Available online at www.rajournals.in

RA JOURNAL OF APPLIED RESEARCH
ISSN: 2394-6709
DOI:10.47191/rajar/v9i3.04
Volume: 09 Issue: 03 March-2023

International Open Access

Impact Factor- 8.174

Page no.- 149-152

Management of Medina (0,0,1): Case Report

FELLAT Nadia[1], EL KARROUMI Nassima[2], AlAMI Kenza[3], FELLAT Rokaya[4]
[1-4]Cardiology Department A Ibn Sina Hospital

ARTICLE INFO

Published Online:
31 March 2023

Corresponding Author:
EL KARROUMI Nassima

ABSTRACT

Percutaneous coronary intervention of bifurcation coronary lesions is associated with a high risk of major adverse cardiac events.
Identifying the side branch will come first, then deciding whether or not it is a significant one.
The aim of this article is to discuss how to manage the Medina 0,0,1 lesion: either optimal medical therapy or PCI.
The inverted T stenting has long been preferred in that matter, and was considered safe. And for that we will be reporting a case of a severe lesion of the first diagonal branch at its ostium.

KEYWORDS: Medina classification, Side branch, Main vessel, percutaneous coronary intervention.

INTRODUCTION

Bifurcation lesions were once indicating surgery but not anymore. The question now is how to perform optimal stenting of the main branch while preserving the side branch (1)

PCI of bifurcation lesions can be very challenging due to anatomic characteristics of each lesion. It includes: bifurcation site, the angle between the main and the side branch, the place location and morphology. (2)

Medina classification had been adopted as the preferred system to define and classify bifurcation lesions.

CASE REPORT

A 68-year-old female with hypertension and menopause as risk factors, had a long history of coronary artery disease since 2015.

During the first admission for unstable angina a PCI of the middle LAD with 2 bare metal stents was performed, this procedure was complicated by an extensive dissection towards left main artery and proximal LAD, treated then with DES.

5 years later in 2020, she was readmitted for recurrence of angina related to lesions of right coronary which was successfully stented.

6 months later, in 2021 the patient was readmitted for the same chest pain without any ischemic changes on the EKG or positive cardiac biomarkers. The angiography control revealed a permeable right coronary stent but a severe lesion of the first diagonal branch at the ostium Medina (0.0.1). (figure1) However, they were no evidence of in-stent restenosis of the 2 previous stents of the LAD.

The operator Z decided to go for a **T stenting** of the SB. (figure2) After wiring the LAD and predilating the SB, the procedure got complicated by an extensive dissection from the ostium to the distal segment of the LAD. Unfortunately, the patient presented a cardiogenic shock and despite a well-conducted resuscitation she died without reopening of the main coronary artery.

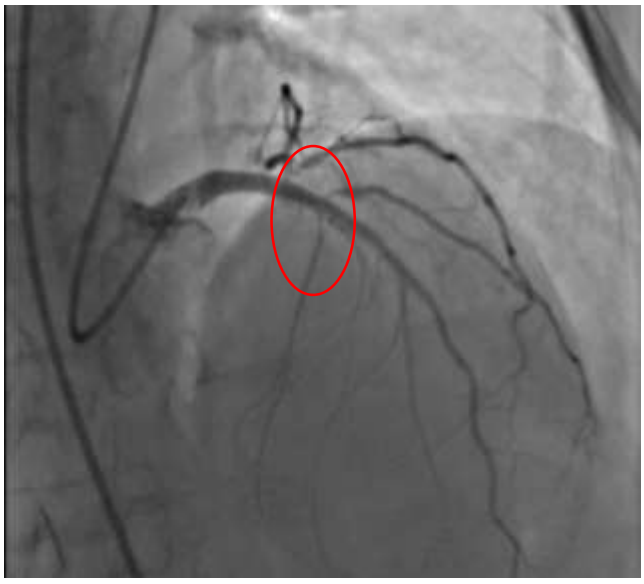

Figure 1: coronarography showing a severe lesion of the first diagonal branch at the ostium (Medina 0,0,1)

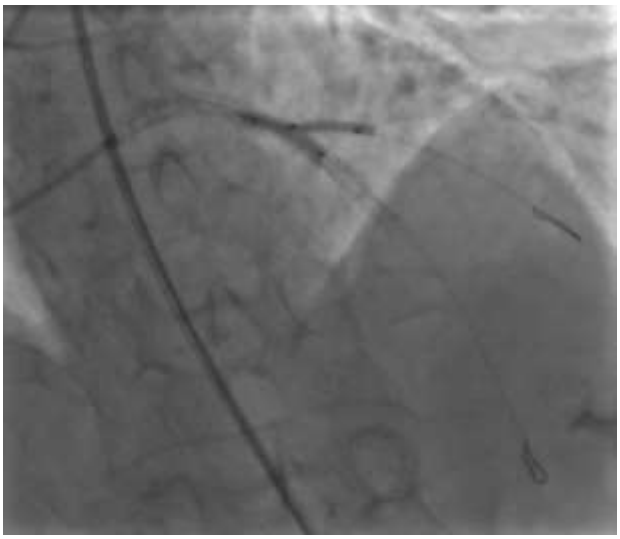

Figure 2: *T stenting*

DISCUSSION

A coronary bifurcation lesion is historically defined as a coronary artery narrowing adjacent to and/ or involving the origin of a significant side branch.

It is more susceptible to develop atherosclerotic plaque than any region of the coronary vasculature due to local hemodynamic forces such as low-shear stress and oscillatory flow. Those features seem to be correlated to endothelial dysfunction. (3)

3 items are used in the Medina classification: the main branch proximal (MBP), the main branch distal (MBD) and the side branch (SB). This classification consists in giving a binary value (1.0) according to whether the segment is compromised or not. (4)

A true bifurcation lesion requires a significant narrowing (>50 %) in both the MB and the SB (Medina 1-1-1 ; 1-0-1 ; 0-1-1) otherwise the lesion will be nontrue. (2)

Identification of the side branch remains a big struggle and is very important to distinguish whether or not it should benefit from revascularization. Actually, the SB provides smaller and less myocardial mass than the MV. However, if it supplies a myocardial mass of %FMM>10% (fractional myocardial mass), it becomes a very significant side branch which losing in PCI would be damaging. (5)

The lesion is considered significant when the percentage of the diameter stenosis is up to 50 and the minimum lumen diameter (MLD) in at least 1 of the 3 segments is located ≤ 4mm from the point of bifurcation (POB). (6)

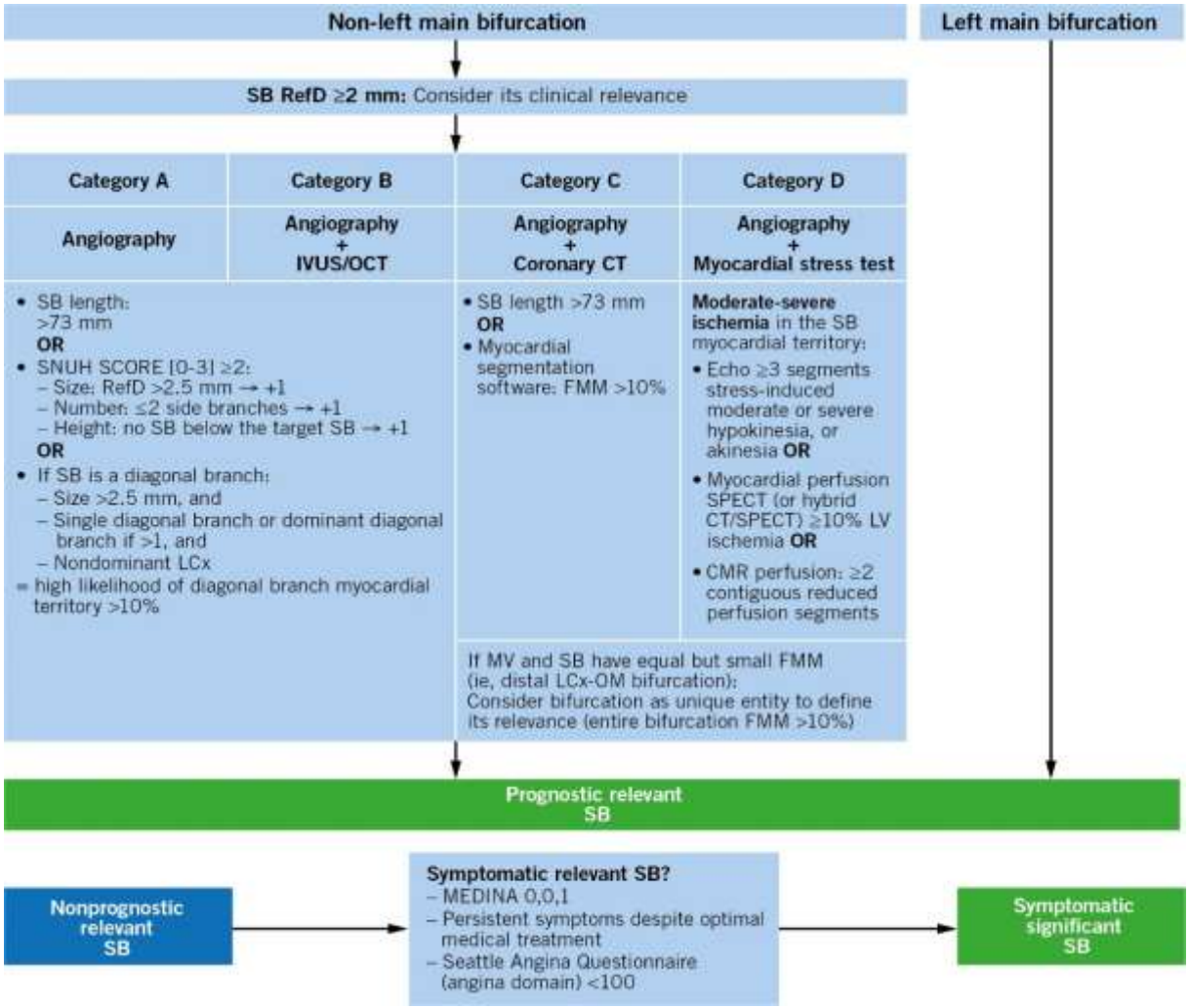

Figure 3: Algorithm to determine the lesion eligibility according to the SB relevance

The minimum needed criterion is an angiographic reference diameter ≥2 mm however the use of additional imaging is highly recommended to increase the assessment of the relevance of a SB. (7)

For diagonal SBs it is recommended to use the SNuH score (S for size, N for Number, H for highest) which is an easy anatomical scoring system to estimate the myocardium mass at risk. (7)

Back in 2007, the COURAGE trial observed no benefit with PCI over optimal medical therapy, in stable coronary artery disease. More to that, the ISCHEMIA trial found that a routine invasive strategy failed to reduce MACE compared with optimal medical therapy, for patients with a moderate to severe ischemia on non-invasive stress testing and patients with stable ischemic heart disease.

On the other hand, Hachamovitch and al. declared that PCI compared to optimal medical therapy only showed survival benefit in patients with moderate to large amounts of inducible ischemia.

Taking all these data in consideration, it has come to conclude that PCI should be reserved for patients with refractory angina after a period of medical optimization, or in case of ACS. (8)

The T stenting has long been the technique of choice for Medina 0,0,1 lesion thanks to its favorable short and long-term outcomes. It consists of covering the lesion with a stent from proximal main branch to the side branch, achieving total ostial coverage with least main vessel injury.(9) It's a technique that requires placing a stent from the proximal main vessel into the SB. It can either be completed with a POT in the main branch, or with kissing balloon inflation then final POT. The main advantage is that the ostium is completely covered.

However, if the main vessel is compromised during this technique, T and small protrusion stenting or culotte strategy should be done. (96)

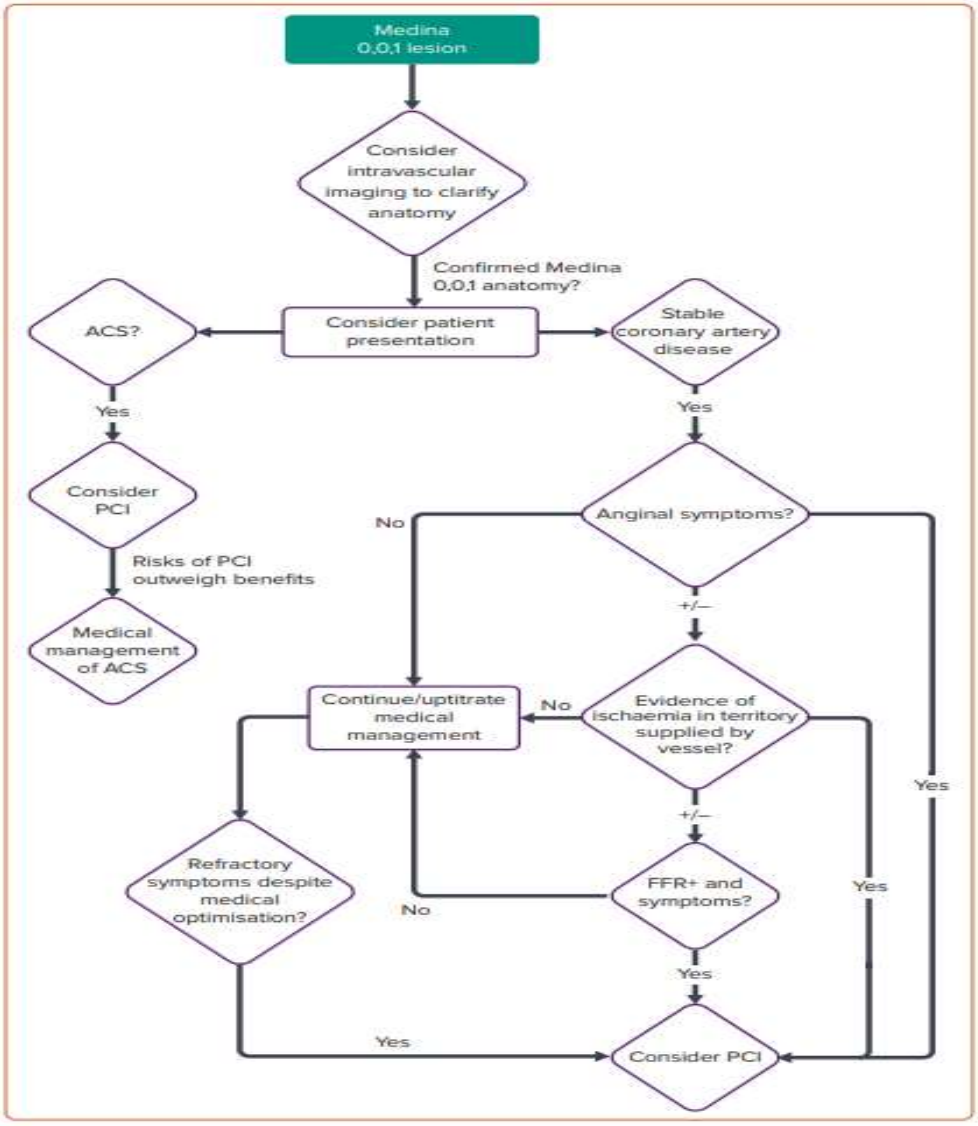

Figure 4: Proposed algorithm for the management of Medina 0,0,1 lesion

CONCLUSION

Usually, Medina 0-0-1 lesions won't supply more than 10% of the myocardium. And for that, compromising the MV will only be harmful.

Until now, the management of these lesions is still debated. However, many proposed algorithms suggesting to treat preferably these lesions medically, and leave PCI only if acute coronary syndrome or in the presence of refractory symptoms.

REFERENCES

1. Louvard Y, Lefèvre T, Morice MC. Percutaneous coronary intervention for bifurcation coronary disease. Heart. juin 2004;90(6):713-22.
2. Bifurcation Lesions - The Cardiology Advisor [Internet]. [cité 19 oct 2021]. Disponible sur: https://www.thecardiologyadvisor.com/home/decision-support-in-medicine/cardiology/bifurcation-lesions/
3. Nakazawa G, Yazdani SK, Finn AV, Vorpahl M, Kolodgie FD, Virmani R. Pathological Findings at Bifurcation Lesions. J Am Coll Cardiol. avr 2010;55(16):1679-87.
4. Medina A, Suárez de Lezo J, Pan M. A New Classification of Coronary Bifurcation Lesions. Rev Esp Cardiol Engl Ed. 1 févr 2006;59(2):183.
5. Jaguszewski M, Aloysius R, Wang W, Bezerra HG, Hill J, De Winter RJ, et al. The REMEDEE-OCT Study: An Evaluation of the Bioengineered COMBO Dual-Therapy CD34 Antibody-Covered Sirolimus-Eluting Coronary Stent Compared With a Cobalt-Chromium Everolimus-Eluting Stent in Patients With Acute Coronary Syndromes: Insights From Optical Coherence Tomography Imaging Analysis. JACC Cardiovasc Interv. 13 mars 2017;10(5):489-99.
6. Lunardi M, Louvard Y, Lefèvre T, Stankovic G, Burzotta F, Kassab G, et al. Definitions and Standardized Endpoints for Treatment of Coronary Bifurcations [Internet]. EuroIntervention. [cité 19 mai 2022]. Disponible sur: https://eurointervention.pcronline.com/article/definitions-and-standardized-endpoints-for-treatment-of-coronary-bifurcations?utm_medium=email&utm_campaign=europcr-2022-coverage-day2&utm_content=europcr-2022-coverage-day2%20CID_db8a9db9130605672ba791dc0f1ed794&utm_source=email&utm_term=Definitions%20and%20Standardized%20Endpoints%20for%20Treatment%20of%20Coronary%20Bifurcations
7. Louvard Y, Medina A. Definitions and classifications of bifurcation lesions and treatment [Internet]. EuroIntervention. [cité 1 janv 2022]. Disponible sur: https://eurointervention.pcronline.com/article/definitions-and-classifications-of-bifurcation-lesions-and-treatment
8. Suleiman S, Coughlan J, Touma G, Szirt R. Contemporary Management of Isolated Ostial Side Branch Disease: An Evidence-based Approach to Medina 001 Bifurcations. Interv Cardiol Rev. 5 avr 2021;16:e06.
9. Brunel P, Martin G, Bressollette E, Leurent B, Banus Y. "Inverted" provisional T stenting, a new technique for Medina 0,0,1 coronary bifurcation lesions: feasibility and follow-up. EuroIntervention. févr 2010;5(7):814-20.