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This letter was shown to the authors, who reply as follows:

SIR,—We thank Dr Rao and Dr Sideris for updating us on the results of the most recent modification of their buttoned devices. We appreciate that things may have changed over the past year or so: when we submitted our papers[1-3] there was little up to date information on the buttoned device and we did not feel compelled to cite limited peer review data, abstracts, or unpublished observations. None the less, these earlier data, representing their learning curve, are perhaps more directly relevant to our data.

Patent arterial duct—The initial report of the adjustable buttoned device[4] concerned 14 patients and was published only one month before we submitted our study. We accept we should have referenced this paper, although only one of the patients was less than 2 years old (a criterion for entering our study) and all of the devices were implanted via a 7F guiding catheter. Two of their patients had a residual shunt on follow up colour Doppler (14%), a rate similar to our own residual patency rate. Furthermore we made the point that the modified Rashkind device can be delivered through a 6F catheter, which may be useful in these very small children. We, like Rao and Sideris, look forward to further clinical trials with the buttoned device, but for the time being we believe that the more familiar Rashkind umbrella has proved to be a more reasonable alternative in this select group of patients.

Interatrial communications—Some peer reviewed data were not available to us when we submitted our paper in October 1993. The multi-Institutional US trial,[5] reports the intention to treat data in 57 patients. In seven patients the procedure was abandoned, urgent surgical retrieval was necessary in four because the position of the device was unstable, and there was late unbuttoning in another. Thus the overall failure rate was approximately 20%. The experience with a later modification of the device seems to be better and we note the unpublished observation of a 1% failure rate with the fourth generation device. However, most of the interatrial communications reported in our paper were in patients who underwent fenestrated total cavopulmonary connections, whereas Rao and Sideris report their experience with only naturally occurring atrial shunts. We are not sure whether the design of the buttoned device is ideal for closure of fenestrations, particularly when an intra-atrial tube or baffle has been used. The modified Rashkind device seems to be ideal under these circumstances, and concern about stress fractures of the arms is less pressing in view of the static nature of the material.

Ventricular septal defects—We are informed that eight patients have undergone "successful" occlusion of a ventricular septal defect with the buttoned device. Quite clearly we could not have been expected to cite these unpublished data. We await a full report of their intention to treat and follow up data in this group of patients.

The technique of delivery of the Rashkind PDA occluder is well known to most units undertaking interventional catheterisation. Our papers describe modifications that broaden the indications for the use of a device, which is readily available to many. It is clearly not a panacea, and is not proposed as such. The original indications for the buttoned device appear to be widening, and it may prove to be an acceptable all-purpose device. Nonetheless, all interventional cardiologists need to be aware of the implications (both medical and non-medical) of the approaches that they adopt. Product liability remains a concern for both the modified Rashkind and the buttoned device, and may ultimately prove to be a decisive factor in the development of all interventional devices.[6] Never before has careful and accurate reporting of results been more necessary. In this respect we have no reservations regarding our three papers.

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Nitrates and severe aortic stenosis

SIR,—There is concern about using nitrates in patients with severe aortic stenosis. Standard textbooks on cardiovascular medicine[1] and prescribing recommendations[2] suggest that nitrates and other vasodilators are contraindicated in patients with severe aortic stenosis, though there is little published evidence for this. We describe a patient with severe aortic stenosis, left ventricular impairment, and severe cardiac failure in whom nitrate administration improved cardiac filling pressures without worsening the transaortic valve gradient.

A 74 year old man was admitted with a 3 month history of progressive dysnoea, orthopnoea, and paroxysmal nocturnal dyspnoea. Electrocardiography (ECG) showed left ventricular hypertrophy and strain and echocardiography showed severe calcific aortic stenosis and a dilated left ventricle with impaired systolic function. A chest *x* ray showed considerable cardiomegaly with pulmonary oedema. He was treated acutely with intravenous diuretics and digoxin.

After stabilisation of his heart failure, left heart catherisation was performed on day 9. This showed normal coronary arteries, but global left ventricular impairment with a left ventricular end diastolic filling pressure (LVEDP) of 36 mm Hg. The left ventricular systolic pressure was 205 mm Hg, while the aortic pressure was 100/55 mm Hg. The transaortic valve gradient was 105 mm Hg, consistent with severe aortic stenosis. No aortic regurgitation was present. The patient started to feel breathless (while lying flat) during the procedure and sublingual nitrates were given (glyceryl trinitrate spray, 2 doses or 800 μg). The LVEDP fell to 20 mm Hg and the patient's symptoms improved considerably. After nitrate administration there was no significant change in the gradient across the aortic valve and only a 5 mm Hg fall in aortic systolic pressure.

This case suggests that nitrate administration needs to be explored as a treatment in patients with severe aortic stenosis and cardiac failure. Nitrate use may reduce cardiac preload and concomitantly improve cardiac output and the myocardial oxygen supply/demand ratio. Nitrates should have additional advantages if coronary artery disease is present. We believe that further studies are needed of treatment with nitrates in patients with aortic stenosis.

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NOTICE

The 1996 Annual Meeting of the **British Cardiac Society** will take place at the Scottish Exhibition & Conference Centre, Glasgow from 7 to 9 May.