Endovascular Treatment (Stenting) of Total IVC Obstruction with Collaterals in Young Adult with Crohn's Disease Maharishi Markandeshwar (Deemed to Be University)

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Abstract

We present a case of clinically extensive bilateral DVTs associated with chronic total inferior vena cava thrombosis with underlying crohn's disease and who is on steroid therapy. Young patients presenting with symptoms of DVT should be investigated not only to establish any thrombophilic pre-disposition but to ascertain the proximal extent of thrombus which may itself influence treatment. Treatment options in the case of IVC thrombus without anatomical variance include anticoagulation, mechanical thrombectomy, systemic thrombolytic therapy, transcatheter regional thrombolysis, and angioplasty

Keywords: *Deep vein thrombosis, inferior vena cava thrombus, IVC stenting, Chronic total IVC occlusion, chron's disease*

Introduction

Inferior vena cava (IVC) thrombosis is an entity which is given less importance that is associated with significant morbidity and mortality [1]

About 2.6% to 4.0% of patients will have DVT [2]

The incidence of unprovoked DVT in young patients is rare, especially below 30 years of age.

There is a paucity of data and societal guidelines with regards to the diagnosis and management of IVC thrombosis

The clinical presentation of IVC thrombosis is often ambiguous and varies significantly according to the acuity, the level, and the extent of thrombosis.

Similar to those with lower extremity DVT, patients with IVC thrombosis commonly complain of leg heaviness, pain, swelling, and cramping.

Even the total occlusion of IVC can remain silent or else can present with acute symptoms

Hypercoagulability which is related to neoplastic or hematological abnormalities, venous stasis secondary to extraluminal pressure from tumors or inflammatory processes and vessel injury due to trauma have all been implicated as primary mechanisms in the pathophysiology of IVC thrombosis [3]

Endovascular interventions play a major role in treatment of venous obstructive diseases.

Catheter-directed thrombolysis (CDT) has become a pivotal adjunctive therapy in the management of both acute and chronic thromboembolic venous disease.

This therapy is most successful in acute thrombus(<14 days) and less effective in chronic clot(>4 weeks)[9]

Percutaneous mechanical thrombectomy has evolved in treating complex veno-occlusive diseases.

These devices work by simple thrombo aspiraton(venturi effect) .

Endovascular therapy offers less morbidity and

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mortality when compared to surgery. In one of largest reported series of endovascular therapy for IVC occlusion, 82% of the lesions in 120 patients were infrarenal, with suprarenal involvement in 18% of cases[10]

Underlying lesions are identified and should undergo high-pressure angioplasty and stenting. The advantage of self-expanding venous stents include the ability to oversize them so as to allow proper fixation and reduce the risk of stent migration in these highly compliant vessels

Case History

22 years male patient presented with complaints of bilateral lower limb pain associated with swelling of limbs for 15 days. H/O shortness of breath for 15 days. H/O anorexia, decreased appetite, nausea for 15 days. He was diagnosed as CHRON'S disease for 6 months and was on steroid therapy. There was no history of trauma, surgery, long-distance travel, prolonged immobilization.

On examination, his BP was 120/70 mmHg and has tachycardia of HR: 126/min

Bilateral lower limbs swelling symmetrically with pitting edema is present

Cardio-respiratory was unremarkable and his abdomen was soft

All routine Lab investigations (hematological, coagulation, and biochemical) were normal.

ECG suggestive of sinus tachycardia

2DECHO suggestive of RA an RV dilated, moderate TR, moderate to severe PAH.

USG COLOUR DOPPLER bilateral lower limbs found to have DVT extending up to infra hepatic inferior vena cava.

CT pulmonary angiography was done suggestive of pulmonary embolism

IVC venogram via the right femoral vein demonstrated total occlusion of the IVC with high-grade multiple collaterals (Figure 1)

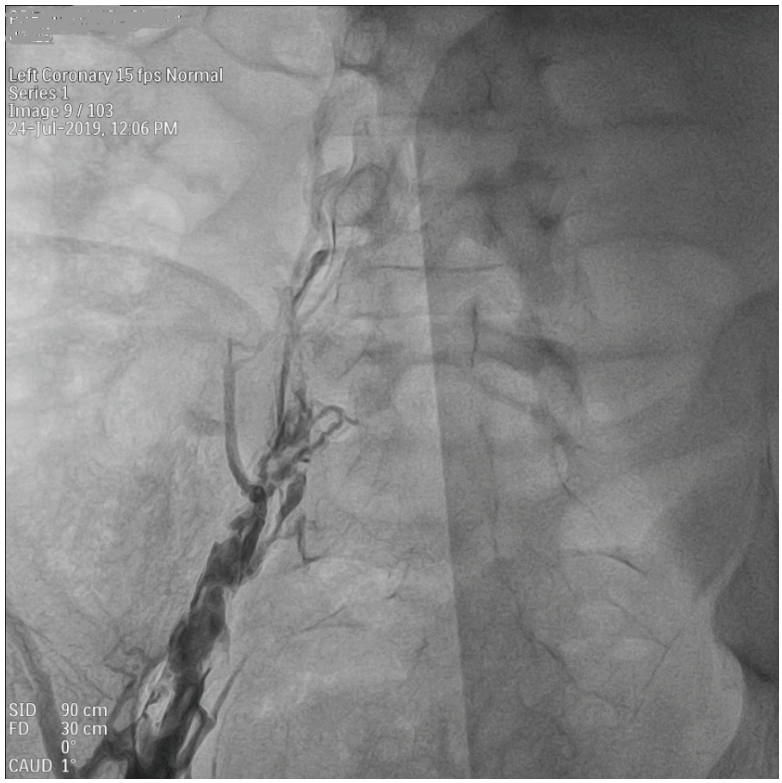

Figure 1 : Venogram showig total occlusion of IVC

IVC filter(Cook Celect Platinum vena caval filter) was placed in view of pulmonary embolism (Figure 2)

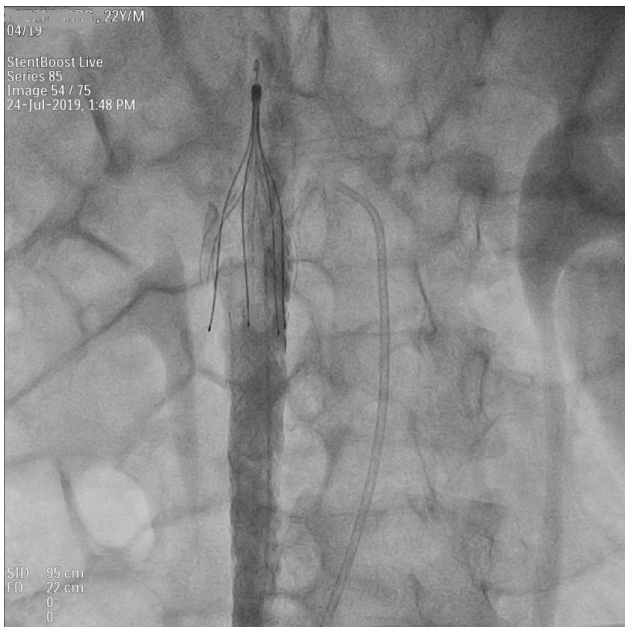

Figure 2 : IVC filter placed

Balloon angioplasty of IVC was done along with mechanical thrombectomy resulting recanalization of IVC.

A self-expandable stent (Abbott Vascular –Absolute Pro) (10×100 mm,135 cms) was placed in IVC. (Figure 3)

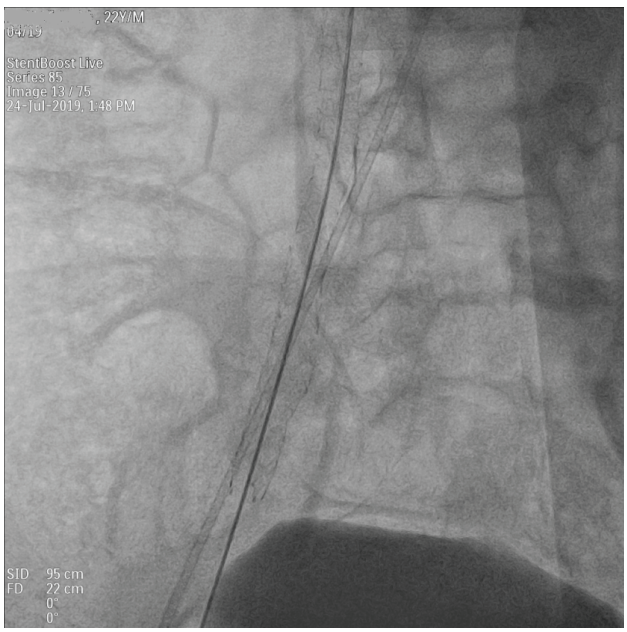

Figure 3 : Stent was placed

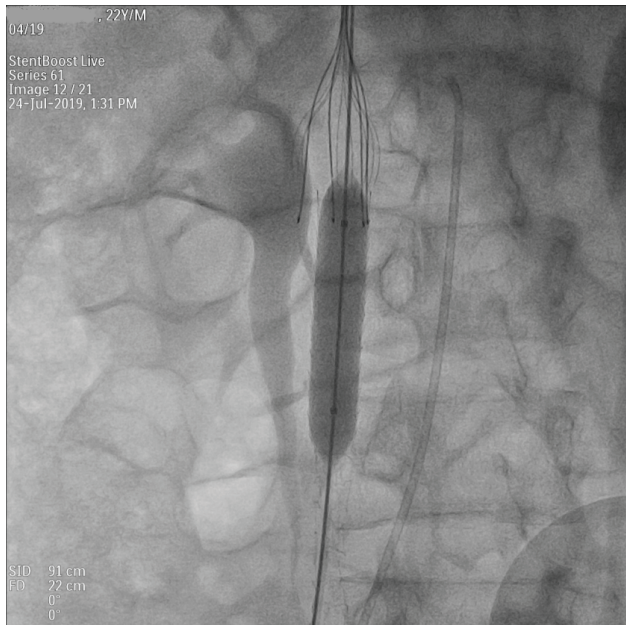

Figure 4: dilatation of stent

Figure 5 : final result after stent placement and post dilation of stent

The patient was started on anticoagulation with intravenous injection heparin bridging with oral anticoagulants.

The patient was started on oral anticoagulants-warfarin 3 mg OD and advised to maintain INR between 2-3

Discussion

It is a known fact that Virchow's triad (stasis, endothelial injury, hypercoagulability) most common pathophysiology for predisposing to DVT. But

unprovoked DVT, especially in young patients, needs thorough workup.

Recent advances in the utilization of ultrasound, CT and as well as endovascular procedures have resulted in an increase in detection rates of IVC thrombosis.

About 12% of patients with a diagnosis of IVC thrombus may present with pulmonary embolism. So, CT pulmonary angiogram is needed to evaluate for pulmonary embolism

Treatment options in the case of IVC thrombus without anatomical variance include anticoagulation, mechanical thrombectomy, systemic thrombolytic therapy, transcatheter regional thrombolysis, and angioplasty [4]

There is no specific literature describing the ideal duration of anticoagulation in these instances, however, case evidence identifies a trend toward treatment for a minimum of one year with maintaining the target INR

Endovascular stent placement in combination with angioplasty is recommended in the cases of residual stenosis and chronic IVC occlusion [5]

Learning Points

 Deep venous thrombosis (DVT) of the inferior vena cava (IVC), iliac veins and femoral veins in young adults is rare, but it is associated with significant morbidity.

 Understanding the embryological IVC development and pathophysiology of thrombus formation is critical to suspecting congenital anomalies of the IVC, especially with bilateral DVT.

 The initial diagnostic procedure should be an ultrasound of the lower extremities. Further investigation modalities are mandatory with the detection of iliofemoral thrombosis. CT or MRI is required to identify the extension of the thrombus and IVC anatomy. For the complete evaluation, thrombophilia workup should be performed[6,8]

 Treatment options include anticoagulation, thrombolytic therapy, and mechanical thrombectomy. In a case of IVC development abnormalities, the location and type of the defect determine the surgical approach. Even with extensive therapeutic modalities, long-term or even life-long anticoagulation is often required [6,7]

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Conflict of Interest-NIL

Ethical Clearance -Institutional ethics Committee-Maharishi Markandeshwar (deemed to be university), Mullana-Ambala

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