

## IMAGES IN CARDIOLOGY.....

### An unusual tattoo

This picture shows the chest of a 51 year old man recently admitted to a district general hospital where a diagnosis of myocardial infarction was made. The patient received thrombolysis in the form of streptokinase and subsequently underwent angioplasty and stenting of his right coronary artery. He was informed that the use of streptokinase should not be repeated. Concerned that he would forget to convey this information with any subsequent event he elected to have this tattoo inscribed on his chest. An allergy to some metals had prevented him from opting for a medical alert type of warning bracelet or necklace. This case illustrates that some patients will go to extreme lengths to follow the advice given by their doctors.

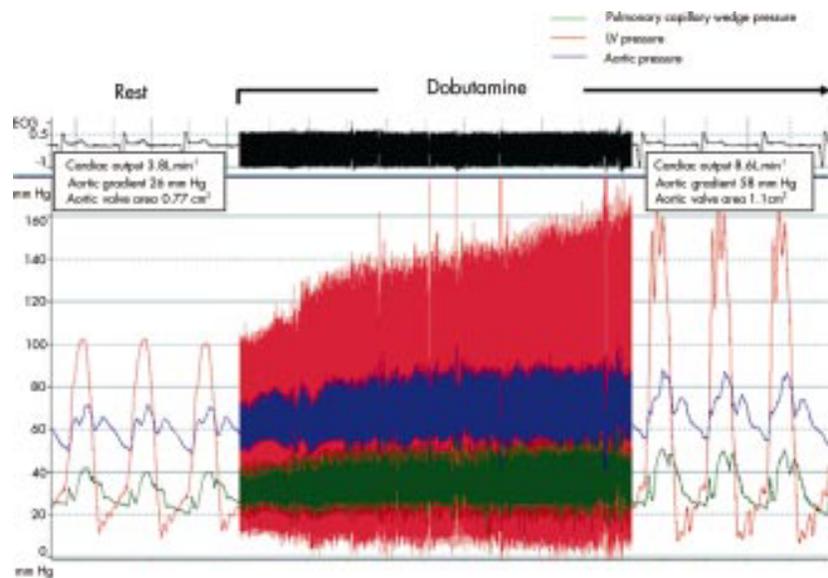
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### Low output, low gradient aortic stenosis

We recently investigated a 47 year old man with increasing dyspnoea of effort (New York Heart Association functional class IV) who had undergone homograft aortic valve replacement seven years previously. At cardiac catheterisation, the epicardial coronary arteries were angiographically normal. The left ventricle was dilated (end diastolic volume index 134 ml/m<sup>2</sup>) and the ejection fraction severely reduced (28%). At baseline, the mean transvalvar aortic gradient at rest was 26 mm Hg and the calculated aortic valve area was 0.77 cm<sup>2</sup>, with a thermoludion cardiac output of 3.8 l/min. With dobutamine challenge (15 µg/kg/min) the gradient increased to 58 mm Hg, the cardiac output increased to 8.6 l/min, and the aortic valve area to 1.1 cm<sup>2</sup> (see fig). Despite this significant increase in valve area, this patient was found at surgery to have severe aortic stenosis.

Traditionally, an increase in aortic valve area on dobutamine challenge is thought to indicate aortic "pseudostenosis", an artefactually low value at rest being caused by poor cardiac output and inadequate valve cusp opening. The current case illustrates the importance of interpreting changes in valve area, valve gradient, and cardiac output *together*. Patients with true severe aortic stenosis



may comprise a spectrum, from those with good contractile reserve who are able to increase cardiac output (and thus, to a certain extent, aortic valve area) with dobutamine, to those with diminished contractile reserve unable to respond in this way. Pathophysiologically, the left ventricular impairment in the former group may be due more to

afterload mismatch and thus respond more favourably to aortic valve replacement than the latter group, who are likely to have irreversible impairment of myocardial contractility.

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