

OBTURATOR ARTERY INJURY POST PERCUTANEOUS CORONARY INTERVENTION: A CASE STUDY



Internal Medicine

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ABSTRACT

Abdominal wall hematoma and vascular injuries are a rare but potentially serious vascular complication that may develop after coronary angiographic procedures. In particular, a hematoma caused by an injury of the obturator artery is very rare, yet can be managed by conservative treatment including hydration and transfusion. However, when active bleeding and severe drop in hemoglobin continues, radiological embolization or surgery might be needed. In this study, we report a rare case of injury to the obturator branch of internal iliac artery by an inappropriate introduction of the hydrophilic guidewire during the performance of a percutaneous coronary intervention.

Introduction

Vascular complications are the most frequent adverse outcomes associated with percutaneous coronary intervention (PCI) via the femoral artery. They contribute to in-hospital morbidity, mortality, and costs; and furthermore, are associated with increased long-term risk of myocardial infarction and death. Vascular complications include bleeding, pseudoaneurysm formation, hematoma, arteriovenous fistula and retroperitoneal bleeding requiring radiological or surgical intervention.

Hematoma is a rare condition that can give rise to an acute abdomen. In this report, we describe a case of a 62-year-old woman who developed acute pelvic hematoma as a result of injury to the obturator artery during coronary intervention which is a rare but serious complication of a PCI via the femoral approach.

Case Report

A 62-year-old woman known to have type II diabetes Mellitus, hypertension, dyslipidemia, and coronary artery disease. She presented to the cardiology clinic with ischemic heart disease signs and symptoms. Diagnostic PCI was performed using right femoral artery access. A fistula connecting the left anterior descending artery (LAD) artery to Pulmonary artery (PA) was accidentally discovered (Figure 1). The fistula then was tested and showed no left to right shunting. Day one status post percutaneous coronary intervention to LAD artery through right femoral artery, patient has undergone a sudden drop in her hemoglobin, from 12 mg/dl to 4 mg/dl and decrease in urine output. Physical examination revealed swelling at the right groin and pelvic regions with bulging of the anterior abdominal wall consistent with hematoma. Patient also developed obstructive uropathy which is believed to be caused by the hematoma which was managed using double J-stent bilaterally. Further investigations revealed elevated creatinine of 3.96 mg/dL blood urea nitrogen of 43 mg/dL on day three post-procedure.

Contrast enhanced CT scan was done to the patient where the exact location of the injury turns to be one of the internal iliac artery branches, subsequently patient was referred to interventional radiology for further diagnosis and management where angiography was done and shows active extravasation from right obturator artery, a branch of internal iliac artery. The bleeding artery was super-selectively catheterized and was embolized using 2 and 3 mm metallic coils (Figure 2). Follow up CT scan shows successful cessation of bleeding with liquefaction of the hematoma which was evacuated later by ultrasound guided percutaneous drainage (Figure 2). In this case, we are discussing the consequences of an unusual artery rupture and how to properly manage it.

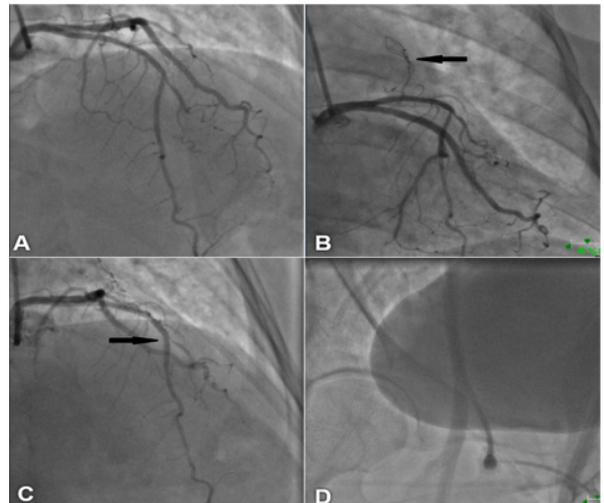


Figure 1: (A) Tight stenosis in mid LAD artery. (B) Small fistula connecting LAD artery to PA (arrow). (C) PCI of LAD artery with drug eluting stent (arrow). (D) Right femoral angiography showing femoral puncture with no complications.

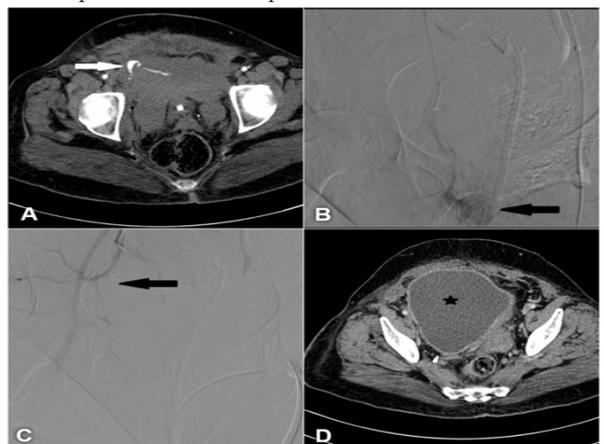


Figure 2: (A) Contrast enhanced CT scan during arterial phase shows active contrast extravasation (arrow) with large pelvic hematoma. (B) Selective angiography shows bleeding from obturator artery (arrow). (C) Selective angiography after deployment of metallic coils (arrow) into right obturator artery shows complete cessation of bleeding. (D) Follow up CT scan shows complete cessation of

bleeding with no contrast extravasation. Also note the liquefaction of the hematoma (star)

Discussion

Vascular complications are rare but potentially serious ones that may develop after percutaneous coronary intervention. Predisposing factors include advanced age, hypertension, obesity, increased sheath size, repeat or multiple punctures of the artery, and concomitant use of anticoagulants [1,2,3].

The common symptoms of post PCI vascular injury include; sudden onset of pelvic and abdominal swelling and pain, that occurs several hours after the procedure.

Because they are rare and can mimic abdominal conditions, vascular complications are often misdiagnosed for different common acute abdomen conditions, such as appendicitis, perforated ulcers, sigmoid diverticulitis, incarcerated hernias and ovarian cyst torsion [4].

Clinically, the diagnosis can be made by the following signs; the appearance of bruising and/or swelling. It may also include non-specific findings, like fever, anemia and plural effusion. Radiological studies can help confirming the diagnosis and excluding other causes of acute abdomen such as intra-abdominal hemorrhage [5]. Renal insult is a potential consequence of obstructive uropathy that can be caused by the hematoma. Surgical evacuation is needed in this case to relieve the obstruction [6]. Contrast enhanced CT scan can be used to evaluate active bleeding from the rupture site as we as to look for other differential causes of acute abdomen. Without contrast, the extravasation hematoma can still be observed on a CT. Angiography could be a useful imaging and therapeutic technique to identify and treat an active bleeding [7]. Most of patients can be managed conservatively with bed rest and analgesics. This management is suitable for most stable patients. However, when a patient has signs of active bleeding, surgical or angiographic interventions should be considered [8].

In order to prevent vascular complications, especially in those with nonpalpable pulses, puncturing the femoral artery under fluoroscopy or ultrasound guidance should be considered [9]. The guidewire must be smoothly advanced through the cannula after the artery has been successfully punctured. Stopping when resistance is faced during the insertion of guidewire is the mainstay of safe sheath engagement. When the wire is being inserted to a small vessel branch, some difficulties could be encountered in advancing the guidewire. After confirming the location of a wire by fluoroscopy, it can be then retracted, span gently, and advanced again. In this situation, angiography must be considered to assess the occurrence of any complications, like vessel dissection and perforation. If complications are evident, then bleeding control should be prioritized. PCI should be delayed if a vascular complication is suspected with discontinuation of antithrombotic agents, besides keeping close observation of the patient. A good strategy to prevent the perforation of small vessels is to replace the straight hydrophilic guidewire with a J-tipped wire. In general, especially with those who are at risk of bleeding, even without any evidence of immediate vascular complications [10].

In the case, there was an unexpected development of pelvic hematoma after a PCI and absence of any signs of immediate vascular complications. Close observation and proper evaluation of complications after percutaneous coronary intervention is very important, even if the rates of these complications are very low. With the guidance of ultrasound or fluoroscopy, the rate of PCI-related vascular complications is being reduced when the femoral artery is punctured and guidewire is inserted. A staged PCI should be considered to ensure a patient's safety and prevent periprocedural vascular complications when a vascular injury is suspected during the procedure. It's important for physicians to consider the possibility of vascular injury with more coronary angiographic procedures are being performed, especially if the patient has many predisposing factors. Furthermore, it is important that this complication is promptly recognized and managed immediately

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