Is the Ross procedure really a Trojan horse?

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We have read the article by Klieverik regarding ‘The Ross operation: a Trojan horse’ with great interest. By the choice of this title, the authors suggest that the use of the autologous pulmonary valve can be utterly devastating. It is understood that the Ross procedure is controversial by itself and the title misleading in consideration of the fact that several authors yielded excellent long-term results.

Modern speculations have described that a horse, the Trojan Horse, was used as a battering ram. The description of the use of a horse was transformed into a myth by later oral historians. It has been suggested that the Trojan Horse actually represents an earthquake that occurred between the wars that could have weakened Troy’s walls. However, the deity, Poseidon, had a three-fold function as god of the sea, of horses, and earthquakes.

Results from several authors suggest that the Ross procedure even is an effective and safe tool to treat patients suffering from rheumatic fever and not as worse as suggested. Kumar by performing the Ross procedure in rheumatic patients (n = 81) showed freedom from autograft dysfunction at 78.4 ± 5.2% after a median follow-up of 109 months. Dividing this entire group by age, young rheumatics (<30 years) showed 65.0 ± 7.8% freedom of re-operation compared with 98.5 ± 1.0% for older rheumatics (P = 0.0002). Recurrent rheumatic fever, however, developed in five patients, partially due to inappropriate post-operative application of penicillin. Da Costa et al.5 published results of 202 patients, including 61% young rheumatics. In this trial, freedom from autograft dysfunction was remarkable 96.4% after 10 years. In both studies, the autograft was implanted using the root replacement technique.

It should be recognized, however, that the originally described technique by Ross was the subcoronary implantation, which was abandoned in favour of the root replacement technique. Sievers reported excellent long-term results with the subcoronary technique. These data are in consistence with our own experience of more than 460 Ross procedures performed since 1994.

Finally, it should be mentioned that an alternative for this patient population would be conventional mechanical or bioprosthetic valve replacement. Ruel in a recent study on 314 patients showed an actuarial freedom from re-operation after 20 years of only 73.0 ± 4.9% for mechanical valves and stented bioprostheses of 11.4 ± 3.5%. On the other hand, survival rates at 25 years follow-up was better for patients with tissue valves (52.3 ± 4.4 vs. 41.2 ± 5.2%).
Thus, the Ross procedure is certainly not free of re-operation; however, considering the outcome and re-operation in traditional prostheses, the Ross procedure still has the lowest re-operation rates even in this unique patient population shown by the authors.

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