

Foot and Ankle Technique Guide

Ankle Syndesmosis Repair, Operative Technique



INVISIKNOT[◇]

Ankle Syndesmosis Repair

Surgical Technique

The following technique guide was prepared under close collaboration with several physicians. It contains a summary of medical techniques and opinions based upon their surgical training and expertise, along with their knowledge of the Smith & Nephew INVISKNOT Ankle Syndesmosis Repair System. Smith & Nephew does not provide medical advice and recommends that surgeons exercise their own professional judgment when determining a patient's course of treatment. This guide is presented for educational purposes only.

Syndesmotic injuries involve disruption of the stabilizing ligamentous structures between the distal fibula and tibia, as well as a disruption of the deltoid ligament medially. They may occur with or without fractures to the ankle. Forceful external rotation and abduction of the ankle widens the ankle mortise. The talus pushes the distal fibula laterally away from its articulation with the distal tibia. Stretching or tearing of the syndesmosis, deltoid and associated ligamentous structures results in diastasis. A fibular fracture (usually above the ankle joint line) can be involved in more severe injuries.

Introduction

This technique guide provides a complete description of Ankle Syndesmosis Repair procedure using the Smith & Nephew Ankle Syndesmosis Repair Kit. The kit is designed for use with a plate when an associated fracture of the fibula is present.* The kit is comprised of a suture button construct and a 3.5mm drill tip passing pin.

The 3.5mm drill-tip passing pin is provided for bone tunnel preparation through the fibula and the tibia. The suture button construct is comprised of two buttons, medial and lateral, connected by ultrahigh molecular weight polyethylene (UHMWPE) suture tape, called ULTRATAPE[®] Suture. The medial button is 3.25mm x 10mm long and has a passing suture attached to it. The ULTRATAPE Suture has a one-way sliding knot, which enables the reduction of the lateral button onto the lateral cortex of the fibula. This sliding knot is assembled inside the lateral button. For fracture repairs, the lateral button (**See Figure 1**) is a button-like post with a round top, designed to fit inside the hole (or slot) in the fracture plate.

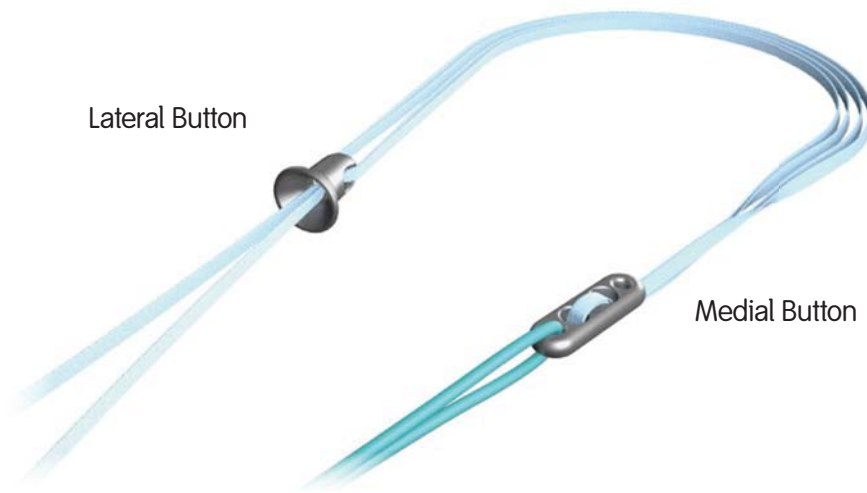


Figure 1: INVISIKNOT[®] Construct: Fracture

*Plate is purchased separately, see ordering information pg. 8

Technique

WARNING: Prior to performing this technique, consult the Instructions for Use (IFU 10601128) provided with the device – including indications, contraindications, warnings, cautions and instructions.

Note: When treating a syndesmotic injury with a fibular fracture, the fracture must be fixed first. Wherever applicable, use fluoroscopic guidance to assure accurate position of the device and stable fixation.

1. Approximately 3 – 4cm above the joint line, use a power drill to advance the 3.5mm drill-tip passing pin through a point slightly posterior to the midpoint of the fibula in the AP plane, aiming for the center of the tibia (approximately 30° anterior to the coronal plane) (**See Figure 2**). Advance the drill until the skin is tented on the medial side of the tibia. Take care to avoid damage to neurovascular structures when passing the drill-tip passing pin.
2. Advance the passing pin through the hole that is approximately 4cm above the joint line in the Smith & Nephew fracture plate. Ensure that the plate location allows for syndesmotic repair (**See Figure 2**).



Figure 2: Hole drilled using 3.5mm drill-tip passing pin

3. Nick the tented skin with a scalpel to allow the passing pin to exit. Disconnect the power drill from the passing pin.
4. Insert the passing suture through the eyelet on the 3.5mm drill-tip passing pin (**See Figure 3**). Advance the drill-tip passing pin through the fibula and the tibia, and retrieve the passing suture on the medial side of the tibia.

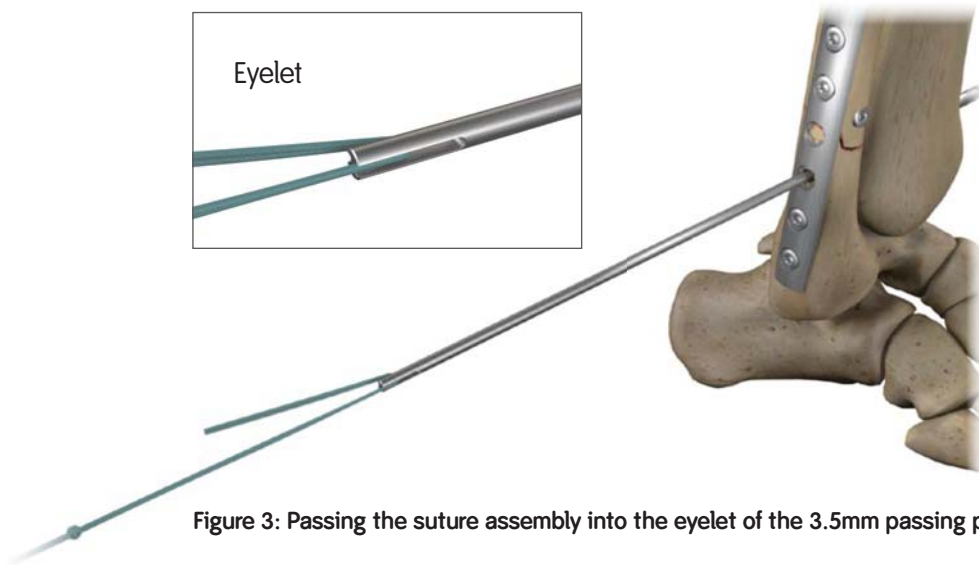


Figure 3: Passing the suture assembly into the eyelet of the 3.5mm passing pin

5. Establish tension by holding the suture tape between the lateral and medial buttons (**See Figure 4**). In a continuous motion, pull on the passing suture medially to advance the medial button until it exits the tibia.

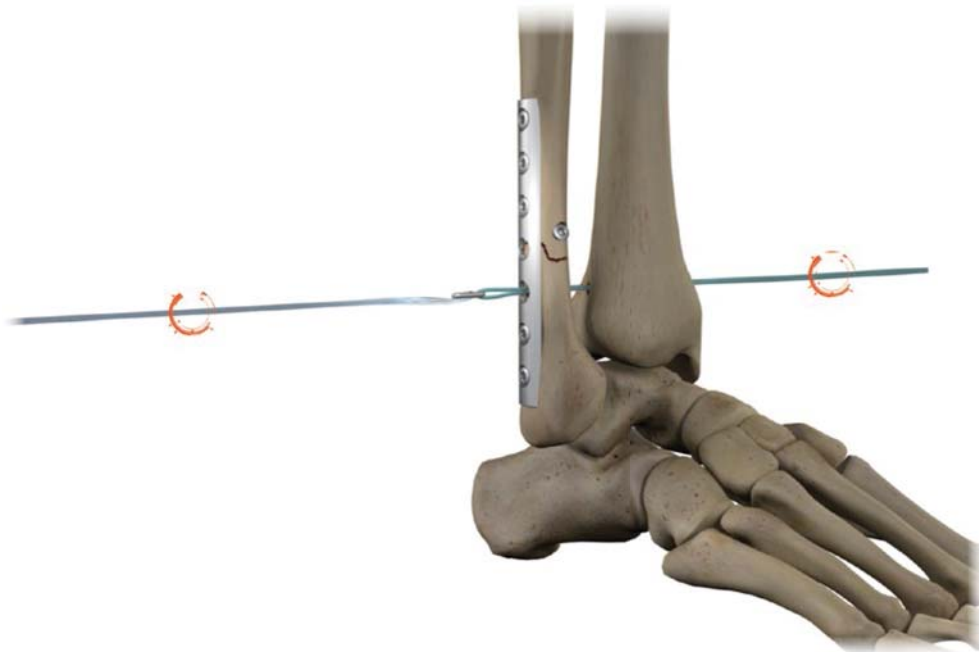


Figure 4: Establish lateral tension by holding in the locations indicated

6. Flip the medial button to place it flush on the medial cortex. Release the passing suture and pull back on the suture tape at the lateral button (See Figure 5). Confirm the button position and orientation.

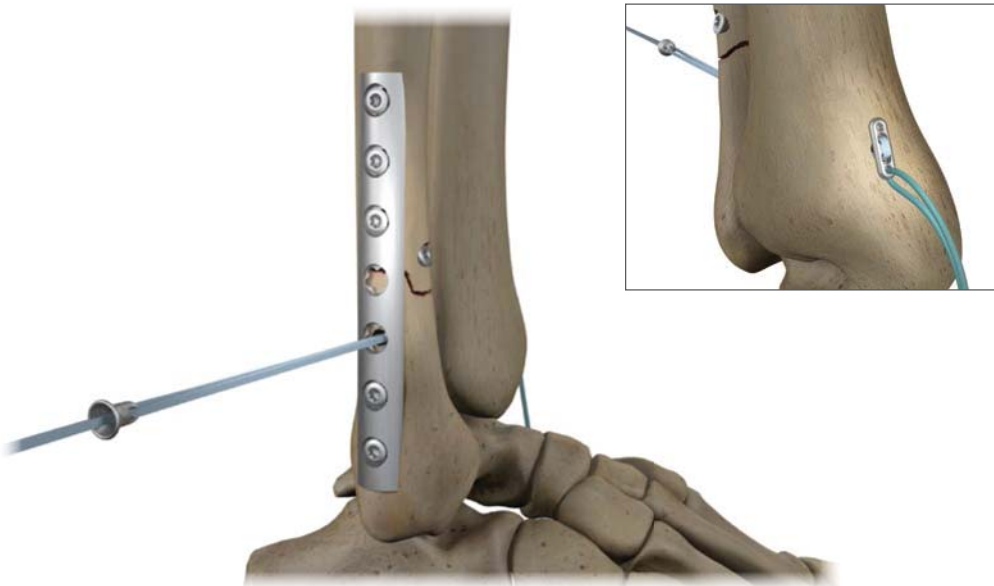


Figure 5: Picture showing the medial button sitting flush on the medial side

7. While maintaining lateral tension on the suture tape, pull on the free ends in an alternating fashion to reduce the assembly until the lateral button is fully seated (See Figure 6). This will prevent bunching of the tape. Set the desired tension.



Figure 6: Lateral button after reduction

8. Tie two surgical knots to secure the lateral button. Take care to ensure that the knots fit inside the lateral button channel.
9. Cut the suture tape. **Figure 7** shows the completed repair.
10. Cut and remove the passing suture from the medial button.
11. If implant removal is necessary, cut the suture tape over the medial button. (This cannot be done on the lateral button.) The buttons and the tape can be removed separately. **Note:** Do not use the INVISIKNOT® Fracture Kit (REF 72204834) without the fracture plate.



Figure 7: Lateral side showing completed repair

Postoperative Care*

Immobilize the ankle in a posterior splint or cast in the neutral position. The patient may be NWB for 4–8 weeks per surgeon's protocol.

**The views and opinions expressed for postoperative care are solely those of the surgeon(s) 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

1. E Ebramzadeh, AR Knutsen, SN Sangiorgio, et al. "Biomechanical comparison of syndesmotic injury fixation methods using a cadaveric model." *Foot & Ankle International*, no. 34(12) (2013): 1710 -1717.
2. Porter, D. AAOS Instructional Course Lectures, Volume 58 (2009).

Ordering Information

To order the items used in this technique, call +1 800 821 5700 in the US or contact an authorized Smith & Nephew representative.

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.

Ankle Syndesmosis Suture-Button Constructs

Reference #	Description
72204834	INVISIKNOT Ankle Syndesmosis Repair Kit, Fracture

Fracture Plates Available for Use with this Technique

Reference #	Description
7282-0805	PERI-LOC® VLP 3.5mm Posterolateral Distal Fibula Locking Plate, 5 Hole Left 62mm
7282-0806	PERI-LOC VLP 3.5mm Posterolateral Distal Fibula Locking Plate, 6 Hole Left 74mm
7282-0807	PERI-LOC VLP 3.5mm Posterolateral Distal Fibula Locking Plate, 7 Hole Left 86mm
7282-0905	PERI-LOC VLP 3.5mm Posterolateral Distal Fibula Locking Plate, 5 Hole Right 62mm
7282-0906	PERI-LOC VLP 3.5mm Posterolateral Distal Fibula Locking Plate, 6 Hole Right 74mm
7282-0907	PERI-LOC VLP 3.5mm Posterolateral Distal Fibula Locking Plate, 7 Hole Right 86mm
7282-1003	PERI-LOC VLP 3.5mm Lateral Distal Fibula Locking Plate, 3 Hole Left 59mm
7282-1004	PERI-LOC VLP 3.5mm Lateral Distal Fibula Locking Plate, 4 Hole Left 71mm
7282-1005	PERI-LOC VLP 3.5mm Lateral Distal Fibula Locking Plate, 5 Hole Left 83mm
7282-1007	PERI-LOC VLP 3.5mm Lateral Distal Fibula Locking Plate, 7 Hole Left 107mm
7282-1009	PERI-LOC VLP 3.5mm Lateral Distal Fibula Locking Plate, 9 Hole Left 131mm
7282-1011	PERI-LOC VLP 3.5mm Lateral Distal Fibula Locking Plate, 11 Hole Left 155mm
7282-2003	PERI-LOC VLP 3.5mm Lateral Distal Fibula Locking Plate, 3 Hole Right 59mm
7282-2004	PERI-LOC VLP 3.5mm Lateral Distal Fibula Locking Plate, 4 Hole Right 71mm
7282-2005	PERI-LOC VLP 3.5mm Lateral Distal Fibula Locking Plate, 5 Hole Right 83mm
7282-2007	PERI-LOC VLP 3.5mm Lateral Distal Fibula Locking Plate, 7 Hole Right 107mm
7282-2009	PERI-LOC VLP 3.5mm Lateral Distal Fibula Locking Plate, 9 Hole Right 131mm
7282-2011	PERI-LOC VLP 3.5mm Lateral Distal Fibula Locking Plate, 11 Hole Right 155mm
7282-3005	PERI-LOC VLP 3.5mm One-Third Tubular Locking Plate, 5 Hole 62mm
7282-3006	PERI-LOC VLP 3.5mm One-Third Tubular Locking Plate, 6 Hole 74mm
7282-3007	PERI-LOC VLP 3.5mm One-Third Tubular Locking Plate, 7 Hole 86mm
7280-3008	PERI-LOC VLP 3.5mm One-Third Tubular Locking Plate, 8 Hole 98mm
7280-3010	PERI-LOC VLP 3.5mm One-Third Tubular Locking Plate, 10 hole 122mm
7280-3012	PERI-LOC VLP 3.5mm One-Third Tubular Locking Plate, 12 Hole 146mm

Indications for Use

The Smith & Nephew INVISIKNOT Ankle Syndesmosis Repair Kit fracture device is indicated to provide fixation as an adjunct to fracture repair hardware during the healing period following an ankle syndesmotoc trauma with fracture.

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