Experimental and Applied Medical Science, 5, 1: 22-25, 2024. DOI: 10.46871/eams.1429504

Approach to A Patient with İatrogenic Coronary Dissection During Percutaneous İntervention: A Case Report

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Abstract

This case report presents a conservative management approach to a potentially hazardous complication, iatrogenic coronary artery dissection (ICAD), occurring during percutaneous coronary intervention (PCI). The patient, a 60-year-old woman with a history of chronic hypertension and type II diabetes mellitus, presented with non-ST-segment elevation myocardial infarction. During the PCI, an antegrade coronary dissection was observed, leading to the termination of the procedure. Post-procedure, the patient was managed conservatively with standard coronary artery disease treatment. Follow-up angiography showed complete healing of the dissection area, and no adverse cardiovascular events occurred during a 3-month follow-up period. This report highlights the importance of early diagnosis and careful management of ICAD. It stresses the need for further research into long-term outcomes and effectiveness of different treatment approaches for patients with ICAD.

Key words: *Iatrogenic coronary artery dissection, Percutaneous coronary intervention, Conservative management, Hydrophilic wire, Complications*

Aim

This case report aims to share the management of a potentially hazardous complication occurring during percutaneous coronary intervention (PCI), emphasizing a conservative approach.

Case

A 60-year-old woman presented to our center with a diagnosis of non-ST-segment elevation myocardial infarction (NSTEMI) due to elevated troponin levels after experiencing 20 minutes of chest pain.

With a history of chronic hypertension and type 2 diabetes mellitus, she had minimal coronary artery disease noted during a 2017 coronary angiography, mainly in the left anterior descending (LAD) artery.

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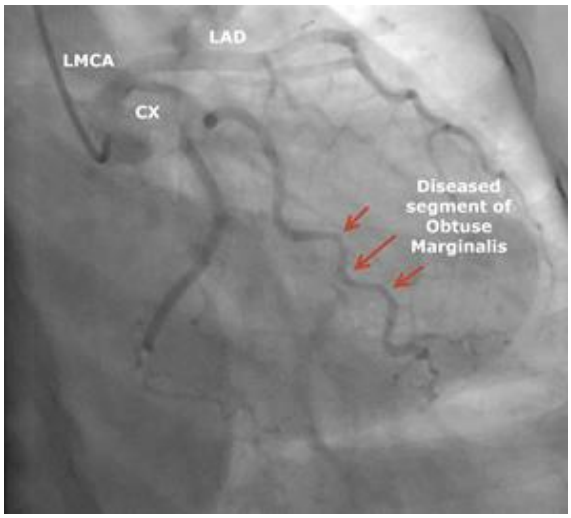
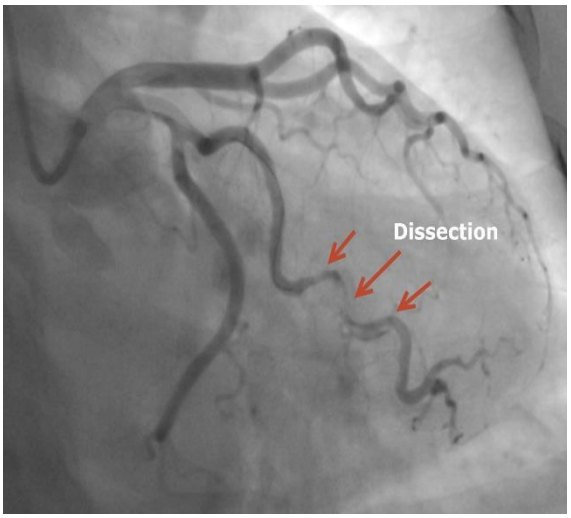
On admission, the chest pain had subsided, and transthoracic echocardiography revealed an ejection fraction of 60% with no significant wall motion abnormalities. Given the elevated cardiovascular risk, coronary angiography was scheduled within 24 hours. After obtaining informed consent, coronary angiography was planned to be performed via the right radial route. After sheat placement in the radial artery, 5000 units of heparin and 200 mcg glyceryl trinitrate mixture was administered through the radial artery. Diagnostic angiography revealed normal left main coronary artery (LMCA). Plaque was detected in the distal LAD vessel and slow flow was detected in the right coronary artery (RCA). In the circumflex artery, 80% stenosis was detected in the obtuse marginalis branch (Figure 1).



Percutaneous coronary intervention was decided because the lesion did not regress with intracoronary glyceryl trinitrate and the patient was followed up with NSTEMI. Before guiding catheter placement 600 mg clopidogrel loaded orally. A 6f 3.5 extra back-up guiding catheter was inserted into the LMCA and an additional 2500 units of heparin was administered intracoronary.

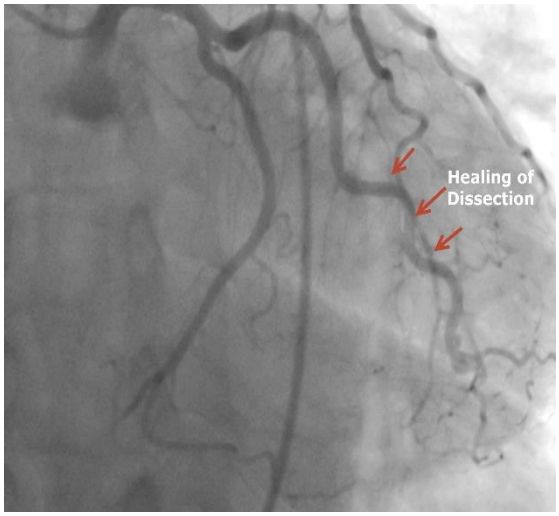
Hydrophilic wire was preferred because of the tortuosity in the obtuse marginalis branch and the soft tip hydrophilic Whisper extra-support (Abbott) wire available at the time was used for lesion crossing. However, the procedure was stopped when antegrade coronary dissection was observed during passage through the tortuous segment (Figure 2).



The procedure was concluded because the patient had no chest pain and ECG changes, distal flow was good and the dissection was considered as Type B.

After the procedure, the patient was followed up in the coronary intensive care unit for 24 hours. The patient received standard coronary artery disease treatment with acetylsalicylic acid 100 mg,

clopidogrel 75 mg, atorvastatin 80 mg, metoprolol 25 mg once a day. The patient was discharged after being followed up in the ward for 2 more days. Control angiography was performed 45 days after the first procedure. Control angiography showed complete healing of the dissection area (Figure 3).



It was decided to continue the standard treatment and the procedure was terminated. No adverse cardiovascular events occurred during the 3-month follow-up period.

Discussion

Iatrogenic coronary artery dissection (ICAD) is a rare but serious complication associated with coronary angiography and PCIs. According to a recent study of 10278 patients who underwent PCI, the incidence of coronary dissection was found to be 1.4% (1). In this study, the most common causes of ICAD were guidewire advancement, stenting, balloon angioplasty and guiding catheter engagement. The use of hydrophilic guidewires, Amplatz-shaped guiding catheters, deep engagement of guiding catheter, calcific and tortuous lesions, female gender, LMCA disease are among the factors that enhance the risk of ICAD (2, 3). Early diagnosis of ICAD is critical for optimal management. Diagnosis is typically made through coronary angiography, which may reveal a radiolucent intimal flap, contrast staining of the vessel wall, or the presence of a false lumen. According to Huber's classification, coronary dissections are classified from A to F, from simple dissection to dissection with total loss of lumen (4).

Management of ICAD is guided by the extent of the dissection, severity myocardial distal flow and hemodynamic stability (3). Types A and B dissections typically exhibit a favorable clinical progression, while dissections of types C to F are regarded as more severe, leading to a substantial rise in morbidity and mortality rates if not addressed promptly (5). In our case we think the case a Type B coronary dissection and followed the patient with conservative medical treatment. During the relatively short follow up there were no significant cardiac adverse events. In this particular case, dissection’s cause was thought as hydrophilic guidewire which was preferred for tortuosity. However, it is an interesting anecdote that hydrophilic wires are also

used in the treatment of coronary dissection cases (6).

Conclusion:

ICAD continues to be a challenging complication of coronary interventions Future studies should focus on the long-term follow-up of patients with ICAD to better understand the natural history and effectiveness of different treatment approaches.

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