SPEAKER 1: In a typical setup, the patient is positioned supine with both legs split either on a split leg table or in the synchronous position with yellowfin gel stirrups. The operative leg is abducted and slightly flexed at the knee. The surgeon and the assistant stand so one is between the legs, and the other stands lateral to the operative leg. The surgeon and assistant may change positions during certain portions of the procedure if desired. The surgical technician stands on the opposite side of the patient's body.

Video towers are placed at the head of the table, one above each shoulder. Minimal operative instrumentation is needed on the Mayo stand. The instruments required for the minimally invasive procedure are listed here. If there is a need to emergently convert, appropriate instruments should be immediately available.

The anatomy critical to the minimally invasive inguinal lymph node dissection is identical to that for the conventional open operative approach and is depicted here. The superficial and deep inguinal lymph nodes are separated by the cribiform fascia, which is violated at the fossa ovalis. There are approximately 10 lymph nodes in the superficial basin, and five in the deep.

The borders of the femoral triangle are graphically depicted here.

The location of each trocar site is represented, as is the area of initial blunt section. External landmarks are identified. Palpation is performed to identify the medial border of dissection, which is the adductor longus muscle. This is marked with a marking pen.

Next, similar palpation is performed to identify the sartorius muscle and identify its medial border, which will mark the lateral boundary of dissection.

The convergence of these lines is the distal border of dissection, which is the apex of the femoral triangle. Proximal dissection extends three to five centimeters [INAUDIBLE] to the inguinal ligament, and includes the soft tissue superficial to the external oblique in this location.

Next, the three trocar sites are marked. The distal most incision is marked three centimeters from the apex of the femoral triangle. The other two trocars are placed proximal to this, each five centimeters apart, one medial and one lateral. Through one of the trocar sites, blunt dissection is performed with the index finger, separating along a natural avascular plane between the subcutaneous fat and the underlying soft tissue.

In this case, the left leg is approached. Three 10-12 trocars are next introduced. As a result of the thin subcutaneous tissue, a leak around the trocar may be encountered. As a result, the incision length should be kept to a minimum, and only one trocar site should be used for the initial blunt dissection.

CO_2 insufflation is performed. Initially, a 25 millimeters of mercury for ten minutes, and then decreased to 15 millimeters for the remainder of the procedure.

The anatomy seen from a distal view is depicted here. Camper's fascia is preserved. Here, you can see Scarpa's fascia. Dissection is performed superficial to Scarpa's fascia. Initial dissection starts in the space created by the digital dissection and CO2 insufflation. The dissection is begun distally, and continued proximally.

The initial dissection is created in order to create a working space between the subcutaneous tissue and underlying regional contents. Dissection is performed superficial to Scarpa's fascia.

As can be seen here, dissection is performed fairly superficially. This can be appreciated with an external view showing the transillumination of the light source through the skin. Dissection can be assisted by external palpation over the previously marked boundaries of the triangle. As dissection is completed, more proximally, the loose [INAUDIBLE] tissue overlying the external oblique aponeurosis, can be appreciated.

The next portion of the procedure is the lateral dissection to identify the sartorius muscle. Dissection is performed through the fatty tissue until the sartorius fascia is identified. The fascia is divided, identifying the underlying muscular fibers of the sartorius. This is initiated distally, and once identified, you simply march proximally up this layer. The fascia is continually scored from distal to proximal.

This is continued up towards the inguinal ligament.

A similar approach is taken immediately to identify the adductor longus muscle. Because of the crossing saphenous vein, the medial dissection is started more proximal in this location.

This dissection is also continued proximally to the inguinal ligament.

As you can see here, the specimen is rolled laterally off the adductor. As we progress medially, the [INAUDIBLE] dissection becomes the pectineus muscle.

The next step is to identify and divide the saphenous vein distally.

At this point, the dissection is begun more proximally on the adductor longus. The saphenous vein is identified here. Next, the saphenous vein is circumferentially dissected out.

The vein in this case is divided with an endovascular stapler.

Next, the apex dissection is completed. This is the remaining soft tissue between the sartorius and the adductor at the distal-most aspect of the dissection. The contents are grasped and elevated under tension, with traction in both the superficial and [INAUDIBLE] direction. This tissue was controlled with the non-dominant hand as dissection of the remaining tissue over the apex is completed.

At this point, the dissection is performed by walking up the medial aspect of the sartorius from distal to proximal, and rotating the contents medially. Because the femoral nerve lies in this location, a thin rim of fat is left on the top of the nerve.

As this process is repeated and continued beginning from the apex and dissecting approximately, the femoral vasculature will be identified in this location.

Because of the position of the lower extremity in abduction inflection, the femoral artery leads directly anterior to the femoral vein. The femoral vein is deep and medial. And as we dissect proximallly, the vessels will spiral, and the two vessels will ultimately become parallel with each other, lying in the same plane. Dissection should stay directly on the [INAUDIBLE] tissue of the femoral vessels. The anterior half of the vessels are completely exposed.

As this animation also illustrates, is the relative position change of vessels in relation to each other as we proceed from distal to proximal. This is accentuated by the leg being in a position of abduction. As this animation also illustrates, we re-sect the deep inguinal lymph nodes with this procedure.

Our deep dissection plane is deep to the cribiform fascia, shown here. The cribiform fascia is an extension of the fashion lata. It separates the superficial inguinal lymph nodes from the deep inguinal lymph nodes. The cribiform fascia is penetrated by the saphenous vein at the fossa ovalis.

As we go back to the live video, the femoral vein begins to come into view. It is appreciated deep and medial to the artery, just proximal to the apex. This is dissected out in a similar fashion. The anterior, as well as the medial and lateral aspect of the vessels, are skeletonized. There is no need to circumferentially dissect out these structures. The femoral vein will be somewhat collapsed because of the CO2 insufflation in this close space. Its caliber will also be seen to fluctuate with ventilation.

Medial dissection is completed off the adductor as we progress more proximally. As we continue our dissection, we simply walk up the adductor from distal to proximal. Continued anterior traction is applied to the specimen as we expose the vessels, heading towards the inguinal ligament.

The femoral vein is skeletonized, and we continue along this vessel under the inguinal ligament, including Cloquet's lymph node, and block with the specimen. The pectineus muscle can be seen here as the deep boundary of dissection.

As you can see, we are deep and proximal to the shelving edge of the inguinal ligament.

The tissue is being freed from the previously exposed inguinal ligament.

At this point, the fossa ovalis is identified, coming directly anterior off the femoral vein approximately three centimeters distal to the inguinal ligament.

The saphenal femoral junction is cleared, and will be divided with a linear endovascular stapler.

The proximal dissection of the femoral vessels is then completed, removing the inguinal contents off of the remaining attachments with the femoral vessels.

If desired, a suture can be placed to mark Cloquet's node.

The remaining attachments with the inguinal ligament and external oblique aponeurosis are completed. Here, the final medial dissection is complete. The remaining [INAUDIBLE] tissue is also taken off the external oblique aponeurosis.

In a similar fashion, the remaining lateral attachments are freed. Here off the sartorius, followed by the final attachments off the inguinal ligament.

Once the specimen is free, the contents are placed in an Endobag.

In the first case, the specimen is easily retrieved through the 10-12 trocar site. In the second case, which is a post radiate field, the specimen is very fibrotic, and it requires slight extension of the incision.

At the completion of the procedure, the anatomic contents can be clearly seen with all the lymphatics and soft tissue in this regional base, and successfully retrieved and block.

The anatomic boundaries here are clearly delineated, and you can see the soft tissue removed [INAUDIBLE] overlying the external oblique aponeurosis.

Once completed, the drain is passed through one of the trocar sites. Here, you can see the drain being placed in the cavity.

The specimen is depicted here, as are photos taken from two patients one week post-operatively.