What goes around comes around...possibly

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A cardiac surgeon practicing in any developed country today has the luxury of being able to select an appropriately sized biologic xenograft or mechanical valve prosthesis off the shelf for implantation into his or her patient. This was not always the case, and it still may not be the case in developing countries where resources are limited. In the days before the availability of xenograft valves, surgeons were faced with either fashioning their own valves or, if they were fortunate, using human homografts for valve replacement surgery.

In the early days of cardiac surgery in the 1960s, surgeons described various methods to repair or replace the aortic valve with fascia lata or autologous pericardium. These surgeons were our pioneers, with such well-known names as Senning, Ross, Ionescu, Bjork, Hultquist, Duran, and others, all giants in their day.¹⁻⁵ In the earlier cases, autologous pericardium was used for partial repair of aortic valves. Then, in 1969 Edwards⁶ used it to replace the entire aortic valve in 2 patients. Subsequent success of further efforts was limited, however, because of scarring and retraction of the pericardial tissue or injury as a result of being placed inside a supporting stent. In 1986, Love and associates⁷ introduced the concept of tanning autologous pericardium with glutaraldehyde. This technique, which was also extensively studied by Carpentier and co-workers,⁸ appeared to eliminate the scarring. By this time, however, the development of xenograft valves, along with their ready availability and ease of use, dampened further interest in pursuing autologous pericardial valves.

Dr Shigeyuki Ozaki from Tokyo in Japan is one of a very few exceptions. In an article in this issue of the *Journal*, Ozaki and colleagues⁹ report on the midterm results of 850 patients who underwent aortic valve replacement with glutaraldehyde-treated autologous pericardial valves during an 8-year period starting in 2007. This is a follow-up of the same group's previous study of 404 valve replacements and represents the largest series in the world.¹⁰ Ozaki's technique has evolved from the original publication and is well illustrated in the video embedded in the article in this issue.⁹

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Central Message

Replacement of the aortic valve with autologous pericardium, an old procedure, deserves a second look, according to this excellent series of cases presented by Ozaki and colleagues.

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The clinical outcomes of these patients are excellent to date and are very promising. Of course, most surgeons would agree that the true test will have to wait until at least 10 years of follow-up, which is more than twice the current follow-up period in this study. Equally clear, as can be seen from the crossclamp times, is the fact that this is neither an easy operation nor a readily reproducible operation.

So how should the cardiac surgery community respond to this excellent series? Is there enough evidence to suggest that we should all start doing this operation? The answer, in our opinion, is an unequivocal no! It would be very reasonable, however, for a high-volume valve center to dedicate 1 or 2 surgeons to focus on learning and further developing the Ozaki procedure. A junior surgeon starting out his or her career today might do well to visit Ozaki and learn his technique. That surgeon could then cautiously introduce the Ozaki procedure in selected cases, perhaps focusing on the younger patients who refuse the option of mechanical valves or those who have little enthusiasm for converting their single-valve problem into a potential double-valve problem down the road, as occurs with the Ross procedure. One clear advantage of the Ozaki procedure relative to the Ross procedure or a homograft valve replacement is that the redo operation is likely to be fairly straightforward because of the presence of far less tissue reaction. If these excellent outcomes are sustainable and

equal or surpass the long-term outcomes of xenograft valves, the Ozaki procedure will be a game changer. We look forward to subsequent follow-up studies from Ozaki and his team.

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