

## Lesions Close to Coronary Bifurcation and Different Angiographic Features

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**ABSTRACT**

**Background:** The optimal treatment strategy remains unclear for lesions located near, but not meeting the criteria for, typical coronary bifurcation lesions (CBL).

**Case presentation:** A 56-year-old male patient presented with persistent angina pectoris. Early coronary angiography (CAG) was performed due to high-risk features. A critical lesion was observed immediately before the circumflex artery (CX)- 3rd obtus marginalis (OM) bifurcation. The distance between the point of bifurcation (POB) and the severe stenosis (Minimal Lumen Diameter-MLD) was approximately 10 mm (MLD-POB distance  $\leq 4$  mm for the normal CBL definition). Provisional bifurcation percutaneous coronary intervention (PCI) was performed with the side-branch preservation owing to the presences of plaques with complex morphological features.

**Conclusions:** Anatomical challenges include plaque distribution extending to the POB, failure to determine a safe stent landing zone, or failure to predict plaque shift to the bifurcation point. These lesions, though not classical bifurcations, can be managed using bifurcation-specific strategies and techniques.

**Keywords**

Close to coronary bifurcation lesion, Percutaneous coronary intervention, Point of bifurcation, Minimal lumen diameter, Case reports.

**List of Abbreviations**

CBL: Coronary Bifurcation Lesion, CAG: Coronary Angiogram, CX: Circumflex Artery, OM: Obtus Marginalis, PCI: Percutaneous Coronary Interventions, POB: Point of Bifurcation, PMV: Proximal Main Vessel, DMV: Distal Main Vessel, SB: Side Branch, MLD: Minimal Lumen Diameter, T-CBL: True- Coronary Bifurcation Lesion, NT-CBL: Non-True Coronary Bifurcation Lesion, MADS-A: Main Across Distal Side-A.

**Introduction**

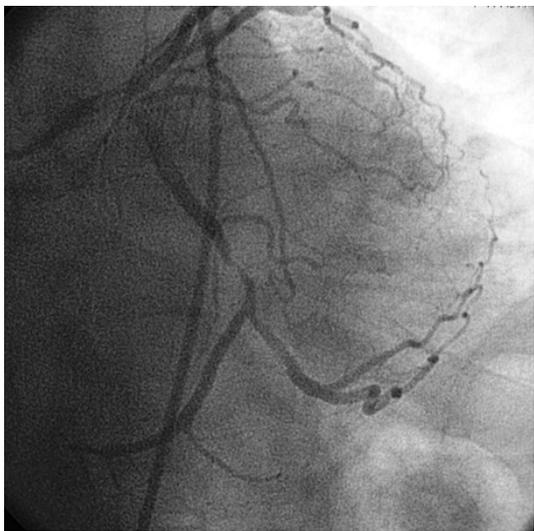
Coronary bifurcation lesion (CBL) treatment has improved with advancements in PCI techniques. However, it remains challenging. The POB is defined as the centre of the largest circle in bifurcation segments (proximal main vessel, distal main vessel and side branch,

PMV, DMV, SB respectively). CBL is defined as angiographically significant coronary stenosis involving a major side branch ( $> 6$  cm in length and  $\geq 2$  mm in diameter) or adjacent to a side branch (lesions within 4 mm of POB; MLD- POB distance  $\leq 4$  mm) [1]. True- CBLs (T-CBL) and Non-True CBLs (NT-CBL) are defined separately, depending on the severity of side branch stenosis, and refer to lesions in the same location [2]. The term pseudo-bifurcation was used for cases in which only the main branch, was affected at the location of coronary bifurcation. Therefore, it was evaluated similarly in the NT-CBL group (NT- CBL are defined as other than 1.1.1- 0.1.1- 1.0.1 according to Medina classification) [3]. Although current guidelines address lesion classification and corresponding treatment strategies, decision-making becomes more complex for severe lesions located near, but not within, the defined criteria for CBL [4,5].

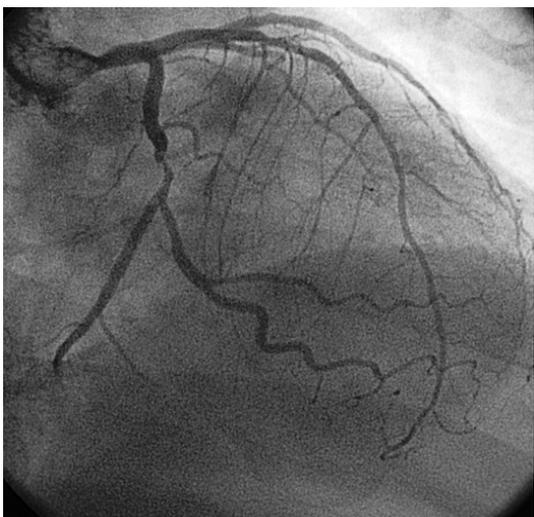
**Case Presentation**

A 56-year-old male patient presented with angina that had been worsening for one month. The patient had been receiving medical

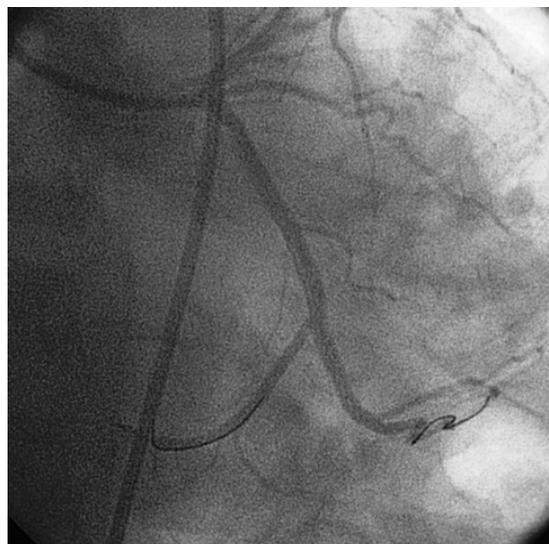
treatment for hypertension and type 2 diabetes mellitus for 10 years. At admission, the haemodynamic findings were normal. Pathological q waves were observed in the inferior leads on the electrocardiogram. Urgent CAG was performed owing to increased cardiac troponin levels and persistent angina. Echocardiography showed a global left ventricular ejection fraction of 40–45%. CAG revealed a critical lesion in the CX before the 3.OM (MLD-POB distance >4 mm) (Figure 1). Although this did not meet the strict definition of a CBL, the complex atherosclerotic morphology posed a risk to the bifurcation core during PCI (Figure 2). No significant stenosis was detected in other coronary arteries. Provisional PCI was performed to the CX-3.OM region. After pre-dilatation, a 3.0x 30 mm drug-eluting stent implantation was successfully performed according to Main Across Distal Side-A classification (MADS-A) (at 14 atmosphere, final diameter 3.24 mm) [6]. The optimal results were observed angiographically. Side branch flow was normal; no complications occurred (Figure 3).



**Figure 1:** AP-Caudal angiographic view showing that the close to coronary bifurcation lesion in the CX artery.



**Figure 2:** Another angiographic view showing the CX lesion.



**Figure 3:** AP-Caudal angiographic view showing that the implanted bifurcation stent in the CX with known as the Main Across Side First (MADS-A) classification.

### Discussion

Despite advances in PCI techniques, CBL treatment remains a challenge. The selection of the most appropriate technique depends on the assessment of the severity of the lesions and lesion type. It was thought that these lesions very close to the coronary bifurcation could be treated with stent implantation in the PMV [7]. However, culprit plaques near the coronary bifurcation frequently extend to the bifurcation point, often undetected angiographically [8]. Only PMV treatment may carry risks, as the stent distal end (*stent edge*) should be at a normal landing point (*Healthy Landing Zone*) during implantation [9]. Plaque shift toward the bifurcation core or plaque rupture at the stent edge can compromise all bifurcation segments in the short or long term [10]. Instead, PCI was performed using a provisional technique, considering it as a T-CBL, in our case (Medina 1.0.1). Optimal results were observed with drug-eluting stent implantation with balloon pre- and post- dilatation. Side branch flow was normal, and no complications were observed.

Many CBL classifications (Medina, Lefevre/ICPS, Duke, Safian, and Sanborne) describe bifurcation lesions in the same locations. Only Movahed's classification specifically addresses lesions close to the bifurcation (suffix 1C = close to bifurcation), noting that if these are not considered T-CBL by the operator, only the PMV should be stented. This highlights the need for operator judgement in managing such lesions. Although subjective assessment may suffice for short, non-calcified plaques, many CBLs exhibit complex morphology and diffuse unstable plaques, as shown in intravascular imaging studies [11]. Given the risks of treating only the PMV, it may be safer to consider these lesions as bifurcation lesions and plan treatment accordingly. As more data emerge, clearer guidelines will streamline decision-making for operators.

### Conclusion

In lesions that are very close to the coronary bifurcation, PCI

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involving a bifurcation may be safer and more effective than treating only the main vessel, due to the complex plaque characteristics in these regions.

## References

1. Lunardi M, Louvard Y, Lefevre T, et al. Definitions and Standardized Endpoints for Treatment of Coronary Bifurcations. *EuroIntervention*. 2023; 19: 807-831.
2. Burzotta F, Louvard Y, Flensted J, et al. Percutaneous coronary intervention for bifurcation coronary lesions using optimised angiographic guidance: the 18th consensus document from the European Bifurcation Club. *EuroIntervention*. 2024; 20: 915-926.
3. Louvard Y, Medina A, Stankovic G. Definition and classification of bifurcation lesions and treatments. *EuroIntervention*. 2010: J31-J35.
4. Albiero R, Burzotta F, Lassen JF, et al. Treatment of coronary bifurcation lesions, part I: implanting the first stent in the provisional pathway. The 16th expert consensus document of the European Bifurcation Club. *EuroIntervention*. 2022; 18: 362-376.
5. Lassen JF, Albiero R, Johnson TW, et al. Treatment of coronary bifurcation lesions, part II: implanting two stents. The 16th expert consensus document of the European Bifurcation Club. *EuroIntervention*. 2022; 18: 457-470.
6. Louvard Y, Thomas M, Dzavik V, et al. Classification of coronary artery bifurcation lesions and treatments: time for a consensus. *Catheter Cardiovasc Interv*. 2008; 71: 175-183.
7. Movahed MR. Coronary artery bifurcation lesion classifications, interventional techniques and clinical outcome. *Expert Rev Cardiovasc Ther*. 2008; 6: 261-274.
8. Malaiapan Y, Leung M, White AJ. The role of intravascular ultrasound in percutaneous coronary intervention of complex coronary lesions. *Cardiovasc Diagn Ther*. 2020; 10: 1371-1388.
9. Kranjec I, Klemenc M, Džananović DZ, et al. In search for "healthy" landing zones for coronary stent placement: are the largest intrasegmental lumens adequate?. *J Thorac Dis*. 2024; 16: 457-468.
10. Park TK, Park YH, Song YB, et al. Long-Term Clinical Outcomes of True and Non-True Bifurcation Lesions According to Medina Classification- Results from the COBIS (CORonary BIFurcation Stent) II Registry. *Circ J*. 2015; 79: 1954-1962.
11. Longobardo L, Mattesini A, Valente S, et al. OCT-guided Percutaneous Coronary Intervention in Bifurcation Lesions. *C Interv Cardiol*. 2019; 14: 5-9.