Volume 24, Number 2

SCOPE THIS OUT

A Technical Pearls Newsletter for Orthopedists

Introducing the 2.8 mm Nano Suction Punch

Ideal for both Nano arthroscopy and standard arthroscopic techniques, the new 2.8 mm Nano suction punch helps achieve optimal resection and aspiration from a periphery portal. Resect meniscal tears from an outside-in portal over the tear with the cutting window down, which is ideal for tight joint spaces or hard-to-reach anterior horn tears. The cutting suction tube resects the meniscus efficiently and aspirates simultaneously.

The Nano suction punch is reusable and autoclavable and demonstrates advanced strength. Capable of acting as a FiberWire® suture cutter after knot tying, this device can also cut bone and effectively trim osteophytes, bone spurs, and loose bodies. Because the punch integrates directly with the GraftNet™ device to collect aspirated tissue, it is ideal for tissue biopsies, AutoCart™ procedures, and autograft biologic augmentation.

Available in 2 lengths, the Nano suction punch offers 3 unique cutting windows—based on patient-specific anatomy—that can rotate 360° for up-, side-, or down-window resection.

SutureLoc™ Implant for Meniscal Root Repair

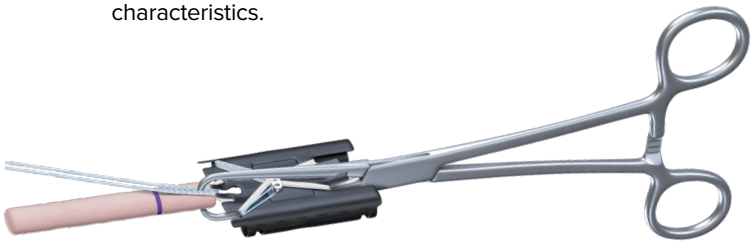
In 2016, Arthrex was first to market with an implant system designed specifically for meniscal root repair. The tradition continues with the release of the all-suture SutureLoc implant. This double-loaded, knotless anchor is intended for joint-line fixation of the meniscal root.

Features and Benefits

- Soft, all-suture implant
- Technique involves minimal bone removal with a smaller drill pin
- Double-loaded implant allows for 2 repair sutures with only 1 anchor pass, reducing steps from previous techniques and eliminating need for a posteromedial portal
- Simple, reproducible suture passing
- Suture tension can be controlled and adjusted under direct visualization
- Repair sutures are converted inline, eliminating possibility of suture cutting into bone
- Each implant is intricately assembled in the USA

The Next Generation of Quad Fixation: FiberTag® TightRope® II Implant

Upgrades to the FiberTag TightRope II implant include many of the notable ACL TightRope II implant features that help simplify graft preparation while also improving graft tensioning characteristics.



Features and Benefits

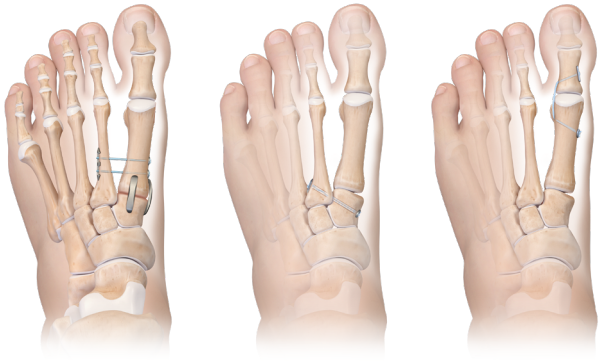
- **NEW** Shorter minimum loop length allows for more graft in the socket
- **NEW** Improved straight tapered needle for easy suture passing
- **NEW** Improved assembly card design for optimized graft assembly and suture management
- **NEW** TightRope tape tensioning strands for improved graft tensioning and handling characteristics[1]
- Available preloaded with FiberTape® suture for the *Internal*Brace™ technique
- Proprietary button design and high-strength TightRope tape loop improve construct biomechanics[2]

References

1. Arthrex, Inc. Data on file (LA1-00038-EN_B). Naples, FL; 2017.
2. Arthrex GmbH. Data on file (APT-G01155). Munich, Germany; 2020.

Knotless Mini TightRope® Implant

The Knotless Mini TightRope implant is an alternative to traditional rigid screw or screw-and-plate fixation for common foot and ankle pathologies, including hallux valgus, Lisfranc injuries, and hallux varus. While providing a strong and reproducible construct that stabilizes bones without overconstraining the joint, this knotless, tensionable technology reduces the risk of early hardware failure and soft-tissue irritation from knot stacks and eliminates implant tensioning variability.[1-3]



Hallux Valgus | Lisfranc Injuries | Hallux Varus

Features

- Reproducible Tensioning
  Eliminates knot tying so surgeons no longer need to worry about knot type, quantity, strength, and stack as they dial in the tension for their correction
- Stronger Fixation
  A 40% increase in mechanical strength with a novel 6-strand construct[1-3] and a tighter fit in bone tunnels for increased construct stability
- Lower Recurrence Rates
  Reduce excessive motion, avoid screw traffic, and minimize bone tunnels after Lapidus fixation by adding adjunct fixation for intercuneiform instability[4,5]
- Eliminates Hardware Removal Surgery
  Flexible fixation allows for stability in the transverse plane while preserving motion in the sagittal plane; this reduces the risk of over constraining the joint, which can result in bent and broken hardware during weightbearing[1-3]

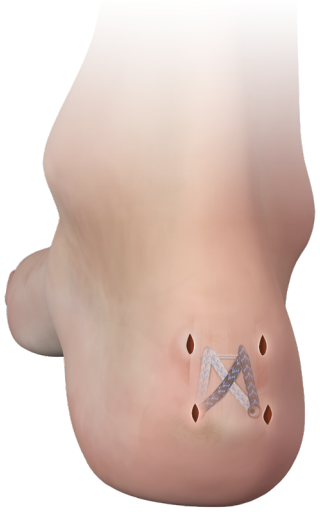
References

1. Arthrex, Inc. Data on file (APT-05278). Naples, FL; 2021.
2. Arthrex, Inc. Data on file (APT-05279). Naples, FL; 2021.
3. Arthrex, Inc. Data on file (APT-05280). Naples, FL; 2021.
4. Galli MM, McAlister JE, Berlet GC, Hyer CF. Enhanced Lapidus arthrodesis: crossed screw technique with middle cuneiform fixation further reduces sagittal mobility. *J Foot Ankle Surg*. 2015;54(3):437-440. doi:10.1053/j.jfas.2014.10.0082
5. Fleming JJ, Kwaadu KY, Brinkley JC, Ozuzu Y. Intraoperative evaluation of medial intercuneiform instability after Lapidus arthrodesis: intercuneiform hook test. *J Foot Ankle Surg*. 2015;54(3):464-472. doi:10.1053/j.jfas.2014.12.019

MIS FiberTak® Achilles SpeedBridge™ Repair Implant System

The new MIS FiberTak Achilles SpeedBridge repair implant system is the latest generation of Achilles reattachment following insertional pathology debridement. This minimally invasive approach provides rigid tendon fixation with improved tendon-to-bone opposition, allowing for immediate postoperative weightbearing and range of motion.[1]

Features and Benefits



- New 2.6 DX Knotless FiberTak anchors and 3.9 mm DX BioComposite SwiveLock® anchors
- 25% less material than traditional SpeedBridge construct[2]
- Double the biomechanical strength of the 4.75 mm SwiveLock SpeedBridge construct, with knotless tensionable technology[2]
- Cannulated instruments for a percutaneous approach
- Shorter inserters with laser line and window
- New 1.7 mm **collagen-coated** FiberTape® suture with differentiating colors
- Hexalobe driver on 3.9 mm BioComposite SwiveLock anchors for high insertional torque in hard bone

References

1. Miller CP, McWilliam JR, Michalski MP, Acevedo J. Endoscopic Haglund's resection and percutaneous double-row insertional Achilles repair. *Foot Ankle Spec*. 2021;14(6):534-543. doi:10.1177/19386400211002707
2. Arthrex, Inc. Data on file (APT-05964). Naples, FL; 2023.

DualCompression Hindfoot Nail

The DualCompression Hindfoot Fusion Nail System is designed to streamline application of intraoperative and sustained dynamic compression.[1] The system facilitates tibiotalocalcaneal arthrodesis for the treatment of severe foot and ankle deformities, arthritis, instability, and skeletal defects after tumor resection.

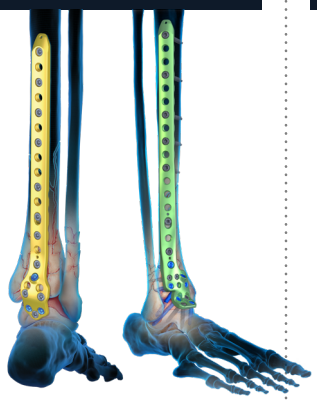
Features

- Available in 3 diameters and 4 lengths
- Superelastic nitinol core provides constant compression[1]
- Up to 10 mm intraoperative and sustained compression[1]
- Unique cable tensioning device

Reference

1. Arthrex, Inc. Data on file (APT-04782G). Naples, FL;2020.

Pilon Fusion Plating System



The Arthrex Pilon Fusion Plating System is an expansion of the Ankle Fusion Plating System, adding options for:

- Distal tibia fractures requiring fracture reduction and primary ankle arthrodesis
- Primary ankle fusions that require additional screw options or lengths
- Revision ankle fusions, tibiotalocalcaneal nail procedures, and total ankle procedures

Severe damage to the tibiotalar joint can result in posttraumatic arthritis, pain, stiffness, and the need for secondary surgeries. This system provides another option for addressing these scenarios.

Anterolateral plates feature numerous screw and length options, limited-contact features, a locking tibiotalar compression screw, and multiple talar screws for enhanced fixation.

Posterior plates include 4.5 mm/5.5 mm fixation throughout, multiple length options, and a locking tibiotalar compression screw.

Trauma Mini Fragment System

The Arthrex Mini Fragment ("Mini Frag") System provides the most comprehensive plate offering on the market, responding to the market shift to fragment-specific plating and small plates as adjuncts to other means of fixation. Improving upon competitive systems, the Mini Frag's modular tray offers screw and plate options sized to 2.0 mm, 2.4 mm, and 2.7 mm to fit a multitude of trauma needs.

Features and Benefits

- NEW: 2.7 mm titanium plating options, with 23 different plate sizes and styles
- Range of reduction instruments and 6 plate bending and cutting options
- Reinforced plating options in all 3 plate sizes; 2.4 mm and 2.7 mm sizes also have 20-hole plate options
- 2.0 mm screws in lengths up to 40 mm and 2.4 mm and 2.7 mm screws up to 80 mm
- Standard AO connections for all systems, including 2.0 mm
- Reduced tray footprint and caddy carrying case to facilitate intraoperative efficiency

Postless Hip Arthroscopy Using the Hip Distraction System

Postless hip arthroscopy has been shown to reduce the risk of groin-related complications, such as genital lacerations and perineal numbness, due to pudendal nerve neuropraxia.[1,2] The Hip Distraction System (HDS) with a postless pad is an ideal setup for this procedure.[1,2]

Specifically designed and validated for the HDS, this pad provides additional positioning support without the use of a perineal post and pad during supine hip arthroscopy procedures. The single-use foam pad has 3 straps that easily attach to the OR bed and patient platform prior to positioning the patient.

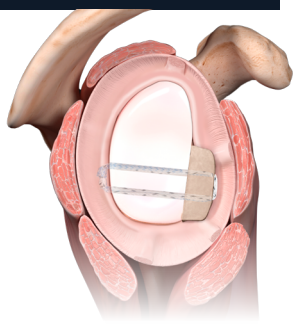
Features

- An arc laser marking indicates where the perineal post and pad line up during the procedure
- Disposable kit includes draw sheet for patient mobility and 2 foam pads for the patient's feet
- Pad is specifically contoured for an exact fit to the HDS patient platform

References

1. Mei-Dan O, Kraeutler MJ, Garabekyan T, Goodrich JA, Young DA. Hip distraction without a perineal post: a prospective study of 1000 hip arthroscopy cases. *Am J Sports Med*. 2018;46(3):632-641. doi:10.1177/0363546517741704
2. Held MB, Tedesco LJ, Lobao MH, Lynch TS. Postless hip arthroscopy: a safer alternative for treatment of femoracetabular impingement syndrome. *VJSM*. 2021;1(3). doi:10.1177/26350254211006733

Metal-Free Bone Graft Fixation for Glenoid Bone Loss



Free bone block procedures aim to restore the glenoid concavity and anatomy of the glenohumeral joint to reestablish stability for patients with bone loss from recurrent anterior shoulder instability. Various bone-grafting techniques have been reported to yield satisfactory clinical and radiological long-term outcomes. However, the structural integrity and clinical function of the subscapularis tendon may be compromised after open shoulder stabilization procedures.[1]

Bone block cerclage is an innovative arthroscopic surgical technique that preserves the integrity of the subscapularis and provides metal-free fixation of the bone graft.[2] The new posterior TransGlenoid drill guide is designed to reproducibly provide safe and accurate drilling of two parallel bone tunnels across the glenoid with an ergonomic hook that conforms to the glenoid anatomy. Two interconnected FiberTape® and TigerTape™ cerclage sutures ensure firm compression of the graft and strong fixation that minimizes construct displacement at high loads.[3]

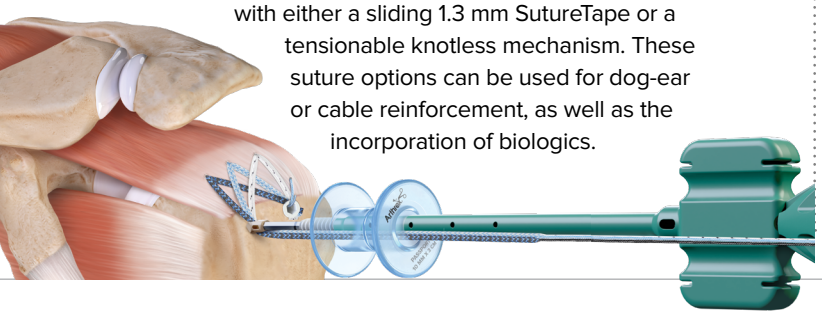
References

1. Boehm E, Minkus M, Moroder P, Scheibel M, et al. Arthroscopic iliac crest bone grafting in recurrent anterior shoulder instability: minimum 5-year clinical and radiologic follow-up. *Knee Surg Sports Traumatol Arthrosc*. 2021;29:266-274. doi:10.1007/s00167-020-05986-7
2. Hachem AI, Del Carmen M, Verdalet I, Rius J. Arthroscopic bone block cerclage: a fixation method for glenoid bone loss reconstruction without metal implants. *Arthrosc Tech*. 2019;8(12):e1591-e1597. doi:10.1016/j.eats.2019.08.014
3. Arthrex GmbH. Data on file (LA2-000140). Munich, Germany; 2021.

New Self-Punching SwiveLock® Anchor for Lateral-Row Fixation

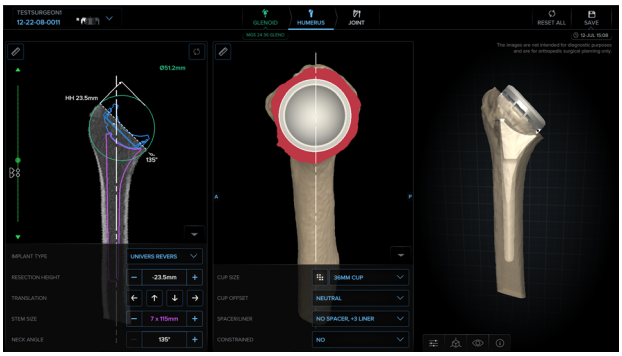
The new Self-Punching SwiveLock anchor with a PEEK eyelet eliminates the need to prepunch and find the pilot hole for lateral-row fixation of a SpeedBridge™ construct. Once the medial-row FiberTape® sutures are loaded into the anchor and tensioned, the anchor can be positioned laterally and malleted into place. Used in conjunction with 2.6 FiberTak® RC anchors medially, this construct allows for a fully self-punching FiberTak SpeedBridge repair, improving surgical efficiency.

This anchor is available in 4.75 mm and 5.5 mm sizes, both with biocomposite and PEEK options and loaded with either a sliding 1.3 mm SutureTape or a tensionable knotless mechanism. These suture options can be used for dog-ear or cable reinforcement, as well as the incorporation of biologics.



Humeral Planning With the Virtual Implant Positioning™ (VIP™) Preoperative Planning System

Arthrex is pleased to announce that the next evolution of the VIP software includes humeral planning, which facilitates effective templating of humeral components compatible with the selected glenoid implant.



In anatomic planning, Eclipse™ cage screw, trunnion, and head sizes can be selected for each patient and optimal coverage of the humeral resection can be visualized. With the center of rotation check on the joint tab, users can replicate native humeral anatomy as closely as possible to properly tension the rotator cuff and avoid overstuffing the glenohumeral joint. In reverse planning, Univers Revers™ and Univers Revers Apex stems can be selected and sized appropriately for each patient. Also, users can visualize and select SutureCups that are compatible with the selected glenosphere to preserve bone in the proximal humerus.

A dynamic 3-dimensional, manipulable bone model is available in both planning types to assess the fit and sizing of components in the native anatomy. With this addition to the VIP software, you can preoperatively plan both the glenoid and humerus with confidence.

Univers Revers™ 4 Stem and 33 Suture Cup

Since its release, the 33 mm SutureCup has quickly become one of the most used sizes for Univers Revers implants. It mates with all stem sizes and, when paired with a 5 mm modular stem, is a great option for smaller bony anatomy and further inlaying of the construct.

Arthrex recently received FDA 510(k) clearance for the size 4 Univers Revers monoblock stem, which retains the familiar 135° neck-shaft angle and is paired with a 33 mm SutureCup. This smaller stem allows for a more inlaid prosthesis in smaller anatomy. Using combination liners, additional stability may be achieved by pairing the 33 mm SutureCup with a 36 mm glenosphere, while preserving proximal humeral bone stock. This launch will also include a monoblock trial to assess component positioning, soft-tissue tension, and range of motion prior to the implantation of the definitive component.

Synergy Vision™ Imaging System: See the Bigger Picture

Matthew T. Provencher, MD
Vail, CO

Arthrex continues to revolutionize surgical visualization with the next-generation Synergy Vision platform. Expanding on a rich history of innovation, this all-in-one platform provides a wider field of view, incorporates the NanoNeedle Scope, delivers industry-first high-dynamic range, and has built-in integration for efficient OR workflows.

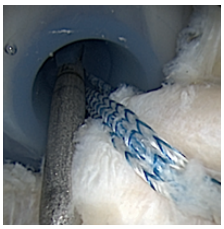
What excites you about the Synergy Vision system and the Pano™ scope?

The ultrawide view is a game changer. Surgeons have been waiting for technology that allows us to see the entire joint with ease and efficiency. The Pano scope enhances the field of view with the touch of a button.

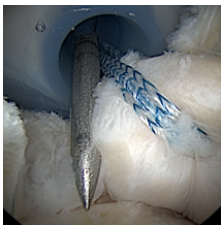
Think about when you are watching a sporting event on TV, and you can see a wide view with 4K image quality and different viewing angles and aspect ratios. Those options should be available to surgeons while operating, and the ultrawide-view technology of the Pano scope provides a long-awaited bigger picture.

What are the most significant advantages of this technology?

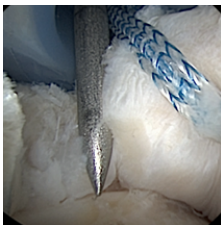
With the touch of a button, you can increase the field of view, seeing more than a traditional scope shows. In the past, this was only achievable using a typical 30° scope and manually changing to a 70° scope, resulting in additional time, equipment, and sterilization. Many of us approach subscapularis tears from the back of the shoulder while switching scopes, which can be challenging. Using an ultrawide view, the entire anatomy is visible with just one scope, resulting in less instrument convergence and optimal portal placement. This technology can be used in the knee to better see, diagnose, and treat a variety of areas, including the meniscal root and PCL. Visualization of the entire anterior horn is also achievable.



30° View



Ultrawide View



70° View

What is the greatest advantage of the Synergy Vision system's compatibility with the NanoNeedle Scope?

Having a singular, all-in-one, plug-and-play system allows me to perform Nano arthroscopy procedures, traditional arthroscopic procedures, or both at the same time. More minimally invasive techniques will be easy to perform with optimal visualization for the procedure, anchor placement, and preparation while viewing the entire pathology in a singular or picture-in-picture view.

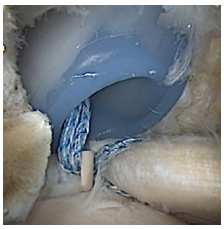
How will these innovative products improve patient outcomes and benefits?

This minimally invasive technology will revolutionize the way surgeons perform procedures by promoting an enhanced ease and efficiency to performing cases. Improved visualization will give us the opportunity to better execute each procedure, improve anchor placement, and help minimize post-op pain by creating fewer portals.

What is the learning curve like?

The technology is very intuitive and easy to use, but as surgeons, we have primarily been trained with a 30° view. Historically, our viewing angles have not evolved much over time, so the introduction of the Synergy Vision system and the Pano scope will really change our perspective and empower us to evolve.

30° View



Ultrawide View

70° View

The Synergy Vision system and Pano scope are pending FDA clearance.

Impact of the Arthrex Trochanteric Nail on My Practice

Sean P. Calloway, MD
Indianapolis, IN

How have the Arthrex Trauma portfolio and the trochanteric nail impacted your practice?

Most of my practice (~90% of operative cases) is outpatient sports surgery. I also take 5 to 6 trauma calls per month at my hospital, a Level III trauma center. Minimizing variables during these busy call periods is a top priority. Using the same company for my outpatient sports practice and inpatient trauma practice has been invaluable. The Arthrex trochanteric nail has become the workhorse in my OR for all types of hip fractures. I also use the tibial nail and Ankle Fracture Management System. To me, Arthrex Trauma means reliability, consistency, and excellent patient outcomes. It is also comprehensive. I recently had a patient with an open distal fibula fracture and closed spiral distal tibial shaft fracture that extended into the tibial plafond. I used the comprehensive Arthrex trauma product line to anatomically plate the fibula, place an anterior-to-posterior cannulated screw to protect the tibial plafond split, and fix the distal tibial shaft with an Arthrex tibial nail using suprapatellar instrumentation.

What is the impact of having the same representative and company for all your cases?

When I talk about Arthrex, I use the phrase "total orthopedic care." I began my relationship with Arthrex after a sports fellowship because I was comfortable with the quality of the products and positive patient outcomes. I have since transitioned my trauma practice to Arthrex for several reasons, including the ability to have one representative covering all my cases. For example, I normally take call on Thursdays, which also happens to be my busiest outpatient surgery day. One Thursday, I had nine elective cases on my schedule. In the middle of the third case, I received a call from the emergency department about a patient with an intertrochanteric femur fracture. Prior to my switch to Arthrex Trauma, I would have had to worry about the timing of surgery, who would cover the case, if the instruments were clean, etc. In this case, all it took was a quick glance from me to my Arthrex rep and a quick, affirmative nod from my Arthrex rep to me. In the end, I completed my elective operative day, fixed the hip fracture, and was home in time for dinner.

What features and benefits stand out about the Arthrex trochanteric nail?

I think the biggest benefit is the telescoping lag screw. As we all know, fractures heal with compression. In most hip fractures, compression is achieved as the proximal fragment slides laterally into the remainder of the proximal femur. In most systems, the entire femoral head lag screw is allowed to slide.

Unfortunately, in more unstable fractures, the lateralization of the lag screw can be quite significant. Using a lag screw can cause lateral hip pain and irritation of the iliotibial band/trochanteric bursa. The telescoping lag screw allows the fracture to compress without lateralizing the lag screw, thus preventing irritation of the lateral soft tissues of the hip. The extended short (ES) nail is also a great feature. It is a long nail that is "locked short" using the proximal integrated aiming arm. This allows for protection of the entire femur without spending extra time or being exposed to extra radiation exposure to complete perfect circles distally. I also appreciate the "lefty tighty" screw. In patients with a left basicervical femoral neck fracture, there is an increased risk of spinning the femoral head while placing a traditional lag screw that is inserted with a clockwise motion. This can lead to a malreduction and poor outcomes. The Arthrex trochanteric nail has a blue lefty-tighty screw inserted while turning the screw counterclockwise, which lessens the likelihood of a negative result. The integrated aiming arm also has a guide to place a superior femoral head screw to protect against femoral head rotation during lag screw placement.

What sets the Arthrex trochanteric nail apart from other products you have used?

My previous system allowed the femoral head lag screw to slide laterally. In one instance, the fracture compressed so much the lag screw lateralized by 2.5 cm, causing the patient significant lateral hip pain, even after 6 months of formal physical therapy and a corticosteroid injection. She needed revision surgery, under general anesthetia, to exchange her lag screw for a shorter length. Nearly all my patients who undergo hip fracture surgery have medical comorbidities. Minimizing reoperation in these patients is key, and the Arthrex telescoping lag screw can reduce this risk.

What advice do you have for new system users?

Many steps of this procedure will be familiar. You will still obtain the appropriate starting point, use the entry reamer, and ream down the length of the femur and measure nail length (if using the ES nail or standard long nail). The telescoping lag screw that makes the Arthrex trochanteric nail superior also makes it somewhat different than other nail systems. The device used to place the lag screw has a few extra moving parts to it. I recommend familiarizing yourself with the different handles/knobs and color-coded steps. There is a small learning curve of a few cases to locking the lag screw and activating the telescoping mechanism. Once you are familiar with the steps, the "skin-to-skin" time is similar to, if not quicker than, other nail systems.

Biologic Tuberoplasty—A Protective Biologic Cushion for Treating Massive Irreparable Rotator Cuff Repairs

Raffy Mirzayan, MD
Los Angeles, CA

What is the origin of biologic tuberoplasty?

Interestingly, the genesis of biologic tuberoplasty started with a retrospective study of my patients who underwent a superior capsular reconstruction (SCR) or bridging procedure between 2006 and 2016. I treated these patients for massive rotator cuff tears using an acellular dermal allograft, and I wanted to investigate the correlation between my clinical findings and graft integrity on postoperative imaging. The results were quite intriguing because significant improvements in ASES and VAS scores were observed in patients with either type I (intact) or type II (tear with tuberosity covered) grafts. However, patients with a type III (tear with tuberosity bare) graft did not experience significant improvement in their scores.[1,2]

These results indicated that graft tear location matters and that graft tears that leave the tuberosity covered provide significant pain relief and improved clinical outcomes.[1,2] This may be explained by the graft acting as a biologic cushion to prevent bone-to-bone contact between the tuberosity and acromion; hence, I coined the "biologic tuberoplasty effect."

Who is the ideal patient for biologic tuberoplasty?

I believe patient selection is critical. The primary goal of biologic tuberoplasty is to alleviate pain for low-demand patients with massive, irreparable rotator cuff tears. I think the ideal candidate for biologic tuberoplasty is a patient who has exhausted nonoperative treatment options and prioritizes pain relief as their primary goal. Improvements in function and strength have also been observed in select patients as they progress through pain-free physical therapy. I also think the patient should have an intact or repairable subscapularis with preserved range of motion (ROM) and be non-pseudoparalytic with minimal to no glenohumeral arthritis. Other considerations for biologic tuberoplasty include patients who may benefit from a shorter procedural time and quicker rehab protocol, and who do not wish to undergo shoulder arthroplasty. Ultimately, your plan of action will depend on how your patient presents and what their goals are.

How has your technique for biologic tuberoplasty evolved over the years?

Given the technology available at the time of my first biologic tuberoplasty cases, the technique required meticulous graft preparation and suture management. On average, it took me around 45-60 minutes to complete this procedure. However,

the innovation of self-punching, tensionable knotless anchor technology allows the procedure to be simple, fast, and reproducible. Now, I can complete it in 15-20 minutes. This is beneficial for my patients because it decreases the amount of time they are under general anesthesia. Also, with the recent introduction of precut ArthroFlex dermal allografts, graft preparation is quicker, easier, and cost-effective.

What are your patient outcomes? Do you have patient follow-up data for biologic tuberoplasty?

My biologic tuberoplasty patients have responded well to the procedure and experience excellent clinical outcomes. Our recently published paper highlighted a mean follow-up of 21 months with patients having significant improvements in their pain and functional scores.[3] Unlike temporary, synthetic spacers, this procedure provides a protective biologic cushion to help prevent bone-to-bone contact between the tuberosity and the acromion for my patients with irreparable rotator cuff tears.

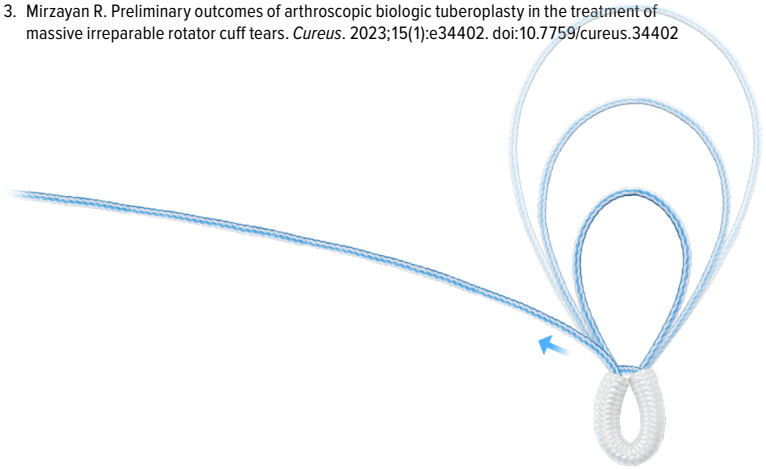
One of the biggest advantages of this procedure is the ability to accelerate recovery. I place my patients in a sling for 3 weeks, at which time they begin active and active-assisted ROM exercises without limitations in ROM. Most patients are pain-free by 6 weeks, have regained their full ROM, and can initiate strengthening exercises.

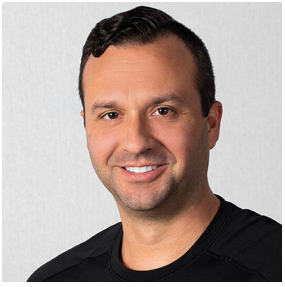
In my experience, biologic tuberoplasty has proven effective in relieving pain, which can improve patient motivation to go to physical therapy to possibly regain function and strength.

ArthroFLEX® is a registered trademark of LifeNet Health.

References

1. Mirzayan R, Stone MA, Batech M, Acevedo DC, Singh A. Failed dermal allograft procedures for irreparable rotator cuff tears can still improve pain and function: the "biologic tuberoplasty effect." *Orthop J Sports Med*. 2019;7(8):2325967119863432. doi:10.1177/2325967119863432
2. Mirzayan R, Acevedo DC, Sidell MA, Otarodi KA, Hall MP, Suh BD, Singh A. Classification system of graft tears following superior capsule reconstruction. *Clin Imaging*. 2022;83:11-15. doi:10.1016/j.clinimag.2021.11.035
3. Mirzayan R. Preliminary outcomes of arthroscopic biologic tuberoplasty in the treatment of massive irreparable rotator cuff tears. *Cureus*. 2023;15(1):e34402. doi:10.7759/cureus.34402





ACP Max™ Platelet-Rich Plasma System

Brian Wallace, DO
Naples, FL

What drew you to the ACP Max system?

In my opinion, ACP Max is a next-generation platelet-rich plasma (PRP) system. It can process 30 mL, 60 mL, or 90 mL of whole blood to produce a final output with platelet concentrations up to 12× over baseline while significantly reducing neutrophil content.[1-3] I was able to use my existing centrifuge and quickly integrate ACP Max into my practice. With this development of a third PRP system, Arthrex has expanded on its comprehensive PRP processing solutions to fit my needs. Given the focus and energy they put toward PRP, Arthrex is a trusted thought leader in the industry.

How does the ACP Max system compare to systems you have used in the past?

The ACP Max system is easy to use, flexible, and fast. It gives me the flexibility to collect different volumes of whole blood, providing the option to significantly increase my platelet concentration when needed. With a spin time <14 minutes, processing PRP is fast and does not disrupt my OR flow. My staff quickly became familiar with the device workflow due to the simplicity of the steps and the incorporation of the familiar Arthrex ACP® double-syringe.

What is the value of the system's two spin cycles?

The dual-spin process provides access to the buffy coat, allowing the ACP Max device to concentrate platelets up to 12× over baseline. The hard, initial spin at 3200 RPM separates out platelet-poor plasma, the buffy coat, and red blood cells. The second, softer spin at 1500 RPM resuspends platelets from the buffy coat to produce 4 mL to 7 mL of highly concentrated PRP.

How does the ACP Max system avoid neutrophil concentration?

Neutrophils, a part of the body's defense mechanisms, are the most common type of white blood cell and account for 60% of white blood cell counts. These cells are incredible at killing infectious agents like bacteria and other pathogens, but when concentrated, can create inflammation and pain.[4] Fortunately, the ACP Max system workflow was developed to ensure a PRP output almost completely depleted of neutrophils. Arthrex data shows a >97% reduction in neutrophils as compared to whole blood.[2]

What tips and pearls can you share for a successful case and outcome?

It is critical your centrifuge brakes are disengaged to prevent mixture of your separated PRP solution. This is an easy process that your Arthrex Technology Consultant can assist with. But the most critical component of a successful case is the blood draw. Use a 19 ga butterfly needle to draw blood, load the correct amount of anticoagulant into the syringe, and gently draw the blood into the syringe. The ACP Max system kit makes it easy since all necessary supplies for a successful blood draw are included.

Have you seen patient interest in PRP change over time?

Interest in PRP has only increased. Patients have become more interested through their own research into autologous therapies, and I continue to promote PRP in my practice as more literature becomes available.

References

1. Arthrex, Inc. Data on file (APT-5368). Naples, FL; 2021.
2. Arthrex, Inc. Data on file (APT-5535). Naples, FL; 2022.
3. Arthrex, Inc. Data on file (APT-5756). Naples, FL; 2022.
4. Borregaard N, Sørensen OE, Theilgaard-Mönch K. Neutrophil granules: a library of innate immunity proteins. *Trends Immunol*. 2007;28(8):340-345. doi:10.1016/j.it.2007.06.002

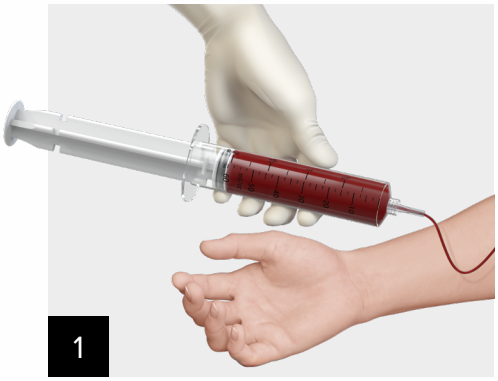
IN THE Loop...

ACP Max Platelet-Rich Plasma System (PRP) System

The ACP Max PRP system expands on the tried-and-true Arthrex ACP® double-syringe system and is capable of processing 30 mL, 60 mL, or 90 mL of whole blood. The system uses a standard ACP centrifuge and a double-spin regimen to produce a neutrophil-poor PRP solution with up to 12× platelet concentration over baseline.[1-3]

References

1. Arthrex, Inc. Data on file (APT-5368). Naples, FL; 2021. 2. Arthrex, Inc. Data on file (APT-5535). Naples, FL; 2022. 3. Arthrex, Inc. Data on file (APT-5756). Naples, FL; 2022.



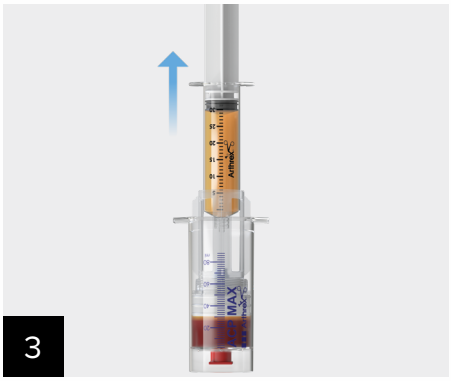
The ACP Max kit contains all necessary blood draw components. It is important to follow proper blood draw protocol technique and use the appropriate amount of anticoagulant citrate dextrose solution (ACD-A).

Blood Volume	ACD-A
30 mL	4 mL
60 mL	8 mL
90 mL	12 mL

Fill the ACP Max syringe with 30 mL, 60 mL, or 90 mL whole blood and complete the first spin at 3200 RPM.

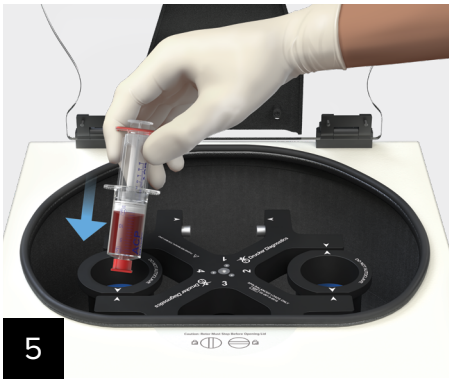
Note: Spin time depends on initial volume collection (see below).

Blood Volume	RPM	Time
30 mL	3200 rpm	3 min
60 mL	3200 rpm	6 min
90 mL	3200 rpm	9 min



Withdraw the platelet-poor plasma until the ACP Max syringe plunger is two gradations above the red blood cell interface.

Fill the Arthrex ACP double-syringe to 15 mL by pulling up on the red tabs.



Gently invert the Arthrex ACP double-syringe, then complete the second spin at 1500 RPM for 5 minutes.

To obtain final PRP output, transfer the PRP from the outer to the inner syringe by depressing the red wings.

Studio X

Ushering in a New Era of Excellence

Furthering our investment and commitment to providing the most advanced medical education resources for the global health care community, we are excited to announce the opening of Studio X, the latest addition to our headquarters in Naples, Florida.

Studio X represents the perfect intersection of science and art, enabling us to introduce the latest in Arthrex innovation and techniques with interactive and immersive medical education resources.

This media production facility features:

Holodeck Extended Reality (XR) Stage

- Combines multiple high-resolution motion-tracking cameras, LED walls, and an LED floor to create an interactive and spatial experience for presenters and audiences

Surgical Studio Suite

- Equipped with the latest generation of Synergy technology to enhance the visual quality of surgical techniques as well as demonstrate new workflow and procedural efficiencies

Virtual Production Stage

- Surrounds presenters with a 100-ft LED volume wall; towering over 17 ft, this instantly transformable backdrop creates a revolutionary experience that harnesses the same capture and lighting techniques used in motion-picture production studios

Additionally, Studio X serves as a strategic planning and design center for future ambulatory surgical centers (ASCs). Surgeons, administrators, and facility owners can participate in hands-on demonstrations using the latest Synergy OR integration platform. Design and build your ASC around the emerging technology and less-invasive procedures of the future.

In creating an experience that elevates and inspires, we are pushing the boundaries of science and creativity.

See what you can expect during your next visit to the Arthrex campus.

Recent ASMAR Ex Vivo Study Demonstrates Apollo[RF®] MP50 Probe Use for Bipolar Radiofrequency Ablation Around Hyaline Cartilage

ASMAR recently published an ex vivo study evaluating the Apollo[RF] MP50 probe for depth of penetration (DoP) and cell viability within healthy bovine hyaline cartilage. Prior to this investigation, there was limited data available on DoP after exposure to modern plasma bipolar radiofrequency (BRF) devices; therefore, this quantitative assessment of the MP50 significantly contributed to existing literature on BRF ablation. Arthrex collaborated with consultant Darren J. Friedman, MD.

A matched pair of knees with no identified anatomic defects was harvested from a bovine specimen for immediate use. Bovine specimens were selected as they best mimic human cartilage relating to thickness and biomechanical properties.

A grid was drawn on the medial and lateral location of each of the 3 anatomic sites of interest: the femoral condyle, trochlea, and patella of the knee hyaline cartilage. The grid was a mirror image of the matched knee specimens. Control spaces were centered on each of the anatomic sites of interest to ensure similar cartilage thickness. Surfaces were randomized and treated with BRF ablate setting 3 (AB-3), 4 (AB-4), or left untreated as a control (12 grids each, 36 grids total). Each specimen was submerged in a basin of room-temperature saline.

Twenty-four slices were harvested from the treatment sites (12 for AB-3; 12 for AB-4). Treatment grids required 3 to 4 linear passes, with each pass requiring approximately 3 seconds.

Confocal Light Microscopy (Qualitative Results): No cavitation or macroscopic changes to the tissue were observed following treatment. The control site had little to no cell death, and both AB-3 and AB-4 sites could be characterized by oval thermal margins.

Confocal Light Microscopy (Quantitative Results): The average DoP for BRF setting AB-3 was 51% lower compared to setting AB-4 (237.9 ± 140 µm vs 484 ± 267 µm) (Table 1). BRF exposure to knee cartilage location or site did not result in significant differences for either ablation setting.

Mean DoP		
Ablate 3	237.9 ± 140.6 (143.4, 332.3)	Mean DoP for AB-3 was 50.9% lower than AB-4 (*P* = .006)
Ablate 4	484.1 ± 267.0 (304.7, 663.4)	

Max DoP		
Ablate 3	302.4 ± 167.8 (189.7, 415.1)	Maximum DoP for AB-3 was 50.6% lower than AB-4 (*P* = .002)
Ablate 4	611.6 ± 299.1 (410.6, 812.5)	

Table 1. Mean ± standard deviation and 95% confidence intervals aggregated from 3 anatomic sites

This basic science investigation of modern plasma BRF devices provides a foundational rationale for clinicians interested in using this technology for precise debridement of chondral lesions.

Reference

1. Khoury AN, Krupp MJ, Matuska AM, Friedman DJ. Bipolar radiofrequency ablation does not result in full-thickness articular cartilage penetration: an ex vivo bovine investigation. *Arthrosc Sports Med Rehabil*. 2022;4(3):e1067-e1073. doi:10.1016/j.asmr.2022.03.002

The views expressed in this newsletter reflect the experience and opinions of the presenting surgeons and do not necessarily reflect those of Arthrex, Inc.

Any description of technique is provided as an educational tool and clinical aid to assist properly licensed medical professionals in the usage of specific Arthrex products. As part of this professional usage, the medical professional must use their professional judgment in making any final determinations in product usage and technique. In doing so, the medical professional should rely on their own training and experience and should conduct a thorough review of pertinent medical literature and the product's directions for use. Postoperative management is patient-specific and dependent on the treating professional's assessment. Individual results will vary and not all patients will experience the same postoperative activity level or outcomes.

The *Internal*Brace surgical technique is intended only to augment the primary repair/reconstruction by expanding the area of tissue approximation during the healing period and is not intended as a replacement for the native ligament. The *Internal*Brace technique is for use during soft tissue-to-bone fixation procedures and is not cleared for bone-to-bone fixation.

Products may not be available in all markets because product availability is subject to the regulatory or medical practices in individual markets. Please contact your Arthrex representative if you have questions about availability of products in your area.

arthrex.com

© 2023-09 Arthrex, Inc. All rights reserved. LN1-000522-en-US_A

SCOPE THIS OUT

Scope This Out is an informational newsletter designed to educate orthopedic surgeons on new products, state-of-the-art surgical procedures, and "pearls" to assist in improving surgical skills.

Arthrex's Corporate Headquarters is located in Naples, Florida. Additional locations include a global division in Munich, Germany as well as several subsidiaries and distribution centers throughout the world.