



JuggerKnot™ Soft Anchor—1.0 mm Mini
Scapholunate Ligament Repair/Reconstruction

Brochure and Surgical Technique

One Surgeon. One Patient.®

Over 1 million times per year, Biomet helps one surgeon provide personalized care to one patient.

The science and art of medical care is to provide the right solution for each individual patient. This requires clinical mastery, a human connection between the surgeon and the patient, and the right tools for each situation.

At Biomet, we strive to view our work through the eyes of one surgeon and one patient. We treat every solution we provide as if it's meant for a family member.

Our approach to innovation creates real solutions that assist each surgeon in the delivery of durable personalized care to each patient, whether that solution requires a minimally invasive surgical technique, advanced biomaterials or a patient-matched implant.

When one surgeon connects with one patient to provide personalized care, the promise of medicine is fulfilled.

Indications and Contraindications

INDICATIONS

The JuggerKnot™ Mini Soft Anchor is intended for soft tissue to bone fixation for the following indications:

Shoulder

Bankart repair

Foot and Ankle

Midfoot Reconstruction, Hallux valgus reconstruction

Hand and Wrist

Ulnar or lateral collateral ligament reconstruction, Repair/reconstruction of collateral ligaments, flexor and extensor tendon at the PIP (proximal interphalangeal), DIP (distal interphalangeal), and MCP (metacarpal interphalangeal) joints for all digits, Scapholunate ligament reconstruction.

CONTRAINDICATIONS

1. Infection.
2. Patient conditions including blood supply limitations and insufficient quantity or quality of bone or soft tissue.
3. Patients with mental or neurologic conditions who are unwilling or incapable of following postoperative care instructions or patients who are otherwise unwilling or incapable of doing so.
4. Foreign body sensitivity. Where material sensitivity is suspected, testing is to be completed prior to implantation of the device.

This brochure demonstrates the surgical technique and post operative care protocol utilized by Mark Rekant, M.D. and A. Lee Osterman, M.D. Biomet as the manufacturer of this device does not practice medicine and does not recommend this device or technique. Each surgeon is responsible for determining the appropriate device and technique to utilize on each individual patient.

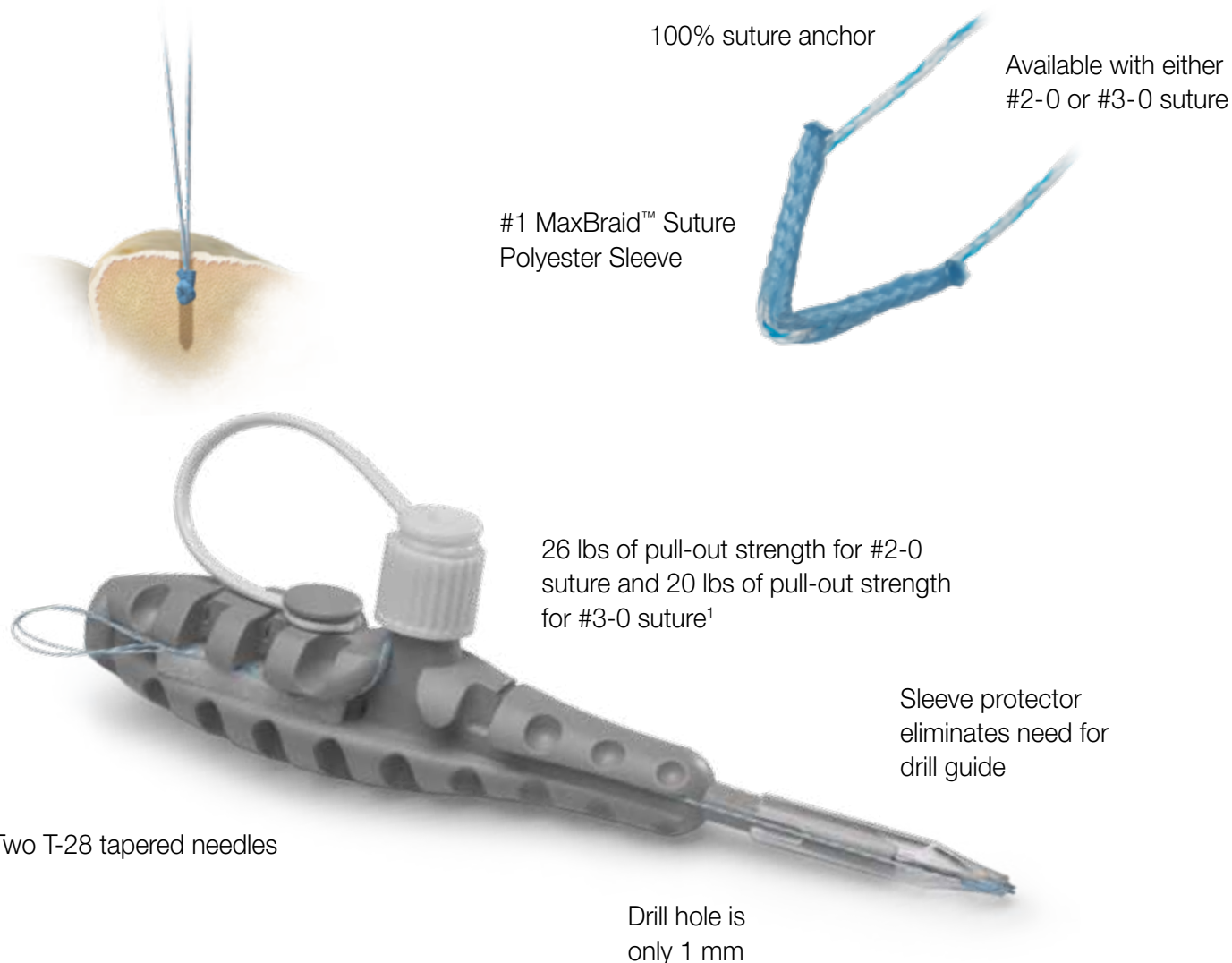
JuggerKnot™

SOFT ANCHOR

The **JuggerKnot™ Soft Anchor—1.0 mm Mini** represents the next generation of suture anchor technology. The 1.0 mm deployable anchor is completely suture-based and the first of its kind. With over 150,000 anchors sold, the award-winning JuggerKnot™ Soft Anchor is now designed specifically for hand and wrist procedures. The new configuration includes two T-28 tapered needles to aid in soft tissue reattachment.

The **JuggerKnot™ Soft Anchor—1.0 mm Mini** is indicated for:

- Ulnar or lateral collateral ligament reconstruction
- Repair/Reconstruction of collateral ligaments
- Flexor and extensor tendon at the PIP (proximal interphalangeal), DIP (distal interphalangeal), and MCP (metacarpal interphalangeal) joints for all digits
- Scapholunate ligament reconstruction



1. Data on file at Biomet, Inc. Bench testing results are not indicative of clinical performance.

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Scapholunate Ligament Repair/Reconstruction



Figure 1

Patient Prep

The injured extremity is prepped and draped in the usual sterile fashion.

Esmarch bandage is utilized for extremity exsanguination inflating tourniquet to 250 mm Hg.

Incision

A standard dorsal wrist exposure is employed using a dorsal longitudinal incision just ulnar to Lister's tubercle, between the third and fourth compartment, centered about the radiocarpal joint. Skin is incised sharply with thick skin flaps elevated (Figure 1).

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Figure 2

The underlying extensor retinaculum is exposed. The third extensor compartment is identified and released allowing for retraction of the Extensor pollicis longus (EPL) tendon radially (Figure 2).



Figure 3



Figure 4

The fourth extensor compartment is then elevated subperiostally to gain exposure of the dorsal capsule. The dorsal capsule is incised in a radially based chevron flap to preserve the dorsal intercarpal and arcuate ligaments (Figure 3).

The scapholunate ligament tear is identified, commonly avulsing from the lunate insertion. The joint is irrigated (Figure 4).



Figure 5

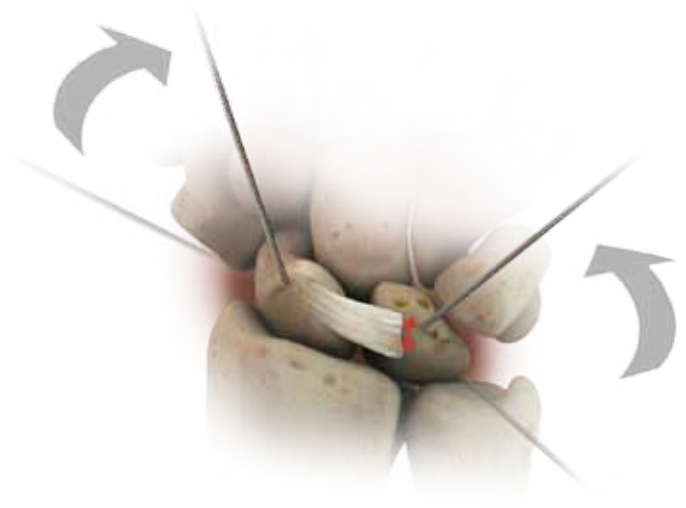


Figure 6

Prepare the Scapholunate Joint for Repair

Reduction of the scapholunate joint is carried out using two 0.062 mm joystick Kirshner wires placed in the lunate and scaphoid respectively. The K-wire placement in the lunate should allow for flexion of the lunate while K-wire placement in the scaphoid should allow for extension of the scaphoid (Figure 5).

Anchor Placement

Placement of the Biomet JuggerKnot™ Mini suture anchors prior to final reduction allows best placement of the loose ends of the sutures into the torn scapho-lunate ligament. Typically, 2–3 anchors are utilized for complete scapholunate ligament avulsions.

Determine placement of the first JuggerKnot™ Mini anchor based off of the ligament insertion points into the scaphoid or lunate as desired. This is typically 2 mm dorsally from the joint edge (Figure 6).

It may be necessary to roughen the surface of the scaphoid or lunate bone surface to promote ligament reattachment.

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Scapholunate Ligament Repair/Reconstruction

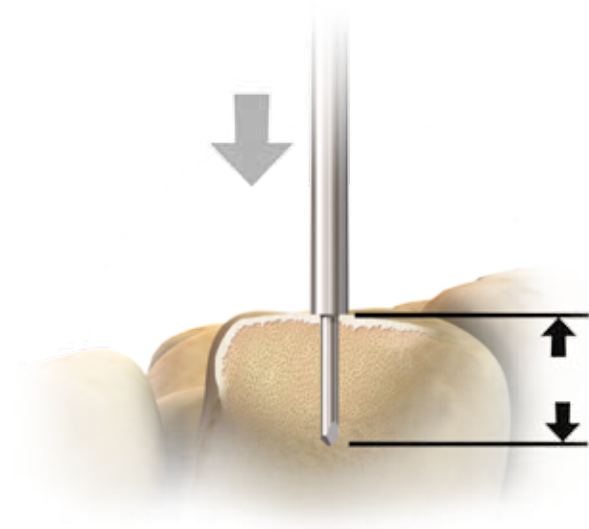


Figure 7

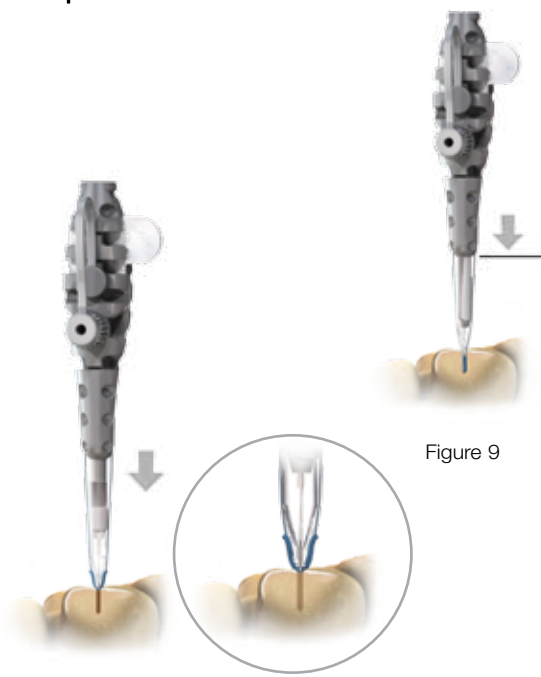


Figure 8

Figure 8A

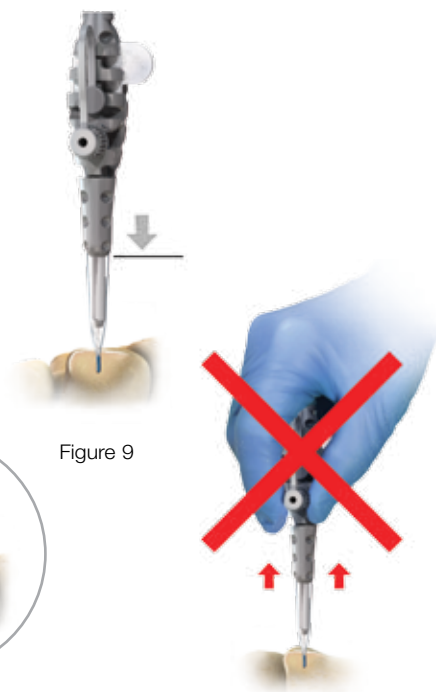


Figure 9

Figure 10

Anchor Placement (Cont.)

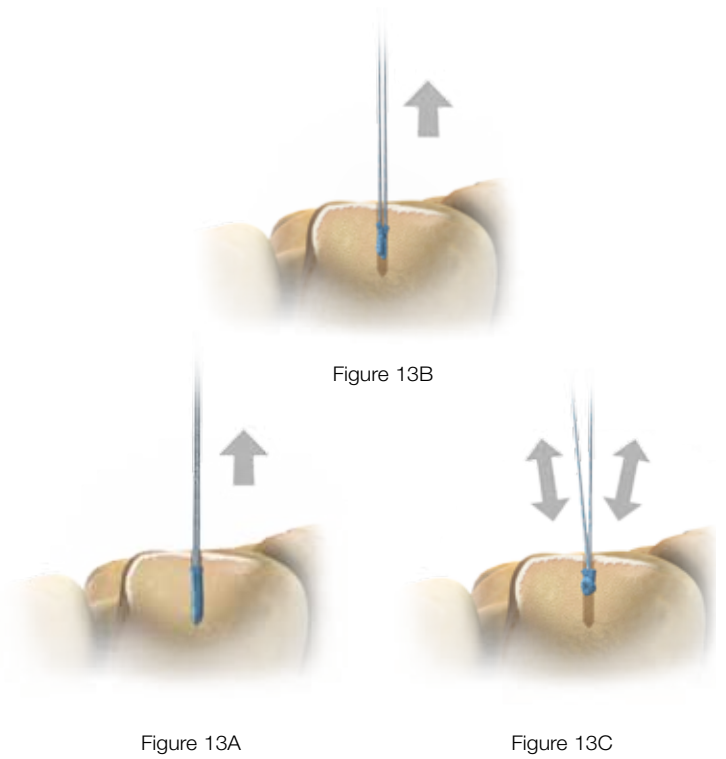
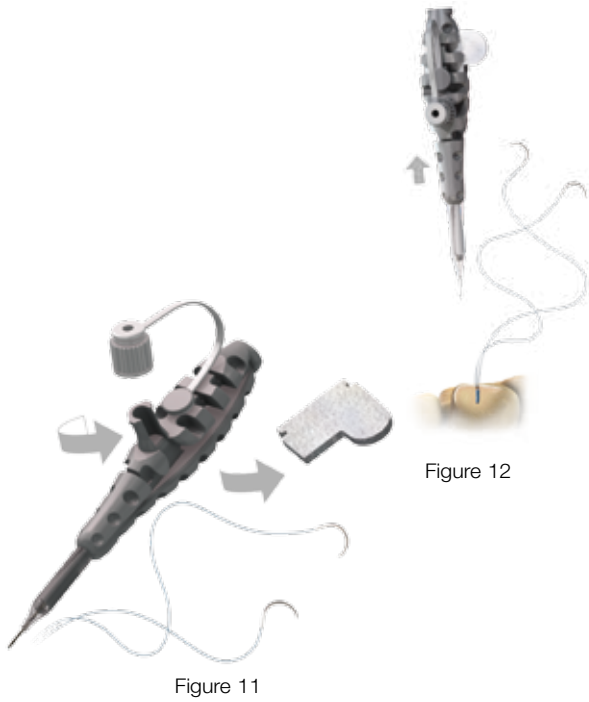
Open a sterile packed JuggerKnot™ Soft Anchor and using the enclosed step drill, prepare the pilot hole by inserting the step drill to the stop or full depth (Figure 7). To reach full depth it is preferred to drill at an angle as perpendicular to the bone surface as possible. This is important for full deployment of the anchor.

Locate pilot hole with tip of JuggerKnot™ inserter (Figure 8A). The angle of insertion must be the same trajectory as the pilot hole. Failure to do this could prevent insertion and deployment of the anchor.

Apply gentle pressure to the JuggerKnot™ inserter to start advancement of anchor (Figure 8, 8A).

Advance the inserter until the clear JuggerKnot™ guide sleeve has retracted to the handle completely to ensure the anchor has reached full depth (Figure 9).

Note: At this point, **do not** pull up on the handle to set anchor (Figure 10).



Anchor Placement (Cont.)

Unscrew lure lock to release sutures and pull foam tab to release needles (Figure 11).

Remove JuggerKnot™ inserter by gently pulling straight up on the handle. This will separate the anchor from the inserter, leaving the anchor in the pilot hole (Figure 12).

Set the anchor by lightly pulling back on both strands of suture (Figures 13A/13B). The 2-0 or 3-0 suture should move back and forth freely within the all-suture anchor (Figure 13C).

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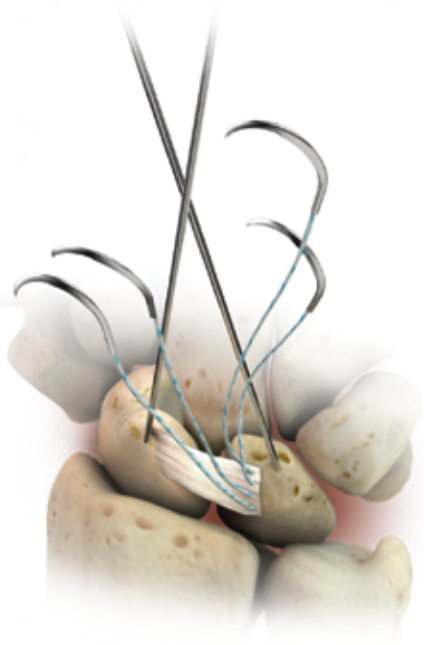


Figure 14



Figure 15

Scapholunate Reduction

Use the included suture for scapholunate ligament purchase. It is recommended to place suture through the ligament but not to secure the knot or tie sutures until final reduction (Figure 14).

Prior to final tying of suture and repair of the scapholunate ligament, the scapholunate joint is reduced and stabilized with two 0.045 Kirshner wires inserted radially or one headless screw for fixation. The previously inserted 0.062 “joystick” K-wires are removed from the lunate and scaphoid (Figure 15).

Intra-operative fluoroscopy is used to confirm proper placement and reduction in multiple views (Anterior/Posterior, Lateral, and Oblique) including correction of any Dorsal Intercalated Segment Instability (DISI) deformity.

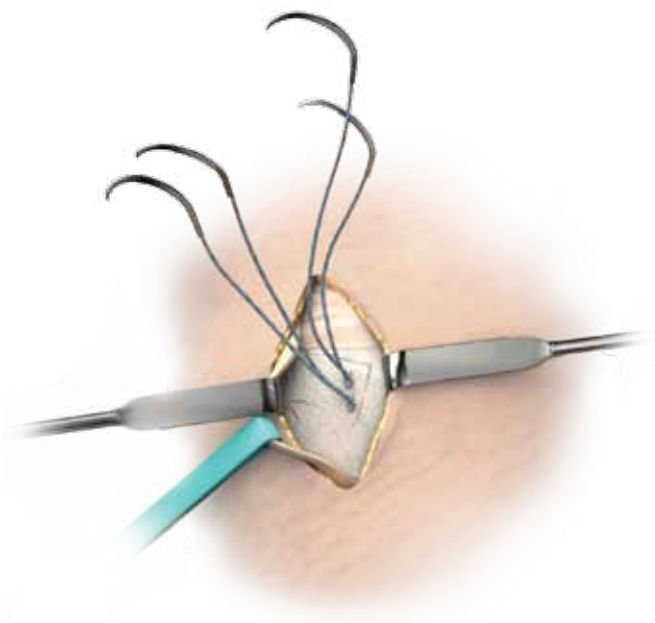


Figure 16



Figure 17

Scapholunate Reduction (Cont.)

Using the attached needles, suture the scapholunate ligament utilizing a horizontal mattress stitch (Figure 16).

Consider augmenting the scapholunate ligament repair with a slip of dorsal capsule using the sutures from the Juggerknot™ Soft Anchor–Mini anchors previously placed.

Closure

The remaining dorsal capsule is repaired with 3-0 suture. The extensor retinaculum is repaired with Extensor Pollicis Longus (EPL) “radialized.”

Deflate the tourniquet and irrigate the wound. Hemostasis is obtained with electrocautery bipolar.

Repair the skin incision and apply a short arm splint (Figure 17).

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Post Operative Care

For rehabilitation, the wrist is immobilized to allow for soft tissue/ligament healing for 8 weeks.

Deep .045 mm K-wire removal is performed at 8 weeks with local anesthesia and conscious sedation.

Wrist range of motion exercises begin after k-wire removal at 8 weeks. Wrist range of motion exercises begin after screw removal at 8 weeks gently.

If a headless screw is utilized, the screw is removed under anesthesia at 9 months.

Implants

JuggerKnot™ Soft Anchor–1.0 mm Mini with 2-0 Suture

Part Number	Description	Size
912076	JuggerKnot™ Soft Anchor–1.0 mm Mini 2-0 Needles with Drill-Single	2-0 Suture
912080	JuggerKnot™ Soft Anchor–1.0 mm Mini 2-0 with Needles 10pk	2-0 Suture

JuggerKnot™ Soft Anchor–1.0 mm Mini with 3-0 Suture

Part Number	Description	Size
912082	JuggerKnot™ Soft Anchor–1.0 mm Mini 3-0 Needles with Drill-Single	3-0 Suture
912084	JuggerKnot™ Soft Anchor–1.0 mm Mini 3-0 with Needles 10pk	3-0 Suture

Instruments

JuggerKnot™ Soft Anchor–1.0 mm Mini 2-0

Part Number	Description	Size
912077*	JuggerKnot™ Soft Anchor–1.0 mm Mini Step Drill (Sterile)	1.0 mm

*Provided as a backup since each JuggerKnot™ Soft Anchor–1.0 mm Mini is packaged with a sterile step drill.

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P.O. Box 587, Warsaw, IN 46581-0587 • 800.348.9500 x1501
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