Autologous is the best

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Keywords: Ross operation • Guidelines • Aortic valve replacement • Autograft procedure

In this issue, Andreas et al. [1] and da Costa et al. [2] present their centre’s experience with the Ross procedure. In both publications and up to 18 years postoperatively, patient survival after the Ross operation was comparable with that of the general population and was superior compared with that after mechanical valve replacement in a real-world setting [1]. This normal survival is unquestionably the best achievable surgical result and it is supported by other randomized prospective trials as well, altogether revealing a survival benefit for the Ross operation versus allografts or mechanical valves in the real-world setting [3, 4]. This is supported by considerable literature as well as by the data of the German-Dutch Ross registry with now 2180 patients and nearly 20 years of follow-up [5]. In addition to a normal survival, a perfect Ross offers the patient well into the second postoperative decade a life without any anticoagulation and all its side-effects, a life without lifestyle restriction, with the lowest risk of extracardiac sequelae like thromboembolism (macro and micro) and bleeding, without noise disturbance, with near physiological haemodynamics at rest and exercise as well as with growth potential. This is likely due to the fact that the Ross operation realizes the theoretical advantage of an autologous, physiological, living aortic valve substitute.

Despite this growing evidence for favourable results, the application of the Ross operation seems to decline. The skepticism over the Ross operation usually focuses on three main arguments: the potentially increased operative mortality of the Ross procedure, the risk of reoperations as well as the complexity of the procedure itself and the lack of reproducibility.

The operative mortality of the Ross operation published by Andreas et al. [1] and da Costa et al. [2] was comparable with that of conventional aortic valve replacement being 2.1% in the German Aortic Valve Registry [6]. Also in other centres the hospital mortality of the Ross operation is around 1% [7]. In our series of 629 subcoronary patients, we lost 2 patients early postoperatively [8], none in the last 400 cases. Thus, the argument of increased hospital mortality after the Ross procedure is not appropriate in general.

The second main argument against the Ross operation is the risk of reoperation on two operated valves. This overall risk is low at about 1% per patient-year [5] in experienced centres at least up to 18 years postoperatively, and carries a low hospital mortality [5] in elective patients as also supported by Andreas et al. [1] and da Costa et al. [2]. Several factors associated with increased risk of reoperation have been identified and this knowledge may further minimize reoperation rates. Nevertheless, there is a lifelong risk of reoperation of varying degree [5], which needs to be determined for the next decades and the patients must be informed on.

Probably, the most critical argument is the complexity of the operation. Indeed, this operation is challenging and requires certain surgical experience, an attitude to accept the challenge as well as an effort to adhere to delicate surgical details. In this respect, da Costa et al. [2] nicely demonstrated that annulus dilatation and its reduction needs special surgical attention with the root reinforcement technique to prevent later dilatation, something that does not occur in the original subcoronary [8] or inclusion technique [9]. The argument that the Ross operation is not reproducible is contradicted by the excellent results of various experienced centres in the literature and the Ross registry.

Despite all the above arguments, counter-arguments and the vast amounts of favourable data that surfaced in the last 10 years, the latest guidelines downgraded this heart valve operation, something that is difficult to understand and might, among other things, leave a strange impression of resignation of the cardiothoracic surgical specialty on the problem of the young patient with aortic valve disease. Is that a reasonable policy?

At this point of time, I cannot objectively agree. First, there is now a considerable amount of evidence (randomized prospective trials, single reports from specialized centres, German–Dutch Ross registry) that the autologous principle, realized as a perfect Ross operation, provides the best we can achieve, which is a normal survival up to 15–20 years in young patients without lifestyle restriction and obviously offering quality life years compared with alternatives.

Secondly, in the current era of individualized medicine, not every therapy is best suitable for every patient. Some young patients with aortic valve disease will appreciate more the benefits the Ross procedure has to offer. Other may decide that the durability of a mechanical valve might be more appealing to them. By narrowing the spectrum of alternatives we have to offer to these patients, we are actively limiting the patients’ choice.

In addition, there is room for the Ross operation to be further optimized, standardized and improved by surgical refinements, advanced tissue engineered homografts [2], interventional techniques and postoperative blood pressure control. Nevertheless, it seems favourable to perform the Ross operation in experienced centres, by trained, experienced, adequately mentored colleagues in patients thoroughly informed about the Ross operation and alternatives in general and institutional. Maybe our modern, workload
reducing, comfort-driven e-society needs new education strategies and paradigms for special, demanding surgical techniques [10]. After all, the surgical challenge to perform a perfect Ross operation is worth the effort for both the patient and the surgeon. This, however, does not relieve us from the responsibility of performing a careful clinical and echocardiographic follow-up of all our patients in order to adjust our therapy if necessary. And in the end: ‘autologous is the best’ (Donald Ross, 2001)—if we really want to.

REFERENCES


