

Treatment strategies in the left main coronary artery disease associated with acute coronary syndromes



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Significant left main coronary artery (LMCA) stenosis is not rare and reported 3 to 10% of patients undergoing coronary angiography. Unprotected LMCA intervention is a still clinical challenge and surgery is still going to be a traditional management method in many cardiac centers. With a presentation of drug eluting stent (DES), extensive use of IVUS and skilled operators, number of such interventions increased rapidly which lead to change in recommendation in the guidelines regarding LMCA procedures in the stable angina (Class 2a recommendation for ostial and shaft lesion and class 2b recommendation for distal bifurcation lesion). However, there was not clear consensus about the management of unprotected LMCA lesion associated with acute myocardial infarction (MI) with a LMCA culprit lesion itself or distinct culprit lesion of other major coronary arteries. Surgery could be preferred as an obligatory management strategy even in the high risk patients. With this review, we aimed to demonstrate treatment strategies of LMCA disease associated with acute coronary syndrome, particularly acute myocardial infarction (MI). In addition, we presented a short case series with LMCA lesion and ST elevated acute MI in which culprit lesion placed either in the left anterior descending artery or circumflex artery. We reviewed the current medical literature and propose simple algorithm for management.

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Keywords: Left main coronary artery, Acute coronary syndrome, Surgery, Percutaneous intervention

Contents

Introduction	273
Current management of left main coronary artery stenosis in stable angina	273
Left main coronary artery stenosis as a culprit lesion in the acute coronary syndromes	274

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Left main coronary artery stenosis as a non-culprit lesion in acute coronary syndromes 274
 Short case series 274
 Conclusion 275
 Acknowledgements 275
 References 275

Introduction

Significant left main coronary artery (LMCA) stenosis is not rare, occurring among a reported 3% to 10% of patients undergoing coronary angiography [1]. Unprotected LMCA intervention remains a clinical challenge. With the advent of drug-eluting stent (DES), extensive use of IVUS and skilled operators, the number of such interventions have increased rapidly, leading to changes in guideline recommendations for LMCA procedures in stable angina (Class 2a recommendation for ostial and shaft lesions and class 2b recommendation for distal bifurcation lesions) [2]. Moreover, isolated LMCA disease with low SYNTAX score (≤ 22) was recommended as class 1 indication with the level of evidence of B in the recent revascularization guidelines of European Society of Cardiology. However, there was no clear consensus on unprotected LMCA lesions associated with acute myocardial infarction with culprit lesion of LMCA itself or distinct culprit lesion of other major coronary arteries [3-6].

This review sought to demonstrate the treatment strategies of LMCA disease associated with acute coronary syndromes, particularly acute myocardial infarction (MI). In addition, we present a short case series with an LMCA lesion and ST-elevated acute MI in which the culprit lesion was placed either in the left anterior descending artery (LAD) or circumflex artery (CX). We review the current medical literature

Abbreviations

CABG	coronary artery bypass graft
CX	circumflex artery
DES	drug-eluting stent
IVUS	intravascular ultrasonography
LAD	left anterior descending artery
LMCA	left main coronary artery MI myocardial infarction
PCI	percutaneous coronary interventions
RCA	right coronary artery
SYNTAX	synergy between percutaneous coronary intervention with TAXUS and cardiac surgery
TIMI	thrombolysis in myocardial infarction

and conclude with an algorithm for LMCA lesions associated with acute coronary syndromes.

Current management of left main coronary artery stenosis in stable angina

Surgery is accepted as a traditional and standard treatment of unprotected LMCA disease. Recent data comparing the safety and efficacy of LMCA interventions with DES and coronary artery bypass graft (CABG) surgery showed comparable results in terms of safety and mortality [2]. Long-term mortality rates were also similar. However, percutaneous coronary interventions (PCI) were associated with higher rates of repeat revascularization, whereas CABG was associated with higher stroke rate compared to PCI [7-10]. Patient selection for both strategies is fundamental

Table 1. Indication for coronary bypass graft surgery vs. percutaneous coronary intervention in the stable angina patients with lesions suitable for both procedures.

LMCA LESION	Favours CABG	Favours PCI
^a Left main with SYNTAX score ≤ 22	1 (Level of evidence – B)	1 Level of evidence – B)
^a Left main with SYNTAX score 23-32	1 (Level of evidence – B)	2a (Level of evidence – B)
^a Left main with SYNTAX score >32	1 (Level of evidence – B)	3 (Level of evidence – B)
^a Left main (isolated or 1 VD, ostium/shaft)	1 (Level of evidence – A)	2a (Level of evidence – B)
^a Left main (isolated or 1 VD, distal bifurcation)	1 (Level of evidence – A)	2b (Level of evidence – B)
^a Left main + 2 VD or 3 VD, SYNTAX score ≤ 32	1 (Level of evidence – A)	2b (Level of evidence – B)
^a Left main + 2 VD or 3 VD, SYNTAX score ≥ 33	1 (Level of evidence – A)	3 (Level of evidence – B)

LMCA, Left main coronary artery; CABG, Coronary artery bypass graft; PCI, Percutaneous coronary; VD, Vessel disease; SYNTAX, Synergy between percutaneous coronary intervention with taxus and cardiac surgery.

^a According to 2014 European Society of Cardiology Guidelines in Myocardial Revascularisation.

^a According to 2010 European Society of Cardiology Guidelines in Myocardial Revascularisation.

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