

## Value of Magnetic Resonance Imaging in Functional Assessment of Baffle Obstruction After the Mustard Procedure

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### INTRODUCTION

Although excellent results have been reported on echocardiographic detection of postoperative sequelae after the Mustard procedure (1–3), baffle obstruction cannot definitely be ruled out in certain cases (3). This may be due to a combination of poor echo windows and the complex three-dimensional relationship of the intraatrial structures. Because it seems imperative to rule out baffle pathology in symptomatic patients (4,5), often additional angiography is required. In this case report we state that magnetic resonance (MR) examination may be an appealing alternative for angiography when echocardiographic examination is inconclusive or patients cannot endure transesophageal echocardiography (TEE).

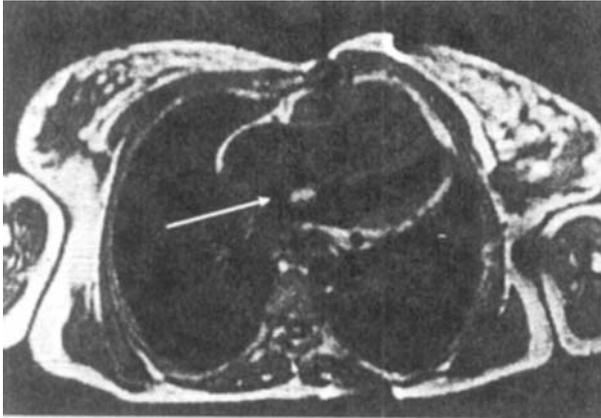
### CASE REPORT

A 23-yr-old woman with a history of Mustard procedure for complete transposition of the great arteries com-

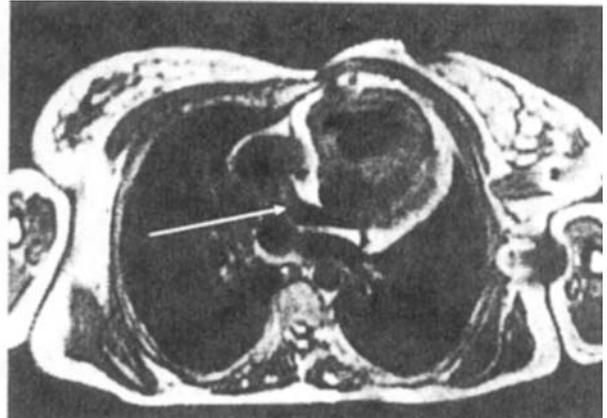
plained of tiredness and weight gain. For assessment of possible baffle obstruction, the patient underwent TEE. Because the baffles could only partly be visualized reliably by echocardiography, additional MR imaging was performed. A 1.5-T MR machine (Siemens Magnetom Vision, Erlangen, Germany) was used. On the axial spin-echo (SE) images (TR 740 msec, TE 30 msec, slice thickness 8 mm, matrix 256 × 256), the pulmonary venous connection appeared to be open (Fig. 1, arrow). This was confirmed on the axial gradient-echo (GE) cine images (TR 50 msec, TE 12 msec, slice thickness 7 mm, matrix 128 × 256) (Fig. 2). On these images, part of the systemic venous connection was also shown (Fig. 2, arrow). At a level somewhat more cranial, the systemic venous connection was visualized by means of SE (Fig. 3) and cine GE (Fig. 4, arrow) imaging. Although tapering of the atrial end of the baffle seemed to be the case on the SE images (Fig. 3, arrow), cine MR imaging did not show a clear jet, which made baffle stenosis unlikely. Baffle leakage was also ruled out on the cine MR images. The cause of the patient's complaints remained unclear. Exercise tolerance proved to be normal.

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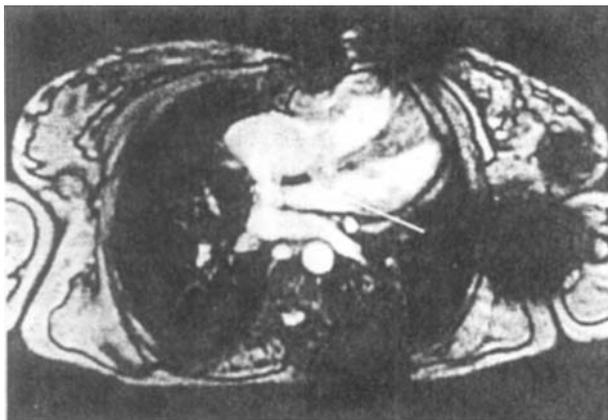
**Figure 1.** Spin echo at the level of the pulmonary venous connection (arrow).



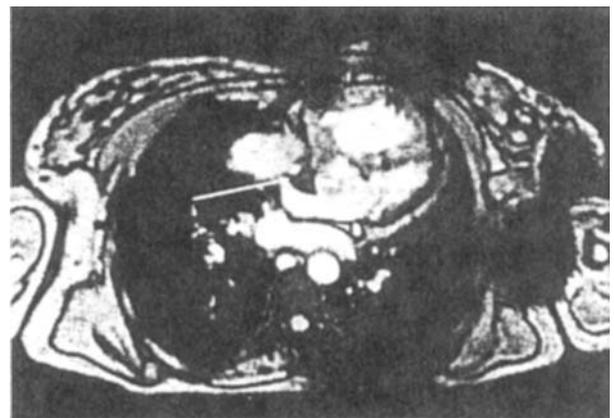
**Figure 3.** Spin echo at the level of the systemic venous connection (arrow).

### DISCUSSION

Although TEE has been considered to be the diagnostic tool of first choice for the assessment of intraatrial baffles (6), MR imaging is gaining ground in this particular area (7,8). Introduction of cine GE imaging (8), velocity mapping (8,9), and, more recently, MR angiography with MR contrast agents (10) has strengthened the position of cardiac MR imaging, especially in the area of postsurgical follow-up of patients with congenital heart disease (9). MR imaging provides additional information about cardiac mass (11), blood flow (8), and extent of intracardiac shunts (10), which may be of clinical importance in patients with a history of Mustard procedure.



**Figure 2.** Gradient echo at the level of the pulmonary venous connection in diastole. Also, part of the systemic venous connection is shown (arrow).



**Figure 4.** Gradient echo at the level of the systemic venous connection in diastole. No "jet" (caused by spins with high flow velocity in the case of baffle stenosis) is shown.

In this case, MR imaging could rule out baffle pathology and prevented an invasive diagnostic procedure where TEE failed to provide a definite diagnosis. Recently, improved MR technology and the widespread availability of cardiac-dedicated pulse sequences may require renewed comparisons between the different imaging modalities in addressing this clinical problem, especially between TEE and MR imaging.

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