Pre-operative saphenous vein mapping

Non-invasive imaging of the greater saphenous vein using ultrasonography can predict anatomic variations in the vein and demonstrate underlying disease and small diameter segments. Such information can be used preoperatively to select which leg and which segments of the vein are best suited to saphenous venectomy for grafting. Ultrasonography can also map the course of the vein in the leg, thereby facilitating the rapid and accurate location of the saphenous vein at operation.

In John Radcliffe hospital, Oxford University Foundation Trust, Surgical Care Practitioners team ( SCP) has developed the routine standard practice for all elective patients to be assessed in Preadmission Clinic (PAC) for the conduits suitability and selection. We use an ultrasound system with a standard setting of 2.7 mm of depth and optimal gauge. In this instance, we examine patients in standing position and actively measure diameter of the long saphenous vein along the leg. Using internal calipers, ultrasonography has been used to predict the diameter of venous segments that are too small to allow successful arterial reconstruction. The optimal diameter is 3mm up to 5 mm. Below that range and above are considered suboptimal, but still usable segments if left as the only option. These information are documented is specific SCP notes and available to the surgeons and follow up team.

For the urgent cases, ultrasonography vein mapping is performed in anaesthetic room after the patient is anesthetised and diameter parameters could be subjective to the patent positioning, administered drugs, and volume status. Based on experience and training we are able to account these parameters in the final decision of the conduit selection.

Equally, ultrasound mapping of radial artery harvesting is the paramount prior endoscopic procedure to determine the diameter of artery, flow and anatomical changes. In combination with physical examination, Allan test with pulse oximetry, ultrasound is a defining element in the surgical decision process. The optimal diameter for radial artery is above 3 mm, however, in some cases can be used if 2.5 mm.

The main benefits of ultrasound mapping are that: is non-invasive diagnostic procedure, reasonably quick time assessment (5 to 15 minutes), helps in the reduction of surgical site infection rate and unnecessary wound incisions. It can be used in collaboration with anaesthetic team, without additional cost. Ultrasound is a standard diagnostic procedure prior to Endoscopic and open conduits harvesting. It requires additional specialised training for the SCP team which can be facilitated by clinical specialist or vascular ultrasound department team.