

In-hospital Outcomes of Aortic Valve Replacement in Two Community Hospitals

Resultados hospitalarios de reemplazo valvular aórtico en dos hospitales comunitarios

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ABSTRACT

Background: The aim of this report is to present the in-hospital outcomes of surgical aortic valve replacement performed by our team within the past three years in two community hospitals in Buenos Aires.

Methods: Between January 2015 and December 2017, 125 patients with diagnosis of symptomatic severe aortic stenosis isolated or associated with coronary artery disease underwent surgery at the departments of cardiovascular surgery of Hospital Alemán and Hospital Británico in Buenos Aires.

Results: 103 patients (82.4%) belonged to the low risk category of the Society of Thoracic Surgeons (STS) score (<4) and 22 patients (17.5%) were categorized as intermediate risk (STS score 4-7%). Overall hospital mortality was 2.4% ($n=3$) and mortality by STS category was 1.9% for low-risk patients and 4.5% for the intermediate risk category.

Conclusions: These data represent the current results of surgical aortic valve replacement isolated or combined with coronary artery revascularization in low-risk and intermediate-risk patients in two community hospitals.

Key words: Aortic Valve Stenosis/Surgery - Transcatheter Aortic Valve Replacement - Treatment Outcome

RESUMEN

Introducción: El objetivo de esta comunicación fue presentar los resultados hospitalarios de la cirugía valvular aórtica realizada por nuestro grupo quirúrgico en los últimos tres años en dos hospitales comunitarios de Buenos Aires.

Material y métodos: Entre enero del 2015 y diciembre de 2017 se intervinieron 125 pacientes con diagnóstico de estenosis aórtica grave sintomática aislada o asociada a enfermedad coronaria, en los servicios de cirugía cardíaca de los Hospitales Alemán y Británico de Buenos Aires.

Resultados: Al aplicar el puntaje STS se hallaron 103 pacientes (82,4%) en el grupo de bajo riesgo (Society of Thoracic Surgery STS <4), y 22 pacientes (17,6%) en el grupo de riesgo intermedio (STS 4-7%). La mortalidad hospitalaria global fue 2,4% ($n=3$), y la mortalidad por grupo de riesgo del STS fue 1,9% para los de bajo riesgo, y 4,5% para los pacientes de riesgo intermedio.

Conclusiones: Estos datos representan los resultados actuales del reemplazo valvular aórtico quirúrgico aislado o combinado con cirugía coronaria en los pacientes con riesgos bajo e intermedio en dos hospitales comunitarios.

Palabras clave: Estenosis válvula aórtica/cirugía - Reemplazo de la válvula aórtica Transcatéter - Resultado del Tratamiento

INTRODUCTION

Surgical aortic valve replacement is the treatment of choice for symptomatic severe aortic stenosis. Transcatheter aortic-valve implantation (TAVI), a technique that has emerged as an alternative for high-risk patients, has significant impact in current practice. (1) This technique has rapidly increased the spectrum of indications to the point that, nowadays, the results are compared in moderate-risk patients, and the intention is to reach the low risk group. (2) However, these new techniques are not free from adverse events, and for the moment, the number and complications associated with TAVI in Argentina are not clearly known

since there are not many reports in this regard.

In fact, the present outcomes of surgical aortic valve replacement in our setting are unknown, as the published local data do not reflect the current state-of-the-art of surgery. Therefore, the aim of this report is to present the in-hospital outcomes of surgical isolated or combined aortic valve replacement performed by our team within the past three years in two community hospitals in Buenos Aires.

METHODS

Between January 2015 and December 2017, 125 patients with diagnosis of symptomatic severe aortic stenosis, either

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isolated or associated with coronary artery disease, underwent surgery at the departments of cardiovascular surgery in Hospital Alemán and Hospital Británico of Buenos Aires.

Data were retrieved from the electronic medical records of each institution and included baseline demographic characteristics of the sample and the in-hospital outcomes of surgery. All the patients consecutively operated on in both institutions during that period were included. The presence of complications and mortality were recorded.

The preoperative risk was estimated according to the Society of Thoracic Surgeons (STS) score, and the patients were divided into two groups: low risk (STS <4%) and intermediate risk (STS 4-7%). Considering the high prevalence of coronary artery disease in patients with aortic stenosis, both isolated aortic valve replacement and combined with coronary artery bypass surgery were included in this study. Finally, we calculated the observed mortality and expected mortality for each group.

Statistical analysis

Categorical variables were expressed as percentages and metric variables as median and range. The goodness of fit test was used to analyze normality of distribution. The observed-to-expected mortality ratio (O:E) was calculated.

Ethical considerations

The study was approved by the Review Committees of each institution. As the study was based on non-sensitive retrospective data retrieved from medical records, patients were not asked to sign an informed consent form.

RESULTS

Of the 125 patients undergoing surgery, 88 (70.4%) were isolated aortic valve replacements and the rest were associated with myocardial revascularization surgery within the same procedure. Baseline population characteristics are described in Table 1. One-hundred and three patients (82.4%) belonged to the low risk category (STS score <4) and 22 patients (17.5%) were categorized as intermediate risk (STS score 4-7%). The immediate postoperative results are summarized in Table 2. Overall in-hospital mortality was 2.4% (n=3) and mortality by STS category was 1.9% for low-risk patients and 4.5% (n=1) for the intermediate risk category. (Figure 1)

The subgroup of patients >80 years of age consisted of 25 patients: 15 (60%) in the low risk category (STS <4%), and 10 (40%) in the intermediate risk category (STS 4-7%). No deaths were reported in low risk patients >80 years and only one patient died in the intermediate-risk group (10%).

DISCUSSION

Surgical aortic valve replacement is the standard treatment for severe aortic stenosis in adults. Since the advent of TAVI, initially developed to treat high-risk patients excluded from conventional surgery, (1) several studies as the Partner 2A (3-4), the US Pivotal Trial (2), and the Notion trial (5) were conducted to compare surgical treatment versus TAVI in intermediate-risk patients. The objective is to extend the indication of TAVI to intermediate-risk patients, and

Table 1. Baseline population characteristics

Variables	N	%
Age in years (mean and range)	71 (36-91)	
Male sex	80	64
Functional class II-III dyspnea	84	67.2
Body mass index (mean and range)	28 (18-44)	
Hypertension	97	77.6
Dyslipidemia	69	55.2
Noninsulin-dependent diabetes	27	21.6
Insulin-dependent diabetes	15	12.0
Smoking habits	46	36.8
Previous myocardial infarction	15	12.0
Stroke	4	3.2
Peripheral vascular disease	11	8.8
Atrial fibrillation	14	11.2
Moderate/severe left ventricular dysfunction	26	20.8
<i>Surgical procedure:</i>	107	85.6
Elective surgery	88	70.4
Isolated aortic valve replacement	106	84.8
Bioprosthesis		

Table 2. In-hospital outcomes

Variable	N	%
Stroke	2	1.6
Myocardial infarction	1	0.8
Permanent pacemaker	3	2.4
Mediastinitis	2	1.6
Reoperation for bleeding	3	2.4
All-cause mortality	3	2.4

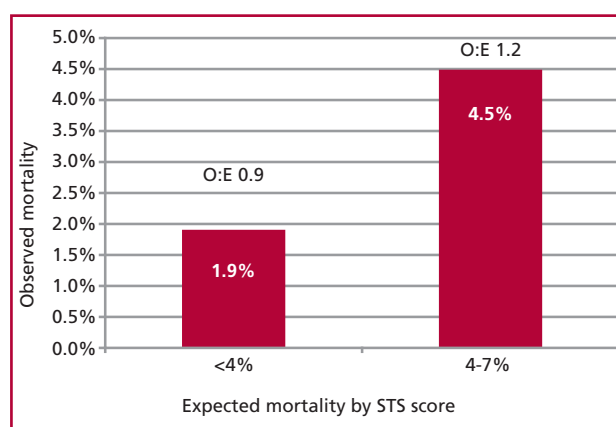


Fig. 1. Observed in-hospital mortality and observed-to-expected mortality ratio of isolated aortic valve replacement or combined with myocardial revascularization in the low-risk category and intermediate-risk category of the Society of Thoracic Surgery (STS) score.

some authors even suggest indicating TAVI to the low risk category. (6)

In our setting, the real results of TAVI are not known, but neither is updated data about the outcomes of surgical aortic valve replacement. The results of the ESMUCICA II and CONAREC registries have not been updated and focus on the outcomes of global surgery, which is statistically influenced by coronary artery bypass graft surgery. For this reason, we consider that our results of the last three years are interesting. Nowadays, aortic valve replacement performed with a minimally invasive approach and using sutureless aortic valves is associated with reduced morbidity, greater patient comfort and shorter aortic cross-clamp time and hospital stay.

The results of controlled clinical trials in intermediate-risk patients (6, 8, 9) show that the incidence of all-cause mortality and major stroke is similar in both groups.

Patients undergoing TAVI achieve greater aortic valve areas and present lower incidence of acute kidney failure and bleeding, while patients undergoing surgery have lower incidence of paravalvular aortic regurgitation and vascular lesion.

TAVI patients with moderate to severe paravalvular aortic regurgitation have higher mortality at two years follow-up than those without aortic regurgitation. (10). The SURTAVI (9) trial provides additional information for the primary outcome of mortality and stroke, and shows similar results. Improvement in symptoms and functional class was also similar, except for a higher proportion of patients with better quality of life assessed by tests in the TAVI group during the first month but without differences thereafter. Paravalvular regurgitation was significantly greater in patients undergoing TAVI.

In conclusion, this study presents the results of consecutive surgical aortic valve replacement procedures, isolated or combined with coronary artery revascularization, performed during the past three years in low-risk and intermediate-risk patients in two referral community centers.

Conflicts of interest

None declared.

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

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