

Prof. Steven F. Bolling: why should we choose valve repair over replacement?

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In the China Heart Congress 2014, Annals of Translational Medicine (ATM) has the honor to interview Dr. Steven F. Bolling (Figure 1), a renowned professor of Cardiac Surgery whose expertise in mitral valve repair continues to result in a large volume of referrals for mitral valve reconstruction. Dr. Steven F. Bolling's innovative approach to mitral valve repair in patients with end-stage left ventricular failure and outstanding ability to repair even the most challenging mitral valve abnormalities have received wide spread international acclaim. He continues to run a National Institutes of Health (NIH)-funded basic science laboratory.



Figure 1 Professor Steven F. Bolling.

ATM: Thank you for joining us in the interview. As you have introduced the valve repair compared with replacement in your speech, what's the take home message from it?

Prof. Bolling: I think the take-home message for mitral valve repair is that we should always try to repair valve in all diseases. For example, in the United States, degenerative disease is really 100% repairable. However, for the rheumatic disease, which is more common in China than in the United States, I think the rate of repair should be somewhere near the fifties or sixties percent. Mitral valve repair is far more difficult in rheumatic disease, but we should try. A mitral valve repair is always better than prosthesis.

We should have a way of thinking about the rheumatic valve and be able to evaluate it. In the United States, the repair rate is low because the average surgeon doesn't do that many mitral valves repairs, so also does very few rheumatic valve repairs. However in China, the experience is rich in rheumatic valves. I think there has been reluctance for some Chinese surgeons to repair for social or economic reasons and so on. But I think Chinese surgeons have good data showing that the repair is a good strategy for many patients.

ATM: What do you think is the difference between treatment strategies for degenerate and functional

regurgitation retrospectively?

Prof. Bolling: It's very interesting that now there is a thought difference between primary mitral regurgitation and secondary mitral regurgitation. The new American College of Cardiology (ACC) and American Heart Association (AHA) guidelines that came out in 2014 have recognized that they are very different diseases. Primary mitral regurgitation is a disease of the valve itself, which includes degenerative disease, endocarditis and rheumatic disease and affects the valve. Secondary mitral regurgitation is really functional mitral regurgitation which is a ventricular disease that has nothing to do with mitral valve itself. We were very confused because they both have the word "mitral regurgitation", but one is from valve and one is from the ventricle. It was the first time that the guidelines have recognised this.

ATM: Regarding the techniques for mitral valve repair, how would you choose the annuloplasty ring and artificial chord?

Prof. Bolling: I think regarding the choice of annuloplasty

ring, the question is whether it's for the primary mitral regurgitation or the secondary. For the primary mitral regurgitation, almost any ring will do; while for secondary mitral regurgitation, I think most groups have come to the conclusion that data supports a very small, very rigid and very complete ring for secondary mitral regurgitation. However, I would like to say that the most important thing about repairing mitral regurgitation is not the ring, but the surgeon.

In terms of the anterior leaflet prolapse, we use Gore-tex chords, almost completely for this. So I think the techniques of flipping a chord over have been mostly abandoned and we use Gore-tex very liberally.

ATM: What is the role of valve repair in the treatment of calcified valve?

Prof. Bolling: Regarding the question of calcification of valve, particularly for rheumatic patients, calcium is probably the one thing that is very difficult thing to deal with. Obviously by the time the patient sometimes comes to us, the calcified valve is already an advanced process. So we would much rather see the patients earlier before they're heavily calcified and they will have a much better long lasting result. When they are heavily calcified, then even we try to do a very complex repair, they tend to reoccur early and get bad results. So I think calcification is probably one thing that blocks repair and leads the way to replacement.

ATM: What about the reoperation rate of valve repair?

Prof. Bolling: I think in rheumatic repair, the incidence of reoperation may be close very high for all the patients who live long enough after the operation. Whereas in degenerate disease, we will quote our patients at the rate of 1% or less reoperation per year and honestly the recurrence rate for the rheumatic patients is around 2% to 3% per year. I think the indications for reoperation are the same as the first time. So significant mitral regurgitation or mitral stenosis and pulmonary hypertension. But I think we need to be very honest with our patients that they will have a

much higher reoperative rate. However, if we look at the patients' outcome with mitral repair even including their reoperation rate, their survival and the quality of their life is much better than that with the replacement.

ATM: Where do you see the future development of valve repair is leading? How would you comment on its technique in China?

Prof. Bolling: I think repair is always better for the mitral valve than replacement. We need to help surgeons get more comfortable with repairing at all types of diseases. While the degenerative disease maybe 99% repairable, it's not the case in the United States. Rheumatic disease in the United States is repaired at 9%, and it should be much higher. It is "too" easy for surgeons just to take the valve replacement strategy, although repair serves best the patients' interests.

To the Chinese surgeons, they have much more experience than we do concerning rheumatic repair. We can learn from Chinese surgeons about how to be aggressive in the repair of rheumatic mitral valves.

ATM: What's your impression of the 2014 Chinese Heart Congress?

Prof. Bolling: I think there was a lot of excitement about the new ACC/AHA 2014 Guidelines presented at the conference. But the most controversial and the most interesting thing to me was that there were so many questions about rheumatic mitral repair. I think rheumatic repair remains as one of the most controversial in mitral valve surgery, not only in the US but also in China.

ATM: Thank you very much for sharing your insights!

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