

# Evaluating the nationwide impact of the adoption of an innovation for Mitral Regurgitation: The case of Transcatheter approach

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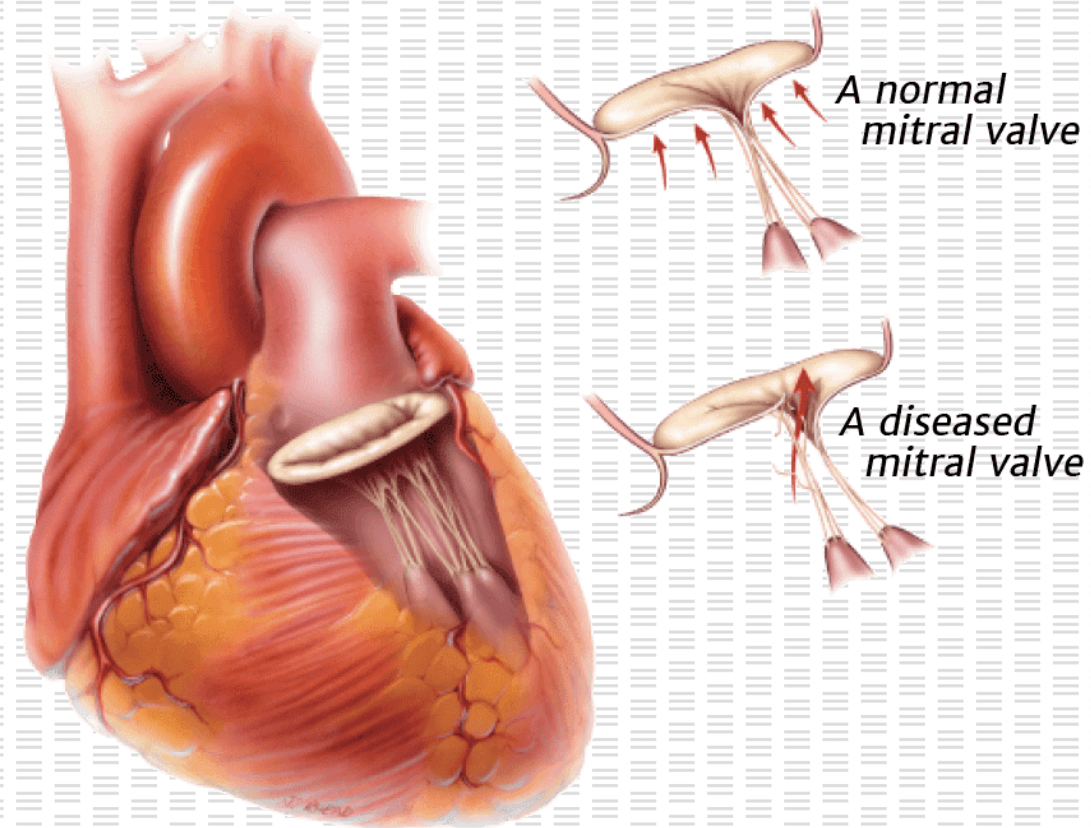


Image obtained from: <https://www.edwards.com/au/patients-care-partners/heart-valves-disease-information/valve-defects>

## INTRODUCTION

**Mitral regurgitation (MR)** is the **second-most frequent Valvular heart disease (VHD)** in Europe.<sup>1</sup>

**Mitral transcatheter edge-to-edge repair (TEER)** is a minimally invasive procedure for treating **MR**, a condition in which the valve between the heart's left chambers does not close properly.<sup>2</sup>



**TEER** is a rapidly evolving procedure that allows safe and effective reduction of **MR** in high-risk patients.



This study delves into the effects of **TEER** for managing **MR** in Spain. We employed a comprehensive national health data to examine its **adoption trends** and **associated health outcomes**.

## METHODS

The analysis was conducted analysing MR cases through International Classification of Diseases 10<sup>th</sup> revision (**ICD-10**) codes in the **Specialized Health Activity Registry (RAE-CMBD)** of the Spanish Ministry of Health from **2016-2020**.

We scrutinize the **TEER** and **surgical mitral valve repair (SMVr)** standardized diagnoses and intervention rates per year. The **risk profiles** (age-adjusted Charlson comorbidity index (**aCCI**)), **mortality**, **length of stay (LoS)**, and **intensive care unit (ICU) LoS** were also analysed.

### Mitral Regurgitation:

Dx codes of interest: I34.0, I34.1

Procedural codes:

Surgical: 02QG0ZZ, 02UG0JZ

TEER: 02QG3ZZ, 02QG4ZZ, 02UG3JZ

### Exclusion criteria:

- All patients suffering infective endocarditis (I33.0) at the time of admission and patients with stays of less than two days in procedures other than transcatheter and who had not been transferred to other centres or died
- Rheumatic mitral valve disease (I05.0 to I05.9).
- All patients with previous pulmonary valvular procedures.
- All TEER procedures will exclude valve dilation procedures (027G\*\*\* and 027J\*\*\*).
- Interatrial septal closure procedures (027G\*\*\*).



Two independent clinical experts validated the coding process

The **determinants of LoS** were evaluated using a **multivariate negative binomial regression model**.



# RESULTS

Among MR patients, there were **3,423 SMVr** and **1,223 TEER**.



Through the period (**2016-2020**) we observed a rise in mean patient age, age-adjusted Charlson comorbidity index (**aCCI**), female patients, and non-elective procedures in **TEER** procedures:

TEER Procedures evolution	2016	2020
Patient age (years) (mean (SD))	70.19 (12.00)	72.29 (11.30)
Age-adjusted Charlson comorbidity index (mean (SD))	4.14 (1.92)	4.64 (2.15)
Female patients (%)	22.03%	35.21%
Non-elective procedures (%)	13.56%	22.82%

Through that period the **median length of stay (LoS)** has been stable in **5 days [IQR: 3-8]**, with minimal ICU stays **0 [IQR: 0-1]** for **TEER** and a **median LoS of 10 days [IQR: 8-16]**, with **2 days of ICU median LoS [IQR: 0-4]** for **SMVr**.

**Mortality** during this period showed a descendent tendency:

- **3.65%** (2016) and **2.47%** (2020) for **SMVr**.
- **4.24%** (2016) and **1.41%** (2020) for **TEER**.

Despite **worsening patient complexity**, there were **no significant differences** in key outcomes between 2016 and 2020.

The **TEER - SMVr ratio** had a significant rise, indicating a notable increase in **TEER** (from **0.226** in **2016** to **0.548** in **2020**).

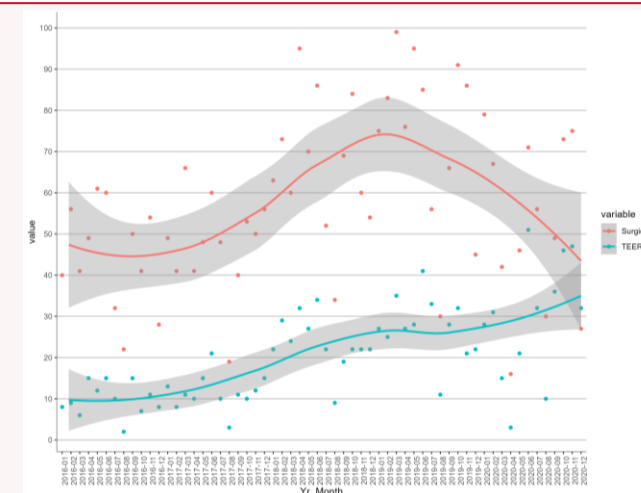


Figure 1. Use of TEER vs SMVr

Results of the **multivariate analysis** showed that **longer TEER LoS** was associated with **female gender** and **non-elective procedures**.

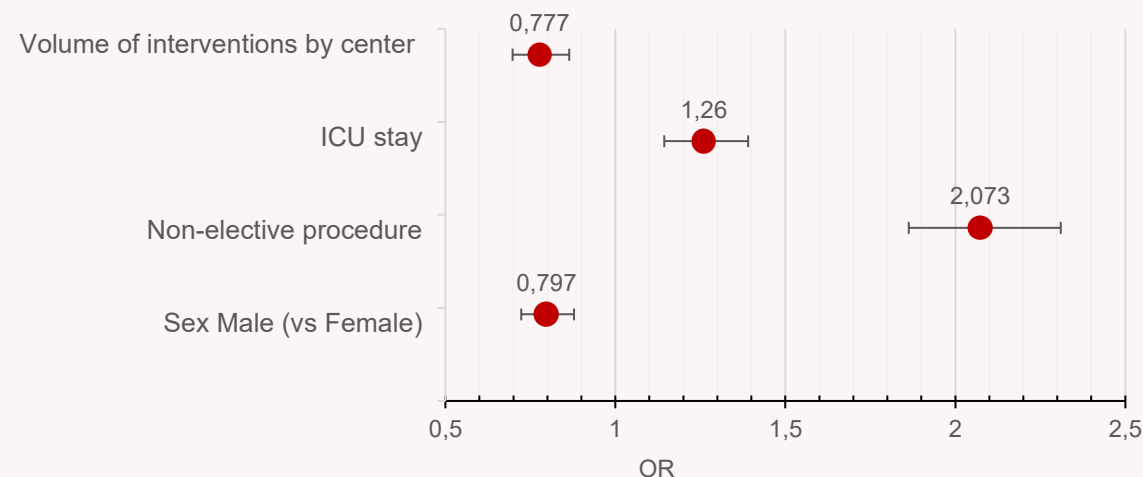


Figure 2. Associated factors ( $p$ -value<0.001) with LoS (odds ratio -OR-).

## RESULTS

Mean costs for **TEER** for MR, **Mitral**, and **SMVr** procedures yearly. An **increase** is seen in all the groups along the years.

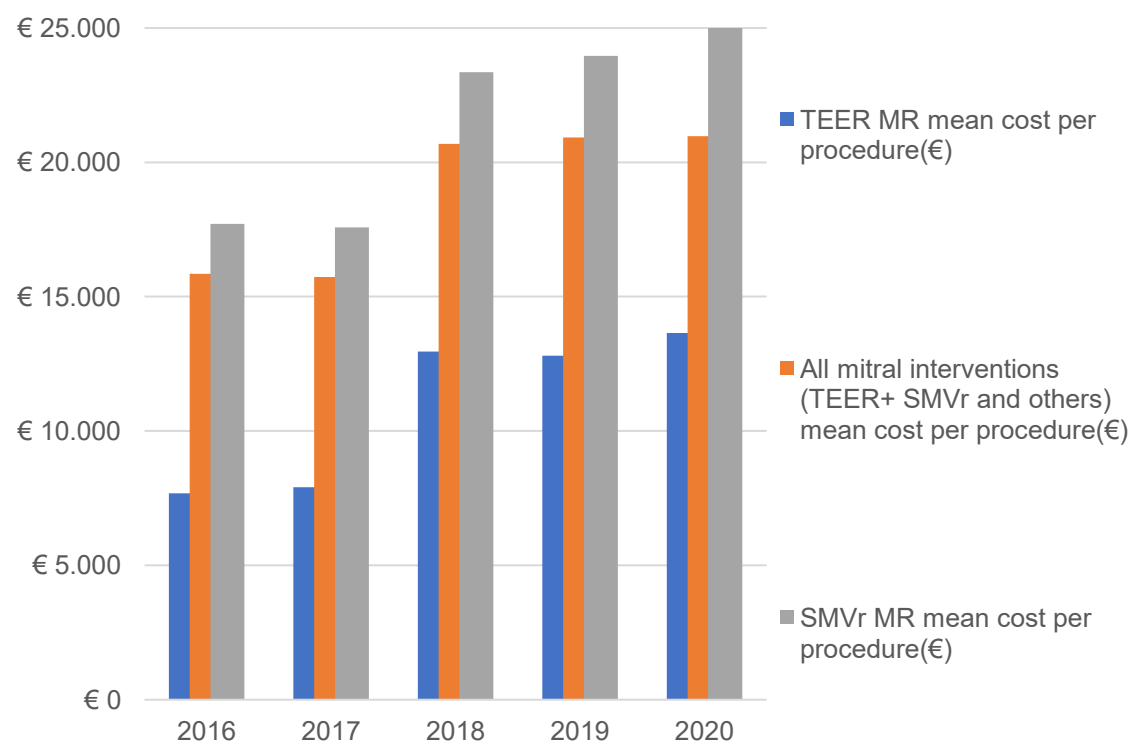


Figure 3. Comparison of mean costs for TEER, all mitral interventions, and SMVr.

## CONCLUSIONS



This study reflects a **clear TEER-SMVr ratio increasing in Spain.**



TEER innovative approach **effectively addresses** high risk cases while **optimizing resource allocation.**



Despite a **growing patient complexity**, the interventions remain being safe.



A **higher non-elective procedure percentage** was observed between 2016 and 2020.



**Reduced Los enhanced hospital capacity** to treat this selected population.

# Thank you

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