ANkle Technique Guide

lateral Ankle Instability Repair using TWINFIX° Ti 3.5 mm Suture Anchors

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Lateral Ankle Instability Repair using TWINFIX°
Ti 3.5 mm Suture Anchors

Introduction

Inversion injuries with sprains to the lateral ankle ligaments are responsible for about 25% of all musculoskeletal injuries and account for up to 40% of all athletic injuries.1 The anterior talofibular ligament (ATFL) is the first or only ligament to be damaged in two-thirds of all injuries whilst one third sustain combined ruptures of both the ATFL and calcaneofibular ligament (CFL). Isolated rupture of the CFL is very rare.2 25-40% of those with rupture of both the ATFL and the CFL may develop functional instability and some may require surgical stabilisation.3

Anatomical repair of both the ATFL and CFL has been shown to yield superior results than repair of the ATFL alone.4 Suture anchors can be used successfully for reconstruction in high-demand athletes.5 In addition to reducing operative time, the use of suture anchors may provide biomechanical advantages over sub-periosteal or intra-osseous sutures. Unlike when using autograft/allograft or prosthetic ligaments, they are easy to use with a small mini-incision technique and require minimal dissection to place two TWINFIX° suture anchors.

Preoperative Considerations

The technique description below is provided as an educational tool. When making final determinations in product usage and technique execution, it is the responsibility of the operating medical professional to exercise their professional judgment and rely on their own medical training and experience. Prior to performing this technique, or utilizing any product referenced herein, please conduct a thorough review of each product's indications, contraindications, warnings, precautions and instructions as detailed in the Instructions for Use provided with the individual components.

Patient Positioning

1. Place the patient on the operating room table in either of the following positions:
   - Supine: Place the patient in the supine position with a sand-bag under the buttock to internally rotate the affected limb.
   - Lateral: Place the patient in the lateral position with the affected limb uppermost.
2. Apply a thigh tourniquet and give usual antibiotic prophylaxis.
3. Exanguinate the limb.
4. Drape and prepare in the standard manner.
Incision and Dissection
1. Make a 6 cm curved skin incision along the anterior-distal border of the fibula, taking care to avoid damage to nerves in the area (particularly the sural nerve and cutaneous branch on the superficial peroneal nerve). (Figure 1)
2. Perform a superficial dissection onto the distal fibula.
3. Identify and retract the peroneal tendons to visualize the abnormal CFL located beneath the tendons.
4. Identify the layer for the thickened/abnormal ATFL.
5. Perform a deeper dissection, using the scalpel to lift the ATFL and CFL from the distal fibula.
6. Perform a sharp dissection, using the scalpel, or a periosteal elevator, such as a curved elevator (SKU: Part 72203703), to lift the periosteal flap proximally/posteriorly away from the antero-distal border of the fibula.
7. Use a rongeur to roughen the bone over the distal fibula in preparation for ligament reattachment.

Ligament Re-attachment
1. Using the drill guide (SKU: Part 72203788) and drill bit (SKU: Part 72203787), prepare the anchor insertion site. Aim the anchors along the shaft of the fibula in order to ensure that the fibular articular surface is not penetrated medially and that the direction of pull for the suture is the same as the direction of the anchor (rather than perpendicular to the suture anchor). (Figure 2)
2. Maintaining the drill guide alignment, place two 3.5 mm TWINFIX® Suture Anchors in the distal fibula within the roughened area of bone. (Figure 3)
   
   a. Rotate the anchor clockwise into the hole with the insertion device. Continue rotating the anchor until the shoulder at the distal end of the inserter shaft contacts the bone surface. In order to ensure proper performance, the anchor must be set fully within the bone and not be prominent.
   
   b. Release the suture and anchor by rotating the nose cone 90° counter-clockwise. Once the rotation is complete, extract the insertion device slowly to deploy the sutures and needles from the handle. (Figure 4)
   
   c. Once the needles are released from the handle, release them from the inserter by manually selecting a single suture and pull the needle through the inserter. Repeat this step for remaining needles. (Figure 5)

3. Place 2 sutures each in the ATFL and the CFL, 7-8 mm from the leading edge in order to tighten the ligament reconstruction. Utilize a conventional horizontal mattress suture pattern and 4 alternating half hitch knots. When tying the sutures, push the ankle into dorsiflexion and eversion to ensure that the ATFL repair is snug against the bone (Figures 6, 7 and 8). Similarly, use the same for approach for the CFL.
4. Cut the 2 sutures from the CFL and one of the sutures from the ATFL.
5. Identify the extensor retinaculum using dissection scissors.
6. Dissect the extensor retinaculum as a separate layer, ensuring that the superficial peroneal nerve is not jeopardized.
7. The fourth suture is used to draw the extensor retinaculum up onto the previously sutured ATFL to reinforce the reconstruction. It is then used to suture the periosteal layer over the repair, further reinforcing the reconstruction as well as covering the knots protecting from any superficial irritation. (Figure 9)

8. Cut the remaining suture limb.

9. Resulting repair is depicted in (Figure 10)
Skin Closure
1. Use sub-cuticular absorbable sutures to close the skin.
2. With the ankle in a neutral position, apply a well-padded plaster of Paris back-slab.

Postoperative Care*
Encourage elevation of the limb for the first 2 weeks, along with non-weight-bearing mobilization. Remove the back-slab after 10-14 days and trim sutures. Apply a removable boot and mobilize at 50% weight-bearing until 4 weeks postoperatively. After 4 weeks, allow full weight-bearing.

Commence physiotherapy at 3 weeks postoperatively, encouraging ankle dorsiflexion and active plantar-flexion. Proprioception exercise can begin at 4 weeks, but avoid hindfoot inversion until 6 weeks postoperatively. Mobilize boot-free from 6 weeks but a brace or taping may be preferred during the following few weeks to protect from further inversion injury during return to sport.

* The views and opinions expressed for postoperative care are solely those of the surgeon and do not reflect the views of Smith & Nephew, Inc. In no event shall Smith & Nephew, Inc. be liable for any damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information, or other pecuniary loss) arising out of the use of or inability to use the expressed views.

References
Ordering Information

To order the instruments used in this technique, call +1 800 343 5717 in the U.S. or contact an authorized Smith & Nephew representative.

Prior to performing this technique, consult the Instructions for Use documentation provided with individual components – including indications, contraindications, warnings, cautions and instructions.

<table>
<thead>
<tr>
<th>Reference #</th>
<th>Description</th>
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<tbody>
<tr>
<td>72203784</td>
<td>TWINFIX™ Ti 3.5 mm Suture Anchor with two ULTRABRAID™ Sutures (#2) and Needles, SL</td>
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<tr>
<td>72203787</td>
<td>Drill, 2.5 mm for 3.5 mm TWINFIX Suture Anchor, SL</td>
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<tr>
<td>72203788</td>
<td>Spike Tip Slotted Drill Guide</td>
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CAUTION: U.S. Federal law restricts this device to sale by or on the order of a physician.

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