

'Double Dipping' 'Double Trouble' – A Rare Case of Two Subsequent Complications with Trans-Femoral Percutaneous Accesses

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1. Abstract

Trans-femoral catheterization is a relative safe, minimally invasive procedure to assess coronary arteries and limb ischemia and the use of vascular closing devices (VCD) has significantly reduce the complication rates associated with percutaneous access as compared to manual compression and decreasing the length of recovery and resumption of daily activity. However, rare complications can still arise associated with this innovative device that can that can induce significant morbidity. We report a case that underwent bilateral trans-femoral percutaneous access approaches after a percutaneous coronary intervention that resulted into two subsequent complications on each side, and requiring bilateral groin explorations. Complications from VCD should be treated and managed promptly to prevent limb ischemia or limb loss.

2. Background

Trans-femoral catheterization is a relative safe, minimally invasive procedure to assess ischemic coronary arteries and limb ischemia. Vascular closing devices (VCD) have significantly reduced the complication rate associated with trans-femoral percutaneous access as compared to manual compression alone. Other benefits include a decrease the length of recovery and earlier resumption of daily activities. However, rare complications can still arise associated with these innovative devices that can induce significant morbidity. This is a case of a male patient who had trans-femoral catheterization via bilateral groins that was complicated by two subsequent different associated complications.

Patient Agreement: a written and signed consent has been obtained from the patient to publish this case report.

3. Case Presentation

72 year-old male who is an active chronic heavy smoker with history of hypertension, diabetes, hyperlipidemia, peripheral vascular disease status post right iliac stent placement, and recent myocardial infarction status post percutaneous coronary artery intervention (PCI) with coronary stent placement a week ago present with a 4 day history of RLE discomfort that is worsened with standing; however, patient denies any symptoms of claudication, numbness, tingling, coldness, paleness or weakness to his RLE. At the time of the PCI, he underwent a right trans-femoral access approach, which was uncomplicated, a VCD was deployed and patient was discharged on the following day. His right foot was cold and had no palpable pedal pulses of the RLE, but dopplerable monophasic waveform distally. Patient was taken to cath lab and RLE angiogram through a left trans-femoral access approach was performed and it was found to have right common femoral artery (CFA) severe stenosis (Figure 1) with a patent right iliac stent (Figure 2). Patient then complained of worsening left groin pain associated with increasing swelling and ecchymosis. A CT angiogram revealed a large left inguinal hematoma with active contrast extravasation consistent with pseudo-aneurysm from the left CFA (Figure 3,4). The patient was taken emergently to the operating room for bilateral groin exploration. The pseudo-aneurysm was first controlled, and fresh clot from the artery was encountered and it immediately bled after the clot removed. The puncture site was repaired with a 6-0 figure of eight stitch using prolene. After the right femoral artery and vein were appropriately dissected and exposed with distal and proximal control, an arteriotomy of the right CFA was made. It was found that the vascular closing device had dissected through

the posterior intima of the artery, and as the VCD was deployed, it had opposed to the anterior intima and completely occluded the R CFA. An endarterectomy was performed with removal of the VCD and biopatch angioplasty. After good hemostasis and appropriate perfusion distally, both groin were closed with placement of bilateral Jackson Pratt (JP) drains.

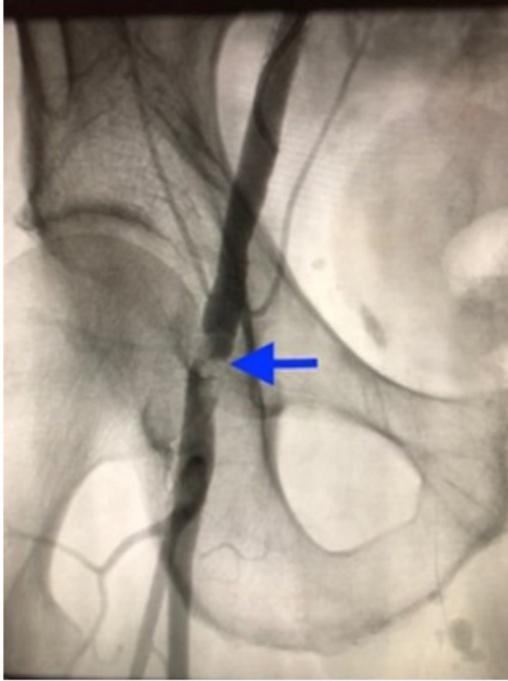


Figure 1: Angiogram showing right CFA stenosis.

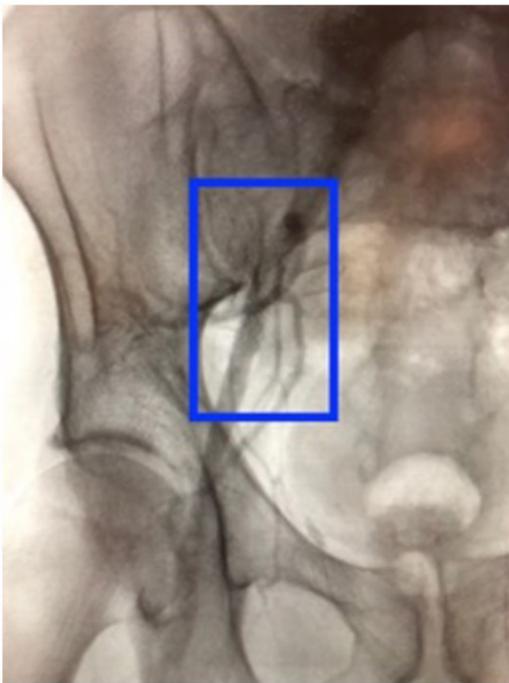


Figure 2: Angiogram showing patent right iliac stent.



Figure 3: CT scan showing subtotal occlusion of right CFA.

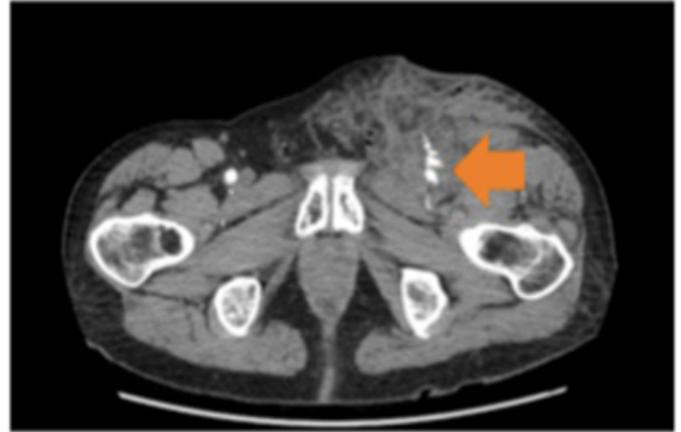


Figure 4: CT scan showing large inguinal hematoma with small pseudo-aneurysm (arrow) from left CFA.

4. Discussion

The trans femoral access approach continued to be the standard and the most commonly used access for percutaneous coronary interventions in the United States due to its immediate access and optimal catheter [1]. A trans-radial access, which is more commonly use in Europe and in Asia, has been an alternative approach with less major bleeding complication, reduction cardiovascular adverse events and reduction in incidence of post procedure acute kidney injury as compared to trans-femoral access [2]. Major complications associated with endovascular procedures comprise mainly from bleeding, which accounts for 70% of all complications, followed by pseudo-aneurysm at 20% [1,2]. Manual compression has been the technique for puncture hemostasis since 1959 until vascular close devices (VCD) has been introduced in 1990s [3]. VCDs have become an increasingly acceptable practice to enhance patient comfort by accelerating time of hemostasis, time of ambulation and time of discharge, especially in anticoagulated patients [4,7]. Since the introduction of VCDs, vascular complication has decrease from 6% to approximately 2%, but VCD related complications has risen such as infection (5%) and ischemia (7%) were a major concern that led to surgical interventions in 39% and 28%, respectively [3,4]. There are several type of VCD, but arterial occlusion of the femoral artery has been the most common complication in Angio-Seal device due to the in-

tra-arterial anchoring [9,10]. Although surgery is the gold standard treatment for VCD related limb ischemia, non-operative approach for suture-mediated VCD related leg ischemia has been reported with the use of an endovascular techniques either with stent placement, balloon angioplasty or aspiration thrombectomy [5,6]. However, potential complications associated with ballooning an occluded femoral artery could lead to arterial rupture, dissection, or perforation, with the possible development of hematoma, pseudo-aneurysm, or even life-threatening retroperitoneal hematoma [6]. The endovascular approach may be appropriate for those patients who may a high-risk surgical candidate [7]. Simultaneous or concurrent trans-femoral access complications have not been yet reported. Vascular access site complication (ASC) could cause significant morbidity and possibly mortality in those patients at risk [1,8]. Studies have found that the severity of the ASC well correlated with higher rate of discharge to rehabilitation/nursing facility compare to home discharge. Similarly, those with severe ASC requiring surgical interventions has a higher 30-day mortality of about 6.1% (4 fold increased compared to the rest of population of 1.4%) and those with moderate ASC requiring blood transfusion had a 1-year mortality rate of 12.1% [8]. Risk factors that prone patient to develop ASC and VCD related complications may included uncontrolled hypertension, anticoagulation, advanced age, female gender, sheath size greater than 6 Fr, location of arteriotomy, and previous arteriotomy in the same location to name a few [8,13]. However, most of these factors cannot be changed or influenced and care should be taken to minimize these complications. Fluoroscopy and ultrasound guided access been advocated to prevent this complicated by reducing improper sheath insertion, and proper VCD deployment, especially for patients with unusual anatomy [8,11,12]. The image-guided access has proven to beneficial in obese patients and female population [8]. The safety and efficacy of VCDs in high-risk patients is yet unknown, and has not reduced the incidence of ASC [8,12,13]. The radial approach has gained momentum in order to reducing bleeding complications from the femoral approach, but it is limited for the using large bore sheaths required for lower extremities interventions [11].

5. Conclusion

Trans-femoral catheterization continues to be a popular and safe approach for coronary revascularization, but rare complications associated with VCDs can still arise requiring groin exploration. Non-operative approach such as endovascular technique may be appropriate in high-risk surgical candidates. Early recognition should prompt immediate attention and appropriate management to decrease significant morbidity.

Reference

1. Hung Fong SS, Jaafar S, Misra S, Narasimha V. Scrotal hematoma with pseudo-aneurysm after transfemoral catheterization. *Journal of surgical case reports*. 2019; (2): rjy310.
2. Bontrager M, Abraham S, Ando G. Comparison of complications after transfemoral coronary angiography between mechanical and manual closure techniques. *Cogent Med*. 2017; 4: 1.
3. Bryan G. Schwartz, Steven Burstein, Christina Economides, Robert A. Kloner, David M. Shavelle, Guy S. Mayeda. Review of Vascular Closure Devices. *Cath Lab Digest*, July. 2017; 19(7): 10-20.
4. Sahil A, Parikh. Vascular Closure Devices for Antegrade Punctures: The Evidence Is Mounting. *Vascular Disease Management*. 2018; 15(9): E108-E109.
5. Moon JY, Park S, Choi D. Focal femoral artery narrowing caused by suture mediated closure device. *Heart*. 2006; 92(11): 1650.
6. Bryan Cogar and Mazan Abu-Fadel. Balloon Angioplasty for Treatment of Femoral Artery Occlusion Following The Use of Suture – Mediated Closure Device. *Vascular Disease Management*, January. 2010; 7(1): E31-E33.
7. Patrick A, Stone, John E, Campbell, Karinna H, Andrews. Posterior wall capture and resultant common femoral occlusion complicating StarClose access closure. *Journal of Vascular Surgery*, August. 2008; 48(2): 469-471.
8. Ortiz D, Jahangir A, Singh M, Allaqaband S, Bajwa TK, Mewissen MW. Access site complications after peripheral vascular interventions: incidence, predictors, and outcomes. *Circulation. Cardiovascular interventions*. 2014; 7(6): 821–828.
9. JB Ricco, F Schneider. Angio-Seal Hopes for Antegrade Puncture Require Better Evidence. *European Journal of Vascular and Endovascular Surgery*, August. 2014; 48(2): 226-227.
10. HJJvan der Steeg P, Berger, AG Krasznaj, R Pietura, LJSchultze Kool. Acute Arterial Occlusion after Deployment of the Angio-Seal Closure Device: Is it as Uncommon as we Think? *European Journal of Vascular and Endovascular Surgery*, December. 2009; 38(6): 715-717.
11. Nair P. Reducing Access-Site Complications. *Vascular Disease Management*. 2015; 12(11).
12. Bersin R. Avoiding Access Site and Closure Complications. The importance of understanding potential adverse outcome and how they can affect procedural planning. *Endovascular Today*. 2015.
13. Lombardo & van den berg. Preventing Vascular Access Site Complications During Interventional Procedures. *Interv. Cardiol*. 2010; 2(6): 829-840.