Crimson Publishers
Wings to the Research

Case Report

Stent Embolization

Kourtis Konstantinos* , Christou Apostolos, Kollokas Aggelos and Patsilinakos Sotirios

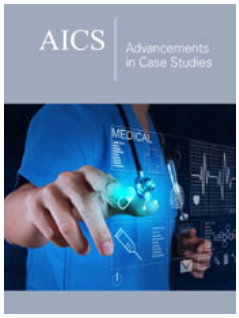
Cardiology Department, Konstantopoulio General Hospital, Greece

Abstract

Although the number of PCI procedures has significantly increased over the years, the severe complications are rare. Stent embolization is a rare complication of coronary stenting, at a rate of 0.2%. We report on a case with a 64-year-old man admitted to the emergency department with unstable angina and stent embolization during the coronary angiography and successful retrieval of a coronary stent from the left anterior descending (LAD) artery, which migrated to the left popliteal artery. The stent was finally removed surgically.

keywords: Stent embolization; Coronary complication; Popliteal artery

ISSN: 2639-0531



***Corresponding author:** Konstantinos T Kourtis, Cardiology Department, Konstantopoulio General Hospital, Nea Ionia, Athens, Greece

Submission: January 18, 2024
Published: February 06, 2024

Volume 4 - Issue 2

How to cite this article: Kourtis Konstantinos*, Christou Apostolos, Kollokas Aggelos and Patsilinakos Sotirios. Stent Embolization. Adv Case Stud. 4(2). AICS.000582. 2024.
DOI: 10.31031/AICS.2024.04.000582

Introduction

Although the number of PCI procedures has significantly increased over the years, the incidence of stent loss has decreased and remains at a rate of 0.2%, as a result to the greater experience of interventional cardiologists and improvements in equipment, especially due to utilization of pre-mounted stents [1,2]. Systemic and coronary embolization's are the consequences of stent dislodgement and can lead to serious complications such as acute closure of the affected vessel, coronary thrombosis and subsequent myocardial infarction.

Case Report

A 64-year-old man admitted to the emergency department with unstable angina. Symptoms begun 4 hours later and lasted for 30 minutes, but there was no chest pain at the time of admission. Resting ECG showed T inversion in the precordial leads but there was no rise in cardiac troponin serum levels. His coronary risk factors include dyslipidaemia and smoking. Next day the patient was taken to the cardiac catheterization laboratory. Coronary angiography revealed a long, heavily calcified lesion in the mid-left anterior descending (LAD) artery.

After an initial balloon dilatation, a 2nd generation drug eluting stent (Nobori 3x30 mm) was delivered to the LAD. Guideliner mother and child technique was used. The attempt to pass through the stenosis was failed and the stent was dislodged from its delivery balloon. The delivery balloon was drawn back without the stent, which moved to the left main (LM) coronary artery. Another balloon (2x10mm) was delivered distally through the stent, which inflated up to 2 atm. The stent could not be withdrawn into the guide catheter, probably due to stent malformation (damage). So, we decided to try "en block" retrieval of the inflated balloon, the dislodged stent, the guide wire and the catheter as far as the common femoral artery. Unfortunately, the stent could not insert into the lumen of the sheath in the femoral artery, so it was released in the peripheral circulation. Fluoroscopy revealed that it was migrated to the left popliteal artery.

The patient was stable during the procedure, without chest pain and without signs of limb ischemia. The PCI attempt was abandoned and a decision for CABG was taken. During the CABG procedure the stent from the left popliteal artery was removed surgically (Figures 1-3). Close examination of the removed stent revealed disruption and malformation, which could explain the difficulty encountered while attempting to retrieve it into the guide catheter or into the femoral artery sheath (Figure 4).

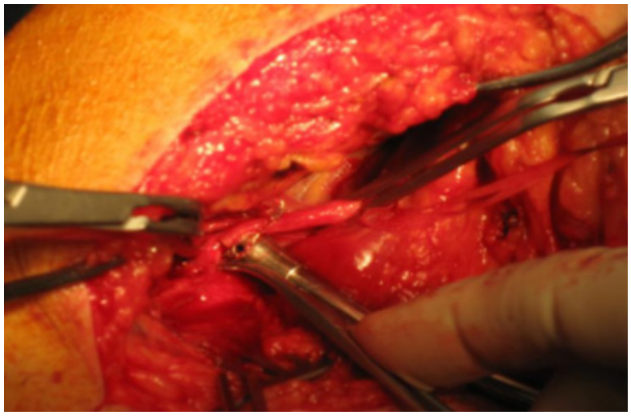


Figure 1

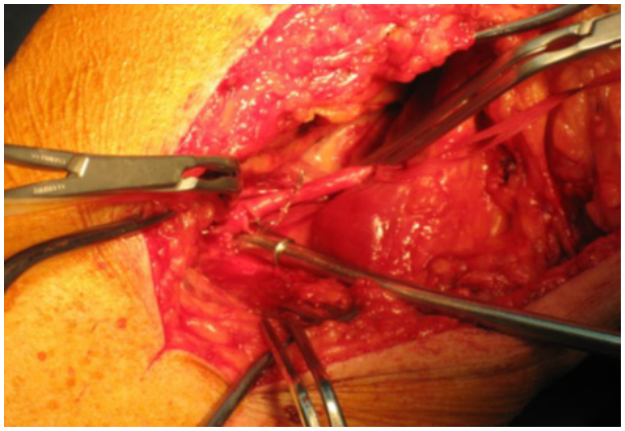


Figure 2

Figure 3

Figure 4

Discussion

Stent loss and its migration is a rare complication of coronary stenting, probably due to advances in equipment design and worldwide utilization of pre-mounted stents. However, anatomical circumstances, such as arterial tortuosity in the location proximal to the lesion and significant calcification of the lesion, increase the frequency stent dislodgement and embolization [1]. It is well-known that direct stenting may be associated with a higher risk of this complication, presumably due to the increased resistance to stent advancement through the lesion, but in our case an initial balloon dilatation was performed. Angulated coronary arteries may also cause difficulties during stent procedures [3,4]. In this specific case, the calcification of the lesion was the main determinant, which was responsible for the stent dislodgement.

Nonsurgical removal or peripheral deployment is the best option for this complication, but surgery may be indicated if percutaneous retrieval attempts fail [5]. Different percutaneous retrieval techniques have been described to retrieve embolized stents from the coronary system and the peripheral circulation. Low-profile angioplasty balloon catheters, loop snare biliary forceps, twirling two wires around the stent, cook retained fragment retriever and basket retrieval devices have been successfully used [1].

In our case the first care was to withdraw the stent from the LM artery and to avoid embolization to the cerebral circulation. Snare loop is often the device of first choice due to its effectiveness and safety [6]. However, there was no snare loop available in our department in order to use it for the retrieval of the stent. The use of low-profile balloon catheters was an alternative choice, which is also very effective, especially in this case where the stent was still riding on the guide wire and was deployed enough to advance a balloon catheter through its lumen. Unfortunately, the stent was lost and migrated with the blood stream to the left popliteal artery. There are many reports of stent embolization and successfully percutaneous retrieval from peripheral vessels, such as from renal artery, pedal artery or abdominal aorta [7-9]. However, in our case the non-surgical retrieval from the left popliteal artery was impossible, because the stent was already damaged and it has been migrated far enough below the aortoiliac bifurcation.

References

1. Brilakis ES, Best PJM, Elesber AA, Barsness GW, Lennon RJ, et al. (2005) Incidence, retrieval methods, and outcomes of stent loss during percutaneous coronary intervention: A large single-center experience. Catheter Cardiovasc Interv 66(3): 333-340.
2. Eggebrecht H, Haude M, Von Birgelen C, Oldenburg O, Baumgart D, et al. (2000) Nonsurgical retrieval of embolized coronary stents. Catheter Cardiovasc Interv 51(4): 432-440.
3. Laarman G, Muthusamy TS, Swart H, Westendorp I, Kiemeneij F, et al. (2001) Direct coronary stent implantation: safety, feasibility, and predictors of success of the strategy of direct coronary stent implantation. Catheter Cardiovasc Interv 52(4): 443-448.

4. Chu CS, Lee ST, Lee KT, Lin TH, Lin CT, et al. (2005) Successful retrieval of dislodged paclitaxel-eluting stent with a nitinol loop snare: A case report. Kaohsiung J Med Sci 21(12): 566-570.

5. Dunning DW, Kahn JK, O'Neill WW (2002) The long-term consequences of lost intracoronary stents. J Interv Cardiol 15(5): 345-348

6. Gabelmann A, Kramer S, Gorich J (2001) Percutaneus retrieval of lost or misplaced intravascular objects. Am J Roentgenol, 176(6): 1509-1513.

7. Juszkat R, Dziarmaga M, Zabicki B, Bychowiec B (2007) Successful coronary stent retrieval from the renal artery. Cardiol J 14(1): 87-90.

8. Mariano E, Versaci F, Gandini R, Simonetti G, Di Vito L, et al. (2008) Successful coronary stent retrieval from a pedal artery. Cardiovasc Intervent Radiol 31(3): 655-658.

9. Hondo T, Eno S, Matsuda K, Kisaka T, Sairaku A (2010) Successful retrieval of a dislodged paclitaxel-eluting coronary stent in the abdominal aorta using a Günther tulip vena cava MReye filter retrieval set. J Cardiol Cases 1(1): 63-65.