

# Images in cardiovascular medicine

## Echocardiographic imaging of the Alfieri type mitral valve repair

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Among other types of mitral repair, the Alfieri or “edge to edge” repair is highly anti-anatomic. Its mechanism of action is exclusion into the ventricle of the redundant valve tissue while coaptation is warranted only by reciprocal fixation of one leaflet to the other. It may be considered a “functional equivalent of a chordal transfer procedure”<sup>1</sup>. Our experience is reported (Table I).

The transthoracic echo views are usually adequate for postoperative functional evaluation at follow-up.

The parasternal short-axis view is the best window for exploration of the repaired valve and allows adequate planimetric measurement of the valve area. If the edges of

the valve are sufficiently thickened to be echogenic, during diastolic valve opening a “figure of eight” will be visible (Figs. 1 and 2). The two mitral orifices may be of different size and at their point of junction the area of antero-posterior suturing will result in a dense echogenic mass. If the two leaflets are sutured close to the commissure, no “figure of eight” will be visible and no echographic “abnormality” will be detected.

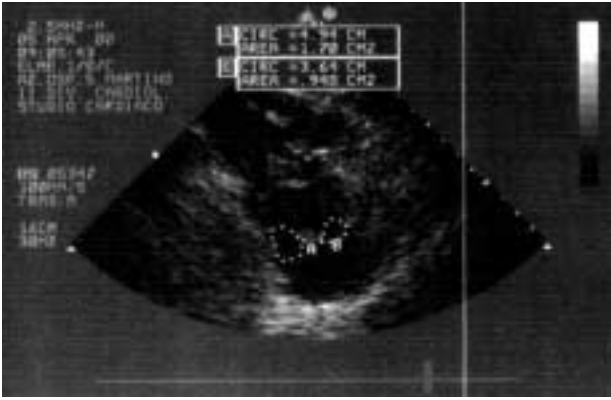
The main concerns about this technique are 1) in the absence so far of long-term controls, its durability, and 2) the resulting stenosing effect on the valve area.

Although in 93% of all reported Alfieri procedures<sup>1</sup> such repair was associated with

**Table I.** Patient data.

Patient	Sex	Age (years)	Procedure	Outcome
1. DL	M	70	Quadrantectomy + ring + Alfieri	Uneventful
2. RG	M	78	Alfieri	Uneventful
3. PF	F	66	Alfieri	Uneventful
4. BM	M	72	Quadrantectomy + Alfieri	Uneventful
5. CL	M	69	Sliding + Alfieri	Uneventful
6. DN	M	74	Quadrantectomy + Alfieri + Carpentier + CABG	Uneventful
7. GG	F	68	Quadrantectomy + Alfieri + ring + CABG	Uneventful
8. LE	M	71	Alfieri	Deceased*
9. FC	M	68	Quadrantectomy + ring + Alfieri	Uneventful
10. DV	M	71	Alfieri	Uneventful

CABG = coronary artery bypass graft; Carpentier = aortic valve repair with a periannular purse string suture; Quadrantectomy = quadrangular resection of the posterior leaflet; ring = Carpentier annuloplasty ring.  
\* exitus on the second postoperative day due to multiorgan failure.



**Figure 1.** Parasternal short-axis view of the mitral valve (diastole). Two unequal areas of mitral opening are divided by the image of the repair suture. A = coaptation point; B = lesser mitral orifice.



**Figure 2.** Parasternal short-axis view of the mitral valve. Same patient as figure 1. The smaller area opens widely.

a ring or a Carpentier type of repair, among patients with isolated Alfieri repair a 6-year period of freedom from reoperation was reported in 1998<sup>2</sup>.

With regard to the hemodynamic effects of a double orifice mitral valve, all reported echocardiographic studies<sup>2-5</sup> and also a three-dimensional computational model<sup>6</sup> have shown no functional difference between a normal valve and a double orifice valve.

This repair offers numerous advantages compared to more traditional techniques. These include easy reproducibility and time saving together with high effectiveness on anterior leaflet prolapse. The echographic appearance of the "figure of eight" should be taken into account when assessing postoperative images.

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