

RE-INFARCTION OF THE TARGET VESSEL, SEVEN YEARS AFTER AN UNDERSIZED BARE METAL STENT DEPLOYMENT

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ABSTRACT

Stent sizing and apposition have been shown to be determinants of clinical outcome and stent under-expansion is associated with both technique/operator-lesion related factors. Here we report a case of re-infarction of the target vessel, seven years after an undersized bare metal stent (BMS) deployment to emphasize again on importance of the effect of stent size and type and undersize hazardous effect on clinical outcome of patients. A 59-year-old man, with a history of previous primary percutaneous coronary intervention (PCI) about 7 years ago on left anterior descending artery was admitted for acute anterior ST elevation myocardial infarction. Our patient's clinical course was an example of under sized BMS stent in primary PCI setting and re -MI and we think undersized stent itself without in stent restenosis can change rheolytic and hemodynamic condition in the stent edge and in hyper coagulable state produce a nidus for thrombus and myocardial infarction and IVUS guided PCI is the best strategy to prevent this event.

Key Words: Bare metal stent, Percutaneous Coronary Intervention, ST segment elevation myocardial infarction.

INTRODUCTION

Stents restenosis in a bare metal stent has an incidence of about thirty percent and occurs mainly during the first six months after stent implantation.¹ In a literature review we found that bare metal stent thrombosis was occurred in 9.6%, 13.9%, and 18.1% of patients at 1, 5, and 10 years, respectively.² Restenosis presented as myocardial infarction in 1.0%, 1.8%, and 2.1% of patients at these time points. There has been a great deal of controversy regarding the risk of late stent thrombosis and re-infarction rate with drug eluting stents, and in many studies bare metal stents have a significantly lower occurrence of very late reinfarction and stent thrombosis.³

Stent sizing and apposition have been shown to be determinants of clinical outcome and stent under-expansion is associated with both technique/operator-related factors (undersized balloon size, low balloon pressure, and short duration of inflation) and lesion-related factors (vessel size; plaque volume;

and plaque composition, especially calcification), it is sometimes difficult to achieve optimal stent expansion even with large balloon size, high balloon pressure, and long duration of inflation. Unavailability of appropriate size is another problem that we encounter in routine practice.⁴ During primary percutaneous intervention (PCI), many factors may interact with properly stent size selection such as: mural thrombosis, vessel spasm and poor opacification of lesion; so stent undersizing commonly complicates this procedure and due to no reflow or slow flow phenomenon post dilation is not possible. Here we report a case of re-infarction of the target vessel, seven years after an undersized bare metal stent (BMS) deployment to emphasize again on importance of the effect of stent undersizing on clinical outcome of patients.

CASE REPORT

A 59 years old smoker man, with a history of previous primary percutaneous coronary intervention (PCI) about 7 years ago on left anterior descending artery was admitted to the coronary care unit and then to the catheterization laboratory at the Mashhad University of Medical Sciences for acute anterior ST elevation myocardial infarction. He

underwent implantation of a bare metal stent in the left anterior descending artery seven years ago and was subsequently discharged on aspirin (100 mg once daily), plavix (75 mg once daily for one month) and a statin (simvastatin 20 mg once daily). Seven years later, he was admitted again for chest pain and electrocardiographic evidence of ST segment elevation myocardial infarction (STEMI) in the anterior leads. He reported adherence to his medication, and had no problem in these years. He received streptokinase and because of continuing chest discomfort he underwent coronary angiography. It showed normal coronaries and we could not detect visible in stent restenosis but his stent as shown in figure1 was undersized.

DISCUSSION

We review the literature and find a study that compares the frequency of stent thrombosis after primary PCI for STEMI with both BMS and DES (drug-eluting stent) and this review showed there is the chance of restenosis to at least 11 years after BMS and to at least 4.5 years after DES deployment.⁵ Table 1 outlines rare case reports of late stent thrombosis with bare metal stents⁵⁻⁹ (Table 1).

Figure1: Angiogram of patient showed an Undersized Stent of mid LAD

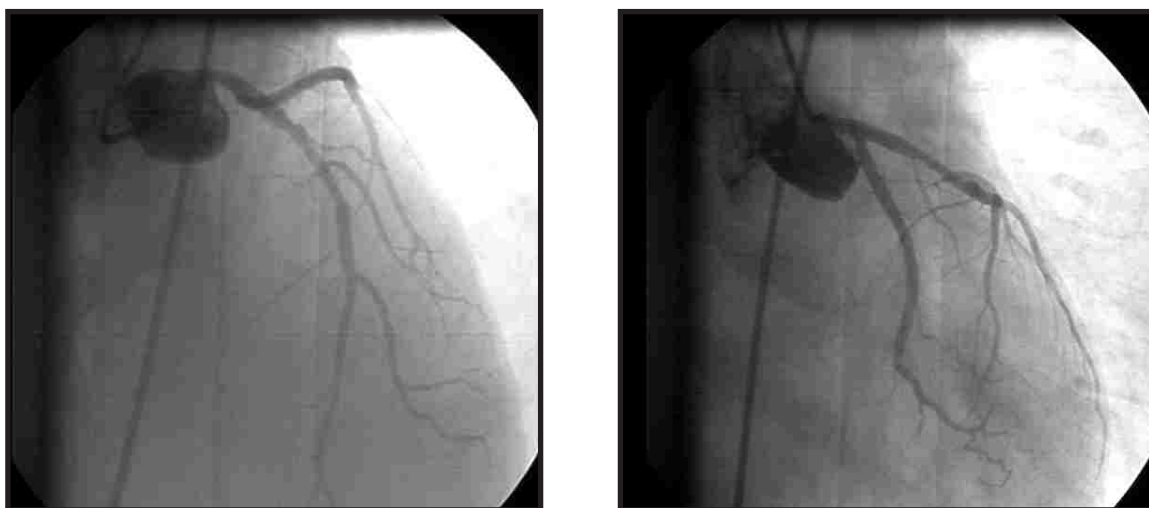


Table 1: Shows The Studies that reporting late Bare Metal Stent Restenosis

	Number of cases	Time
Ramos, et al.	2	3 and 5 years
Hasegawa, et al.	14 cases	63-147 months
Sarkees ML, et al.	1	13 years
Manjappa N, et al.	1	717 days
M Fineschi, et al	1	7 years

After the first year, reinfarction of the target vessel was significantly higher with DES compared with BMS, however reinfarction of the nontarget vessel was similar with DES and BMS. Due to above mentioned problems, undersized stenting in primary PCI setting is a widespread problem and the clinical outcomes of this practice are unknown. However, physicians electing to deploy undersized stents should be aware of the risk of late re-infarction in both DES and BMS deployment in acute setting and consider routine IVUS (Intravascular Ultrasound) evaluation of the stented segment. In primary percutaneous coronary intervention stent oversizing is recommended and in equivocal and stable condition using IVUS before stenting and appropriate post-dilation is the preferred strategy. In summary many studies suggest "bigger is better" especially in primary PCI with BMS to avoid restenosis, however it is not clear that it also decrease re-infarction rate or not. Our patient's clinical course was an example of under sized BMS stent in primary PCI setting and re-MI and we think undersized stent itself without in stent restenosis can change rheolytic and hemodynamic condition in the stent edge and in hyper coagulable state produce a nidus for thrombus and myocardial infarction and IVUS guided PCI is the best strategy to prevent this event.

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