



Helen Matthews has completed this personal reflection on **04/09/2019**

Paper: Summer 2019 CPD Questions

Personal Reflection:

Evidence based surgical anatomy of the popliteal artery and variation in branching patterns :

There are multiple anatomical variants of branching patterns of the tibio-peroneal trunk (TPT), anterior and posterior tibial ATA and PTA and peroneal arteries from the popliteal artery (PA). This study extracted anatomic data from major online medical databases and pooled findings for a meta-analysis.

The most common variant was a division of the PA below the knee into the ATA and TPT for the PTS and peroneal arteries. (Type 1A). Second most common was a trifurcation pattern of all 3 branches dividing within 0.5 cm of each other (Type 1B)

Other variations are relatively uncommon. These include :-

Type 1C : Division of the PTA and a common trunk of the ATA and peroneal (ATP trunk)

Further divisions of the PA at or above the knee :

Type 11A1 : ATA branching off first and following a normal course

Type 11A2 : ATA branching off first and following a medial course

Type 11B : PTA branches off first

Type 11C : Peroneal branches off first

Cases of hypoplastic or aplastic branches were classified as Type 111

A mean diameter of the PA at the subcondylar level was 8 mms.

Knowledge of the prevalence of possible variations of this anatomy as well as morphometric data is clinically relevant in the planning and execution of any surgical interventions (eg total knee replacement, popliteal aneurysm repair, popliteal artery entrapment treatment) in the area of the popliteal fossa /upper calf.

Characterisation of tibial velocities by Duplex ultrasound in severe peripheral arterial disease and controls :

Patients having an arterial duplex ultrasound with PAD were evaluated during a 5 year period and retrospectively compared with non-PAD controls. PAD patients included intermittent claudicants warranting re-vascularisation, critical limb ischaemia, gangrene and non-healing ischaemic ulcers.

The popliteal and calf arterial PSVs were measured proximally, mid and distally and a mean PSV calculated for each. This was compared along with APIs, which is the AAV divided by the proximal PSV of the profunda, peak and average ankle velocities, mean tibial velocity and ankle-profunda index between the 2 groups using independent t-tests.

Tibial velocities and tibial parameters are significantly lower in PAD, whereas profunda velocities are significantly higher compared with non-PAD controls. It was shown that tibial velocities and tibial parameters decrease incrementally with decreasing ABI. Therefore, ABI is a new, sensitive and specific assessment tool in the evaluation of PAD.

The results establish an early criteria reference range to guide interpretation for clinical decision making.