

# Transcatheter closure of residual Gerbode defect after aortic valve replacement surgery

Mehdi Slim \*, Nouha Mekki, Sami Ouannes, and Elies Neffati

Cardiology Department, Sahloul University Hospital, Hammam Sousse, 4011 Sousse, Tunisia

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A 42-year-old man with a history of surgically repaired coarctation of the aorta presented with a refractory right heart failure. Echocardiography revealed a calcified bicuspid aortic valve both regurgitant and stenotic and a defect within the membranous septum with left to right shunt from the left ventricle (LV) to the right atrium. The patient was referred to surgery for an aortic valve replacement and closure with patch repair of the Gerbode type defect. Post-operative course was complicated by refractory heart failure with a persistent left to right shunt through the defect due to loose sutures. Taking into account the high surgical risk, percutaneous closure of the defect was decided. An Amplatzer Duct Occluder (St Jude Medical, USA) I device was successfully released within the defect. The patient was completely asymptomatic on follow-up.

A 42-year-old man with a history of surgically repaired coarctation of the aorta at the age of 25 was referred to our department for refractory right heart failure (RHF). Five months before admission, he presented with fever, abdominal pain but with negative infectious investigations. He was started on a 2-week intravenous antibiotic therapy with a good clinical course. Physical examination revealed severe signs of RHF and a loud 4/6 holosystolic murmur.

Transthoracic echocardiography (TTE) revealed a calcified bicuspid aortic valve both regurgitant and stenotic. A 7 mm defect within the perimembranous ventricular septum was noted with a L–R shunting, but the jet was directed into the right atrium (*Figure 1A and B*, see [Supplementary material online, videos S1 and S2](#)).

Cardiac computed tomography (CT) scan confirmed the presence of the defect (*Figure 1C*).

Cardiac magnetic resonance imaging (MRI) showed a Type A Gerbode defect (GD) (*Figure 1D*, see [Supplementary material online, video S3](#)).

The patient was referred to surgery for an aortic valve replacement with a mechanical prosthesis and patch repair of the GD. A few days post-operative, the patient presented with congestive HF. The TTE confirmed the presence of a persisting GD due to loose sutures.

Taking into account the high surgical risk, percutaneous closure of the defect was decided.

Under general anaesthesia, we first proceeded with a 3D transoesophageal echocardiography study (*Figure 1E*, see [Supplementary material online, videos S4 and S5](#)).<sup>1</sup>

Left ventricle angiography was first performed (*Figure 1F*, see [Supplementary material online, video S6](#)).

A 12/10 ADO I device was successfully released within the defect after confirming the absence of impingement of the aortic valve prosthesis or the TV leaflets and no relevant residual shunt (*Figure 1G–J*, see [Supplementary material online, videos S7–S10](#)).<sup>2</sup> The procedure was uneventful.

After 12 months of follow-up, he was asymptomatic. The TTE showed trivial residual shunt and a moderate intraprothhetic regurgitation (see [Supplementary material online, videos S11 and S12](#)).

## Supplementary material

[Supplementary material](#) is available at *European Heart Journal – Case Reports* online.

**Consent:** The authors confirm that written consent for submission and publication of this case report including images and associated text has been obtained from the patient in line with COPE guidance.

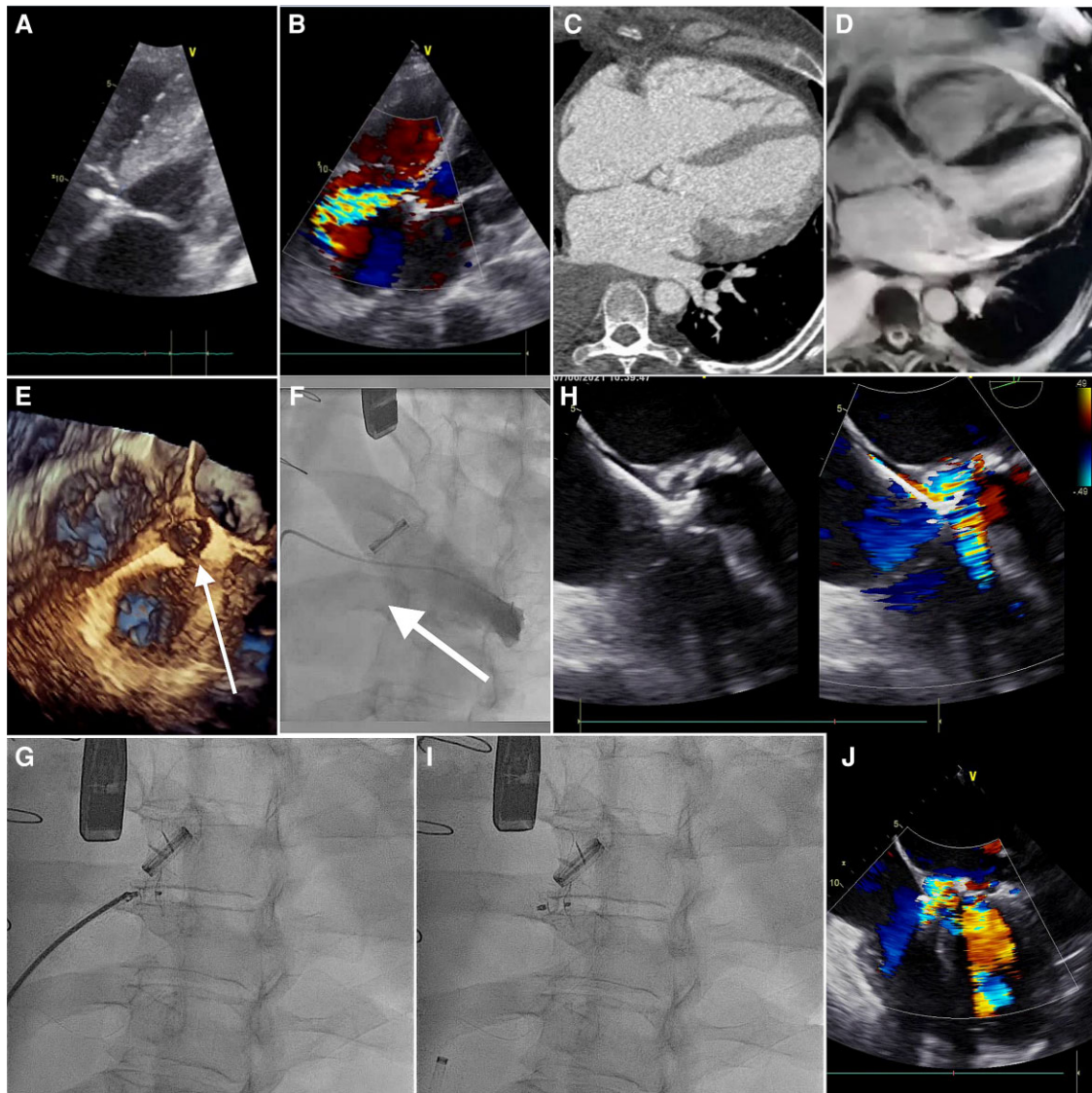
\* Corresponding author. Tel: +216 98696847, Fax: +216 73241411, Email: [mehdislim\\_fms@yahoo.fr](mailto:mehdislim_fms@yahoo.fr)

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**Figure 1** (A and B) Transthoracic echocardiography locating the defect above the tricuspid valve (A) and the left to right shunt through the defect in colour mode (B). Four chamber view in cardiac computed tomography scan (C) and cardiac magnetic resonance imaging (D) showing the communication between the left ventricle and right atrium. (E) 3D transoesophageal echocardiography atrial view showing the Gerbode defect (arrow). (F) Left ventricle angiography with a pigtail introduced through the defect showing the left to right shunt from the left ventricle to the right atrium (arrow). Fluoroscopic (G) and echocardiographic guidance (H) of the position before device release. (I and J) Final result.

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### Data availability

All data are incorporated into the article and its online Supplementary material.

### References

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