# Superficial Thrombophlebitis, Superficial Vein Thrombosis

Thrombosis Canada
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## Objective:

To provide an evidence-based approach to the diagnosis and management of patients presenting with superficial vein thrombosis (SVT).

## Background:

Superficial thrombophlebitis or superficial vein thrombosis (SVT)* results from thrombus formation in a superficial vein with associated inflammation of the vessel wall. SVT is most often observed in the lower extremities, with greater saphenous vein (GSV) involvement in 60-80% of affected individuals. SVT is 6-fold more common than venous thromboembolism (VTE) with a yearly incidence rate of 0.64%.

*It is important to note that SVT is different from thrombus within the superficial femoral vein which is a deep vein and requires the same approach to management as deep vein thrombosis (DVT) in other deep veins.

Risk factors for SVT are similar to those for deep vein thrombosis (DVT) and pulmonary embolism (PE) and include active malignancy or cancer therapy, surgery, venous procedures, trauma/injury, immobilization, obesity, estrogen use/pregnancy (particularly in the first month postpartum), a personal or family history of VTE, and inherited thrombophilia. In addition, SVT often occurs in the presence of varicose veins (present in up to 80% of SVT patients) and, in the upper extremities, is often associated with intravenous catheters. SVT is a risk factor for concomitant and future VTE.

## Diagnosis:

At diagnosis, approximately 25% of patients with SVT are found to have concomitant VTE. The diagnosis of SVT can be made clinically, based on the presence of characteristic signs and symptoms including erythema, warmth and tenderness along a palpable cord. Compression ultrasound (CUS) is suggested in most cases to confirm the presence of SVT, rule out DVT, and delineate the length of the thrombus and proximity to the saphenofemoral junction (SFJ) or saphenopopliteal junction (SPJ), where the GSV and small saphenous vein join the deep veins, respectively. Details regarding these parameters should be sought from the radiologist when not included in the ultrasound report.

CUS should be performed in the majority of patients with clinically diagnosed SVT, particularly those with symptoms above the knee or located close to the popliteal fossa, in those with symptoms suggestive of DVT and in patients with VTE risk factors. Patients with below the knee SVT restricted to a varicose vein without additional VTE risk factors may not require CUS assessment.

## Treatment of SVT:

**General measures:**

- As approximately 4% of patients with SVT will have a concomitant PE, all patients should be assessed for a history of PE symptoms (e.g. dyspnea, pleuritic chest pain, hemoptysis) and investigated accordingly [**See Clinical Guide Pulmonary Embolism (PE): Diagnosis**].
- Patients with upper extremity SVT associated with vein cannulation or IV catheters should be assessed for signs of infection (e.g. fever, purulent discharge at insertion site).
- Patients who are over age 40 with no varicose veins or other obvious risk factors for VTE should have age- and gender-appropriate screening for malignancy. Migratory superficial thrombophlebitis further increases the index of suspicion for malignancy.

**Approach to treatment**

Once SVT is diagnosed, treatment will depend on whether or not a concomitant DVT is identified and on the extent and most proximal location of the SVT (see **Figure 1** for management algorithm). Antibiotic therapy is generally not indicated unless there are signs of infection.

- Patients in whom a **concomitant DVT** is identified should be managed with **therapeutic anticoagulation** [see **Clinical Guide Deep Vein Thrombosis (DVT): Treatment**].
- Isolated SVT which extends to **within 3 cm of the SFJ or SPJ** is associated with a high risk of progression into the deep venous system. These patients should also receive **therapeutic doses of anticoagulation** for 3 months [see **Clinical Guide Deep Vein Thrombosis (DVT): Treatment**].
- Isolated SVT **≥5 cm in length** located >3 cm from the SFJ should receive **prophylactic doses of fondaparinux (2.5 mg SC daily) or rivaroxaban (10 mg PO daily) or prophylactic/intermediate doses of LMWH (see Table 1)** for 45 days. Patients can also receive topical Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) and/or compression therapy for symptomatic relief in conjunction with anticoagulation.
- Isolated SVT <5 cm in length located >3 cm from the SFJ/SPJ can be treated with oral or topical NSAIDs, compresses (warm or cool), and elevation for symptomatic relief. Compression stockings of appropriate length and tension can be considered if tolerable and no contraindications exist (e.g. known peripheral arterial disease). In patients with isolated SVT <5 cm in length located >3 cm from the deep system with severe symptoms or risk factors for extension (prior history of DVT/PE or SVT, cancer, pregnancy, hormonal therapy, recent surgery or trauma), treatment with prophylactic doses of fondaparinux (2.5 mg SC daily), prophylactic doses of rivaroxaban (10 mg PO daily) or prophylactic/intermediate doses of LMWH **(see Table 1**) for up to 45 days can be considered.
- SVT associated with IV cannulation is not generally treated with anticoagulation. Supportive measures such as warm compresses and topical NSAIDs can be considered for symptom relief.

## Role of ultrasound in management of SVT

Ultrasound imaging of the affected leg is used to exclude/confirm extension into the deep veins. It is not used to determine duration of anticoagulation if a patient is started on anticoagulation for SVT (see Table 1). Duration of anticoagulation is based on the time frames evaluated in clinical trials (i.e., 45 days), on resolution of evidence of acute inflammation (e.g. warmth, erythema, tenderness on palpation), and risk factors for recurrence (e.g. active cancer, current pregnancy). Please note that brownish discolouration or a palpable lump that is not tender over a superficial vein is not considered acute inflammation and does not indicate need for treatment.

## Special Populations:

### Malignancy

No randomised studies have assessed duration of anticoagulation in patients who develop SVT in the setting of active cancer. Given that it is a strong risk factor for extension into the deep veins, most cancer patients with SVT should be treated with anticoagulation for a minimum of 45 days with one of the agents in Table 1 (assuming the risk of bleeding on anticoagulation is low). Extension beyond 45 days should be individually based on severity of initial presentation, persistence of symptoms, and concern about recurrence.

### Pregnancy

No randomized studies have assessed the management of SVT during pregnancy. Guideline recommendations differ and include prophylactic or intermediate doses of LMWH for a fixed period (1 to 6 weeks) or throughout pregnancy and the postpartum period in pregnant women with SVT that is bilateral, symptomatic, ≤5 cm from the deep venous system or ≥5 cm in length. If no treatment is administered, clinical follow-up and repeat CUS is recommended within 7 to 10 days. Warfarin and DOACs are contraindicated in pregnancy as these medications can cross the placenta [see **Clinical Guide** **Pregnancy: Venous Thromboembolism Treatment**].

### Pediatrics

Data regarding the management of SVT in this population are very limited. If possible, pediatric hematologists with experience in thromboembolism should manage children with or at risk for SVT. When this is not possible, a combination of a neonatologist/pediatrician and an adult hematologist, supported by consultation with an experienced pediatric hematologist, should manage these children.

### Upper Extremity SVT

Limited data exists to guide the treatment of SVT in the upper extremity. The suggested approach to treatment is similar to lower extremity SVT as outlined. One exception is that typically IV cannulation associated is typically not treated with anticoagulation unless other risk factors for extension are present.

**Figure 1: Approach to management of SVT.** DVT, deep vein thrombosis; NSAID, non-steroidal anti-inflammatory; LMWH, low molecular weight heparin

* Prophylactic/intermediate dosing anticoagulation is reasonable for severe symptoms or with risk factors. If not treating or if using topical NSAIDs, monitor for extension with repeat U/S 7 to 10 days later. The goal of U/S is to rule out extension into the deep veins, not to confirm resolution of thrombus which may take weeks or be present indefinitely.

**DVT,** deep vein thrombosis; **NSAID**, non-steroidal anti-inflammatory; **LMWH**, low molecular weight heparin

**Table 1: Treatment Options for SVT***

| Drug Class | Suggested dosing | Duration of treatment |
|---|---|---|
| **LMWH**** | Dalteparin 5,000-10,000 units SC daily<br>Enoxaparin 40-80 mg SC daily<br><br>Nadroparin 2,850-5,700 units SC daily | 45 days |

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|---|---|---|
| | Tinzaparin 4,500-10,000 units SC daily | |
| **Fondaparinux**** | 2.5 mg SC daily | 45 days |
| **Rivaroxaban**** | 10 mg PO daily | 45 days |
| **Oral NSAIDs** | Ibuprofen 400 mg PO TID<br><br>Naproxen 500 mg PO BID | 7-14 days |
| **Topical NSAIDs** | Topical diclofenac [Voltaren Emugel®] apply 2 to 4 g to affected area 3 or 4 times daily | 7-14 days |

* Patients should be treated with therapeutic anticoagulation if they have concomitant DVT and/or have isolated SVT within 3cm of the deep system (i.e. SFJ, SPJ). Choice of anticoagulant will be determined based on local availability, physician familiarity, and patient coverage, values, and preferences.

**Assuming risk of bleeding on anticoagulant therapy is low.

# Recurrent SVT

Patients with SVT in the context of varicose veins have a high risk of recurrence. Unfortunately, to date, no clinical studies have evaluated the efficacy of long-term anticoagulation for prevention of recurrent SVT. If symptoms of acute inflammation recur in a patient with a past history of SVT, an ultrasound should be repeated to rule out extension into the deep veins and consideration should be given for short-term anticoagulation as per Table 1. All patients with SVT should be advised of the risk of recurrence as well as the signs and symptoms of DVT and PE.

## Other Relevant Thrombosis Canada Clinical Guides:

- Deep vein thrombosis (DVT): Diagnosis
- Deep vein thrombosis (DVT): Treatment
- Pulmonary embolism (PE): Diagnosis
- Pregnancy: Venous Thromboembolism Treatment
- Rivaroxaban (Xarelto®)
- Unfractionated Heparin, Low Molecular Weight Heparin and Fondaparinux

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