Negative results - Vascular general

Lower limb ischemia after migration of a coronary artery stent into the femoral artery

Andrea Siani, Luca Maria Siani, Federica Mounayergi, Emanuele Baldassarre*

Division of Vascular Surgery, San Paolo Hospital, Civitavecchia, Rome, Italy
Division of Urology, Regional Hospital, Viale Ginevra 3, 11100 Aosta, Italy

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Abstract

A coronary stent may be lost in the peripheral or visceral arterial system with an incidence ranging from 0.9 to 8.4%, however, a limb or organ ischemia after stent migration is very uncommon. We report the case of an 83-year-old man who underwent coronary artery stenting at our Hospital’s Cardiological Department. During this difficult procedure, due to the critical stenosis of the circumflex artery, the stent was accidentally lost and found at the level of the insertion of the right common femoral on the external iliac artery. After several attempts to rescue the stent through an omolateral and controlateral femoral approach with the hook technique, the right common, superficial and profunda femoral arteries were surgically exposed. The stent was easily removed from the origin of the profunda femoral artery by a longitudinal arteriotomy. Finally, the arteriotomy was closed with a homologous saphenous vein patch. We underline the importance of an early extraction of the stent, discussing the preferable surgical approach to minimize the possible dramatic complications in the peripheral artery system.

Keywords: Coronary stent; Coronary stent displacement; Stent adverse effects

1. Introduction

Cases of dissection or thrombosis after the stenting of the coronary arteries are common despite the widespread use of this procedure in the clinical practice. Minor but unwelcome complications, such as stent loss in the peripheral or visceral arterial system, present an incidence ranging from 0.9 to 8.4% [1]. However, cases of limb or organ ischemia after stent migration remain anecdotal [2, 3]. Herein we report a case of coronary artery stent displacement at the origin of the right profunda femoral artery, causing femoral thrombosis, in a patient with a chronic occlusion of superficial femoral artery. The progressive worsening of limb perfusion caused an acute complete ischemia.

2. Case report

An 83-year-old man, with a complaint of severe coronary artery disease and a recent episode of myocardial infarction, underwent coronary artery stenting at our Hospital’s Cardiological Department. His past medical history was relevant for hypertension, non-insulin dependent diabetes and peripheral vascular disease with bilateral chronic arterial occlusion of the superficial femoral arteries. A previous angio-MRI examination showed a normal patency of the aorta and the iliac arteries, while the superficial femoral arteries appeared occluded with a sufficient revascularization above the knee and a good runoff. No stenosis of profunda or common femoral artery was detected. During the clinical examination, the patient referred a long interval calf claudication and the Windsor Index was 0.6 on posterior and anterior tibial arteries bilaterally. The stent positioning appeared difficult due to the presence of a very calcified stenosis of the circumflex artery. During this procedure, the stent was accidentally lost and traveled up to the insertion of the right common femoral on the external iliac artery. Several attempts by the cardiologists to rescue the same stent through an omolateral and controlateral femoral approach with the hook technique were performed and failed.

After this manoeuvr the stent migrated to the level of femoral bifurcation. After two hours the patient presented with an intense acute pain in the right leg. At clinical examination the femoral pulse appeared valid, however, sensory and motory impairment with pallor occurred and at Doppler examination a significant drop in Windsor Index (WI) was detected (no signal on posterior tibial artery and no signal in anterior tibial artery). In consideration of the high risk of worsening of the acute lower limb ischemia due to common femoral artery thrombosis, we decided to treat the patient by an open surgical stent removal.

Under local anesthesia, we carried out the exposure of the right common, superficial and profunda femoral arteries. By a longitudinal arteriotomy the stent was easily removed from the origin of the profunda femoral artery (Fig. 1).
Moreover, a secondary thrombosis of the femoral bifurcation was detected. A distal thrombectomy by the use of a N. 2 Fogarty catheter was performed with the extraction of the secondary thrombus upward to obtain a good run-off.

Thus, the arteriotomy was closed with a homologous saphenous vein patch. Intraoperative angiography excluded the stent disruption or distal embolization. The ischemic time was 5 h.

The postoperative course was uneventful with no signs of lower limb ischemia.

The postoperative Doppler showed a good signal on anterior and posterior tibial artery and the WI was 0.7

Preoperative CK value was 450 U/l (range 26–192). Postoperative CK value was 350 U/l in the first postoperative day. Postoperative value of CK improved gradually until normalization.

3. Discussion

There are only a few reports in the medical literature regarding external bodies embolization into the peripheral arterial systems. In particular, these articles report cases of missile embolization and a bullet due to penetrating gunshot injuries [4, 5]. Only Nguyen et al. reported a similar case of lower limb ischemia due to embolization of a coronary artery stent which migrated into the right posterior tibial artery in a patient with superficial femoral-posterior tibial artery bypass who required direct extraction by a longitudinal arteriotomy of the posterior tibial artery and a saphenous vein patch angioplasty [6].

Prompt extraction is obviously mandatory to prevent intimal injuries and artery occlusion, especially at the level of vessel divisions, like the femoral, popliteal, brachial and carotid bifurcation. However, some authors prefer a conservative treatment with no surgical retrieval of the stent if there is no limb ischemia [7].

If a minimally invasive approach is impossible or very difficult, as in this case, we maintain that an open surgical management should be indicated, especially in cases of stent dislocation into major branches. In fact, in the presence of a severe peripheral arteriopathy, the endovascular manoeuvres can lead to vessel injuries due to repetitive attempts of stent rescue or due to the intravascular stent entrapment with vessel dissection, perforation, thrombosis or migration, as in this case. The goals of a correct surgical treatment should be: an early extraction to prevent intimal injuries, pseudointimal covering and secondary distal thrombosis; a direct approach to the arterial site stent misplacement to facilitate the treatment of possible intimal damage; the extraction under direct vision to avoid secondary lesions of the arterial wall with subsequent thrombosis. This policy can lead to rapid, easy and effective treatment, avoiding complex revascularization procedures with higher morbidity. The artery should be approached preferably by a longitudinal arteriotomy to better explore the intimal layer status, evaluating the necessity of an eventual intimeectomy, endoarterectomy or bypass graft procedures. An intraoperative angiography should be always performed to evaluate the run-off, secondary associated artery lesions and the possible presence of a secondary foreign body due to the stent disruption.

A saphenous patch is preferable for potentially high infective risk due to several endovascular attempts with leak in sterility.

In conclusion, we retain essentially the early stent extraction, the direct approach by longitudinal arteriotomy with patch closure and the intraoperative angiography, when a coronary stent is lost in the major branches of the peripheral artery system.

In our opinion, the surgical rescue is preferable in contrast with an endovascular approach in peripheral arteries because it is easier and safer. The endovascular approach could be a valid treatment in the case of central vessels like the common carotid, visceral or renal arteries to avoid a high impact operation.

References