ANTERIOR LEAFLET PROLAPSE: ARE ALL THE ROADS LEADING TO ROME?

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Use of artificial chordae (AC) to correct the prolapse of anterior leaflet (AL) due to chordal elongation or rupture, is a method that is widely recognized as the best solution for a complex pathology. Chordal transposition was first proposed¹, followed by edge-to-edge². Over time, the application of artificial chordae tendinae, proposed by Frater et al³, found progressively the favor of the scientific community. However, it was perceived initially as a difficult operation, as there was not an accepted technique to obtain the correct length of the new chordae. With time, many strategies were published and results were so good that recent papers reported that AC use for AL provided similar results than isolated PL prolapse^{4,5}.

Nasso et al⁶ proposed a new technique to adjust the correct length of the AC. The Authors have to be congratulated for the development of a simple strategy, easy to apply. However, a few considerations have

to be done. The papillary muscles are relaxed in diastole and the distance between their tips and the mitral annulus can be different, in these conditions, from the distance present in the working heart⁷. This different position can cause, as in strategy proposed by the Authors, the length of the AC to be shorter than needed. But the problem of the correct length of the artificial chordae is perhaps even more complicated. We described two techniques, based on opposite principles, that clinically worked both well. In the first one⁸ the length of the artificial chordae was based on the length of the prolapsing chordae minus the distance between the annular plane and the tip of the anterior leaflet positioned in the left atrium. In the second one⁹ the artificial chordae were 5 mm longer than the prolapsing chordae. The concepts of these techniques are totally opposite, but both were working well. Whereas the first method is more anatomic, the second one includes a factor that can be, in our opinion, important. Artificial chordae are not extensible, whereas native chordae are. Chordae are based on highly crimped collagen fibers, that, during systole, increase their period (the distance between the initial and final point of a wave) and, consequently, increase their length. This happens every single heartbeat. When the mitral area is covered only by the anterior leaflet, the coaptation length is long and 2-3 mm more or less are not influent. When both leaflets move, the length of the artificial chordae can make the difference between a good and a failed repair.

We are waiting for the long term echocardiographic results of the technique described by Nasso et al⁶, that, for its simplicity, can find huge diffusion. Many techniques are described in the literature¹⁰, all of them supported by good results, as that one described by the Authors. Perhaps it is necessary to be more openminded and to accept the concept that, any technique we use, can work and that mistakes in choosing the correct length can be forgiven if the coaptation length is long. It seems that all the roads lead to Rome!

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