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Editorial

Fast-track TAVI: establishing a new standard of care

TAVI fast-track: redefiniendo el estándar asistencial

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Transcatheter aortic valve implantation (TAVI) has revolutionized the treatment of aortic stenosis and is currently the treatment of choice for degenerative aortic stenosis from 75 years of age. Despite its minimally invasive nature, for years, the length of stay after TAVI was approximately 1 week.[1] Due to technological advancements and perioperative care, in recent years, there has been a progressive reduction in the length of stay after TAVI. Several factors have contributed to this trend, such as patient selection (preoperative planning and inclusion of patients of lower surgical risk), simplification of the procedure (use of local anesthesia, secondary radial access, smaller caliber catheters and vascular complications, standardization of implantation techniques with fewer conduction disorders) and optimization of peri- and postoperative care (accelerated circuits following after TAVI and outpatient monitoring).

In an article published in *REC: Interventional Cardiology*, Pimienta González et al.[2] present the results of the first 100 patients treated with TAVI in a noncardiac surgery center, with the implementation of an early discharge protocol since the beginning of the program. The patients' mean age was 82 years and their surgical risk was low-to-intermediate (Society of Thoracic Surgeons score of 4.38%). A total of 97% of all procedures were performed via transfemoral access (95% via transcatheter access) and 3% via surgical transaxillary access, in patients with mostly native aortic stenosis (98%). All patients received a self-expanding supra-annular valve: 87% an Evolut valve (Medtronic, United States) and 13% an ACURATE valve (Boston Scientific, United States). There were no deaths during the procedure nor any cases of conversion to open surgery. The median length of stay was 2 days (1-19), with 76% of patients being discharged within the first 48 hours. The 30-day event rate was low: pacemaker, 13%; major vascular complication, 4%; stroke, 1%; and cardiovascular mortality, 1%. There were only 6% readmissions within the first month.

Procedural results and the subsequent care are remarkable, considering an early discharge protocol in an unselected population in a center without prior experience performing TAVI. A quarter of the procedures were proctored, which undoubtedly contributed to the excellent results reported. A total of 27% of patients were discharged at 24 hours and 76% at 48 hours due to a rigorous peri-TAVI care protocol consisting of in-person visit 1 week prior to the procedure, nursing call 48 hours prior to the procedure, telephone consultation 48 hours following discharge and in-person consultation at 10 days, and the systematization of the conduction disorders approach, which is currently the "Achilles' heel" of TAVI and the main reason for delayed discharge.

However, there are some limitations that should be mentioned. Firstly, the authors do not specify which clinical criteria were predefined to categorize hospital discharges as very early (< 24 h), early (24-48 h) or late discharges (> 48 h), nor the percentage of patients who received ambulatory electrocardiographic monitoring; information that could be useful for other centers with similar characteristics. Furthermore, all procedures were performed under general anesthesia, which contrasts with most protocols of early discharge, which prioritize local anesthesia and conscious sedation, given its potential benefit in terms of mortality, speed of recovery and shorter length of stay.[3] Finally, one cannot rule out some selection bias (low surgical risk; 3, alternative access; 3%, bicuspid valves; 2%, valve-in-valve; 0%, pure aortic regurgitation). Nevertheless, the work of Pimienta González et al.[2] exemplifies the possibility of implementing this type of protocols (duly prespecified and proctored) during the learning curve in contemporary clinical practice.

The growing number of TAVIs has triggered the development of standardized measures and protocols aimed at reducing the length of stay and improving the efficiency of resources. Several studies have demonstrated the safety and efficacy profile of an early discharge strategy (24-72 h) after TAVI. In 2015, Durand et al.[4] first described early discharge within the first 72 hours in selected patients treated with transfemoral TAVI with local anesthesia as a safe strategy with a low rate of complication. Subsequently, large-scale international studies reaffirmed the safety profile of an early discharge strategy through the implementation of dedicated protocols with rapid recovery circuits and pre-established criteria for early discharge.[5-8] The Vancouver 3M Clinical Pathway study, with more than 400 patients from 13 North American low- (< 100 TAVIs per year), intermediate- or high-volume centers (> 200 TAVIs per year) achieved hospital discharges within 24 hours in 80% of patients and within 48 hours in 90%, regardless of the experience and volume of the participant centers.[6] This circuit was subsequently validated in a low-volume center with limited experience performing TAVIs, with a mortality rate of 0.6% and a readmission rate of 6.7% at 30 days;[9] figures very similar to those reported by

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Pimienta González et al.[2] in their series. However, these findings contrast with data from large registries that demonstrated that there is an inverse association between volume and mortality, especially for the first 100 cases.[10] While the results of the present study suggest a possible attenuation of the learning curve with new devices and contemporary implantation techniques, they highlight the importance of optimizing and systematizing not only the aspects of the procedure ("minimalist TAVI"), but also the clinical and logistical aspects throughout the entire care process, from before to after the procedure.

Of note, most of the evidence on early discharge after TAVI comes from studies with a predominance of balloon-expandable valves (traditionally associated with lower rates of pacemakers), which contrasts with the present work, in which 100% of the devices used were self-expanding valves. Some studies have previously explored the safety profile of early discharges in patients treated with self-expanding valves. In an American registry with nearly 30,000 patients who underwent elective TAVI with the self-expanding Evolut valve, the discharge rate the next day after TAVI was close to 60%.[11] Similarly, Ordoñez et al.[12] described the safety profile of early discharge after TAVI with the self-expanding ACURATE neo valve in 368 unselected patients, 55% at 24 hours and 74% at 48 hours, without observing an increased risk of death or readmission at 30 days.

In conclusion, the study by Pimienta González et al.[2] is yet another demonstration of the applicability of this type of clinical pathways in our environment and the routine clinical practice, provided they are conducted in a structured and systematized manner.[13-15] After the simplification of the procedure, the latest generation devices, contemporary implantation techniques, the patients' lower risk profile and postoperative expansion of accelerated circuits, the "minimalist" hospitalization after "minimalist TAVI" has already become a common practice and a key tool in terms of efficiency to be able to face the increasing number of TAVIs in the coming years and the expansion of its indications.

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CONFLICTS OF INTEREST

None declared.

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