

## Superficial Vein Thrombosis of the Upper Extremity: Not a Benign Entity

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### Abstract

Superficial vein thrombosis receives little medical attention, however it is not an uncommonly encountered presentation. While previously thought to be a completely benign entity, more recent studies have demonstrated that it may be associated with concomitant deep vein thrombosis and thromboembolic complications.<sup>1</sup>

Additionally, superficial vein thrombosis is not always self-limiting, and can be prone to tenacity and recurrence, causing significant incapacitation and impairment of daily functional activities, especially when involving the upper extremities.

We present the case of a 31-year-old woman who developed extensive superficial vein thrombosis of the non-dominant upper extremity following a brief period of peripheral intravenous cannulation.

Our reasons for highlighting this case are:

1. This presentation is usually undermined, and the thromboembolic complications associated with it are not recognized as a sequelae of this entity.
2. To create awareness about current treatment guidelines in superficial vein thrombosis.

**Keywords:** Superficial Vein Thrombosis; Intravenous Cannulation.

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### INTRODUCTION

Superficial vein thrombosis is an inflammatory, thrombotic disorder in which a thrombus develops in a vein located near the surface of the skin. Superficial vein thrombosis is most commonly seen in the lower extremity, specifically the long saphenous vein<sup>2</sup>, however it may also occur in the upper extremity (especially, following a medical procedure like intravenous cannulation), or in the breast or penis (called Mondor's disease).



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Most superficial veins that develop thrombosis also have phlebitis, in contrast to deep vein thrombosis, in which phlebitis may be absent. The diagnosis of superficial venous thrombosis is therefore, usually a clinical one. However, a clinical diagnosis often tends to underestimate the extent of superficial vein thrombosis, or may miss the presence of concomitant deep vein thrombosis.<sup>3</sup> A venous colour Doppler ultrasonography is required to confirm the presence, as well as evaluate the extent of superficial vein thrombosis. Additionally, the venous colour Doppler will also diagnose concomitant deep vein thrombosis, if present.

### Case Presentation

A 31-year-old female presented to the Emergency Department (ED) with abdominal pain. Cannulation was done of the dorsal metacarpal vein of the left hand (non-dominant hand) with a 20 gauge peripheral angiocath, and she received 40 mg pantoprazole, 20 mg hyoscine butyl bromide, and 50 mg tramadol, all given intravenously via the peripheral cannula. Patient was discharged from the ED after symptomatic relief of abdominal pain.

Total time for intravenous (IV) catheter in-situ was < 3 hours. Retrospectively, there was a history elicited of pain at the site of injection, which reduced significantly once the peripheral venous catheter was removed. However, once discharged, there was a resurgence of pain with progressive edema over the left hand and forearm over the next 12 hours. Over the next 24 hours, the oedema and erythema subsided, however the pain persisted.

48 hours after IV cannulation, a venous colour Doppler of the left upper limb was done in view of worsening pain which revealed an acute echogenic thrombus in all the superficial veins of the left upper extremity, including the cephalic vein, basilic vein, and median cubital veins. The basilic vein seen medially in the arm was distended with echogenic thrombus upto its drainage into the left brachial vein. Subcutaneous oedema was noted in the left arm and left forearm.

The deep veins including the left brachiocephalic vein, left subclavian vein, axillary vein, brachial vein, and deep veins along the radial and ulnar arteries showed normal colour flow with no evidence of thrombosis.

Differential diagnosis

Cellulitis

Septic thrombophlebitis

Deep vein thrombosis of the upper limb.

### Treatment and Outcome

A haematology consult was taken, and the patient was advised to start oral Apixaban 5 mg, once a day for 3 months, along with oral NSAIDs for 5 days for pain relief. Pro-thrombotic profile was done prior to initiation of Apixaban, which was within normal limits. Patient had significant resolution of pain by day 5 of follow-up, and was advised to repeat the upper limb venous colour Doppler after 3 weeks.

### DISCUSSION

Superficial vein thrombosis is an inflammatory, thrombotic disorder in which a thrombus develops in a vein located near the surface of the skin.

While previously thought to be a completely benign entity, more recent studies have demonstrated that concomitant deep vein thrombosis is seen in as many as 25% cases of superficial vein thrombosis of the lower limbs, while concomitant pulmonary embolism may be seen in about 5% cases.<sup>1</sup> D-dimer is known to have a high false negative rate for superficial vein thrombosis.<sup>2</sup> The diagnostic test of choice is an ultrasound as this helps assess the length of the thrombus, as well as extension to deeper veins.

Risk factors for concomitant deep vein thrombosis include superficial vein thrombosis > 5 cm in length, or <3 cm from the sapheno-femoral junction or involvement above the knee (in case of lower limbs), superficial venous thrombosis in a non-varicose vein, active malignancy, recent hospitalization or immobilization, prior history of venous thromboembolism or deep vein thrombosis, age above 75 years, and male gender.

The 2012 ACCP (American College of Chest Physicians) guidelines suggest that patients with superficial vein thrombosis >5 cm can be treated with prophylactic dose of Fondaparinux or LMWH (low molecular weight heparin) for 5 days.<sup>5</sup> This recommendation is largely based on the results of the CALISTO trial (randomized, double-blind, placebo-controlled, large trial with 3002 subjects) which conclusively showed that 2.5 mg Fondaparinux given for 45 days (compared to a placebo) reduces the risk of symptomatic thromboembolic complications by 85% without increased bleeding.

Even though most patients with isolated superficial vein thrombosis are now being treated with anticoagulation therapy, about 8% experience

symptomatic thromboembolic complications within three months.<sup>3</sup>

## CONCLUSION

Superficial vein thrombosis is not an entirely benign entity as was previously thought to be, and may require anticoagulation therapy. Patients with superficial vein thrombosis should always be screened for concomitant deep vein thrombosis.

Physicians should be aware of risk factors as well as red flag signs in superficial vein thrombosis, and appropriate anticoagulation therapy should be initiated in a timely manner in order to prevent thromboembolic complications.

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