

## DESIGN CLOSE TO MY HEART

Taleisin Golesworthy  
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Taleisin Golesworthy, is an engineer. He revealed that he was also a sufferer of Marfan's Syndrome. This is a condition involving connective tissue, resulting in problems in limbs, eyes and the heart. His problem was that the tissue close to his heart at the base of the aorta became gradually more swollen, with the fatal risk of it bursting.

Some years ago a technique had been developed by cardiovascular surgeons to remove the diseased portion of the aorta and replace it with a synthetic graft. The disadvantages of this procedure were that it involved very delicate dissection of the diseased tissue, prior to replacement by the graft. To perform this, the heart's action had to be stopped, and a heart-lung by-pass had to be used and the body had to be radically cooled. This procedure was time consuming and very risky, costly and post operatively required the patient to take anticoagulants for life.

In early adult life, screening by MRI methods showed an enlargement with time of the base of the ascending aorta. Mr Golesworthy discussed his problems with a number of cardio-vascular surgeons and together they came up with a new solution, for a corset to surround the diseased area, which would stop enlargement and the probable disastrous burst of the aortic vessel. Using his engineering CAD skills, the speaker was able to model in polymer his aorta from repeated MRI measurements and then to design a textile corset to fit carefully around the aortic vessel. He successfully underwent the operation some 31 months ago and is now fit and well.

The new operation took just 2 hours against 8 hours for the earlier procedure. There was no stopping of the heart or cooling of the body and he did not need any post-operative medication and was out of hospital in under a week. The cost was about £2000 against £8-10,000 for the earlier procedure. So far, 10 operations have been carried out successfully at the Brompton Hospital, London.

Marfan's Syndrome affects 1 in 5,000 people and there are some 12,000 patients in the UK.

A truly magnificent step forward due to cooperation between the disciplines of engineering and cardio-vascular surgery

*Given on the 29<sup>th</sup> November 2006 at the Royal Agricultural College, Cirencester*