





An unexpected complication associated with a temporary vena cava filter

Geçici vena cava filtresiyle ilişkili beklenmeyen bir komplikasyon

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ABSTRACT

Interventional methods have been increasingly used in the treatment of iliofemoral deep vein thrombosis over the past two decades. While these methods have shown significant success, they can be associated with certain periprocedural complications. In this case report, we presented an unusual complication encountered during the removal of a temporary inferior vena cava filter in a 55-year-old male patient who underwent hybrid pharmacomechanical thrombectomy for iliofemoral deep vein thrombosis and its surgical treatment.

Keywords: Complication, deep venous thrombosis, inferior vena cava filter.

ÖZ

İliofemoral derin ven trombozunun tedavisinde son yirmi yılda giderek artan bir şekilde girişimsel yöntemler kullanılmaktadır. Bu yöntemler önemli başarı göstermiş olsalar da bazı periprocedürel komplikasyonlarla ilişkilendirilebilirler. Bu olgu sunumunda, iliofemoral derin ven trombozu nedeniyle hibrid farmakomekanik trombektomi uygulanan 55 yaşındaki erkek hastada geçici inferior vena cava filtresinin çıkarılması sırasında görülen alışılmadık bir komplikasyon ve cerrahi tedavisi sunuldu.

Anahtar sözcükler: Komplikasyon, derin ven trombozu, inferior vena cava filtresi.

Iliofemoral deep vein thrombosis (IFDVT) is a significant pathology that can lead to severe complications such as post-thrombotic syndrome (PTS) and pulmonary embolism (PE) if left untreated.^[1] The current standard approach for treating deep vein thrombosis (DVT) consists of promptly administering intravenous anticoagulation, either with unfractionated heparin or, more recently, low-molecular-weight heparin. Additionally, early mobilization and the use of graduated compression stockings (ranging from 30 to 40 mmHg) are also considered among the standard treatment approaches and have demonstrated effectiveness in preventing the occurrence of PTS.^[2]

However, interventional methods have been increasingly used in the treatment of IFDVT over

the past two decades. Hybrid pharmacomechanical thrombectomy (PMT) is a catheter-based treatment method that involves fragmentation of the thrombus and better penetration of the thrombolytic agent into the clot. Literature reports successful outcomes of hybrid PMT in the treatment of IFDVT in patients with a threatened extremity, symptom duration of less than 14 days, high life expectancy, and good functional capacity.^[3,4]

Prior to the procedure, a temporary filter is typically placed in the inferior vena cava (IVC) through the contralateral femoral vein to prevent periprocedural PE. A systematic review evaluating a total of eleven studies reported that no major mechanical complications related to the procedure were observed.^[5] However, it is important to consider

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the potential complications that may arise during filter placement or removal.

In this case report, we presented an unusual complication encountered during the removal of a temporary IVC filter in a patient who underwent hybrid PMT for IFDVT, along with its surgical treatment.

CASE REPORT

A 55-year-old male patient presented to the emergency department with complaints of swelling and pain in the right leg. The patient described progressively worsening swelling and pain in the right leg for the past two days. Physical examination revealed significant swelling, discoloration, increased leg diameter, and increased warmth from the groin of the right leg onwards (Figure 1). The patient had coexisting diabetes mellitus. Other systemic examinations were normal. After a diagnosis of right IFDVT based on the results of the lower extremity venous colored Doppler ultrasonography, the patient was hospitalized for interventional treatment. Low-molecular-weight heparin was initiated at 6,000 IU twice daily by subcutaneous injection, and hybrid PMT was planned. A written informed consent was obtained from the patient.

The procedure was performed in a hybrid room under ultrasound guidance via local anesthesia. First,



Figure 1. Initial presentation of acute right lower limb swelling and discoloration.

a temporary IVC filter was placed through the left femoral vein (8-French, 50-cm TPS Thrombolysis Catheter with a 30-mm filter diameter; Invamed, Ankara, Türkiye). Subsequently, the PMT procedure was performed through the right popliteal vein. The details of the standard procedure were previously described.^[3] The patient was then admitted to the intensive care unit for monitoring. A 6-French, 90-cm Viper thrombolysis catheter (Invamed, Ankara, Türkiye) was placed, and alteplase (Actilyse; Boehringer Ingelheim, International GmbH, Ingelheim am Rhein, Germany) was infused at 1 mg/h through the Viper for 20 to 24 h to remove residual thrombus. On the second postoperative day, the patient was taken back to the hybrid room for the removal of the temporary IVC filter. Under fluoroscopy guidance, an attempt was made to remove the filter, but it was unsuccessful. During the removal of the filter, it was observed that it became stuck in the sheath at the point where it was inserted, and a portion of it did not enter the sheath. Active bleeding was observed at the site of femoral vein puncture. A surgical incision was performed in the left femoral region under local anesthesia, and the femoral vein was explored. The filter was surgically removed through femoral vein exploration. A significant amount of thrombus was observed at the proximal end of the filter (Figure 2). Subsequently, the femoral vein was sutured. The patient had an uneventful postoperative course and was discharged with direct oral anticoagulant medication.

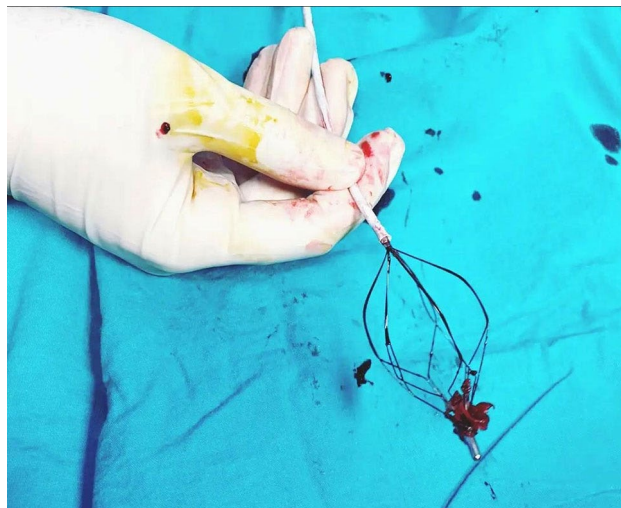


Figure 2. Removed temporary inferior vena cava filter and organized thrombi at its proximal end.

DISCUSSION

In the treatment of IFDVT, it is necessary to reduce the complications of venous thrombosis and improve the quality of life of the patients. Although anticoagulation is the standard treatment, PE and PTS can occur even in individuals receiving anticoagulant therapy for DVT. Hybrid PMT has emerged as an effective treatment option for IFDVT in recent years.^[1-5] This technique combines pharmacological treatment aimed at thrombolysis with mechanical removal of the thrombus from the venous system. Claimed benefits of this technique include lower thrombolytic dose, increased local thrombolytic agent application, reduced systemic side effects, lower treatment costs, and shorter treatment duration.^[6]

Despite the successful outcomes of hybrid PMT, periprocedural complications such as PE and major bleeding have been reported.^[5,6] Complications related to temporary IVC filters are rare.^[5] Retrievable IVC filters should be removed under fluoroscopic guidance and in appropriate sterile conditions. In cases of severe complications, as encountered in this case, urgent intervention can be performed. The inability to remove the temporary filter due to a high thrombus burden is a rare complication. However, in the event of such a situation, hybrid rooms equipped with both imaging devices and the capability for sterile surgical intervention provide an opportunity to intervene before complications escalate. Assuming that the removal of a temporary IVC filter can only be performed under fluoroscopy guidance is a significant oversight. In cases of complications, the surgical environment and team should be ready for surgical intervention.

In conclusion, the application of hybrid PMT and the use of temporary IVC filters in the treatment of IFDVT are highly effective and safe. However,

it is important to keep in mind that mechanical complications may rarely occur, and surgical intervention should be considered.

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