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Original Article

Left main PCI: An observational analysis from large single-centre experience

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ABSTRACT

Background: Although trials have shown efficacy of unprotected left main percutaneous coronary intervention (uLMPCI), data from Indian subcontinent are lacking. Hence, we planned this observational analysis of single-center uLMPCI data.

Objectives: To study long-term outcome after uLMPCI and identify predictors of adverse outcome.

Methods: Case details of 62 consecutive patients of uLMPCI between 2006 and 2013 were retrieved from a computerized database wherein detailed records were maintained.

Results: Mean follow-up duration was 669.8 ± 404.2 days. Procedural success rate was 98.4%. Primary endpoint was composite of major adverse cardiovascular and cerebrovascular events (MACCE), which included cardiac death (CD), cerebrovascular accident (CVA), myocardial infarction (MI), and need for repeat intervention (RI) at three years. MACCE occurred in 13 (20.9%) patients. Cardiac death (CD), (including possible stent thrombosis), RI, and CVA occurred in 6 (9.7%), 5 (8%), and 2 (3.2%) patients, respectively. Overall three-year MACCE-free survival rate was 76.7%. Event-free survival rate was similar among patients who underwent uLMPCI alone and patients who underwent uLMPCI along with additional one-vessel PCI [(88.9% vs 81.8%), $p = 0.492$], while survival rate was lower in patients who underwent uLMPCI along with PCI of additional two or more vessels (40%, $p = 0.036$). Patients with syntax score ≤32 had higher event-free survival rate than those with syntax score >32 [(87.1% vs 33.3%), $p = 0.001$]. Syntax score >32 was the only independent predictor of adverse outcome.

Conclusion: uLMPCI is safe and effective alternative to CABG for LM alone and LM plus single-vessel disease with syntax score ≤32.

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1. Introduction

In patients with coronary artery disease, approximately 6% have significant left main (LM) disease.[1] In view of the large area of myocardium under jeopardy, LM interventions have potential for major ischemic impediment and thus remain a major therapeutic challenge.

In patients with high surgical risk and low-risk anatomical features, PCI for ULMCA lesion is a class IIa indication according to recent guidelines.[2] Recent randomized controlled trials (RCTs),[3–6] registries,[7–9] and meta-analysis[10] have shown feasibility and safety of DES implantation in this challenging subset of patients and results comparable with CABG in terms of MACCE occurrence. However, CABG still remains the procedure of choice for treatment in patients with high-risk anatomy.

Although several multicentric studies are available from the western world and far east, there is insignificant data of uLMPCI from the Indian subcontinent. Moreover, results often vary depending on the experience of the operator in this challenging subset of patients. Hence, we aimed to evaluate the procedural success and long-term outcome of uLMPCI with drug-eluting stents (DES) and identify predictors of adverse outcome in our large single-center study spanning over a 7-year time period.

2. Methods

2.1. Study population

A total of 62 consecutive patients, who underwent LMPCI between January 2006 and December 2013, were analyzed in this single-center registry. The decision to perform LMPCI was made at the discretion of performing physician on the basis of lesion characteristics, hemodynamic condition of the patient, and patient preference. A written informed consent was obtained prior to the procedure in all patients as per institution protocol. All data related to the procedure, patient's clinical presentation, and follow-up were retrieved from individualized computerized database software, where all such records were maintained with yearly follow-up information. Incomplete records were refreshed with telephonic contact with the patients between December 2013 and August 2014. Patients were risk stratified also according to syntax score.[11] Approval of the institutional ethics committee was taken for data analysis.

2.2. Medication

All patients were pre-treated with Aspirin and loaded with clopidogrel 600 mg. Unfractionated heparin was given at the time of procedure and titrated to maintain ACT >280 seconds intraprocedure. GpIIb/IIIa inhibiting agents were given at discretion of operator in view of complexity of the lesion, stent length, multiple stents, and patient's clinical status. Post-procedure, all patients were prescribed clopidogrel at least for one year and advocated aspirin for whole life. Other cardioactive medication was prescribed in accordance with patient's clinical need and guidelines recommendation. Complete revascularization was aimed in all patients, except those who presented with ACS, in whom only culprit lesion was done at first go and significant nonculprit lesion was revascularized later in a staged procedure, usually within two weeks of index PCI.

2.3. Follow-up

All patients were followed up in cardiology outpatient department, initially at 3 months after PCI, followed by a visit after 6 months, and then yearly. No routine follow-up angiography was done. However, symptomatic patient was subjected to check angiography.

2.4. Endpoints

The primary endpoint of study was a composite of major adverse cardiovascular and cerebrovascular events (MACCE), which included CD, myocardial infarction (MI), stroke, and need for RI. Secondary endpoint was composite of all the above, and symptoms of angina in addition.

2.5. Definitions

Technical success: Technical success was defined as deployment of stent in the target lesion successfully.

Procedural success: It was defined as target lesion (vessel) revascularization with residual diameter stenosis of <10% and TIMI 3 flow without any major procedural complication or immediate post-procedure adverse event like MI, acute stent thrombosis, need for emergency target revascularization, or CD.

Complete revascularization: Complete anatomic revascularization was defined as treatment of all coronary artery segments >1.5 mm in diameter with ≥50% diameter stenosis.[12]

Target lesion revascularization (TLR): TLR was defined as repeat intervention of target lesion up to 5 mm segment proximal and distal to stent.

Target vessel revascularization (TVR): TVR was defined as repeat intervention of any segment of coronary vessel proximal or distal to the target lesion, involving its branches and/or target lesion itself.

Cardiac death (CD): Any death due to proximate cardiac cause (e.g. MI, low-output failure, fatal arrhythmia), unwitnessed death and death of unknown cause, and all procedure-related deaths, including those related to concomitant treatment, will be classified as CD.[13]

Myocardial infarction (MI): MI was defined as increase in CPK-MB level of more than three times the upper limit of normal range associated with typical chest pain and fresh ST elevation or new onset LBBB.

Major adverse cardiovascular and cerebrovascular events (MACCE): MACCE was defined as occurrence of nonfatal MI, CD, RI, including TLR/TVR and any new vessel revascularization or cerebrovascular accident (CVA) during follow-up period.

Stent thrombosis (ST): Stent thrombosis was labeled as acute, subacute, late, and very late when event occurred within 24 hour, 30 days, <1 year, or >1 year, respectively after