



Femoral Endovenectomy with Iliac Stenting for Chronic Iliofemoral Venous Occlusion

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A 62-year-old man with progressive swelling on his left thigh and leg was referred to the Division of Vascular Surgery. Anticoagulation therapy did not prevent or improve the symptoms of chronic deep vein thrombosis (DVT) from his left external iliac vein to posterior tibial vein. He had no trauma history nor any accidents. He underwent femoral endovenectomy, thrombectomy and stent insertion in left iliac vein. The patient had additional balloon angioplasty for stenosis in left common femoral vein. He had an uneventful postoperative recovery without complication. Leg swelling has been improving and follow-up continues under anticoagulation. We report a case of femoral endovenectomy with iliac stenting, which may be an efficacious treatment for chronic DVT.

Key Words: Endovenectomy, Iliac vein, Stent, Venous thrombosis

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INTRODUCTION

Deep vein thrombosis (DVT) is a common condition that can lead to serious complications, such as postthrombotic syndrome (PTS), pulmonary embolism or death. Over 90% of DVT patients treated with anticoagulation have venous insufficiency, 15% venous ulceration, 15% venous claudication and 40% restricted ambulation [1,2]. Chronic post-thrombotic occlusion of the iliofemoral vein lead to severe morbidity, but it can be improved when venous drainage is adequately recovered. Although acute thrombotic occlusion of the iliofemoral vein can be successfully treated with thrombolysis, balloon dilatation and/or stent insertion, chronic occlusion can sometimes develop and need additional treatment. Comerota et al. [3] and Vogel et al. [4] reported novel endovenectomy cases, which can improve venous drainage and consequentially reduce venous symptoms. Herein we report a case of chronic DVT successfully treated by a hybrid operation including endovenectomy of femoral vein and iliac stenting, which is the first case ever

reported in Asian patients.

CASE

A 62-year-old man presented with progressive swelling on his left thigh and lower leg. He had been diagnosed as DVT 2 months ago and underwent thrombolysis in other hospital. Despite of antithrombotic therapy with aspirin and rivaroxaban, leg swelling was getting worse. Clinical classification was C4 with lipodermatosclerosis [5]. Venous duplex ultrasonography and computed tomography venography (CTV) revealed chronic DVT from left external iliac vein (EIV) to posterior tibial vein and in great saphenous vein (GSV) (Fig. 1). A hybrid operation was planned including femoral endovenectomy, thrombectomy, and stenting of left EIV. Under the general anesthesia, left femoral veins were dissected via a longitudinal incision in the left groin. After venotomy, chronic thrombus and dense synechiae of fibrous tissue inside the vein were excised (Fig. 2).

The endovenectomy was extended cephalad to just

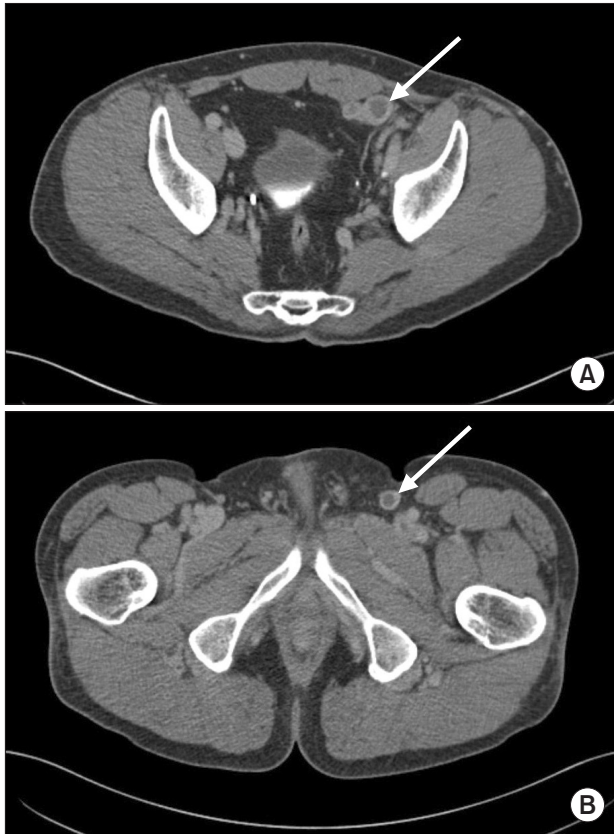


Fig. 1. Deep vein thrombosis in the left external iliac vein (arrow in A), great saphenous vein (arrow in B) and femoral vein.

below the inguinal ligament and caudad to 3 cm distal to femoral vein bifurcation. The deep femoral vein orifice was completely recanalized. The venotomy was closed with a left GSV patch. A 7-French sheath was inserted via the suture line and two self-expanding stents (10×60 mm, 10×80 mm) were deployed (Absolute Pro; Abbott Vascular, Santa Clara, CA, USA) in the left EIV (Fig. 3).

Postoperative anticoagulation was done with unfractionated heparin and warfarin. Follow-up CT on postoperative day (POD) 7 showed patent left EIV stent, but remnant stenosis in common femoral vein (CFV). Balloon angioplasty was performed and the venous flow improved (Fig. 4). The patient was discharged POD 10 on anticoagulation with warfarin. On 6 months follow-up, the symptoms have improved and anticoagulation is continued.

DISCUSSION

Chronic veno-occlusive disease in the iliofemoral vein can be restored by endovascular recanalization alone [6]. However, CFV stenting may result in the occlusion of the orifice of deep femoral vein, and worsen the symptoms [4]. Moreover, stents crossing the inguinal ligament are exposed to kinetic stresses, such as motion, compression, extension and contraction. Consequently CFV stenting have a risk of fracture and reocclusion.

When a major axial vein is occluded, multiple channels of collateral veins take on venous drainage. However, when the venous drainage is insufficient, symptoms of PTS can

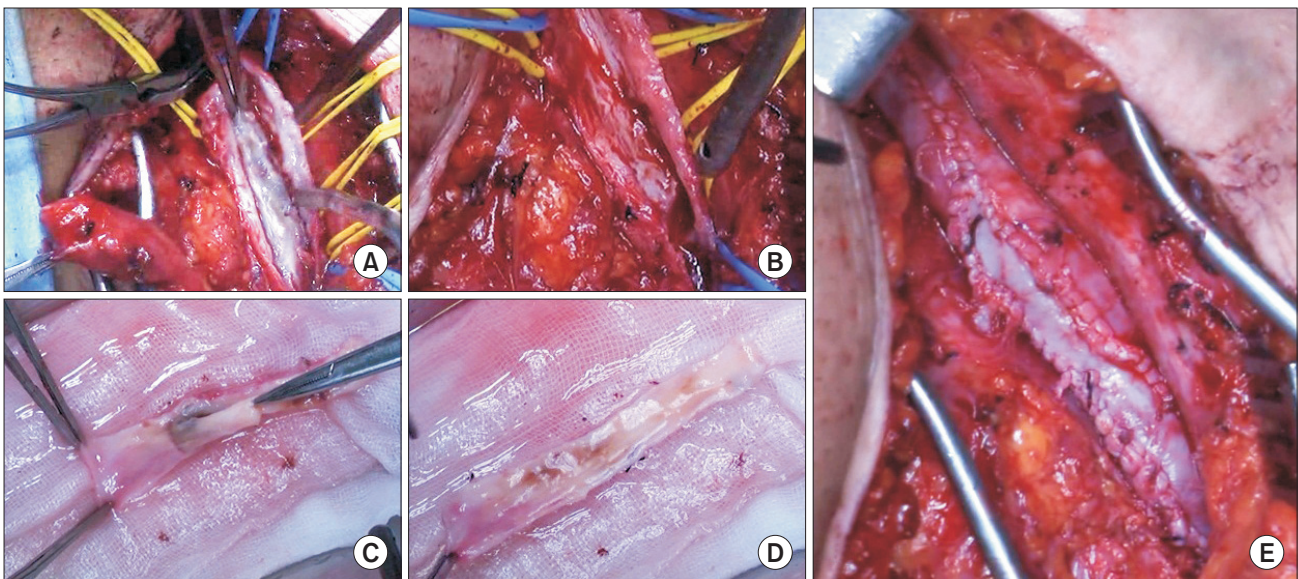


Fig. 2. (A) Venotomy of left common femoral vein showed chronic organized thrombus and synechiae (B) after endovenectomy (C) endovenectomy of thrombosed proximal great saphenous vein (GSV) for a use of vein patch (D) GSV patch (E) closure the vein with patch angioplasty.

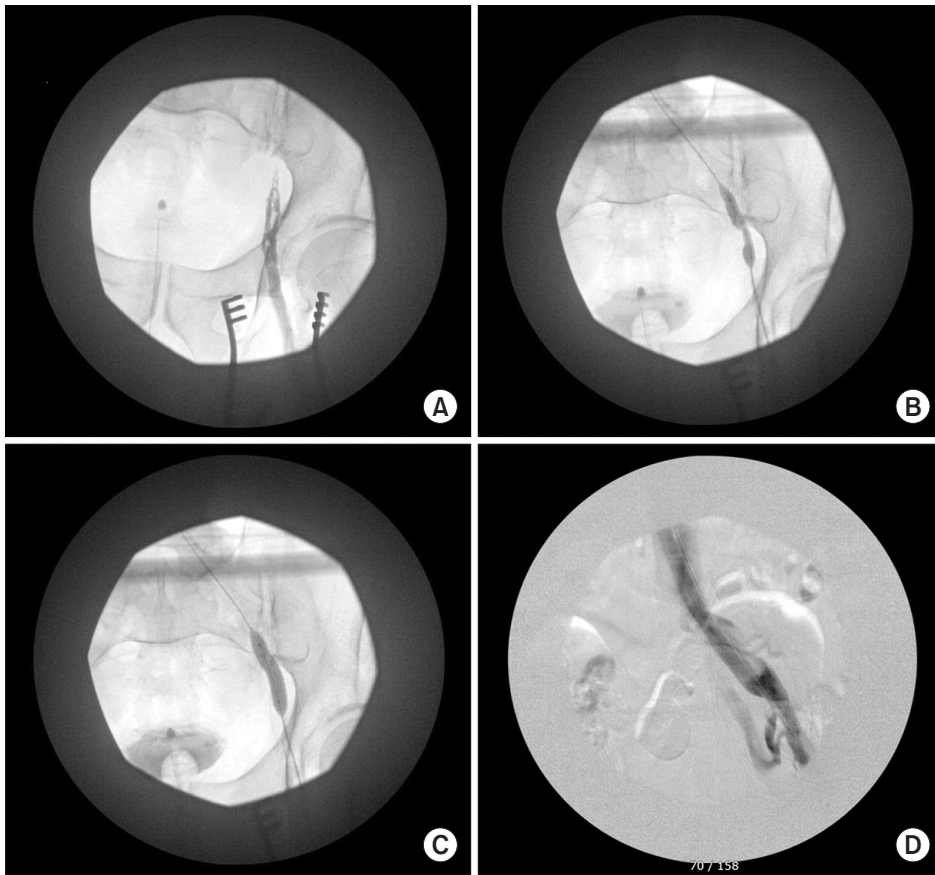


Fig. 3. (A) On-table venography showed residual stenosis in left common femoral vein. (B) Balloon angioplasty (C) stenting and ballooning (D) completion venography showed restored venous flow in left iliac vein.

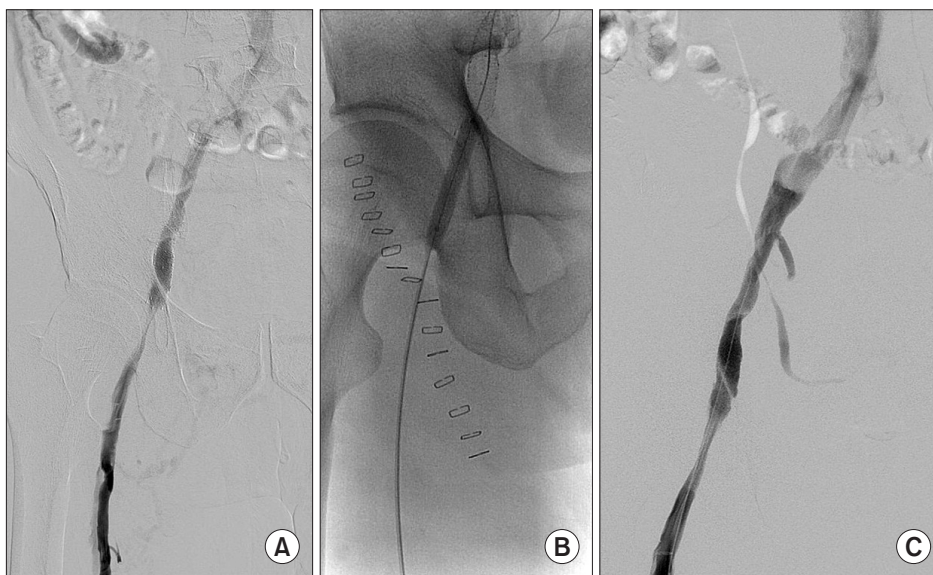


Fig. 4. (A) Venography in prone position showed a stenosis in proximal left common femoral vein (B), balloon dilatation (C) completion venography showed improved venous flow.

develop. In selected cases of PTS, endovenectomy can be an effective therapeutic method for CFV obstruction, with venous intimal change to synechiae and fibrous tissue formation. Furthermore, when iliac obstruction co-exists, endovenectomy synergizes the effect of iliac stenting in venous recanalization by increasing the inflow to the stented

vein [7-9].

Comerota et al. [3] and Vogel et al. [4] reported 10 cases of endovenectomy with iliac vein stenting. In brief, after the premedication with dual antiplatelets of aspirin and clopidogrel for 3 days, the CFV, femoral vein, deep femoral vein were exposed. Through a longitudinal venotomy, dense

fibrinous tissue and web-like synechiae were removed with sharp and blunt dissection. The vein was repaired with bovine or saphenous vein patch. Then iliac vein recanalization with stent was performed in usual manner.

In this case, the surgery was done by the same technique that Comerota et al. [3] had mentioned. Unfortunately, the common femoral vein just above the vein patch, which were closed by direct suture, showed a recurrent stenosis which

required additional balloon angioplasty. It seems to be prudent to cover the patch along the whole length of the venotomy to prevent immediate recoil or restenosis.

In conclusion, femoral endovenectomy and iliac stenting can be an effective and safe technique for chronic venous obstruction. Further studies on long-term outcome and optimal peri- and postoperative medication would enhance the efficacy of endovenectomy and stenting.

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