



## Case Report

# Emergency Coronary Bypass Due to a Pseudoaneurysm

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### Abstract

The indications for immediate coronary bypass stated in the American Heart Association guidelines for percutaneous transluminal coronary angioplasty are: less than 6 hours after myocardial infarction (MI), ongoing or recurrent angina pectoris despite medical intervention within 12 hours, cardiogenic concussion, ongoing ischemia, or MI complications after thrombolytic therapy. Presently described is the case of a 52-year-old patient with a femoral pseudoaneurysm who required an immediate coronary bypass procedure.

**Keywords:** Emergency coronary bypass, off-pump bypass, pseudoaneurysm

Myocardial infarction (MI) is one of the important causes of global death. Coronary artery bypass graft (CABG) surgery within the first 6 hours of treatment of acute coronary syndrome has been suggested to be important in order to prevent enlargement of an infarct area, to protect myocardial function, and to prevent heart failure.<sup>[1]</sup> The appearance of MI-related mechanical complications within the first 6 hours, ongoing angina pectoris despite the medical intervention, change in electrocardiogram, presence of ventricular arrhythmias, and most importantly, when revascularization of a blocked vein with percutaneous transluminal coronary angioplasty (PTCA) is unsuccessful, there is an urgent requirement for immediate surgery.

### Case Report

A 52-year-old diabetic male patient with symptoms of non-ST-segment elevation acute coronary syndrome (NSTEMI-ACS) underwent coronary angiography in the cardiology clinic. Upon detection of 70% ostial stenosis in the left main coronary artery and 80% in the region of the proximal diagonal branch 1 of the left anterior descending (LAD) artery during the procedure, it was decided that CABG was necessary.

Using transthoracic echocardiography, his ejection fraction was detected to be 35%. The creatine level before the angiography had been 1.1 mg/dL, and increased to 2.1 mg/dL after treatment. Moreover, the troponin I level was 45. In order to improve kidney function and increase cardiac stabilization it was decided to postpone the CABG procedure for a few days. The patient's femoral sheaths were removed in the cardiology clinic and he was transferred to the cardiovascular surgery service. Upon arrival, intravenous fluid and antianginal treatment were administered.

After 2 days of hospitalization, his troponin I level and creatine levels decreased to 15 ng/L and 1.9 mg/dL, respectively. The patient started to feel pain at the site of the angiography entrance. Doppler ultrasound (US) revealed a pseudoaneurysm 30x25 mm in size (Fig. 1). Compression and an US-guided thrombin injection were attempted, but it was not successful. His hematocrit level decreased to 30% from 41%. Pain due to a right femoral hematoma at the site of the angiography entrance increased. The patient also began to have a chest ache. An immediate repair of the pseudoaneurysm was scheduled, and CABG was also prepared in the event of cardiac malfunction.

Under general anesthesia, the pseudoaneurysm sac was

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incised through the right femoral site (Fig. 2). During the repair, upon detection of ST segment elevation and hypotension, CABG was performed. After opening the pericardium, a significant defect in the function of the left ventricle was observed. Off-pump CABG (saphenous vein-LAD, saphenous vein-D1, saphenous vein-obtuse marginal 1). Due to the inappropriate hemodynamics, the left internal mammary artery (IMA) was not utilized in this operation. The patient was transferred to our intensive care unit with inotropic medical care. The creatine level increased to 3.2 mg/dL in the postoperative (PO) period. Inotropic care was decreased on the first PO day. On PO day 2, urinary output began to increase and the creatine level started to decline. The patient was followed-up for 3 days in the intensive care unit and was successfully discharged from the hospital on PO day 7.

## Discussion

Most of the data from NSTEMI-ACS cases support primary early invasive therapy rather than conservative therapy. In comparison with late invasive strategies, early invasive strategies can reduce the length of hospitalization and complications due to ischemic events. Based on these observations, it can be suggested that a patient with prolonged symptoms and reduction of ST-segment elevation on the frontal wall might have posterior transmural ischemia and urgent coronary angiography should be performed. In addition, patients with high risk of thrombolysis and MI should immediately be examined with angiography. In the lower risk groups of NSTEMI-ACS patients, revascularization after angiography can be postponed without enhancing the risk. Preferably, angiography should be performed in the first 72 hours of hospitalization.<sup>[2]</sup> The optimal revascularization timing is different for percutaneous

coronary attempt (PCA) and CABG. The outcome and benefits of PCA for NSTEMI-ACS patients are associated with early treatment, while CABG has the biggest impact when performed after a few days of medical stabilization.<sup>[3]</sup>

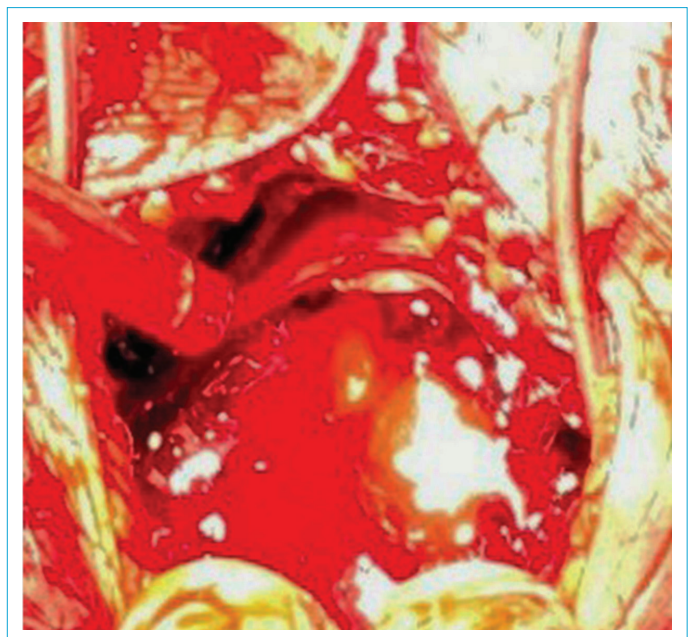
Iatrogenic or traumatic causes often have a major role in the etiology of extremity artery pseudoaneurysm; however, there are other factors such as vasculitis, infection, drug dependency, anastomotic separation.<sup>[4-5]</sup> Today, due to the increase in the number of invasive attempts, the number of pseudoaneurysm patients has also increased. The rate of incidence has been reported as 0.1% to 0.2% after diagnostic angiography and 3% to 3.5% after an invasive attempt. Factors such as a prolonged procedure, the use of a large catheter, obesity, use of anticoagulants, and a defective or more than 1 artery puncture increase the rate of incidence.<sup>[6]</sup> The reason for a pseudoaneurysm in our patient might have been due to a body mass index of 34 kg/m<sup>2</sup> or the use of clopidogrel.

An iatrogenic femoral artery pseudoaneurysm can be treated with various methods, including a standard surgical approach, thrombin injection with US, compression therapy with Doppler US, and endovascular repair.<sup>[7-9]</sup> The diagnosis of our patient's pseudoaneurysm was achieved with US. Compression and thrombin injection were applied, but not successful in this case.

We typically use bilateral IMA, especially for young patients. In this patient, our strategy was cardiac stabilization and stabilization of kidney function, followed by on-pump CABG using bilateral IMA. The inconsistency of the general condition of our patient forced us to use the off-



**Figure 1.** Ultrasound image of the pseudoaneurysm.



**Figure 2.** Intraoperative image of the pseudoaneurysm.

pump saphenous vein CABG method.

The number of pseudoaneurysms has been increasing and this is an important issue for surgeons. Treatment can be successfully performed in many cases. The course of medical events in patients who are to undergo CABG treatment may vary, as observed in the present case. Considering that, insufficient compression could significantly decrease the progress of a pseudoaneurysm after catheterization, suggesting that we should be much more careful regarding this issue.

#### Disclosures

**Informed Consent:** Written informed consent was obtained from the patient who participated in this study.

**Peer-review:** Externally peer-reviewed.

**Conflict of Interest:** No conflict of interest.

**Authorship contributions:** Concept – M.S.; Design – M.S.; Supervision – M.S.; Materials – M.S.; Data collection &/or processing – M.S.; Analysis and/or interpretation – M.S.; Literature search – M.S.; Writing – M.S.; Critical review – M.S.

#### References

1. Ryan TJ, Bauman WB, Kennedy JW, Kereiakes DJ, King SB 3rd, McCallister BD, et al. Guidelines for percutaneous transluminal coronary angioplasty. A report of the American Heart Association/American College of Cardiology Task Force on Assessment of Diagnostic and Therapeutic Cardiovascular Procedures (Committee on Percutaneous Transluminal Coronary Angioplasty). *Circulation* 1993;88:2987–3007. [\[CrossRef\]](#)
2. Mehta SR, Granger CB, Boden WE, Steg PG, Bassand JP, Faxon DP, et al; TIMACS Investigators. Early versus delayed invasive intervention in acute coronary syndromes. *N Engl J Med* 2009;360:2165–75. [\[CrossRef\]](#)
3. Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS); European Association for Percutaneous Cardiovascular Interventions (EAPCI), Wijns W, Kolh P, Danchin N, Di Mario C, Falk V, Folliguet T, et al. Guidelines on myocardial revascularization. *Eur Heart J* 2010;31:2501–55.
4. Keçelgil HT, Kolbakır F, Keyik T, Erk MK. Peripheral artery pseudoaneurysms. *Türk Göğüs Kalp Damar Cer Der* 1994;2:323–5.
5. Ting AC, Cheng SW. Femoral pseudoaneurysms in drug addicts. *World J Surg* 1997;21:783–6. [\[CrossRef\]](#)
6. Kronzon I. Diagnosis and treatment of iatrogenic femoral artery pseudoaneurysm: a review. *J Am Soc Echocardiogr* 1997;10:236–45. [\[CrossRef\]](#)
7. Ceylan M, Şahin S, Çelik L, Bilgin Ş. Color Doppler Ultrasonography Guided Compression Therapy Of Iatrogenic Postcatheterization Pseudoaneurysm of Femoral and Brachial Arteries. *Türk Göğüs Kalp Damar Cer Derg* 2004;12:287–92.
8. Kouvelos GN, Papas NK, Arnaoutoglou EM, Papadopoulos GS, Matsagkas MI. Endovascular repair of profunda femoral artery false aneurysms using covered stents. *Vascular* 2011;19:51–4.
9. Akın EB, Çakır Ö, Eren Ş, Özçelik C, Eren N. Diagnosis and Treatment in Pseudoaneurysm *Türk Göğüs Kalp Damar Cer Derg* 1999;4:324–7.
10. Ricci M, Karamanoukian HL, Abraham R, Von Fricken K, D'Ancona G, Choi S, et al. Stroke in octogenarians undergoing coronary artery surgery with and without cardiopulmonary bypass. *Ann Thorac Surg* 2000;69:1471–5. [\[CrossRef\]](#)
11. Pasini E, Ferrari G, Cremona G, Ferrari M. Revascularization of severe hibernating myocardium in the beating heart: early hemodynamic and metabolic features. *Ann Thorac Surg* 2001;71:176–9. [\[CrossRef\]](#)