

# Impact of Myocardial Bridging on the Long-term Clinical Outcomes of Patients with Left Anterior Descending Coronary Artery Disease Treated with a Drug-Eluting Stent



Chan-Hee Lee, MD, Ung Kim, MD, PhD\*, Jong-Seon Park, MD, PhD, Young-Jo Kim, MD, PhD

Division of Cardiology, Yeungnam University Medical Center, Daegu, South Korea

Received 22 January 2014; received in revised form 21 February 2014; accepted 22 February 2014; online published-ahead-of-print 12 March 2014

## Background

Myocardial bridging (MB) is mostly confined to the left anterior descending coronary artery (LAD) and has been reported to be correlated with increased atherosclerotic plaques in the segment proximal to the bridging. This study aimed to assess the impact of MB on the clinical outcomes of patients with DES implantation in the LAD.

## Methods

A total of 551 consecutive patients with DES implantation on LAD from January 2008 to December 2009 were included. Patients were divided into an MB group (n = 94, 17.1%) and a non-MB group (n = 457, 82.9%) based on angiographic findings. They were followed up for three years to evaluate major adverse cardiac events (MACE), which were defined as all-cause death, myocardial infarction (MI), target lesion revascularisation (TLR) or ischaemic driven target vessel revascularisation (Id-TVR).

## Results

During three years of follow-up, the rate of MACE was significantly higher in the MB group than in the non-MB group (18.1% vs. 9.8%,  $p = 0.024$ ), especially rates of TLR (8.5% vs. 2.4%;  $p = 0.003$ ) and Id-TVR (13.8% vs. 4.2%;  $p < 0.001$ ). However, no difference was observed for MI (3.2 vs. 2.6%;  $p = 0.692$ ) and all-cause death rates (3.2 vs. 4.6%;  $p = 0.575$ ). Multivariate regression analysis showed that the presence of MB was an independent predictor for MACE (Hazard ratio 2.897, 95% CI 1.536 - 5.464,  $p = 0.001$ ).

## Conclusion

MB appears to be associated with adverse effects in patients with DES implantation in the LAD.

## Keywords

Myocardial bridging • Drug-Eluting Stents • Coronary artery disease • Left anterior descending coronary artery • Major adverse cardiac events

## Introduction

Myocardial bridging (MB) is a congenital coronary variation whereby a segment of a major epicardial coronary artery, which normally has an epicardial course, runs intramurally

though the myocardium under the muscle bridge. MB occurs most commonly in the mid-portion of the left anterior descending coronary artery (LAD) [1]. MB was first reported in depth analysis of autopsy samples by Geiringer in 1951 [2], and later recognised angiographically by Portmann and Iwig

\*Corresponding author at: Division of Cardiology, Yeungnam University Medical Center, 317-1, Daemyung-dong, Namgu, Daegu 705-717, South Korea, Email: [woongwa@hanmail.net](mailto:woongwa@hanmail.net)

in 1960 [3]. This segment is squeezed (or milked) in systole by contraction of surrounding myocardium and recovered during diastole [4].

Usually, MB is an incidental finding associated with good long-term prognosis that five-year survival rate was 97% [5]. Though MB has long been considered a benign condition based on angiographic findings [6], it is not always a benign entity. In fact, MB may cause clinical symptoms such as, angina, myocardial infarction, life-threatening arrhythmia, and sudden cardiac death [7,8]. However, the relationship between MB and the long-term outcomes of a patient with a drug-eluting stent (DES) implanted by percutaneous coronary intervention (PCI) remains uncertain in patients with coronary artery disease (CAD). We undertook this study to assess the potential impact of MB on clinical outcomes in patients with DES implantation in the LAD.

## Methods

### Study population

A total of 551 consecutive patients (591 lesions) with implanted DES by PCI at Yeungnam University Medical Center from January 2008 to December 2009 were enrolled in this study. Average patient age was  $63.38 \pm 10.18$  years (range 36-86 years), 348 patients (63.2%) were male. MB was identified angiographically as a segment squeezed (milked) in systole by contraction of surrounding muscle and completely or partially recovered in diastole [4,9]. Based on conventional angiographic findings, these 551 patients were divided into the two groups, that is, an MB group and a non-MB group. This study was approved by the local Institutional Review Boards of the institutions involved and was conducted in accord with the Declaration of Helsinki.

### Procedures and Medication

PCI was performed using standard techniques. All patients received 325 mg aspirin orally and a loading dose of 300 mg of clopidogrel before coronary angiography (CAG), or after PCI in emergency cases. After PCI, patients were routinely treated with aspirin 100 mg/day, clopidogrel 75 mg/day, and/or cilostazol 200 mg/day at the operator's discretion. Patients were advised to maintain life-long aspirin therapy. Clopidogrel duration was at operator's discretion based on considerations of lesion and procedural complexity. All patients were implanted with DES, such as, Sirolimus-eluting stent (SES, Cypher Select™, Cordis, Miami Lakes, FL, USA), Paclitaxel-eluting stent (PES, Taxus, Boston Scientific Corp., Natick, MA, USA), Zotarolimus-eluting stent (ZES, Endeavor sprint, Medtronic, Santa Rosa, CA, USA), or Everolimus-eluting stent (EES, Xience V, Abbott Vascular, Santa Clara, CA, USA), during PCI.

### Quantitative coronary angiographic analysis

The percentage of diameter stenosis, minimal lumen diameter, distal reference diameter and lesion length were analysed

using an automated edge-detection system (Centricity Cardiology CA 1000, GE Healthcare, Fairfield, CA, USA) before and after angiography.

### Clinical follow-up and Study end points

The endpoint of this study was a composite of major adverse cardiac events (MACE) during the three-year follow-up. MACE included all-cause death, cardiac death, myocardial infarction (MI), target lesion revascularisation (TLR), ischaemic driven target vessel revascularisation (Id-TVR), and stent thrombosis (ST). MI was defined as typical ischaemic chest pain, ST-segment or T-wave abnormalities with a creatinine kinase-MB level  $\geq 2$  times higher than the reference value, without any new pathologic Q waves. TLR was defined as surgical or percutaneous re-intervention driven by significant ( $> 50\%$ ) luminal narrowing within a stent or with 5 mm proximal or distal to a stent in the presence of angina symptoms or objective evidence of ischaemia. Id-TVR was defined as the need for emergent or elective coronary artery bypass grafting or repeat PCI in a target vessel due to chest pain or a positive test result for ischaemia (exercise stress test, stress echocardiogram, 24-hour Holter monitoring, evidence of ST-segment depression or an increase in  $>1$  electrocardiogram lead at rest, or a radionuclide study showing a reversible perfusion defect). ST was defined as previously by the Academic Research Consortium [10]. Demographic, medical, and procedural data were recorded in a computerised cardiovascular database. Clinical follow-up data were obtained from institutional medical records and by conducting telephone interviews with patients or relatives.

### Statistical analysis

The analysis was performed using SPSS version 20.0 for Windows (IBM, SPSS Inc., Chicago, IL, USA). Continuous variables (presented as mean  $\pm$  SDs) were compared using the unpaired Student's *t* test. Categorical variables (presented as frequencies) were compared using the chi-square or Fisher's exact probability test. Kaplan-Meier survival analysis was used to prepare cumulative event free survival curves and compared the differences among curves for statistical significance using log-rank analysis. Cox proportional regression analysis, adjusted for confounding baseline variables, was used to evaluate the potential impact of MB on MACE. *p* values of  $<0.05$  were considered statistically significant.

## Results

The incidence of angiographically determined MB in the 551 patients was 17.1% ( $n = 94$ ). MBs were mainly located in the mid-portion of the LAD ( $n = 77$ , 81.9%); others were in the distal LAD ( $n = 15$ , 16.0%) and the diagonal branch ( $n = 2$ , 2.1%). Regarding positional relationships between MB and implanted DES, most of MBs was located distal to stents ( $n = 92$ , 97.9%). In no case was a DES implanted in MB. The patients were divided into the MB group ( $n = 94$ , 17.1%) and the non-MB group ( $n = 457$ , 82.9%).

Download English Version:

<https://daneshyari.com/en/article/2917747>

Download Persian Version:

<https://daneshyari.com/article/2917747>

[Daneshyari.com](https://daneshyari.com)