Background
Popliteal vein entrapment may be concomitant with popliteal artery entrapment and cause a variety of associated clinical findings similar in nature to chronic venous insufficiency. It is a rare condition and as such few studies have been published.
Raju et al reported the incidental finding of popliteal vein entrapment in 42% of patients in ascending venography. Other authors have placed this value lower with Leon et al at 27% of normal individuals. Indeed, they found total occlusion of the popliteal vein in 10% of healthy volunteers on full extension of the knee. Care must be taken to not over-call this condition, as normal outflow fraction was recorded in all 27 of these volunteers using air plethysmography. Indeed, it is likely that such venous compression is an essential part of the venous muscle pump of the lower limb.
It is common in a normal population and most institutions consider it benign. However, in patients who have significant clinical changes that appear attributable to venous disease, and all other explanations have been excluded then popliteal vein entrapment should be considered as a cause.

Clinical indications
- Swelling
- Pain
- Hyperpigmentation
- Hyperpigmentation extending to the middle or upper calf
- Discoloration/dusky/cyanosis
- Stasis ulceration
- Stasis dermatitis
- Recurrent cellulitis
- Spontaneous, unexplained calf DVT
- Venous claudication

Procedure
With the patient prone on the bed, normal appearance of the popliteal vein should be investigated bilaterally. To avoid full extension of the knee, a support should be used underneath the patient's ankles such as a towel.

At rest
Longitudinal and transverse images should be investigated over the whole popliteal fossa. Measurements (elliptical area if possible or AP and transverse distances) of the narrowest section should be taken. Repeat for the other leg.

Full knee extension
Remove the ankle support and allow the knee to fully extend whilst observing the popliteal vein. Note the segment which narrows the most taking elliptical area measurements where possible, or AP and transverse measurements. Repeat for the other leg.

Active plantar flexion
For this manoeuvre the foot of the bed should be aligned with the wall leaving a small gap for the patient's foot. Again with the patient prone the popliteal fossa should be imaged.

Then ask the patient to start pressing the ball of their foot against the wall and build to full exertion. Note the greatest lumen reduction whilst performing this manoeuvre and take area reduction measurements. Repeat for the other leg.

Ref:
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