

Although open surgical replacement of the transverse aortic arch carries greater operative risk for octogenarians than for younger patients, without repair these patients would probably not survive beyond a few years' time, and perhaps much less. Ikeno and colleagues<sup>4</sup> are to be commended for their excellent results in a set of elderly patients with complex aortic disease; however, further study is critical to evaluating the value of these complex aortic repairs in elderly patients. Most octogenarians accept that repair risks death, but they fear survival with a catastrophic neurologic event.

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## Commentary: Still not too old for surgery!

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The pace of population aging is faster than ever, and it is expected to accelerate even more for a while. Led by high-income countries like Japan, the World Health Organization projects that the world's population aged 80 years or older will be 434 million worldwide by 2050, up from 125 million in 2015.<sup>1</sup> South Korea is not an exception; it is also rapidly catching up this trend and is projected to be the country of longest life expectancy by 2030.<sup>2</sup> We, as citizens of the nearest neighboring country to Japan, thus have very special interests on the article by Ikeno and colleagues<sup>3</sup> in the current issue of the *Journal*. Through this article, Ikeno and colleagues<sup>3</sup> sought to give insights into a feasibility issue of high-risk extensive arch surgeries in very elderly patients in a timely manner. In this single-center observational study from Japan, they evaluated 139 patients aged 80 years or older who underwent total arch replacement. Despite a higher risk of operative mortality (8.6% vs 4.0%;  $P = .01$ ) in this aged group relative to younger individuals

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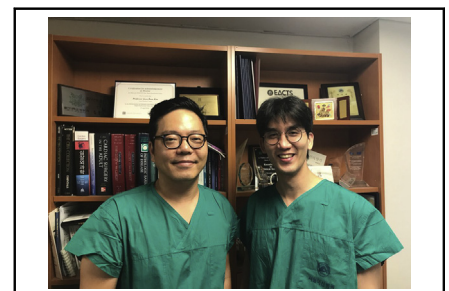
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Joon Bum Kim, MD, PhD (left), and Sung Jun Park, MD (right)

### CENTRAL MESSAGE

On the horizon of “super-aged society,” discussions regarding cardiovascular research are moving forward, reproducing benefits of such complex procedures as total arch repair in very elderly patients.

( $n = 601$ ), it will probably be regarded as an excellent result for this extensive procedure, and interestingly, the rate of permanent neurologic deficit was as low as that of the younger group (4.3% vs 3.7%;  $P = .72$ ). When compared with an age- and sex-matched Japanese general population, survival outcomes of these elderly patients ( $\geq 80$  years) undergoing total arch repair were significantly poorer; however, the landmark analysis revealed that the high mortality risk was confined within 1 postoperative year. Indeed, the survival outcomes after 1 year of surgery were comparable to matched general population.

It was not long ago when our cardiovascular surgical community started discussing the feasibility issue of performing extensive aortic surgery in very elderly patients ( $\geq 80$  years), and we believe that there still are many who regard these treatments as futile. The feasibility of certain interventions, however, should always be tested for its projected benefits against its potential risks, and unconditional exclusion of certain patients group solely on the basis of age should therefore not be a reasonable approach. Although a direct evaluation of the risk-benefit ratio of arch replacement in these elderly patients was not available in the study of Ikeno and colleagues<sup>3</sup> because of the lack of a control group (patients who did not undergo arch replacement but had the same aortic pathology), we could assume from the results of landmark analysis that such surgical managements were effective in the prevention of lethal adverse aortic events.<sup>4</sup> Meanwhile, the operative risks (death plus permanent neurologic event) seemed quite low in these patients, given that 26.6% of patients presented with acute aortic dissection.

The study by Ikeno and colleagues<sup>3</sup> also has several limitations inherent in a retrospective observational study from a single center. It is apparent that the surgeries were performed by world-renowned experts in a large-volume tertiary center, and one may therefore argue that such excellent surgical results may not be generalizable in a real-world setting. At least, however, we can postulate

that complex arch diseases in very elderly patients can be excellently handled in centers of excellence,<sup>3,5,6</sup> and the generalization of such practices should be our next goal in our community.

In this era of population aging, in which a global “super-aged society” is on the horizon, it is not doubtful that the study of Ikeno and colleagues<sup>3</sup> will contribute to the accumulation of valuable information on surgical outcomes of extensive arch repairs in octogenarians and nonagenarians. We look forward to seeing generalization of these encouraging results from many centers in the world.

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