

CLOSURE OF DEEP FASCIA IN ANKLE FRACTURE SURGERY

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FASCIAL CLOSURE DURING ANKLE FRACTURE FIXATION

Deep fascial closure during open reduction and internal fixation of ankle fractures is an important step in the soft tissue reapproximation and coverage of the hardware and bone of the lateral malleolus. This process also capitalizes on the periosteal contribution to bone healing. Further, restoration of the fascio-periosteal layer maintains the integrity of the lateral compartment and prevents herniation of the peroneal muscles.

The deep fascial fibers covering the anterior compartment are oriented in a transverse fashion. They are attached to the anterior border and lateral surface of the fibula and are usually disrupted by the fracture trauma, the surgical exposure, or both. Even with meticulous dissection and minimal stripping of the soft tissues, the lateral soft tissues are often shredded. As such, it is impractical to use standard suture techniques to restore this anatomy. The senior author (JMS) has developed a new technique for a routinely successful deep fascia closure that utilizes the natural arrangement of the local anatomy.

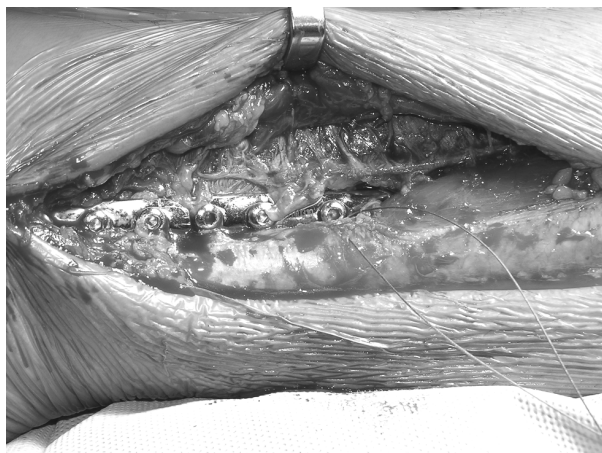


Figure 1. The suture is passed from superficial to deep.

TECHNIQUE

Step 1. Using 2-0 absorbable sutures, a modified horizontal mattress stitch is fashioned. Starting on the fascial-periosteal flap from the posterior aspect of the fibula, the suture is passed from superficial to deep (Figure 1). The suture is then placed perpendicular to the transverse fibers of the deep fascia of the anterior compartment. Approximately 1-cm of tissue is captured by the needle (Figure 2). By placing the suture vertically across the horizontal fibers, the suture is unable to pull through the fascia unless the fascia is separated from the fibula.

Step 2. The suture is then passed back through the posterior fascia (Figure 3).

Step 3. Tying the suture allows the surgeon to apply proper tension to the stitch and mobilize the posterior fascial flap over the lateral hardware (Figure 4). The process is repeated in a distal direction until the plate is covered. Occasionally, as one proceeds distally the anterior fascial flap has separated from the fibula (usually in the zone of injury). In this instance the plate is left partially exposed. This technique provides a consistent and reliable solution for deep closure of the fragile deep fascia during ankle fracture fixation.



Figure 2. The suture is placed vertically across the horizontal fibers.

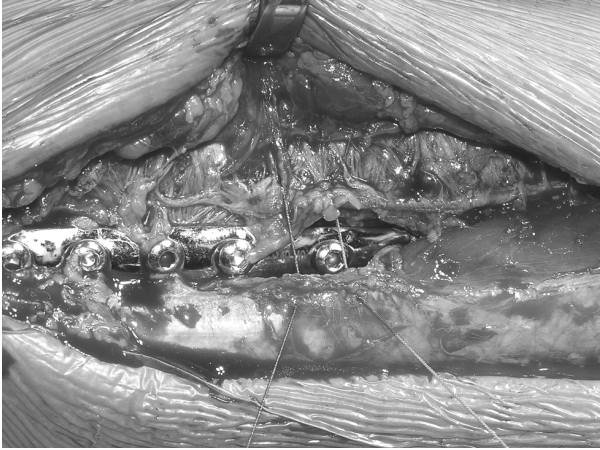


Figure 3. Passing the suture back through the posterior fascia.

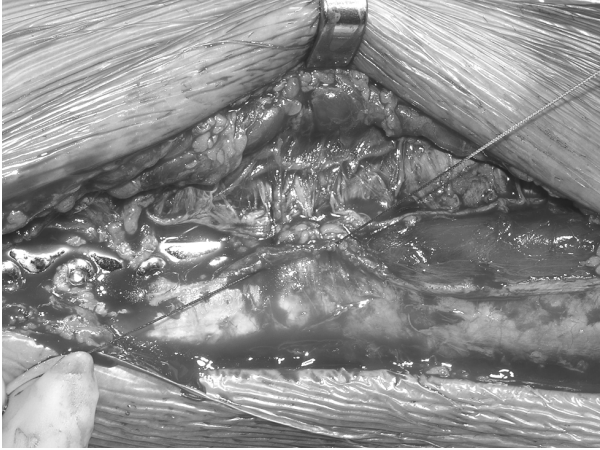


Figure 4. The suture is tied.