

**Table 1.** Baseline characteristics of OR vs. SOR patients

	OR	SOR	Odds ratio	p
N = 197	180 (91.37%)	17 (8.62%)		
Age	59.8 ± 11.5	60.6 ± 13.8	-	0.794
Age > 70 years	36 (20.45%)	5 (29.41%)	1.62 (0.53 - 4.89)	0.360
Male sex	137 (76.1%)	12 (70.6%)	1.33 (0.44 - 3.98)	0.567
Diabetes	26 (14.4%)	6 (35.3%)	3.21 (1.09 - 9.43)	0.026
Smoking	76 (42.2%)	4 (23.5%)	2.37; (0.75 - 7.57)	0.196
Hypertension	105 (58.3%)	12 (70.6%)	1.69; (0.57 - 5.00)	0.441
Prior myocardial infarction	14 (7.8%)	4 (23.5%)	3.60; (0.08 - 0.95)	0.056
KK 3/4 on admission	10 (5.75%)	2 (11.8%)	2.26 (0.45 - 11.3)	0.280
Prior revascularization	12 (6.7%)	5 (29.4%)	5.76; (1.74 - 19.07)	0.008

KK: Killip and Kimball.

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## REFERENCES

- de Lemos J, Braunwald E. ST segment resolution as a tool for assessing the efficacy of reperfusion therapy. *J Am Coll Cardiol* 2001;38:1283-94. [https://doi.org/10.1016/s0735-1097\(01\)01550-9](https://doi.org/10.1016/s0735-1097(01)01550-9).
- Husser O, Bodi V, Sanchis J, Núñez J, Mainar L, Rumiz E, López-Lereu M. The Sum of ST-Segment Elevation Is the Best Predictor of Microvascular Obstruction in Patients Treated Successfully by Primary Percutaneous Coronary Intervention. *Cardiovascular Magnetic Resonance Study. Rev Esp Cardiol (English Ed.)* 2010;63:1145-54. [https://doi.org/10.1016/s1885-5857\(10\)70228-0](https://doi.org/10.1016/s1885-5857(10)70228-0)
- Nijveldt R, van der Vleuten PA, Hirsch A, Beek AM, Tio RA, Tijssen JG, et al. Early electrocardiographic findings and MR imaging-verified microvascular injury and myocardial infarct size. *JACC Cardiovasc Imaging* 2009;2:1187-94. <https://doi.org/10.1016/j.jcmg.2009.06.008>
- Merlo P, Hirschson Prado A, Cohen Arazi H, Domine E, Higa C, Cassano C, Benzaón M. Reperusión subóptima en pacientes con infarto agudo de miocardio con elevación del segmento ST tratados con angioplastia primaria: predictores y valor pronóstico. *Rev Argent Cardiol* 2018;86:269-274. <https://dx.doi.org/10.7775/rac.es.v86.i4.13325>
- Mahmoud AH, Taha NM, Baraka K, Ashraf M, Shehata S. Clinical and procedural predictors of suboptimal myocardial reperfusion in primary percutaneous coronary intervention. *Int J Cardiol Heart Vasc* 2019;23:100357. <https://dx.doi.org/10.1016/j.ijcha.2019.100357>
- Roule V, Thibaut H, Andrien L et al. Acute Cardiovascular Care, Residual platelet reactivity after pre treatment with Ticagrelor prior PTCA, associated with SMR. *EIJ* 1-7 2019

## Circulatory Support and Extracorporeal Membrane Oxygenation in Transcatheter Aortic Valve Implantation

Severe aortic stenosis (SAS) is the most common valve disease in elderly patients. As many of these patients have several comorbidities and high risk for conventional surgery, transcatheter aortic valve implantation (TAVI) has been developed as an option. (1)

While TAVI is a proven and safe procedure, it presents risks associated with technical aspects, which are difficult or impossible to anticipate (vascular or ventricular trauma), and others that are specific to the patient, some of which can be prevented in order to avoid an unfavorable prognostic impact. (2)

An 82-year-old diabetic patient with SAS, ejection fraction of 15%, and history of aortic valve replacement, was hospitalized for heart failure, requiring inotropic support and mechanical ventilation, with prohibitive risk for conventional surgery (EuroSCORE II 70.5%). The case led to surgical team consensus of using TAVI as therapeutic approach. Due to the preoperative condition and the high chance of hemodynamic intolerance during the procedure, a circulatory support device (extracorporeal membrane oxygenation, ECMO) was used.

Arterial-venous cannulation of the femoral vessels (with 21F venous cannula and 17F arterial cannula (MAQUET AG, Hechingen, Germany) was performed. A Sapien prosthesis (Edwards Sapien XT, Edwards Lifescience, Irvine, Ca) was implanted. As during the procedure, the patient developed extreme bradycardia and deep cardiogenic shock, circulatory support with ECMO (CardioHelp®, MAQUET, Hechingen, Germany) was provided. This allowed the procedure to be completed successfully (Images A and B) and the patient was transferred to ICU under drug and respiratory support.

Once the echocardiography revealed myocardial functional recovery, the device and the drug and respiratory support were successively weaned, a process demanding 96 hours. Several case reports such as the present one, together with two clinical series, pose the usefulness of this strategy in selected patients. Husser et al. reported 18 cases of prophylactic use of ECMO, which represent 8% of total TAVI performed with 97% implant success and 7% mortality at 30 days, while Seco et al. performed 11 ECMO in 100 TAVI patients, with one death (9%). (3, 4)

Stretch et al. reported an increase in the use of mechanical circulatory support in patients over 80 years of age, which rose from 6.2% between 2004 and 2007 to 11.9% between 2008 and 2011. The question is whether the lack of mechanical circulatory support availability could become ethically unacceptable, and even legally controversial, given the increasing growth of TAVI procedures. (5, 6) The indications for prophylactic use of ECMO during TAVI include severe ventricular function impairment, pacemaker intolerance

prior to implantation, and hemodynamic instability prior to or during induction of anesthesia and the concomitant angioplasty of the main coronary artery, to prevent severe complications that could compromise the success of the procedure and patient survival. The feasibility of this strategy has been demonstrated in selected cases. (3-5)

#### Conflicts of interest

None declared.

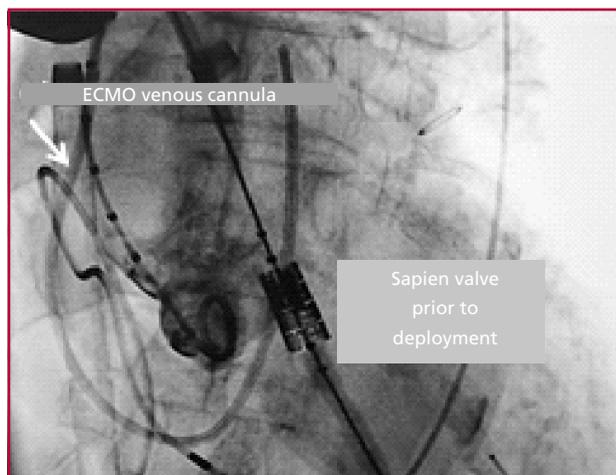
(See authors' conflicts of interest forms on the website/ Supplementary material).

#### Ethical approval

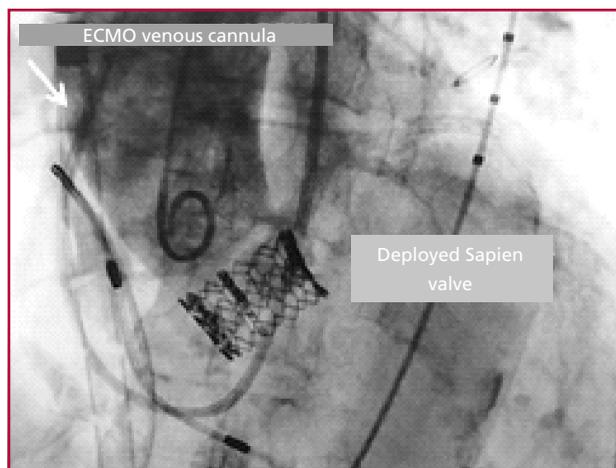
Not applicable.

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**Fig. 1.** Image of Sapien prosthesis prior to deployment. The venous cannula can be observed in the inferior vena cava.



**Fig. 2.** Deployed Sapien prosthesis in aortic position.

#### REFERENCES

1. Kodali S, Thourani VH, White J, Malaisrie SC, Lim S, Greason KL. Early clinical and echocardiographic outcomes after SAPIEN 3 transcatheter aortic valve replacement in inoperable, high-risk and intermediate-risk patients with aortic stenosis. *Eur Heart J* 2016;37:2252-62. <https://dx.doi.org/10.1093/eurheartj/ehw112>
2. Drews T, Pasic M, Buz S, D'Ancona G, Mladenow A, Hetzer R, et al. Elective femoro-femoral cardiopulmonary bypass during transcatheter aortic valve implantation: a useful tool. *J Thorac Cardiovasc Surg* 2013;145:757-63. <https://dx.doi.org/10.1016/j.jtcvs.2012.02.012>
3. Husser O, Holzamer A, Philipp A, Núñez J, Bodi V, Müller T et al. Emergency and prophylactic use of miniaturized veno-arterial extracorporeal membrane oxygenation in transcatheter aortic valve implantation. *Catheter Cardiovasc Interv* 2013;82:E542-51. <https://dx.doi.org/10.1002/ccd.24806>
4. Seco M, Forrest P, Jackson SA, Martínez G, Andvik S, Bannon PG et al. Extracorporeal membrane oxygenation for very high-risk transcatheter aortic valve implantation. *Heart Lung Circ* 2014;23:957-62. <https://dx.doi.org/10.1016/j.hlc.2014.05.006>
5. Stretch R, Sauer CM, Yuh DD, Bonde P. National trends in the utilization of short-term mechanical circulatory support: incidence, outcomes, and cost analysis. *J Am Coll Cardiol* 2014;64:1407-15. <https://dx.doi.org/10.1016/j.jacc.2014.07.958>
6. Sauer CM, Yuh DD, Bonde P. Extracorporeal membrane oxygenation use has increased by 433% in adults in the United States from 2006 to 2011. *ASAIO J* 2015;61:31-6. <https://dx.doi.org/10.1097/MAT.0000000000000160>

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#### Virtual Cardiology Outpatient Clinic in a Public Hospital During the COVID-19 Pandemic

The COVID-19 pandemic has generated health measures such as interruption of in-person work activities, social confinement, and suspension of scheduled medical services. (1, 2) "Hospital El Cruce - Néstor Kirchner" is a high-complexity tertiary care center that is part of a public health network in the south of the Greater Buenos Aires Area.

A system of referral and counter-referral of patients operates through the network, so that most patients return to their referring institutions after hospitalization or diagnostic-therapeutic interventions. A lower proportion of patients are followed-up by hospital physicians, due to complex diseases that may require additional procedures or rehospitalizations.

Thus, outpatient clinics receive a reduced number of patients depending on the hospital services provided, with scheduled appointments and full schedules for several months. As of March 20, with the provision of the pandemic lockdown by national authorities, the hospital's outpatient clinic was interrupted. (2)

In the first week of April, we started a telephone follow-up program for patients with scheduled appointments, which was then followed by a system designed for patients who had smartphones or computers suitable for that practice. (3-5) The Department of Telemedicine created a virtual consultation procedure within the current regulatory framework (Resolution 2018-189-APN-SGS#MSYDS / DI-2019-1-APN-DNSIS#MSYDS), adapted to the mandatory,