

Thrombus Entrapment in the Hemostasis Valve during Thrombus Aspiration: An Octogenarian with Inferior Myocardial Infarction and Complete Flow Restoration without Any Additional Angioplasty

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Abstract

Keywords

- ▶ thrombectomy
- ▶ PCI
- ▶ angioplasty
- ▶ acute coronary syndrome
- ▶ myocardial infarction
- ▶ cardiac catheterization
- ▶ coronary intervention

Published reports demonstrate improved myocardial reperfusion with adjunctive thrombus aspiration in ST-elevation myocardial infarction (STEMI). However, implementation of this procedure without angioplasty or stent implantation is not clear. In this report, we present an octogenarian with inferior STEMI who was treated with thrombus aspiration alone. Another important feature of our case is trapped thrombus material in the guiding catheter during thrombus aspiration. Operators should avoid thrombus re-injection by controlling the system carefully during aspiration procedure.

Vulnerable atherosclerotic plaque with superimposed thrombus is the basic pathophysiology of the myocardial infarction and distal embolization of thrombus during primary percutaneous coronary interventions (PCI) results in impaired myocardial perfusion and lower thrombolysis in myocardial infarction (TIMI) flow grade.^{1,2} Published reports demonstrate that adjunctive thrombus aspiration in ST-elevation myocardial infarction (STEMI) improves markers of myocardial reperfusion with limited improvement in survival.^{3–5} Although it is known to be a quick and easily applicable procedure, some complications can be seen. We report an octogenarian with a trapped thrombus in guiding catheter during thrombus aspiration and complete flow restoration without any additional angioplasty or stent implantation.

Case Presentation

An 80-year-old female presented with severe, ongoing chest pain for the last 1 hour. On physical examination, blood

pressure was 100/60 mm Hg, and heart rate was 40/min. The electrocardiography showed third-degree atrioventricular block with ST-segment elevations in leads II, III, aVF, and reciprocal ST depression in leads V1–4. After administration of 600 mg clopidogrel, 300 mg aspirin, and 5,000 units of unfractionated heparin, the patient was immediately transferred to the cardiac catheterization laboratory. A temporary pacemaker lead was placed at right ventricle apex. By using a 6F JR4 guiding catheter, angiography revealed filling defect and total occlusion of distal right coronary artery (▶**Fig. 1a**). After advancing of 0.014 inch floppy guidewire and passing through the lesion distally, thrombus aspiration was performed by using a StemiCath manual thrombus aspiration catheter (Minvasys, Gennevilliers, France). After few seconds, interruption of blood flow in the syringe was noticed and catheter was removed with ongoing suction. There was not any thrombus material in suction syringe or aspiration catheter and there was no spontaneous bleeding from hemostasis valve (y connector) tip. By negative aspiration of the guiding

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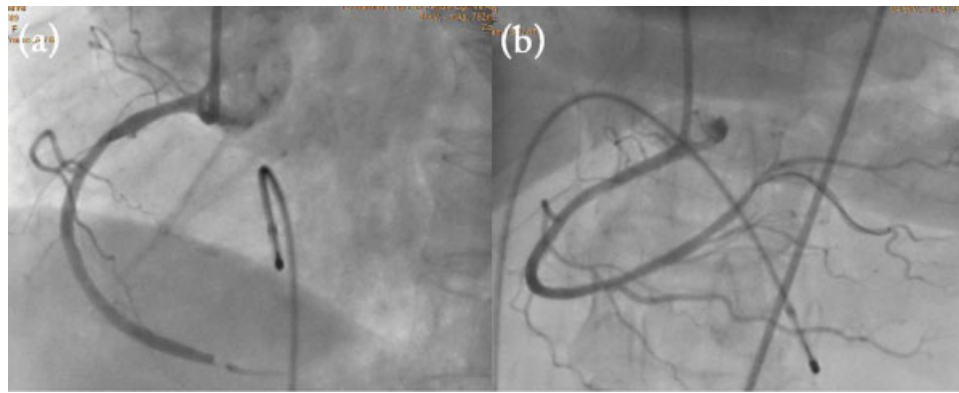


Fig. 1 (a) Left anterior oblique 30-degree coronary angiogram before thrombus aspiration shows filling defect at the distal part of the right coronary artery and (b) anteroposterior cranial 30-degree coronary angiogram after thrombus aspiration shows any obstructive plaque or trace of thrombus.

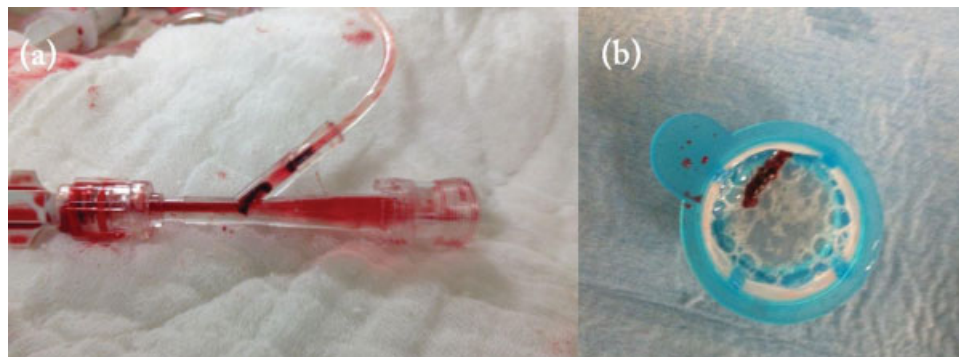


Fig. 2 (a) Trapped thrombus in y connector and (b) thrombus extracted from y connector.

catheter, large organized thrombus material was caught in y connector (→ **Fig. 2**). Repeated angiography of right coronary artery revealed TIMI III flow without any vulnerable or obstructive plaque (→ **Fig. 1b**). Rapid resolution of ST-segment elevation and relief of chest pain was noticed concurrently and additional balloon or stent implantation was not performed. The patient was discharged uneventful after 5 days and she was free of symptom during 3 months follow-up.

Discussion

Several randomized trials in patients with STEMI have shown that thrombus aspiration improves the myocardial perfusion.^{6,7} However, there is paucity of data regarding device-related complications.⁸ Similar to other coronary procedures stroke, air embolization, distal embolization of thrombus, no reflow, dissection, and perforation can be seen during aspiration procedure. Another important question is the optimal technique for aspiration. Although developers recommend to stop negative suction during catheter removal, in our view continuous suction should be done. Interruption of flow despite changing localization of aspiration catheter or unseating guiding catheter might be considered as a sign of obstruction of the system by thrombus material. Turning off the aspiration stopcock in this instance may cause loosening of the material in coronary artery or guiding catheter. Therefore, operators should permit some blood to be evacuated

from catheter or y connector before flushing forwardly to the coronaries. Starting aspiration from proximal segment of the lesion and good catheter engagement are the other important clues for aspiration.

Another important issue in our case is that angioplasty was not applied after thrombus aspiration. Regarding the age of the patient and complete flow restoration, stent implantation was deferred. It has been shown that approximately 70% of coronary occlusions are due to complicated plaque and superimposed thrombus in postmortem histological studies.⁹ In our clinical experience and compatible with small sized series in the literature, successful management of selected primary PCI patients by using only thrombus aspiration catheter is possible although it is not based on a randomized trial.^{10,11} Although authors reported good short-term survival, long-term follow-up of these series were absent.^{10,12}

Conclusion

Manufacturers may better revise their user instructions about thrombus aspiration catheters and operators must be ready to any complication during thrombus aspiration procedure. Loosening or flushing of thrombus material to the ascending aorta or left main coronary artery might cause more serious conditions than myocardial infarction itself.

Although we do not know about long-term survival of these patients, thrombus aspiration strategy alone without

any additional angioplasty or stent implantation in cases without flow limiting lesions or complicated plaques such as rupture, dissection, or obvious erosion seems to be effective and safe especially in the elderly patients. This approach needs to be evaluated with further studies.

Conflict of Interest

All authors declare that they have no conflict of interest.

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