

# Retroperitoneal Hematoma After Percutaneous Femoral Vein Catheterization: A Rare Complication

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## ABSTRACT

Percutaneous femoral vein catheterization is a common routine procedure for hospitalized patients, and this procedure is not without complications. Retroperitoneal hematoma due to vascular penetrating injury, although rare, can still occur. This report describes a 60-year-old woman with heart failure and chronic renal failure was treated with percutaneous femoral vein catheterization for continuous renal replacement therapy. But unfortunately, retroperitoneal hematoma complication caused by percutaneous femoral vein catheterization with a central venous catheter (CVC) tip protruding through the iliac vein. Then the patient was treated with emergency femoral venography and femoral vein stent implantation.

**Keywords:** Retroperitoneal Hematoma; Percutaneous Femoral Vein Catheterization; Vein Injury; Learning Points for Clinicians

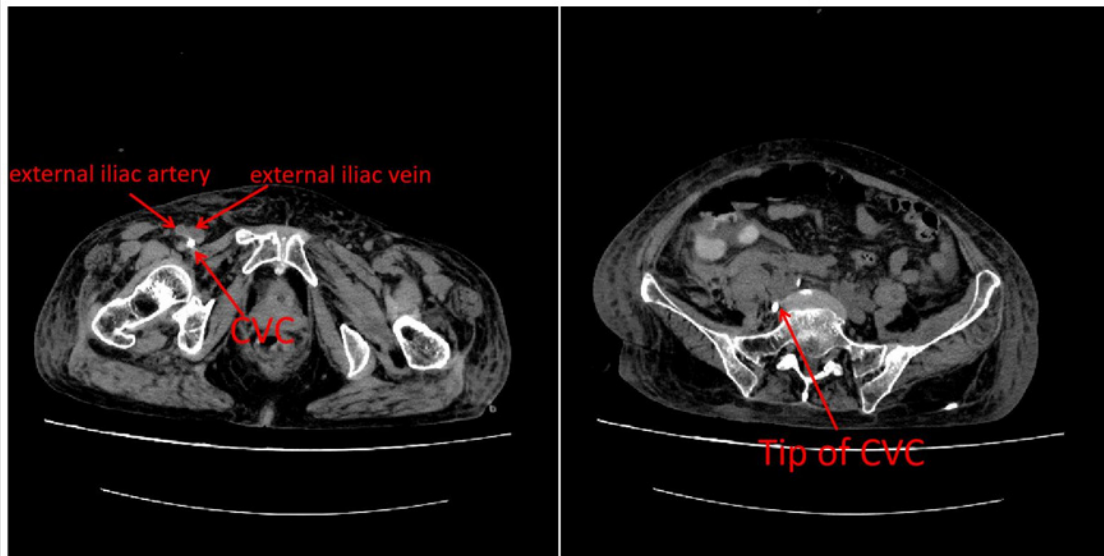
## Learning Points for Clinicians

Percutaneous femoral vein catheterization is a common routine procedure for hospitalized patients, and this procedure is not without complications. Retroperitoneal hematoma due to vascular penetrating injury, although rare, can still occur. This complication can be largely avoided by ultrasound, attention to puncture force and angle.

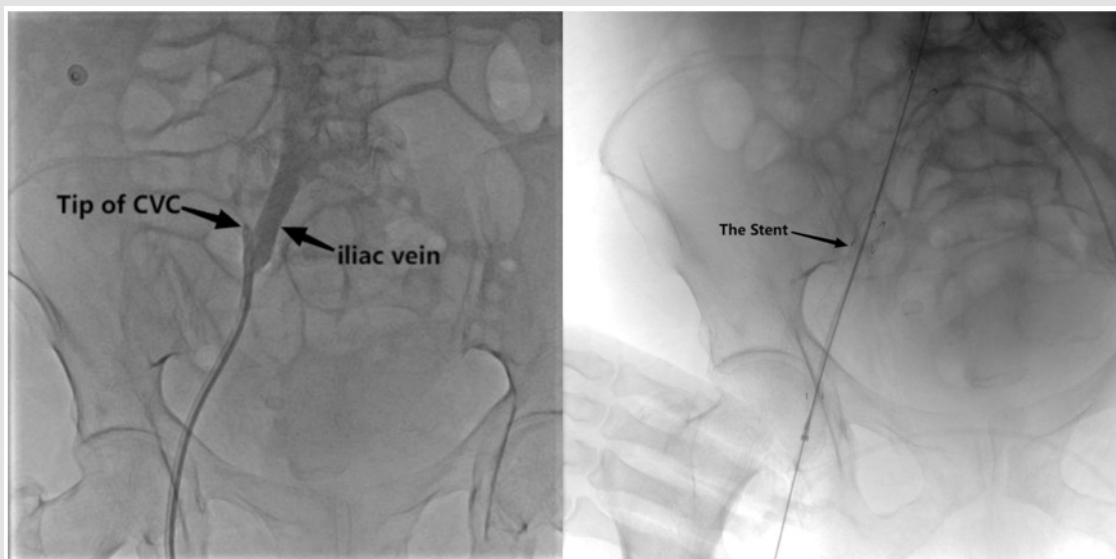
## Case Presentation

A 60-year-old woman with heart failure and chronic renal failure was admitted to our department and treated with percutaneous femoral vein catheterization for continuous renal replacement therapy

(CRRT). But 2 days later, when the patient was physical examined due to persistent pain in the posterior lumbar region, large subcutaneous ecchymosis could be seen in the posterior lumbar region. Urgent blood test and abdominal CT scan were performed, suggesting she had decreased hemoglobin, a huge retroperitoneal hematoma, pelvic effusion, and a central venous catheter (CVC) tip outside the iliac vein (Figure 1). Considering the penetrating vein injury by CVC, the patient was treated with emergency femoral venography to clarify the diagnosis, and then was treated with femoral vein stent implantation (Figure 2). After the operation, the hemoglobin gradually increased and the hematoma gradually decreased.



**Figure 1:** The CVC traveled close to the vessel wall rather than in the vessel lumen, and the tip of CVC was located next to the retroperitoneal spine. CVC, central venous catheter.



**Figure 2:** CVC tip protruding through the iliac vein and implanted stents on femoral venography.

## Discussion

Retroperitoneal hematoma is a life-threatening disease with a high mortality rate from retroperitoneal hiatus hemorrhage, and early diagnosis and proper treatment are crucial [1]. Retroperitoneal hematoma has a variety of causes, while medical vascular injuries and retroperitoneal hematoma complications caused by percutaneous femoral vein catheterization and surgery are relatively rare, but can carry a heavy burden on patients and clinical staff [2]. One of the

best ways to manage postoperative complications is to prevent them from occurring in the first place, and a great deal of research has been invested in predicting postoperative complications over the past few decades [2,3]. We report this case of penetrating extremity vascular injuries, retroperitoneal hematoma due to malpractice, and we believe that the most important cause of this complication is inappropriate force and angle of puncture, which can easily lead to vascular injuries when punctured with too much force and at too large angle.

A meta-analysis by Sobolev, et al. [4] showed a 60% reduction in the likelihood of major vascular complications, and a 66% reduction in the likelihood of minor vascular complications when ultrasound-guided femoral vein access was used in electrophysiological procedures. So ultrasound guidance reduces the risk of bleeding from vascular access, especially in patients receiving anticoagulation. Avoiding complications of clinical procedures does require a multifaceted approach that includes adequate preparation, strict adherence to guidelines, ongoing monitoring and evaluation and emergency management, patient communication and education, and continuous learning and improvement.

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