To the Editors:

Percutaneous transluminal septal myocardial ablation in hypertrophic obstructive cardiomyopathy

Until the early 1990s, surgical myomectomy was the standard treatment for patients with hypertrophic obstructive cardiomyopathy (HOCM) who were refractory to pharmacotherapy. Recently with the introduction of percutaneous transluminal septal myocardial ablation (PTMSA) by alcohol-induced septal branch occlusion, the therapeutic options have improved.

The circumscribed therapeutic myocardial infarction following PTMSA results in widening of the left ventricular outflow tract (LVOT) with concomitant gradient reduction (1). A significant reduction of left ventricular pressure gradients at the time of the procedure is desirable but not mandatory for long term success.

Follow up studies show impressive clinical improvement, as well as remodelling (2). In a 2-year follow up, the gradient remained reduced, and the ventricular wall thickness decreased by 30%. Inclusion criteria for PTMSA are an intraventricular gradient of more than 30 mmHg at rest or 60 mm Hg with provocation, and a septal measurement >18 mm thickness (3).

Alcohol septal ablation for HOCM induces significant changes in the resting ECG in most patients, despite the occlusion of a relatively small artery. The changes include Q waves, bundle branch block, transient anterior ST segment elevation, atrioventricular block, and transient prolongation of the QT interval (4).

A 30-year old man who had been previously diagnosed as HOCM was treated with high doses of atenolol and verapamil, but severe chest discomfort, dyspnoea, and shortness of breath progressed despite medication. He had a resting gradient of 110 mmHg across the VOT and a septal thickness of 23 mm in diastole.

Hence we performed alcohol septal ablation. We explained the potential risks involved and got written consent. Routine coronary angiography showed a large first septal vessel. Under fluoroscopic control, the first major septal branch of the anterior descending coronary artery was crossed with 0.014 inch guide wire after cannulating the left coronary artery. The septal branch was occluded with a 2.5 mm diameter Occam percutaneous transluminal coronary angioplasty over the wire balloon catheter. Transient occlusion of the first septal vessel showed significant reduction of LVOT gradient. After inflation of the balloon, 2.0 ml of absolute alcohol was slowly injected into the septal artery to induce a small septal vessel infarction after removing the 0.014 wire (Figure 1). The patient complained of severe chest pain during alcohol injection which was treated with intravenous morphine. A temporary pacemaker wire was placed in the right ventricle prophylactically before the procedure.

The left ventricular outflow pressure gradient decreased from 122 mmHg to 60 mmHg immediately after

the procedure (Figure 2). The patient was kept under observation in the coronary care unit for 2 days. His hospital stay was uneventful and he was discharged on the fifth day.

Figure 1. Angiographic appearances before and after septal ablation.

He had a dramatic symptomatic improvement at two weeks. Shortness of breath improved from New York Heart Association class III-IV to II, and the LVOT gradient was maintained at 47 mmHg (at rest).

PTMSA is a new and less invasive treatment with a higher success and lower complication rate than surgical myectomy (5,6). Surgical myomectomy and alcohol septal ablation are equally effective at reducing obstruction and subjective exercise limitation in appropriately selected patients (6). Because the morbidity is relatively small, intervention with PTMSA is becoming more popular than surgical myomectomy. Since the immediate decrease in LVOT gradient is followed by a further decline at follow up, with a progressive reduction in the intraventricular septum thickness, the patients' symptoms improve over time.

Figure 2. Pressure recording before (above) and after the procedure.

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V Senaratne, Resident Cardiologist, S Sathanandan, Senior Registrar and R A I Ekanayake, Cardiologist, Institute of Cardiology, National Hospital, Colombo. (Correspondence: VS, telephone + 94 1 0777 353146. Competing interests: None declared. Received 14 August 2003, accepted 18 August 2003).