Inferior Vena Caval Filter in the Treatment of Protein S Deficient Chronic Thrombo-Embolic Pulmonary Hypertension with Deep Vein Thrombosis

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[CLINICAL INFORMATION]

Patient initials or identifier number. Mrs. MB

Relevant clinical history and physical exam. A 45-year-old lady presented with NYHA III dyspnoea for 3 months & left leg swelling for 9 months. She was diagnosed as a case of Ilio-femoral Deep vein thrombosis & treated with Warfarin. After stopping Warfarin due to intractable haemoptysis she again developed DVT. No H/o paroxysmal nocturnal dyspnoea & orthopnoea.

O/E
- Pulse: 110/min, regular
- BP: 100/60 mmHg
- JVP: Raised
- Precordium: Apex normal, Left parasternal lift present, P@ loud
- Left leg oedematous & pigmented.

Relevant test results prior to catheterization.

INR: 1.56
- Plasma Fibrinogen- 380mg/dl (200-400)
- Protein C - 70% (70-140)
- Protein S - 22% (60-130)
- Anti- Thrombin - 78.3%(75-125)
- ANA, Anti- Phospholipid antibody - Negative
- ECG: Tachycardia
- CXR P/A view: Pulmonary conus bulged
- Echocardiography: RA, RV dilated with moderate pulmonary hypertension (PASP- 45mmHg) LVEF- 60%(Fig1)
- Duplex study of Left lower limb-Massive and floating Ilio-femoral-popliteal deep venous thrombosis (Fig2).
- CT pulmonary angiogram: Multiple thrombi in the main and branch pulmonary arteries (Fig3)

Relevant catheterization findings. Abdominal Aorta (Fig 4) and renal arteries were normal. IVC(Fig 5) and Renal veins showed Large caliber vessel free of any narrowing orthomibus. So we planned for Implant IVC filter in Infra-renal position.
Procedural step. With all aseptic precaution right femoral venous (7 Fr) and arterial (6 Fr) access sheath introduced. Heparinization done with 5000 iu Unfractionated Heparin. Pigtail catheter introduced in AP view through arterial route to visualize renal arteries which will act as guide for positioning IVC filter at infra renal position. A metallic marker placed over body surface at the level of renal arteries to ensure proper positioning of the filter. IVC filter delivery system engaged through venous access after visualization of renal veins and assessed the position of the delivery cable in relation with pigtail catheter and metallic marker (Fig 6). Then we pushed the IVC filter (Gunther Tulip, Cook Medical) through cable, proper positioning ensured and unscrewed the filter in infra renal position without hampering renal venous drainage. Then we again visualized renal arteries through pigtail. After successful IVC filters implantation we removed all catheters and cables (Fig 7). Haemostasis ensured.

Hospital course was uneventful. As there was Pulmonary hypertension and haemoptysis was controlled we continued Warfarin 5mg once daily and Sildenafil 50mg twice daily.

Case Summary. Protein S deficient DVT is very rare condition. It is devastating when thrombus is proximal ilio-femoral. Pulmonary embolus due to DVT results in significant mortality & morbidity, resulting in the need for prevention & treatment. Although systemic anticoagulation therapy remains the initial & most effective treatment, IVC filters play pivotal role in patients with established DVT & PE. Varieties of filters are FDA approved & relatively safe filters placed over several year are retrievable. The choice of using a particular filter should be made with careful consideration of the duration of intended use, character of filter & associated complications.