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eComment. Flexible age limits for biological aortic prosthesis implantation

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We found the article published recently in your esteemed journal by Niclauss and associates very interesting and of great practical importance to the everyday practice of a cardiac surgeon [1]. It has long been well known that certain groups of the population, such as sportsmen and women during their reproductive age, inhabitants of socially and medically remote areas and patients with mental or visual problems may be good candidates for an aortic bioprosthesis, despite the fact that they were significantly younger than 65 years. The aforementioned article provides us with more information on the subject. Improvements in technology have made bioprostheses better and longer lasting. This fact, in combination with the low rate of reoperations and the low incidence in neurological events reported in the study, provides cardiac surgeons and patients with a greater freedom in selecting aortic bioprostheses. We must emphasize the fact that this is solely the case for aortic valve replacements, as we believe that biological prostheses in the mitral position in patients younger than 65 years will soon bring them to their cardiac surgeon for a redo procedure.

Conflict of interest: none declared.

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eComment. The majority of younger patients in the USA chose biological aortic valves

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We read with great interest the study by Niclauss *et al* [1]. The authors report their experience with biological valves in the aortic position in 84 patients <65 years of age. Their results show a reoperation rate of 6%, almost exclusively in patients <56 years old. In the same time period, 140 patients <65 years of age received a mechanical prosthesis. During a 10-year period, they found that the numbers of mechanical valves steadily declined, whereas the numbers of biological valves steadily increased, indicating that patients are more accepting of the idea of reoperation and more inclined to avoid life-long anticoagulation.

The recent revisions of the ESC/EACTS guidelines published last year have expanded the indication for bioprosthetic aortic valves, proposing that both types of valves are suitable for patients between the ages 60 and 65 years. The same results reported by Niclauss *et al.* are noted in US heart centres, at an even more convincing level. At our hospital, there has been a dramatic increase in the number of the biological aortic valves at the expense of the mechanical ones. In the recent years, almost 93% of the overall aortic valve replacements have been done with biological prostheses. The percentage remains high even in patients <65 years old, approaching 80%. It is characteristic that the vast majority of younger patients who are reoperated due to endocarditis or bioprosthetic valve degeneration choose a biological prosthesis again.

The major reason behind this trend is an increased awareness of the complications of life-long anticoagulation, as well as the dramatic improvement of reoperation outcomes [3]. Today, second and even third-time reoperations are a daily routine, and patients survive through complex surgeries. Furthermore, modern technology has improved the longevity of the bioprostheses, making them less prone to calcific degeneration. Minimally invasive techniques and transcatheter options offer interventions with far less morbidity and mortality, making reoperations attractive to our patients. It is of no surprise that they chose and will keep choosing biological aortic valves over mechanical ones, and it is our responsibility to make sure that they receive the best possible operation with the best outcome and the least complications.

Conflict of interest: none declared.

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eComment. A novel lower age threshold for use of biological valves

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The publication by Niclauss *et al.* [1] highlights a subject with conflicting results in the literature: the determination of a lower age limit for bioprosthetic valves in the aortic position. They concluded that biological aortic valve replacement could be an alternative treatment option for patients between 56 and 60 years old at the time of surgery. Nevertheless, biological aortic valves in patients younger than 60 years old is still a matter of ongoing debates, and the debate has gained renewed impetus with the advent of transcatheter aortic valve implantation and the feasibility of valve-in-valve procedures [2]. Moreover, valve-related complications in this patient population have not been clearly investigated. It is noteworthy that in two recently published studies, mechanical valves among younger patients were shown to have more superior clinical outcomes compared to bioprostheses.

Badhwar *et al.* [3], who conducted a prospective study on 172 propensity-matched patients, demonstrated a significantly lower mortality rate in patients with mechanical prostheses after 4 years of follow-up. Of note, patients with bileaflet mechanical prostheses enrolled in the above-mentioned study were monitored at