



CONTROVERSES ET ACTUALITÉS EN CHIRURGIE VASCULAIRE  
**CONTROVERSIES & UPDATES  
IN VASCULAR SURGERY**

**Who benefits from first rib resection in patients with Paget-Schroetter syndrome?**

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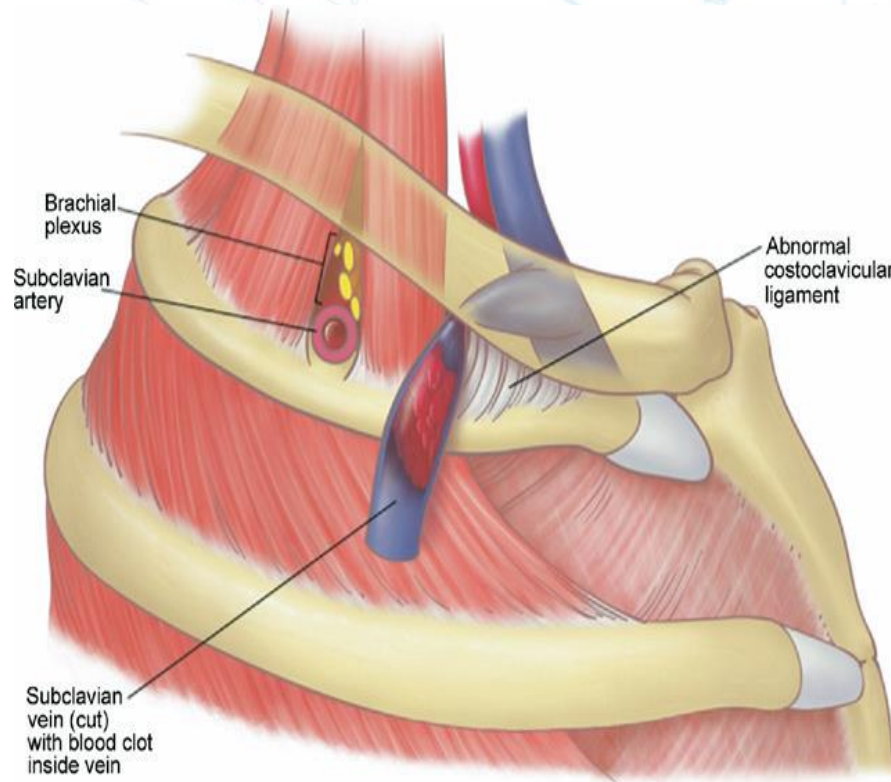


# Conflict of interest

- I do not have any potential conflict of interest



# Congenital abnormal lateral insertion of the costoclavicular ligament and hypertrophy of the scalenus anterior in the Paget-Schroetter syndrome. (Urschel , 2008)





There is discrepancy between imaging and symptoms.  
Imaging in isolation should not be an indication for surgery.



- 54 patients had UEDVT and were treated with anticoagulation alone and were seen in an 18 year period. 49 patients who attended a follow up visit underwent ultrasonography (mean follow up 5 years).
- Scores of severity of postthrombotic symptoms were graded in a numerical scale ranging from 1 to 10 and correlated to u/s findings graded from 0 to 2.
- There was no relation between the severity of symptoms and ultrasonographic findings.

**Heron et al; Ann Int Med 1999**



- The appropriate selection of patients for thoracic outlet decompression has never been evaluated in RCTs and any recommendations are based on meta-analysis of small institutional series.





In a case control study 45 consecutive patients who had been treated for primary UEDVT received either

- oral anticoagulant therapy only (n=14, group 1);
- thrombolysis followed by anticoagulant therapy (n=14, group 2);
- or thrombolysis, transaxillary first rib resection and anticoagulant therapy (n=17, group 3)<sup>7</sup>.

**Endpoints were persisting symptoms and quality of life (QoL).**

**Bosna et al; Vascular 2011**



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- Patients in groups 2 and 3 had significantly less pain, swelling and fatigue in the afflicted limb at six weeks.
- There was no difference in pain ( $P=0.90$ ), swelling ( $P=0.58$ ), fatigue ( $P=0.61$ ), functional impairment ( $P=0.61$ ), recurrence ( $P=0.10$ ) or QoL ( $P=0.25$ ) between groups at the end of follow-up (mean follow-up 57 months [range 2-176,  $SD\pm 46$ ]). Treatment strategy was not predictive of QoL ( $P=0.91$ , analysis of variance).
- No differences in long-term symptoms or QoL between patients with successful and unsuccessful thrombolysis were present.

**Bosna et al; Vascular 2011**





In a metaanalysis of 12 series, patients following thrombolysis within the first 2 weeks were divided in 3 groups:

- First rib resection n=448
- First rib resection and venoplasty n=68
- Thrombolysis with no first rib resection n=168

**Lugo et al; Ann Vasc Surg 2015**



- Symptom relief at last follow up was significantly more likely in the first rib resection group (95% ) and the first rib resection and venoplasty group (93%) rather than the rib not removed group (63%).
- **40% of the patients** in the rib not removed group eventually required surgery for recurrent symptoms.

**Lugo et al; Ann Vasc Surg 2015**



- Therefore, a blind policy of immediate first rib resection (FRR) following primary UEDVT would lead to an unnecessary operation and expose to a significant but small risk of serious complications **approximately 60%** of patients who did not have FRR for the management of UEDVT.





# Risk of bleeding

Using data from 29 studies and a total of 2000 patients, major bleeding (MB) amongst patients treated with thrombolysis and/or first rib resection was 3.8% (95% CI: 2.4–5.8%)

Thiyagarajah et al, Thromb Res 2019



# Pneumothorax and risk of brachial plexus injury

- Pneumothorax rate was 6.03% (95%CI=1.76-12.01; 11 studies), while nerve injury rate was 3.70% (95%CI=0.10-10.25; 7 studies).

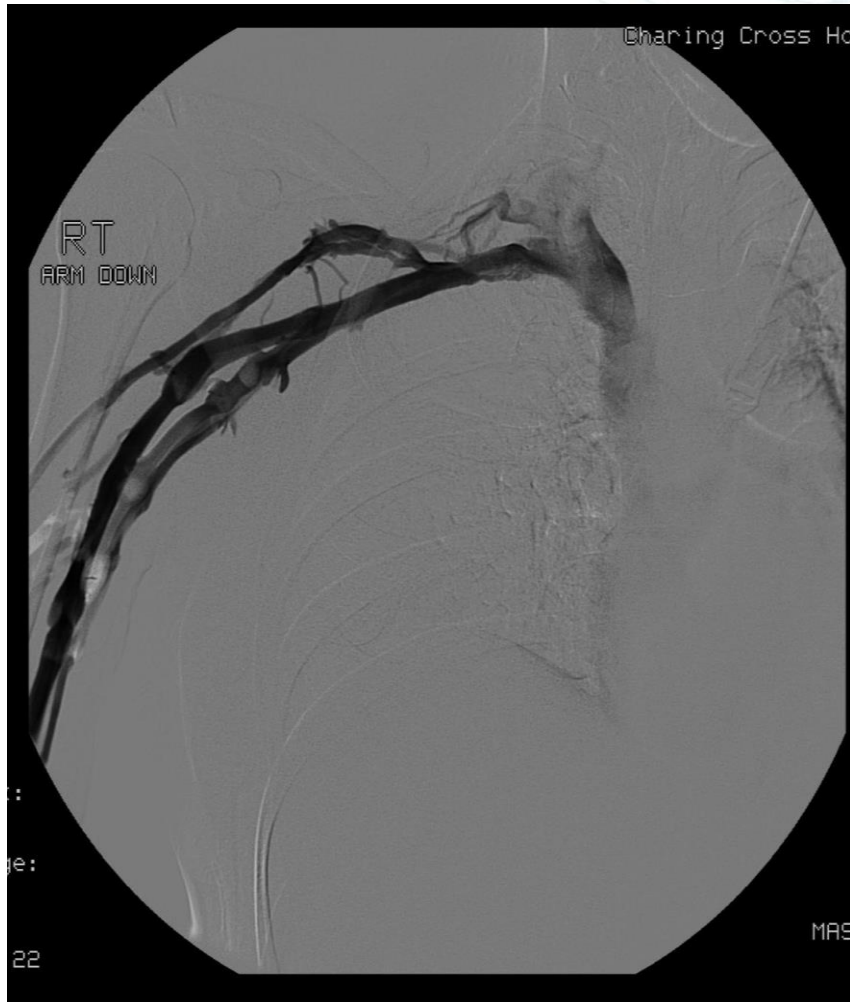


- FRR may be considered following upper extremity deep vein thrombosis in patients who remain symptomatic following anticoagulation for 2-3 months, if positional venography demonstrates narrowing of the subclavian vein.

Lee et al, JVascSurg, 2000







# Thrombolysis with residual intrinsic stenosis

- Uncovering a residual stenosis in the subclavian vein post thrombolysis, is considered an indication for immediate FRR. However this probably leads to overtreatment .
- The majority of these patients should be treated with anticoagulation for a couple of months and if symptomatic should be offered FRR.



# Successful thrombolysis no residual stenosis

- Many surgeons would not perform first rib resection if positional venography shows no stenosis/occlusion of the subclavian vein.
- In these cases the presence of thrombophilia should be investigated. The patients should be treated for 3 months with anticoagulation and should be re-evaluated if recurrent symptoms occur.





# Unsuccessful thrombolysis in primary subclavian venous thrombosis

If the vein has not recanalised, decompression of the thoracic outlet should not be considered.

The patient should continue on anticoagulation for several months and the symptoms should be re-evaluated.

If symptoms are significant the patient with a short occlusion (aprox 2cm) may be considered for an internal jugular to subclavian vein bypass.

Sanders, 1991



- From a patient-centered, patient reported standpoint, venous TOS is equally effectively treated with first rib resection **regardless** of thrombolysis or **timing of surgery after thrombolysis.**

Ryan, Mouawad, Vaccaro, Go, 2018



- There is a consensus of opinion that in patients with recurrent subclavian vein thrombosis, immediate thrombolysis and first rib resection should be performed.







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