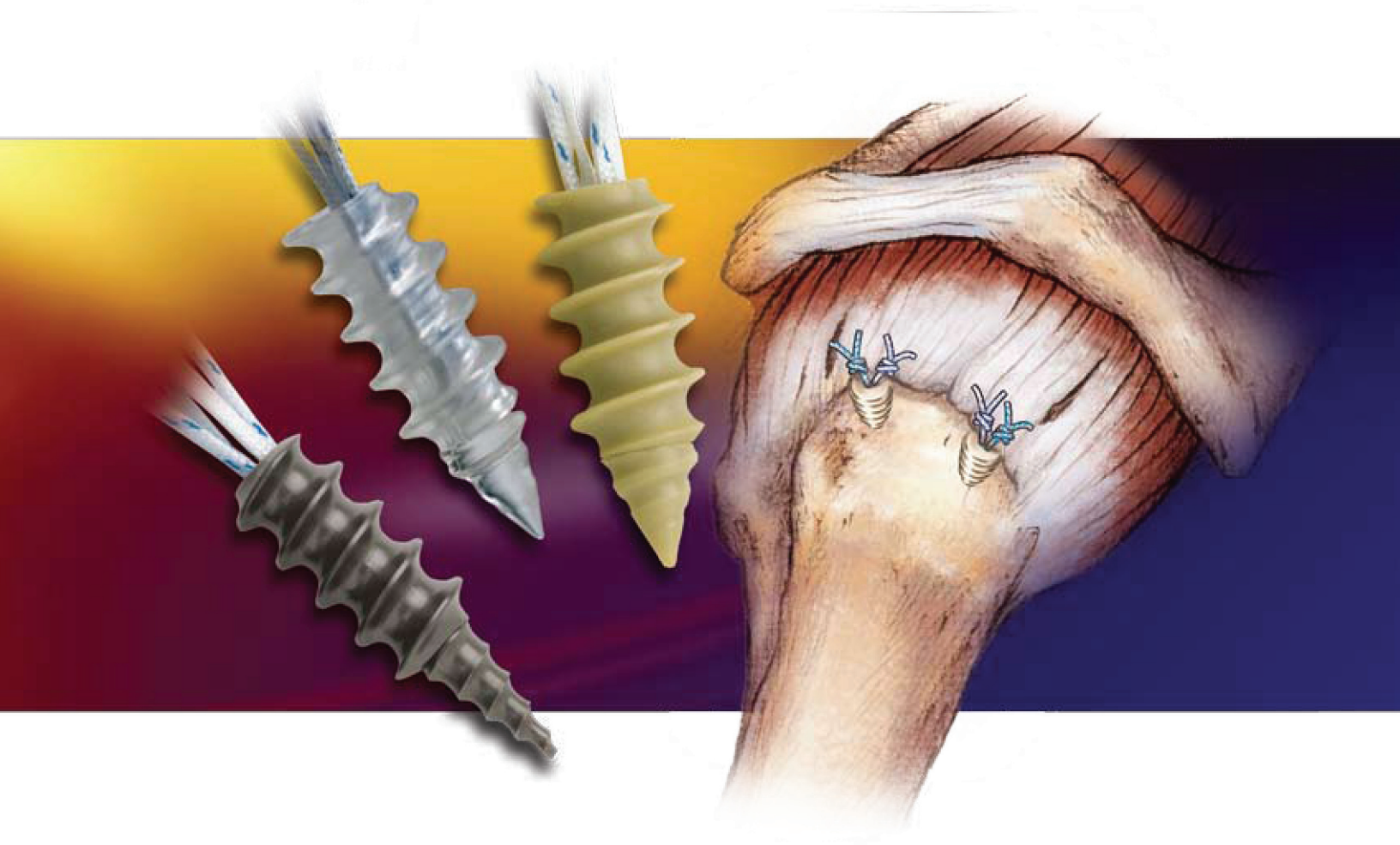
ALLthread™
SUTURE ANCHORS



Rotator Cuff Repair Utilizing the ALLthread™ Suture Anchor

by Scott Kuiper, M.D.

BIOMET®
SPORTS MEDICINE

TraumaPro

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The Material Difference

Biomet Sports Medicine recognizes the benefit of material options. Many times surgeons require different materials for different applications. These requirements may be dependent upon anatomic location, bone quality, or patient acceptance. Biomet Sports Medicine is proud to offer a wide range of ALLthread™ Suture Anchors manufactured with innovative materials to meet your needs. The ALLthread™ Suture Anchors are fully-threaded to achieve fixation in cortical bone to maximize resistance to pullout and displacement. Dual eyelet configurations ensure suture sliding during the knot tying process. Knot strength of 39.45 lbs.[1] is achieved with the addition of MaxBraid™ PE Suture.

ALLthread™
SUTURE ANCHORS

PEEK-Optima® Polymer

LactoSorb® L15 Resorbable Copolymer

Titanium Dual Eyelet

Titanium Triple Eyelet

Features

- Fully-threaded to achieve cortical fixation
- Dual and triple eyelet configurations to ensure suture sliding while knot tying
- Loaded with MaxBraid™ PE Suture

PEEK-Optima® Polymer

Biomet Sports Medicine is proud to be one of the first to provide implants manufactured with PEEK-Optima® Polymer. This significant polymer advancement has provided benefits from both metal and resorbable technologies. PEEK-Optima® Polymer exhibits an optimal combination of strength, stiffness and toughness, while being radiolucent and revisable, making it ideally suited for suture anchors. PEEK-Optima® polymer provides physiological load sharing between the implants and the surrounding tissues.

LactoSorb® L15 Resorbable Copolymer

LactoSorb® L15 Copolymer is comprised of 85% L-lactic acid and 15% glycolic acid. This formulation provides a balance of properties, *i.e.*, strength retention/loss timed to complement healing, complete mass loss and enhanced biocompatibility during degradation principally due to the lack of crystallinity. The elimination of future implant removal surgery, clearer radiographs and more physiological load sharing between the implants and the surrounding tissues are a few of the benefits of LactoSorb® Technology.

Titanium

This traditional material is clinically proven for biocompatibility and strength. Titanium allows for fast and easy insertion techniques making it one of the easiest materials to use on the market. The high strength of titanium allows for design variations such as the ALLthread™ Ti III Suture Anchor—a triple eylelet suture anchor loaded with three sutures to provide additional fixation when necessary.

MaxBraid™ PE Suture

Suture plays a significant role in repairs made with suture anchors. Biomet Sports Medicine's incredible strength MaxBraid™ Suture is comprised of polyethylene, to help eliminate suture fray and prevent breakage. MaxBraid™ Suture has high tensile strength, but also possesses great knot tying characteristics. The unique braid cinches on itself, providing confidence when tying knots.

Options

Rotator Cuff Repair. Repairing a torn rotator cuff can present a multitude of challenges. Biomet Sports Medicine offers the ALLthread™ Suture Anchor in multiple sizes, suture configurations and options with needles to allow the surgeon to select fixation methods based on the needs of the patient.

Part No.	Size	Material	Suture		Needles
905940	5.5mm	LactoSorb® L15 Copolymer	Two #2	MaxBraid™ Suture	Cutting
905942	5.5mm	LactoSorb® L15 Copolymer	Two #2	MaxBraid™ Suture	No
905943	5.5mm	LactoSorb® L15 Copolymer	Two #2	MaxBraid™ Suture	Tapered
905941	6.8mm	LactoSorb® L15 Copolymer	Two #2	MaxBraid™ Suture	Cutting
905944	6.8mm	LactoSorb® L15 Copolymer	Two #2	MaxBraid™ Suture	No
905945	6.8mm	LactoSorb® L15 Copolymer	Two #2	MaxBraid™ Suture	Tapered
905940P	5.5mm	PEEK-Optima® Polymer	Two #2	MaxBraid™ Suture	Cutting
905942P	5.5mm	PEEK-Optima® Polymer	Two #2	MaxBraid™ Suture	No
905943P	5.5mm	PEEK-Optima® Polymer	Two #2	MaxBraid™ Suture	Tapered
905941P	6.8mm	PEEK-Optima® Polymer	Two #2	MaxBraid™ Suture	Cutting
905944P	6.8mm	PEEK-Optima® Polymer	Two #2	MaxBraid™ Suture	No
905945P	6.8mm	PEEK-Optima® Polymer	Two #2	MaxBraid™ Suture	Tapered
902581	5.0mm	Titanium	Two #2	MaxBraid™ Suture	Tapered
902582	6.5mm	Titanium	Two #2	MaxBraid™ Suture	Tapered
902588	5.0mm	Titanium	Two #2	MaxBraid™ Suture	Cutting
902589	6.5mm	Titanium	Two #2	MaxBraid™ Suture	Cutting
902591	5.0mm	Titanium	Two #2	MaxBraid™ Suture	No
902592	6.5mm	Titanium	Two #2	MaxBraid™ Suture	No
902597	5.0mm	Titanium	Three #2	MaxBraid™ Suture	Tapered
902598	5.0mm	Titanium	Three #2	MaxBraid™ Suture	No
902599	6.5mm	Titanium	Three #2	MaxBraid™ Suture	Tapered
902600	6.5mm	Titanium	Three #2	MaxBraid™ Suture	No

Rotator Cuff Reinforcement. The SportMesh™ Soft Tissue Reinforcement was designed with one of the most important issues in soft tissue reinforcement in mind: tissue quality. Due to the tendon's relatively low vascular supply, the tendon's ability to heal is extremely slow. The important function of the SportMesh™ Soft Tissue Reinforcement is to relieve the load during the sensitive healing period and thus achieve short and long-term stability. The Artelon® Fibers have a unique fiber structure that permits host tissue ingrowth and blood vessels between fibers.

Features

- Strong, consistent, readily available material with a five-year shelf life
- Unlike allograft material, there is no concern with variation of donor tissue
- Cost effective compared to traditional materials
- Extremely easy to handle, cut and shape to soft tissue
- Unlike allograft and xenograft materials, the SportMesh™ implant is a synthetic material and poses no risk of collagen rejection or donor disease transmission
- Porous Artelon® structure permits host tissue in-growth

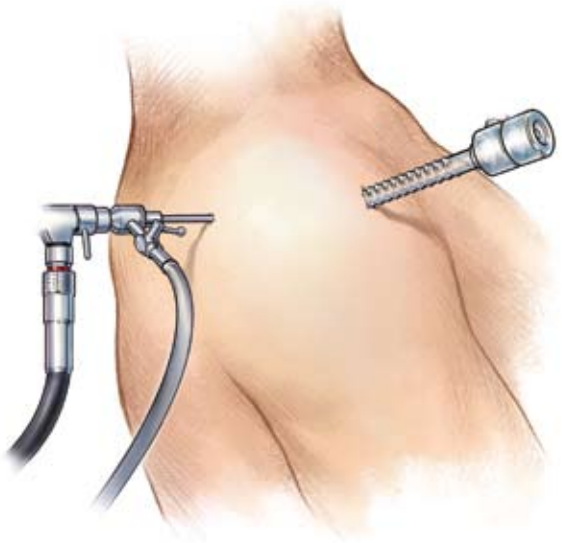

Figure 1

Figure 2

Portal Placement

Beach chair or lateral decubitus position is utilized per surgeon preference. A standard posterior portal is utilized along with a traditional anterior portal for instrument passage for diagnostic arthroscopy. Intra-articular pathology is addressed including, evaluation of the undersurface of the rotator cuff. The arthroscope is passed into the subacromial space via the posterior portal (Figure 1).

Visualization of the Subacromial Space

Bursectomy is performed using a combination of shavers and electrocautery to visualize the subacromial space, rotator cuff, acromion and coracoacromial ligament. Debridement is carried out with motorized instruments to remove any loose and devascularized flaps of rotator cuff. (Figure 2)

An acromioplasty is performed with a high-speed burr until smooth and flat. The coracoacromial (CA) ligament is released and AC joint pathology is addressed.

The rotator cuff tear is visualized from the posterior and lateral portals to determine tear type, configuration, and size, as well as amount of retraction.

Figure 3

Figure 4

Mobilization of the Rotator Cuff

The rotator cuff, if retracted, is mobilized by freeing the rotator cuff both superiorly and inferiorly in the planes medial to the glenoid. Anterior and posterior slide procedures can be performed if the rotator cuff is severely retracted and scarred.

Margin-convergence techniques are then utilized to repair splits in the tendon anteriorly and posteriorly. Margin-convergence repair is performed by using the appropriate 45º left or right Speed Pass™ device passing MaxBraid™ Suture across the tear (Figure 3) When anterior and/or posterior splits in the tendon have been repaired, the remaining defect is evaluated for repair to the greater tuberosity.

A tissue grasper is utilized to make sure the tendon can be reduced to bone without any undue tension (Figure 4). Viewing posteriorly and working through a lateral portal, the greater tuberosity is lightly decorticated with a high-speed shaver.

Figure 5

Figure 6

Postion/Insert the ALLthread™ Tap

The ALLthread™ tap is used to create threaded holes for the ALLthread™ Suture Anchors.* To attain the proper angle for insertion, an accessory portal may be made slightly anterior or posterior to the traditional lateral portal. The tap is positioned at a 45˚ "dead man's" angle to increase the resistance of suture anchor pull-out (Figure 4). The tap is started with hand pressure, approximately 4 – 5 mm off the articular margin.

Insert the ALLthread™ Suture Anchor

The ALLthread™ Suture Anchors are inserted in an anterior to posterior direction at the same angle of the threaded holes created by the tap. The anchor is advanced into the hole such that the proximal threads of the anchor are seated just below the cortical surface. The vertical laser-etched lines are in line with the suture anchor eyelets to assist with anchor orientation for knot tying.

*Note: ALLthread™ Titanium Suture Anchors

The ALLthread™ Titanium Suture Anchors requires pre-drilling prior to insertion.

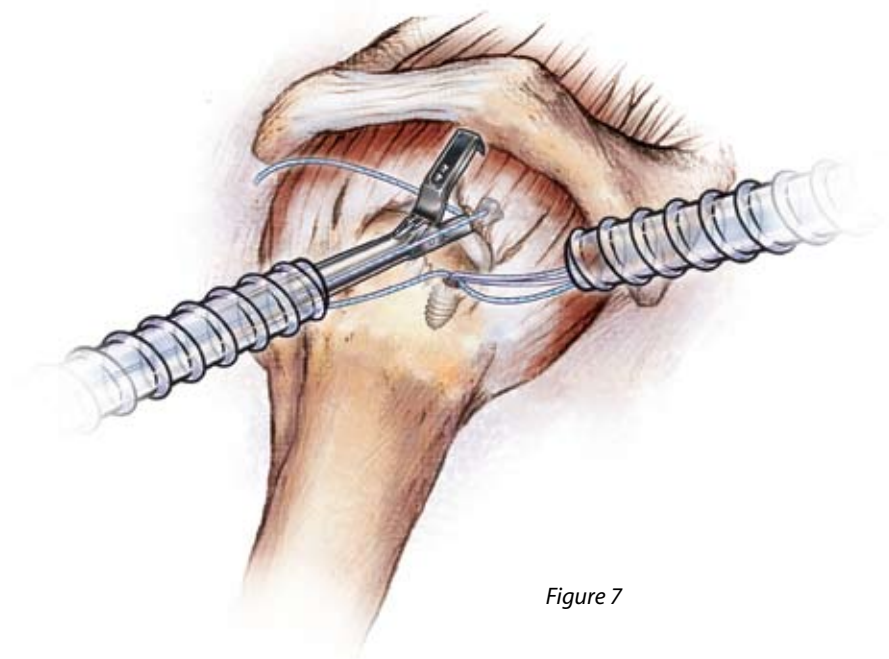

Figure 7

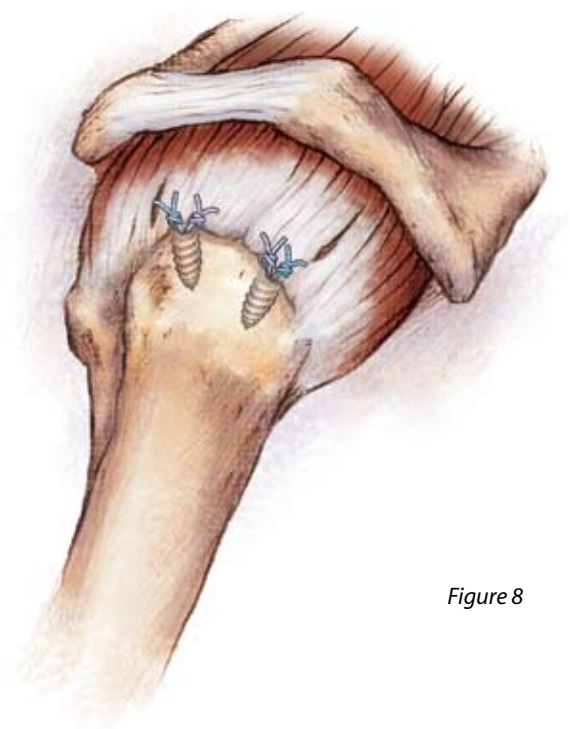

Figure 8

Pass the Suture Through the Rotator Cuff

Individual sutures from the anchor are passed out the lateral portal and the BiPass™ Suture Passer is then used for passing suture through the rotator cuff tendon (Figure 7). The MaxBraid™ Suture is loaded approximately 2 cm from the end of the suture, passed through the tendon, and then brought back out the lateral portal with the BiPass™ Suture Punch.

This suture is then passed back out either the accessory portal or anterior portal for suture management. This procedure is repeated until one limb of each suture has been through the tendon edge for simple suture repair of the rotator cuff to bone.

Repair the Tendon

After all sutures have been passed, repair of the tendon progresses from posterior to anterior. A secure sliding knot with multiple half-hitches using alternating posts secure the tendon to the tuberosity. A probe is used to check fixation. The rotator cuff repair is now complete utilizing the ALLthread™ Suture Anchors (Figure 8).

If a double row repair is to be utilized, an anchor is placed along the articular cartilage margin and sutures are brought through the tendon 1 cm medial to the lateral edge of the tendon using a horizontal mattress configuration prior to traditional anchor placement.

Ordering Information

ALLthread™ PEEK-Optima® Polymer Suture Anchors	
905940P	5.5mm — Two #2 MaxBraid™ Suture w/Cutting Needles
905942P	5.5mm — Two #2 MaxBraid™ Suture
905943P	5.5mm — Two #2 MaxBraid™ Suture w/Tapered Needles
905941P	6.8mm — Two #2 MaxBraid™ Suture w/Cutting Needles
905944P	6.8mm — Two #2 MaxBraid™ Suture
905945P	6.8mm — Two #2 MaxBraid™ Suture w/Tapered Needles

ALLthread™ LactoSorb® L15 Copolymer Suture Anchors	
905940	5.5mm — Two #2 MaxBraid™ Suture w/Cutting Needles
905942	5.5mm — Two #2 MaxBraid™ Suture
905943	5.5mm — Two #2 MaxBraid™ Suture w/Tapered Needles
905941	6.8mm — Two #2 MaxBraid™ Suture w/Cutting Needles
905944	6.8mm — Two #2 MaxBraid™ Suture
905945	6.8mm — Two #2 MaxBraid™ Suture w/Tapered Needles

ALLthread™ Titanium Suture Anchors	
902581	5.0mm — Two #2 MaxBraid™ Suture w/Tapered Needles
902582	6.5mm — Two #2 MaxBraid™ Suture w/Tapered Needles
902588	5.0mm — Two #2 MaxBraid™ Suture w/Cutting Needles
902589	6.5mm — Two #2 MaxBraid™ Suture w/Cutting Needles
902591	5.0mm — Two #2 MaxBraid™ Suture
902592	6.5mm — Two #2 MaxBraid™ Suture
902597	5.0mm — Three #2 MaxBraid™ Suture w/Tapered Needles
902598	5.0mm — Three #2 MaxBraid™ Suture
902599	6.5mm — Three #2 MaxBraid™ Suture w/Tapered Needles
902600	6.5mm — Three #2 MaxBraid™ Suture

Tap (for LactoSorb® L15 and PEEK-Optima® Versions)

905958	5.5mm
905959	6.8mm

Awl (for LactoSorb® L15 and PEEK-Optima® Versions)

905955	5.5/6.8mm

Drill (for Titanium Version)

905961	5.0/6.5mm

BiPass™ Suture Punch

902096	Handpiece
902092	Disposable Nitinol Pusher—Qty. 1
902094	Disposable Nitinol Pusher—Qty. 10

AquaLoc™ Cannula

900362	5 x 75mm
900366	5 x 85mm
900360	7 x 75mm
900364	7 x 85mm
900363	8.5 x 75mm
900367	8.5 x 85mm

SpeedPass™ Suture Passers

904001	70˚ Right Hook
904002	70˚ Left Hook
904003	Medium Up

References

1. Data on file at Biomet Sports Medicine. Bench test results are not necessarily indicative of clinical results.

Package Inserts

For description, materials, indications, contraindications and warnings, see package inserts 01-50-1078, 01-50-1072, 01-50-1134 and 21282003 at www.biometsportsmedicine.com.

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