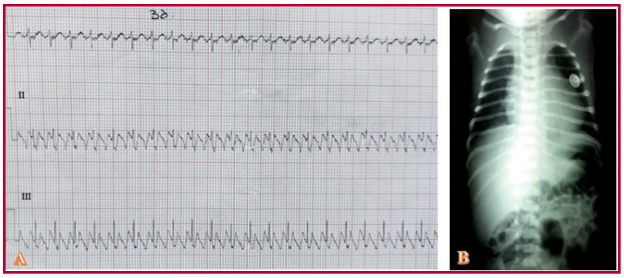

Fig. 2. A. ECG shows atrial flutter with a 2:1 conduction pattern, evidencing the typical saw-tooth P-wave pattern. **B.** Chest teleradiography: Cardiothoracic ratio was 63%, indicating mild cardiomegaly.

Fig. 2. ECG: In sinus rhythm after the second electrical cardioversion.

ECG, and was discharged on oral propranolol therapy for 3 months.

The prognosis of AFl depends on the occurrence of congenital heart diseases and on the response to cardioversion; therefore, babies with healthy hearts have little likelihood of recurrence, and drug treatment for long periods is discouraged. However, those patients with refractory flutter and structural anomaly often receive beta-blockers, or digoxin and beta-blockers, for at least 6 months. (2-4) Our patient did not present with structural heart disease but systolic dysfunction that was overcome. Cardioversion for neonatal AFl with only 0.25-0.5 J/kg is often successful, with a success rate of about 90%; (5) our patient underwent two electrical cardioversions despite continuous amiodarone infusions to restore sinus rhythm, which proved to be safe for the baby, since up to four electrical cardioversions can be performed at 1 J/kg in refractory cases. (5) Fetuses and neonates with AFl or ectopic atrial tachycardia are more likely to be macrosomic than the general population, (6) as was the case of our patient, who was large for his gestational age (weight > p 90). Differential diagnosis should consider infectious diseases, metabolic disorders, and other common arrhythmias in this age group, such as supraventricular tachycardia.

Conflicts of interest

None declared.

(See authors' conflicts of interest forms on the website/Supplementary material).

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Transcaval Transcatheter Aortic Valve Replacement

Transcatheter aortic valve replacement (TAVR) is currently the strategy of choice in high-risk or inoperable patients, (1, 2) and it is a valid alternative in intermediate-risk patients, (3, 4) particularly when it can be performed via the femoral artery (V). This access has been the most used and is currently the first choice, added to the reduction of the caliber in the devices for this route. However, there are still some cases in which it cannot be used, and alternative accesses are necessary. The transapical access is one of these alternatives, which, in addition to being more aggressive, showed worse results than the femoral route in some cases. This led to other options such as the transaortic, subclavian, and carotid routes that require surgical access, and, more recently, the percutaneous transaxillary access, and the transcaval access.

All of them have their advantages and disadvantages -as well as their detractors, and a complete summary exceeds the interest of this brief letter, which is to report our first case of percutaneous transcaval TAVR following the minimalist technique, under conscious sedation and without transesophageal echocardiography (TEE).

We describe the case of a highly symptomatic patient with severe aortic stenosis who was rejected for surgery and was indicated TAVR, since the femoral access was contraindicated due to severe peripheral vascular disease (including the occlusion of the iliac arteries and a bilateral iliofemoral bypass), in addition to severe COPD as comorbidity. Therefore, transcaval access was decided.

A left femoral arterial puncture of the bypass was performed under conscious sedation with a 6-French (Fr) introducer.

A puncture of the right femoral vein was also performed with a 6-Fr introducer and a percutaneous suture was placed with a 10-Fr Perclose device (Abbott Vascular, Abbott Park Il USA); then, a super stiff guidewire together with it an 18-Fr introducer were inserted to the infrarenal inferior vena cava.

Next, simultaneous aortography and venography were performed to confirm the closest site between the vena cava and the abdominal aorta, already identified with angiotomography which, in turn, had also been ruled out due to significant calcification in that segment of the aortic wall (Figure 1).

A 20-mm loop snare was advanced through the arterial puncture, and a triaxial system –composed of a 6-Fr renal guide catheter (allowing good orientation) containing a 5.0 x 40 mm balloon for 0.035' guide– was inserted through the venous sector, with a 0.018' guidewire inside, to which the proximal flexible end had been cut and the distal end had been connected to the electrosurgical knife in cut mode.

By directing the guidewire towards the loop snare, penetration is performed by perforating the wall of the inferior vena cava (IVC) and abdominal aorta (AA); the guide is snared and progressed towards the proximal thoracic aorta near the subclavian artery. The balloon is advanced and then exchanged for a 0.035' super stiff guidewire, the path is predilated and an 18-Fr introducer is advanced from the IVC to the AA, through which the aortic valve is implanted following the usual technique. Once the implantation is completed –leaving a back-up guide to prevent inadvertent migration–, the path is closed with a 10 mm occluder device for muscular ventricular septal defect (VSD). Once the closure is confirmed, there is usually a residual flow (aortocaval fistula for a few minutes); subsequently, the whole system is removed and heparinization is reversed (Figure 2).

The venous access is also closed, either with percutaneous suture -as in our case, or with a Z-stitch using polypropylene (Prolene®) 0 in the subcutaneous tissue.

The maneuvers and rescue elements that should always be available are the aortic balloons and stent graft of adequate diameter in case of significant bleeding, which occurs in less than 5% of cases.

When the procedure was completed, the patient was monitored in the coronary care unit and discharged the next morning.

Although the minimalist transfemoral approach seems to be the global trend, the debate continues about which access to use when the transfemoral route is not possible. While the transcaval access looks intimidating, it is a non-aggressive approach with quite predictable outcomes. One has to be prepared for complications that –while uncommon– could be life-threatening.

Light bleeding –in general due to pressure difference mechanisms–, if it is well managed, avoids blood collection and allows spontaneous drainage towards the vena cava; in fact, in some cases (such as ours), it happens in the first few minutes through the body of the occluder device. However, we must be ready to resolve major bleedings (BARC type 4) (6) as if it were an aortic perforation, for which the necessary elements should be available to allow for a quick and effective resolution.

As described in some international series, transcaval access was possible in our patient, with excellent initial outcomes.

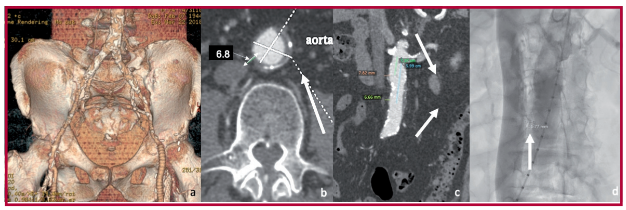

Fig. 1. A. CT angiography; left iliofemoral and right femorofemoral bypass, and severe bilateral iliac calcification. **B-C.** Distance between the aorta and the vena cava in sites without calcium and suitable for cavo-aortic puncture marked with arrows by tomography and (D) angiography.

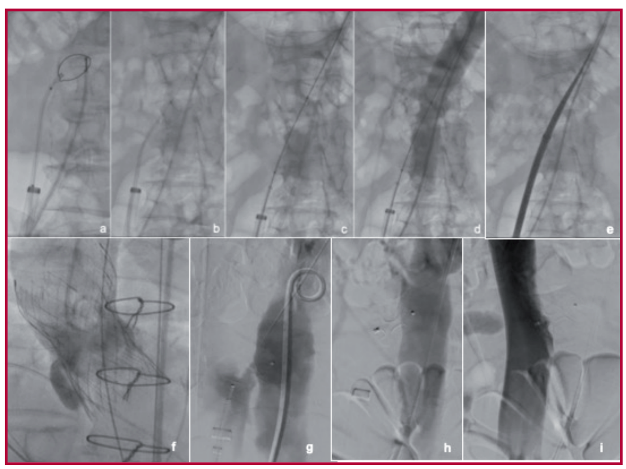

Fig. 2. A. Loop snare in the abdominal aorta with telescoping system, including an 18-Fr introducer, 6-Fr catheter, 5.0 x 20 balloon, and a 0.018” guidewire in the inferior vena cava. **B.** Perforation with the guidewire in the wall of the vena cava and the aorta penetrating the abdominal aorta. **C.** Over-the-wire balloon crossing. **D.** Follow-up aortography. **E.** Transcaval 18 Fr introducer to the abdominal aorta. F. Final outcome: implantation of CoreValve Evolut R™ **G.** Placement of the occluder device with a protective 0.018” guidewire in parallel. H. Final outcome in the aortography. I. Final cavography.

Conflicts of interest

None declared.

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