

Percutaneous pulmonary valve implantation with anomalous left anterior descending coronary artery

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Image

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Abstract

Percutaneous pulmonary valve placement in patients with an anomalous coronary artery is rare and can be complicated by coronary artery compression. We report successful implantation of a percutaneous pulmonary valve in a patient with an anomalous left anterior descending artery.

Case

A 10-year-old girl with double outlet right ventricle with severe pulmonary valve stenosis status post surgical repair with a right ventricle to pulmonary artery conduit required multiple conduit replacements and developed severe conduit stenosis. She also had an anomalous left anterior descending artery arising from the right coronary artery. Due to increasing right ventricle hypertrophy and hypertrophy, she underwent percutaneous pulmonary valve placement.

The diagnostic portion of the procedure was performed in the usual manner. Due to the risk of coronary artery compression with percutaneous valve placement,¹ great care was taken to ensure sufficient distance of the coronaries from the calcified conduit. Right coronary artery angiography showed an anomalous left anterior descending artery arising from the proximal right coronary artery and travelling posteriorly (Fig 1a and b). The conduit was significantly calcified. A 20 mm × 4 cm Z-med II balloon (B. Braun, Bethlehem, Pennsylvania, United States of America) was inflated in the conduit with simultaneous right coronary artery angiography, showing no compression. This was repeated with a 22 mm × 2 cm Atlas Gold balloon (Bard PV, Tempe, Arizona, United States of America) (Fig 2). After inflation of the non-compliant balloon demonstrated no coronary artery obstruction, a 23-mm Edwards SAPIEN XT valve (Edwards, Irvine, California, United States of America) was implanted in the usual manner. Repeat angiography showed no coronary compression (Fig 3a and b).

Percutaneous pulmonary valve placement in patients with coronary artery anomalies should be approached with caution, but can be safely performed.

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Conflicts of Interest. None.

Ethical Standards. The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national guidelines on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008, and has been approved by the institutional committees.

Reference

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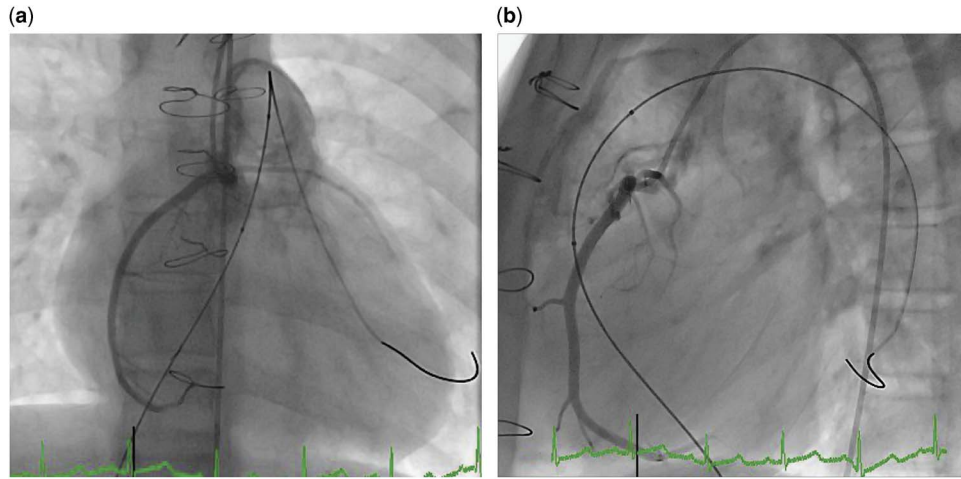


Figure 1. Anomalous left anterior descending artery origin from the proximal right coronary artery; anteroposterior (a) and lateral (b).

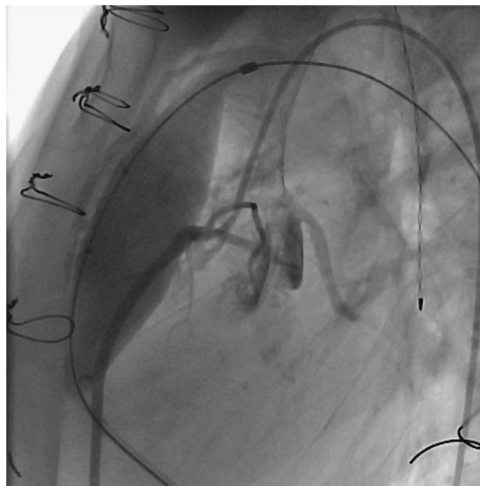


Figure 2. Right coronary artery angiography with inflation of the Atlas Gold balloon showed no obstruction.

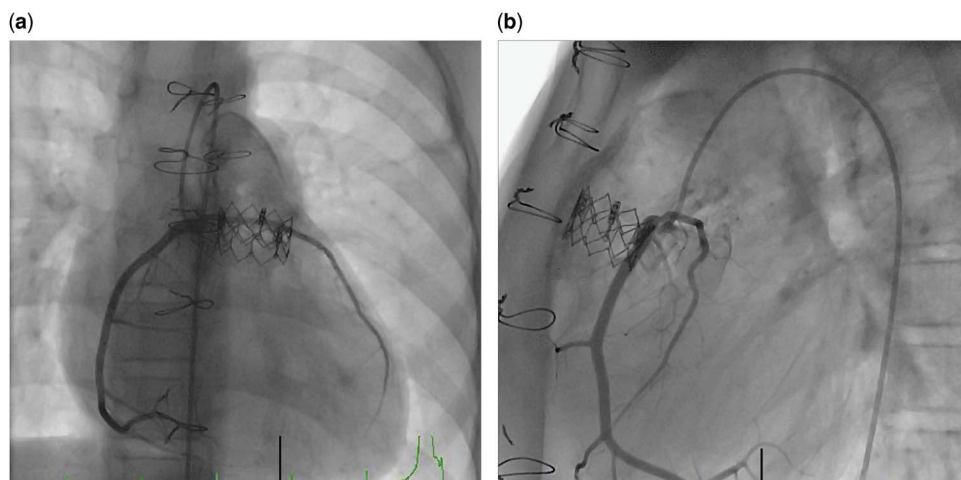


Figure 3. Right coronary artery angiography after valve implantation showed no obstruction; anteroposterior (a) and lateral (b).