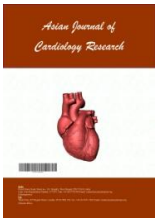

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Double Bifurcation Stenting in Complex Coronary Disease

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Authors' contributions

This work was carried out in collaboration among all authors. Author SP designed the study, did the intervention. Author TS performed wrote the protocol and wrote the first draft of the manuscript. Author SK managed the analyses of the study. Author VP managed the literature searches. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Bifurcation lesions consists of 15-20% of all percutaneous interventions. Bifurcation stenting is still complex and associated with high risk of stent thrombosis and restenosis. Although provisional approach has been proved to be the standard strategy of treatment. There is still lack of evidences for multiple steps of the procedure. For so many years we have been focused on the optimization of side branch (SB), but the clinical outcome is mostly dependent on the main vessel (MV) stenting. The optimal expansion of MV stent without the compromise of SB is the ultimate goal to achieve in the coronary bifurcation stenting. Here we report a case of complex bifurcation lesion for whom we successfully treated with double bifurcation stenting.

Keywords: Bifurcation stenting; complex percutaneous interventions; multivessel PCI.

1. INTRODUCTION

Bifurcation lesions account for 15–20% of all percutaneous coronary interventions (PCIs) [1]. Coronary bifurcation stenting is still complex and associated with a high risk of stent thrombosis and restenosis even in this era of drug-eluting stent (DES) [2]. The occlusion of SB

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after MV stenting is one of the most common complications seen during bifurcation stenting [3]. The optimal expansion of MV stent without the compromise of SB is the ultimate goal to achieve in the coronary bifurcation stenting [4]. The main reasons for this are due to carina (flow divider region) shift and plaque shift (from MV to SB) which leads to increased incidence of peri procedural MI and mortality [5,6]. Although conservative strategy (only main branch stenting) was considered ideal, now a days 2 stent strategy is quickly evolving especially in large SB. Here we share our experience with one such case where double bifurcation stenting was done.

2. CASE REPORT

We report a case of 56-year-old male with no risk factors presented with Acute anterior wall ST elevation myocardial infarction. Coronary angiogram revealed distal left main and double vessel disease with SYNTAX-1 score of 26 and Medina Score of (1,1,1). since patient was not willing for CABG, we proceeded with complex bifurcation stenting.

LCA cannulated with 7F EBU guide, LAD lesion crossed with 0.014" Fielder FC wire followed by dilatation with 2.0x12 mm Balloon at 14 atm pressure. Proximal LAD stented with 2.75 x 34 mm Resolute Onyx DES.

LCX lesion crossed with 2 separate 0.014" fielder FC wires, one into main LCX and other into OM branch followed by successful deployment of 2.5x34 mm Resolute Onyx DES in main LCX and proximal edge crushed with 3.0x 12 mm NC balloon at 14 atm pressure.

LMCA stented with 3.5x 12 mm Resolute Onyx DES till proximal LAD (Overlapping with distal stent), POT was done with 4.5x 8 mm NC balloon at 16 atm pressure.

LCX was recrossed with 0.014"wire and ostium dilated with 2.0x 12 mm balloon at 12 atm pressure followed by deployment of 2.5x 18 mm Resolute Onyx DES till major OM via TAP technique and kissing balloon dilatation done with 3.25x 12 mm NC balloon from LMCA into LAD.

Main LCX was recrossed with another 0.014" fielder FC guide wire and ostium dilated with 2.5x 12 mm NC balloon at 12 atm pressure. Final kissing balloon was done for LCX/OM bifurcation (Medina 1,1,1) with 2.5x12 mm and 2.75x12 mm NC balloon at 12 atm pressure.

Post procedure angiogram revealed TIMI 3 Flow with no complications.

Post procedure IVUS run showed well apposed stent struts without any dissection.

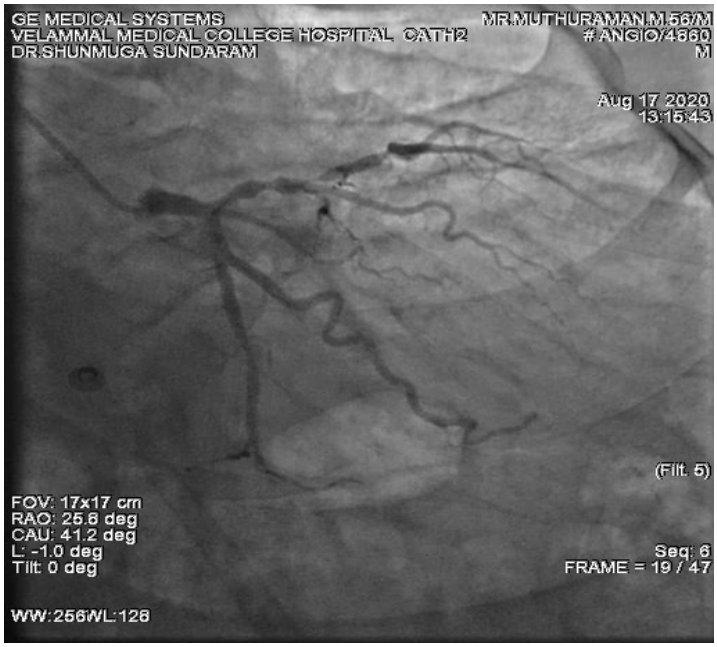

Image 1.

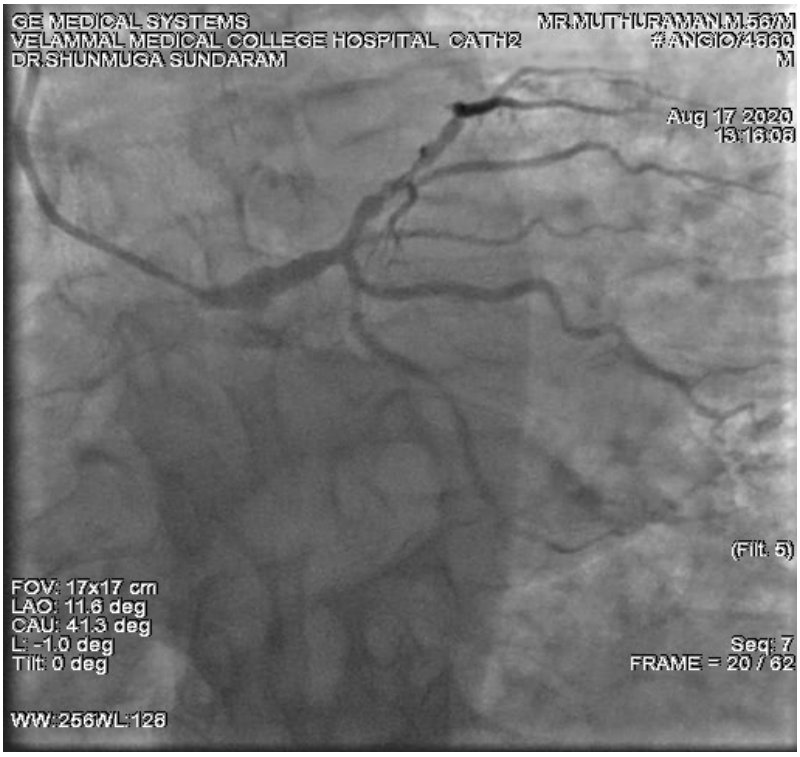

Image 2.

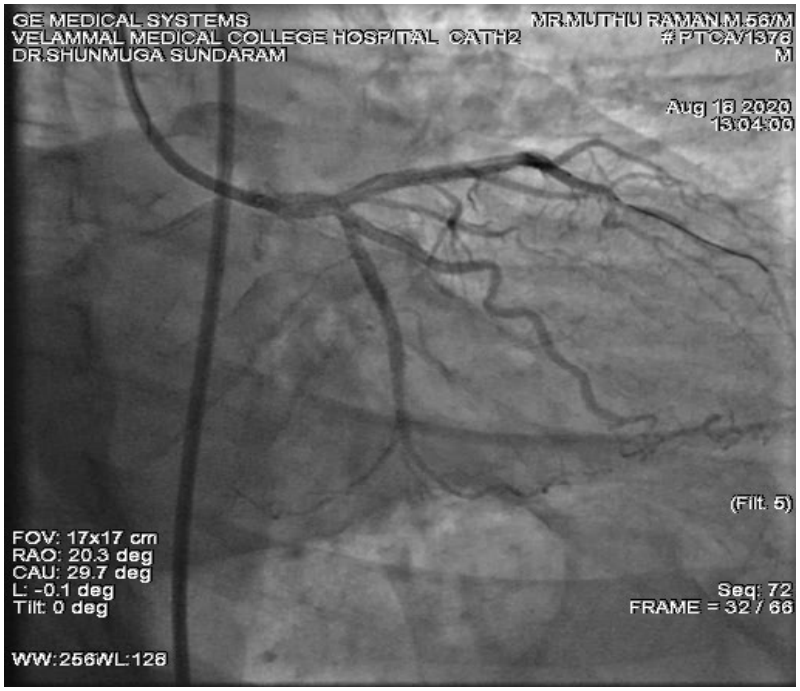

Image 3.

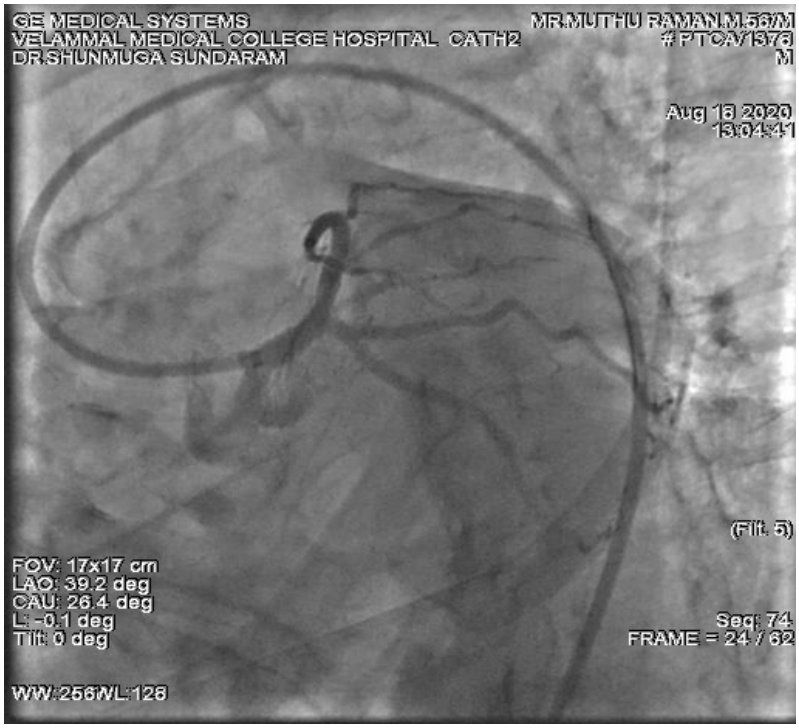

Image 4.

3. DISCUSSION

A Bifurcation lesion is traditionally defined as a coronary artery narrowing occurring adjacent to and/or involving the origin of a significant side branch [7]. Miere et al. were first to define the risk of side branch of occlusion associated with provisional stenting [8]. Bifurcation lesion interventions poses significant challenge in terms of wiring, passing hardware, recrossing, immediate and long-term outcomes. Various strategies like culotte, T stenting, step crush, DK crush, TAP, Reverse TAP etc has evolved based on factors like anatomic variation, side branch angle and extent of plaque burden. According to Bifurcations Bad Krozingen (BBK) II trial culotte technique is better than T-stenting in terms of restenosis rate [9]. However culotte technique revealed similar results compared with crush technique in NORDIC Stent Technique study [10] and was found inferior to DK crush technique in DK-CRUSH III trial [11]. According to recently studied meta-analysis by Barret et al. [12], crush technique is found to have less event rate compared to all other techniques. Think the best 2-stent technique is the technique you are most familiar with. The optimal stent expansion is much more important than the selection of a specific 2-stent technique. Here in this case, we did double bifurcation stenting with TAP and reverse TAP successfully.

4. CONCLUSION

Bifurcation lesions are increasingly common in routine percutaneous interventions, for long part of time it was believed that conventional approach is ideal but for significant side branch lesion double branch stenting has become mandatory to prevent side branch occlusion. In a patient with complex bifurcations double bifurcation also can be done without any residual complications in expert hands, thus improving the survival of patients.

CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline patients consent and ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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