Transtibial Amputation with Extended Flap and Bone Bridging

Vessels:

Saphenous vein and nerve:
Find the saphenous vein, the nerve is usually just lateral to the vein. Separate vein and nerve, drawn down nerve and cut, no need to suture ligate this nerve. Ligate the saphenous vein with absorbable suture.

Anterior tibial vessels and the deep peroneal nerve:
Identify and separate the vessels and the nerve. Pull deep peroneal nerve distally and divide. Dissect the anterior tibial vessels, clamp them, and double ligate first with a stick tie, then with a free tie (proximal to first tie).

The anterior tibial vessels are located within the anterior muscle compartment, at the deepest or most posterior surface, just anterior to the syndesmotic membrane. They are most easily visualized after transecting the anterior muscles and finding the transected vessels at the posterior aspect of the anterior compartment.

Clamp perforating vessels to tie:
Care is also taken to find and clamp the small perforating vessels that go from the posterior tibial and peroneal vessels down into the soleus, so that these perforating vessels do not retract down below the fascia and cause bleeding that may be difficult to control.

Dissect tibial nerve and posterior tibial vessels:

1. The tibial nerve runs throughout its course with the posterior tibial vessels. It is the largest nerve in the lower leg. Separate from the posterior tibial vessels by opening the perineurium and physically pulling away from the vessels. Clamp the posterior tibial vessels to exclude the nerve. Draw the nerve down and divide. Ligation of this nerve to prevent bleeding from the nerve is controversial. I rarely ligate the nerve, and only do so if I visibly see small vessels that may bleed.
2. The posterior tibial vessels are located within the fascia of the deep posterior muscle compartment. They are easily visualized after gently lifting the deep posterior compartment off of the superficial compartment by manually separating the fascial plane between the soleus and deep compartment, starting on the medial edge, at the proximal portion of the flap. If the interval between the soleus and gastrocnemius is entered inadvertently, this becomes obvious when the plantaris tendon comes into view.

Isolate the posterior tibial vessels, clamp and cut

Isolate and clamp peroneal vessels:
The Peroneal vessels are also within the deep posterior muscle compartment, but are not as obviously identified as the posterior tibial vessels. They lie lateral to the posterior tibial vessels, and are between the FHL muscle and the PT muscle, very close to the deep edge of the fibula. The large veins are occasionally torn during the transection of the fibula, and occasionally bleeding that appears to be coming from the fibula, is actually coming from the peroneal veins. If this is the case, placing a bone hook into the fibula, and lifting the limb by the fibula allows the peroneal vessels to fall away from the bone so they can be clamped more proximally and ligated at the site of bleeding under direct visualization.

Double ligate peroneal vessels:
- with 0-silk suture.

Double ligate posterior tibial vessels:
- with 0-silk suture.

Ligate perforating vessels

Let the tourniquet down

Clamp and tie small bleeding vein

Hemostasis