Chronic DVT Symptoms & Treatment:

Standard of Care

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VTE & PTS: Prevalent Problem

- Deep venous thrombosis & PE (VTE)
  - ~950,000 new cases in US annually
  - ‘Classic’ medical treatment
    - Anticoagulation
    - Only prevents progression of thrombosis
    - Does not act on resolving existing thrombus


DVT Outcomes

- Resolution
- Persistence +/- recanalization
- Pulmonary Embolism
- Post Thrombotic Syndrome * most common complication

PTS Can Be Devastating

- More central occlusions > chance of PTS
- Higher ambulatory pressures > severity of PTS
- Up to 60% will develop PTS despite AC after 1st episode DVT
- 95% of iliofemoral DVT patients will be unable to work in 10 yrs
- 5-10% will develop venous ulcer (600k/yr)
- Estimated socioeconomic burden of up to 3 billion annually

Likely MILLIONS are suffering from PTS

Considerations for Treatment

- CDC.gov
- Pacific Vascular Symposium VI
**Post Thrombotic Syndrome**

Ambulatory Venous Pressures & Symptoms

- 28 mmHg – Asymptomatic
- 36 mmHg – Varicosities
- 41 mmHg – Edema
- 47 mmHg – Hyperpigmentation
- 60 mmHg – Ulceration

The Greater the Pressure, the worse the PTS


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**Complications:**

**Post-Thrombotic Syndrome (PTS)**

Symptoms / Consequences

- Swelling
- Pain
- Dermatitis
- Varicose veins
- Venous claudication
- Lymphedema
- Ulceration fibrosis with atrophy

Source: Courtesy of Dr. Ali Amin

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**Standard of Care: Acute DVT**

1. Therapeutic & appropriate Anticoagulation
   - AC duration depends on removing etiology
2. Therapeutic compression stockings to reduce swelling
3. Early ambulation


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**Anticoagulation for Acute DVT**

- Prevents clot propagation
- Reduces risk of pulmonary embolism
- May provide moderate symptomatic relief

**But does not**

- Actively dissolve clot
- Reduce risk of venous valvular damage
- Prevent venous hypertension
- Prevent occurrence or severity of Post Thrombotic Syndrome
- Rapidly resolve symptoms

Source: https://ash.confex.com/ash/2012/webprogram/Paper46479.html

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**Consider….**

However, the standard of care AC - Helps prevent propagation of clot & PE

BUT…. has no effect on endogenous thrombolysis &....38% on therapeutic AC will cont to propagate clot on US

Knapik et al J Vasc Surg 1990

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**Standard of Care for Chronic DVT**

Tailored to signs & symptoms:

1. Anticoagulation
   - AC depends on PTS (risk:benefit ratio)
   - Augment outflow by lowering blood viscosity
2. Ambulation
3. Compression garments
4. Skin & Wound care
Ambulation

- Exercise: “work the calf pump”
  - Improve outflow of blood from leg
  - Increase collaterals to improve outflow
  - Increase vessel size to aid in outflow

Stockings

- Appropriate length & pressure
  - Consider pt ability to use: some compression is better than none
- SOX Trial:
  - Multicenter randomized placebo-controlled trial
  - Active vs placebo ECS x 2 years to prevent PTS – 1st proximal DVT
  - 410 active ECS, 396 placebo ECS
  - PTS in 14.2% active, 12.7% in placebo
  - No difference in 2 groups in preventing PTS

Skin & Wound Care:

- Reduce Venous HTN:
  - Compression:
    - Elastic: Multi-layer compression – Cochrane review more effective
    - Inelastic: Unna boot
    - Intermittent Pneumatic Compression (IPC)
  - Elevation
  - Ablation of insufficiency
  - Surgery (SEPS, Valve repair)

Wound Care

- Types of dressings:
  - Moist to moist dressings
  - Hydrogels/hydrocolloids
  - Alginate dressings
  - Collagen wound dressings
  - Debriding agents
  - Antimicrobial dressings
  - Composite dressings
  - Synthetic skin substitutes

Skin & Wound Care

- Venous eczema: moisturizing lotions – Eucerin
- Antibiotics
- Pentoxifylline (Trental)
- Hyperbaric Therapy: limited data for venous
- Debridement
- Stimulators: grafts, matrix
- Skin grafts

Summary

- Reduce venous HTN
- Apply Standards (ECS, Activity, +/- AC)
- Skin care as appropriate
- Intervention for insufficiency/perforators
- May need more aggressive intervention for obstructive lesions to improve outflow & reduce HTN