

Key Words: mitral valve repair, mitral annular calcification, robotic cardiac surgery

Discussion



Dr Stephanie L. Mick (*New York, NY*).

I congratulate Didier and his whole team for this impressive work. It represents an important advance in our field of robotic cardiac surgery. You showed in these 64 MAC cases a 97% repair rate and 3% mortality rate. Not surprising at all when compared with the non-

MAC cases, the MAC cases involved more complex repairs, longer crossclamp and bypass times, and higher rates of conversion to replacement sternotomy and the need for repair revision. Will you comment about your preoperative patient selection and imaging. In the article, you talked about TEE preoperatively. Was this in every patient, was this from patient 1 to 500, or did your algorithm for selection evolve over time?



Dr Didier F. Loulmet (*New York, NY*).

When it comes to preoperative assessment, we found that the most useful test to detect MAC is the preoperative catheterization. TTE is unreliable. In degenerative patients, we always look at the catheterization carefully to detect MAC and to assess its extension to the

different segments, 1 segment, 2 segments, 3 segments, P1, P2, or P3. It also allows us to analyze the relationship with the circumflex artery, which is important. So in the presence of large MAC, yes, we would ask for preoperative TEE. Every patient would get a TEE no matter what in the operating room, but TEE has been good for assessing the extension of MAC to the subvalvular apparatus and to the PL. If MAC extends to the PL and the PL is not repairable, there is no point in trying. So those patients would be excluded from robotic repair.

In talking about selection and future prospects, based on our results, it appears that older patients are those who benefit the most from this, and this is where we find all our preoperative events. So I think that above the age of 80 years when patients have MAC plus potentially a

complex repair, those are maybe better served with a bio-prosthetic valve replacement. So that's going to be a change in our future indications.

Dr Mick. You have made a change in the field by your use of 2 surgeons for every case, a bedside surgeon and yourself at the console. Especially in cases like this, what are the benefits of having a surgeon at the bedside?

Dr Loulmet. I am privileged to work with an extraordinary team, especially my partner and friend, Dr Eugene Grossi, who has been invaluable help for this. We use the same team, pretty much the same team, since the beginning, the same operating room, the same days, and the same robot. So there is a real consistency. There is no improvisation.

But when it comes to the patient-side surgeons, this all goes very far from just assisting; it's more than an assisting job. The advantage of robotics is that you can put together 2 experienced surgeons, and robotic surgeons are going to be able to see exactly the anatomy of the MV; I mean, the surgeon at the console with 3-dimensional vision and the surgeon at the bedside with endoscopic vision. It allows you, and this is what I found most useful, sometimes to discuss cases and then you make decisions together, and there is no hesitation on which direction to take. I think this is an extraordinary thing.

The second important thing is that focusing on one thing makes you lose track of other things, especially, and you are a robotic surgeon yourself, you know that when you are at the console it's massive and you cannot just forget about the rest of the operating room. It is reassuring to know that at the bedside is someone who is controlling the entire operating room and can troubleshoot if anything happens, such as the camera could move and compromise the exposure and that is taken care of by the patient-side surgeon. There is no need to rescrub and lose time. The same thing with the robotic system, the arms of the system could conflict, and this is a major weakness of the da Vinci system, and the patient-side surgeon with experience can troubleshoot. Those things are complex.

So it's not the role for a nurse practitioner, a physician assistant, or a fellow. They will get frustrated because they don't have the knowledge. They may not even have the hospital privileges for doing these things. I think the 2-surgeon model is key.

Dr Mick. Especially in complex repairs like this, having 2 sets of hands, one robotic set of hands and a physical set of hands, is basically invaluable.