REVIEW ARTICLE

TRANSCATHETER AORTIC VALVE IMPLANTATION IN MEXICO

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ABSTRACT

The procedure has become increasingly frequent since transcatheter aortic valve implantation began. However, the existing literature on this subject in our environment has not been reviewed, so we decided to conduct an intentional search for Mexican publications. A review of journals and authors focused on transcatheter aortic valve prostheses was performed between May 1, 2012, and May 31, 2024. Sixteen publications were found in the period analyzed. There is little dissemination in scientific journals about using transcatheter valve prostheses in Mexico and their advantages and risks. It is advisable that hospital referral centers, in addition to performing the procedure, disseminate their results.

Keywords: *TAVI, publications, transcatheter prosthesis, clinical case, literature.*

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INTRODUCTION

Aortic stenosis is the most frequent valve lesion; the leading cause is degenerative pathology associated with aging and increased life expectancy. It affects approximately 7% of patients over 65 years[1].

The accepted treatment is the replacement of the diseased valve with a prosthesis that can be mechanical or biological. This procedure is performed by open heart surgery, which is not free of risks that must be considered when proposing this type of treatment to patients[2].

If the patients' clinical conditions are added to the above, the procedure may be contraindicated due to the high risk of performing it on a patient with a complex condition. Initially, such patients were left untreated. However, techniques and valve prostheses that can be implanted endovascularly (TAVI) have been developed, with less possibility of complications and an earlier recovery in high-risk patients[2,3].

The first procedure of this type in the world was performed by Alain Cribier in 2002[4]. In Mexico, Joel Estrada et al. (Estrada J et al., unpublished observations) first performed this procedure at the Instituto Mexicano del Seguro Social (IMSS) in 2012, the year in which this type of prosthesis was also implanted at the Instituto Nacional de Cardiología Ignacio Chávez[3]. Since then, and up to the present, in Mexico this procedure has been performed in various hospital centers[1-3,5-9]. With the increase in life expectancy in our country and the possibility of a higher frequency of aortic valve stenosis in patients over 65 years of age, we consider it necessary to evaluate the impact of this procedure in terms of the dissemination of its indications, results, complications, and perspectives, with the experience of national authors who would be an appropriate source to generalize the use of the procedure with scientific support in our country.

Based on this condition, we analyzed the dissemination of Mexican authors' use of TAVI and whether these publications were published in national medical journals.

UNSTRUCTURED LITERATURE REVIEW

Based on the recommendations of Page et al.[8], an unstructured literature review was performed in Mexican medical journals to which the full text was available. The search criteria were publications related to TAVI performed between May 1, 2012, the month in which TAVI implants began in Mexico, and May 31, 2024, by Mexican authors who perform their clinical activity in this country and, in addition, publications in foreign journals by Mexican authors with case reports from national hospitals.

The articles found were classified based on their format as "clinical case", "case series" (report including between two and ten patients), "review article", "research article", "editorial article" and "guidelines".

It was verified that the publication's content included at least one of the following topics: indications for the procedure, description of the approach and implantation technique, results of the procedure, including complications and their type-if any-, mortality, follow-up, and perspectives.

RESULTS

During the period analyzed, we found 16 publications that included articles with the following characteristics:

- Six clinical cases (one in a Mexican journal, performed in a foreign hospital center, which was excluded from the review). The five reviewed studies present the indications, the approach route (four of them through femoral vessels), the brief description of the technique, and the perioperative follow-up (defined as a period of 60 days post-implantation) at 90 days and at two years in which one case of atrioventricular block was reported as a complication, the rest without complications and none with mortality[1,3,5,7,9].
- Five case series: three foreign cases were excluded from the analysis, one of them with a national author included in the working group; the remaining two present the indications, the approach route (one by femoral vessels and the other by open technique due to the inaccessibility of peripheral vascular routes), the technique and morbidity. One reports a two-year follow-up[10,11].
- Three research studies[2,12,13]; two of them describe the indications, the approach, the technique, the complications observed (hemorrhage at the access site resolved by local compression, atrioventricular block, cerebral vascular event, and acute renal failure) and the mortality attributed to pulmonary hypertension, metabolic complications, severe pneumopathy in one case, mesenteric thrombosis in another and one due to unknown cause. One of these studies has a five-year follow-up with 36 patients[2,12].
- An evaluation of the measurement procedure for diagnosis and planning of the procedure or association with complications in 134 patients[13].
- An editorial article[14] and an expert paper with guidelines for using TAVI that includes all the items to be evaluated, described, and defined for an adequate application by the readers[15].
- One of the case reports focuses more on anesthetic care during the procedure, and another describes

the combined approach with surgery via mini sternotomy.
- One of the case series focuses on the transapical surgical approach for prosthesis implantation.

It is worth mentioning that the search shows the first TAVI explant published in Mexico in 2017 in a foreign journal by Mexican authors, and it is the only report of these characteristics[8].

DISCUSSION

The first TAVI implantation in humans was performed in Rouen (France) in 2002[4]; this technique began 10 years later in Mexico. When comparing the type of publications and the number of patients analyzed in other countries[16,17], it is striking that there are very few publications on the technique in our environment. It is especially striking when recently, in an academic forum, a casuistry of more than 400 cases was presented (Arizmendi et al., unpublished observations), a product of the compilation of information from various hospital units, which undoubtedly reflects a reality very different from the one that appears in the reviewed bibliography. At the same time, it may be a reason for reflection in the sense that the procedure has more application than that reported in the Mexican literature and that, on the other hand, the follow-up of this large number of patients may provide more clarity on the risks and benefits of the procedure. All of the above becomes more relevant if we take into account, above all, that in the international literature, there are major case reports, multicenter studies, and even meta-analyses related to the use of transcatheter aortic valve prosthesis in which the advantages of femoral endovascular access compared to conventional surgery are demonstrated, as well as complications such as atrioventricular block, cerebral vascular event, hemorrhage, among others[18-21]. These data are also reported in the short term in the reviewed studies[1,2,12] and in the five-year follow-up, which is only reported in one of the national publications[2], after which an even more significant benefit is observed with traditional surgery in international studies[16,18,19], which also report an increase in the removal of prostheses placed via endovascular[22]. This should be a reason for analysis in our environment[9] since there is increasing national and international interest in expanding the use of TAVI in lower-risk or younger patients, in whom the morbidity and durability of endovascular prostheses should be analyzed among other variables[17,18,20]. New indications for the use of TAVI in patients with ventricular support should also be considered, not only with stenosis but also in cases with aortic valvular insufficiency or venous access routes in cases in which arterial vessels are not adequate[23,24].

CONCLUSION

Transcatheter aortic valve implantation is a reality in our country. However, it is necessary to have follow-up data in the medium and long term to compare the results with large international series, evaluate what needs to be improved, and prepare the hospital environment to treat aortic valve lesions with all the treatment options available, as well as detect, treat, and resolve possible associated eventualities.

Declarations

The authors declare no conflict of interest.

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