

SCOPE THIS OUT

..... A Technical Pearls Newsletter for Orthopedists

ACP Max™ PRP System

The ACP Max platelet-rich plasma (PRP) system expands upon the tried-and-true ACP double-syringe system technology by allowing for collection of larger volumes of whole blood (30 mL, 60 mL, or 90 mL). Compatible with existing ACP centrifuges, the ACP Max system uses a double-spin regimen to maximize platelet concentration. PRP from the ACP Max system has been shown to have high concentrations of platelets—up to 12× over baseline for the 90 mL collection—and a depletion of neutrophils.^{1,3}



With the addition of ACP Max to Arthrex's comprehensive PRP portfolio, surgeons are able to choose a system and bioformulation that best fits their needs.

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Coming Soon: Virtual Implant Positioning™ 8.0

The Virtual Implant Positioning (VIP™) system provides a platform for visualizing, understanding, and planning anatomic and reverse total shoulder arthroplasty cases. Additionally, the VIP system provides the tools to execute plans intraoperatively using patient-specific instrumentation, including the VIP glenoid targeter and the VIP reamer.

Arthrex is pleased to announce the upcoming expansion of the preoperative planning system. VIP 8.0 includes additional features to optimize the planning process such as: range of motion (ROM), osteophyte removal, and multiple plan capabilities.* These tools are housed in an updated user interface that aims to maximize the efficiency and ease of planning.

Features and Benefits

- **NEW** Multiplan capability allows users to approve up to two plans in one case, regardless of implant or procedure type
- **NEW** ROM simulation allows for an understanding of how implant selection and positioning impact ROM for reverse total shoulder arthroplasty procedures
- **NEW** Osteophyte removal functionality allows surgeons to remove potential bony impingement at any point during preoperative planning
- Cloud-based portal that allows cross-platform capability across all devices
- Implant selection and planning support from dedicated surgical planners based at Arthrex global headquarters in Naples, FL
- Reusable, sterilizable patient-specific instrumentation designed to reduce cost and lead time

*Pending FDA clearance



Learn more about
Arthrex Shoulder
Arthroplasty and
the VIP Experience



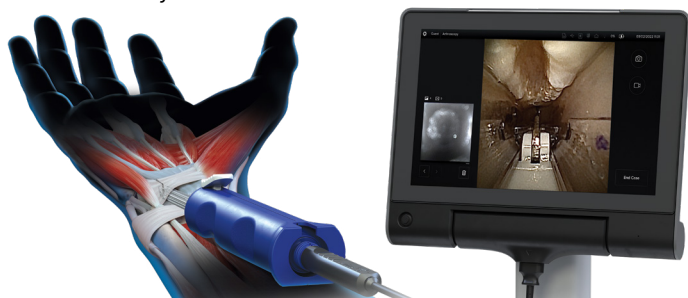
Hand & Wrist

NanoScopic™ Carpal Tunnel Release System

Designed for precision and efficiency, the simplified, all-in-one NanoScopic carpal tunnel release system streamlines ECTR procedures. This disposable system offers a straightforward, single-handed pull-blade technique for a quick and exact procedure, while its ergonomic design maximizes comfort and enhances feel and function.

Features and Benefits

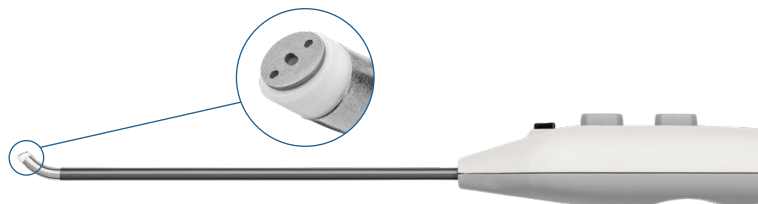
- Sterile, single-use system for a fast procedural experience
- Ideal for either the procedure or operating room
- Uses the latest NanoNeedle imaging technology
- Compatible with the NanoScope™ imaging console
- No heat or fogging as typically seen in traditional scopes and camera systems



Imaging and Resection

Apollo^{RF} SJ50 for the Knee

The Apollo^{RF} SJ50 probe's shorter working length, smaller diameter, and 50° anatomic curve promotes optimal performance in knee arthroscopy applications. Its 360° edge control and low default ablation setting is designed for precise ablation and coagulation while minimizing the effect on surrounding tissue.



Features and Benefits

- Shortened working length of 110 mm promotes maneuverability and control in the knee joint
- Smaller diameter of 3.3 mm allows access into tight joint spaces in the knee
- 360° edge-control feature promotes the effective removal of frayed tissue near repair sites
- Smaller electrode face allows for improved visualization of the meniscal root attachment prior to repair

Orthobiologics

BoneSync™ Calcium Phosphate Cement for Rotator Cuff Repair

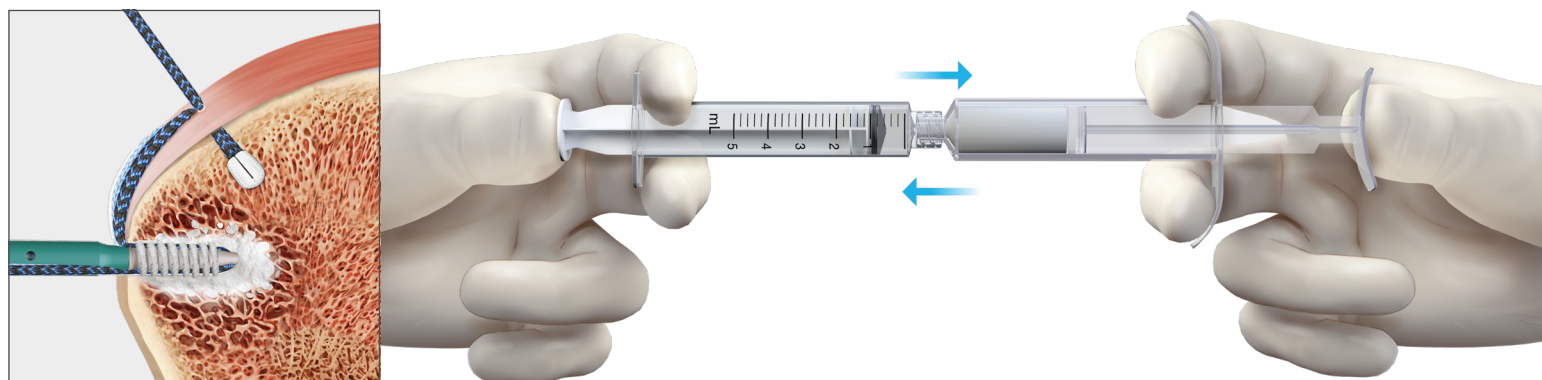
Poor-quality bone in the lateral row is an all-too-common concern in rotator cuff repair. Proven BoneSync calcium phosphate technology can be leveraged to augment poor-quality bone. Finding the balance between improved fixation and improved biology is key. Collagen is infused into the cement to produce an optimal macroporous environment. BoneSync calcium phosphate cement is an easy-to-use, fast-remodeling, settable, and drillable bone void filler that can augment poor-quality bone in the lateral row.

Features and Benefits

- Results in ready-to-use cement in <60 seconds
- Simple push-pull mixing mechanism
- Fast setting, allowing immediate supplemental strength¹

Reference

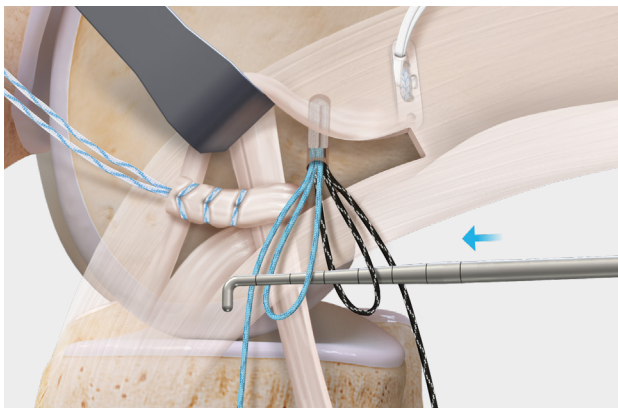
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Knee & Hip

Double Knotless Knee FiberTak® Anchor for Lateral Extra-articular Tenodesis (LET)

Knee FiberTak anchors are the first all-suture implants designed specifically for the knee and are available in 5 configurations (double knotless, hybrid, double knotted, button, and with FiberTape® suture for the *InternalBrace*™ technique). In this family of versatile anchors, the Double Knotless Knee FiberTak anchor is particularly advantageous for LET, providing surgeons with a simple, reproducible technique to restore rotational stability.



Features and Benefits

- Preconverted knotless mechanism allows for a simplified surgical technique
- FiberStaple™ technique using the Double Knotless Knee FiberTak anchor allows surgeons to fixate the graft with the first knotless loop and create additional fixation using the second tensionable knotless loop either in line or with a fold-over technique
- Knotless mechanism featuring SutureTape offers improved handling characteristics and increased resistance to tissue pull-through¹
- Softer anchor body creates a more consistent bunching effect for reliable deployment in various bone densities
- Minimal bone removal preserves native anatomy and reduces the risk of femoral tunnel convergence during ACL reconstruction
- Ergonomically designed instrumentation with shorter working lengths optimizes precision and ease of use during open knee procedures
- Titratable graft tensioning minimizes risk of over constraint

Reference

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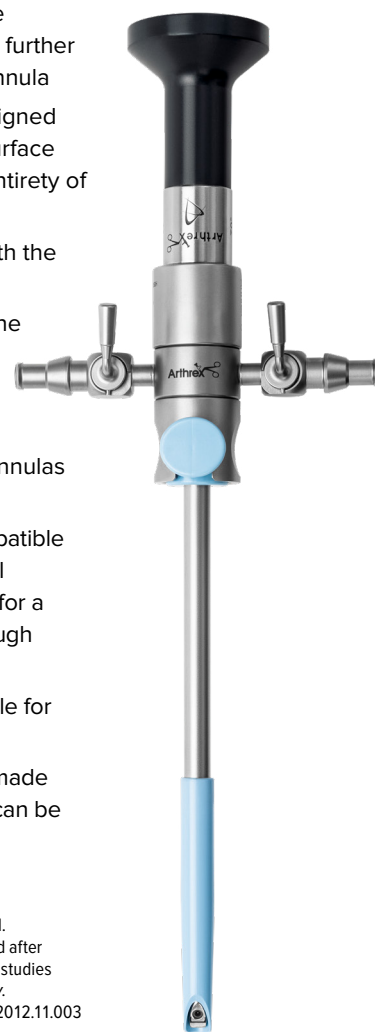
FlushFit Atraumatic Cannula System for Safe Hip Joint Access

Iatrogenic damage to the articular cartilage surfaces of the hip is a known complication associated with hip arthroscopy.¹ The FlushFit atraumatic cannula has a soft plastic tip and is cut at an angle to allow a 70° arthroscope and the Pano™ scope to sit flush with the end. This unique design provides an atraumatic way to enter a tight hip joint while under distraction without scuffing the femoral head. The 5 mm inner diameter accommodates CapsuleCut™ blades and some shaver blades.



Features and Benefits

- Angled cannula prevents the arthroscope from protruding further than the plastic tip of the cannula
- Softer plastic material is designed to deflect off the cartilage surface during joint access for the entirety of the case
- Quick-connect option for both the scope and cannula
- 125 mm working length for the standard-length cannula
- 145 mm working length for the hip-length cannula
- Disposable kit contains 2 cannulas and 1 cannulated obturator
- Cannulated obturator is compatible with 1.1 mm and 1.5 mm nitinol guidewires and has a cutout for a hand to fit over the wire through the obturator
- Reusable obturator is available for thicker capsules
- Cannulas and obturator are made with radiopaque plastic and can be seen under fluoroscopy



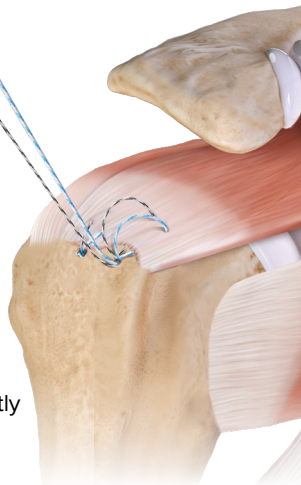
Reference

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Shoulder & Elbow

Double-Loaded Knotless 2.6 FiberTak® Anchor

Tensionable knotless technology brought a unique feature to soft-tissue repair by allowing surgeons to dial in the appropriate amount of tension on a repair construct. Now, with the introduction of double-loaded knotless technology, surgeons have even more control in dialing tension. This anchor features two repair sutures, which are passed separately through the tissue, shuttled simultaneously through the knotless mechanism, and tensioned independently to achieve desired fixation.



The new Double-Loaded Knotless FiberTak anchors are ideal for small rotator cuff tears or upper border subscapularis tears, providing a quick and efficient method for surgeons to make two passes with the repair sutures and bring them to a single point of fixation.

Knotless AC TightRope® Implants

The Knotless AC TightRope repair system is designed for the reduction and stabilization of acute and chronic acromioclavicular joint separations.



For arthroscopic procedures, the dual construct features a #6 TightRope suture preassembled into a clavicle insert and a Dog Bone™ button, which attaches to the suture loops separately after they are passed antegrade through the 3 mm bone tunnels. For open procedures, the construct also features a #6 TightRope suture preassembled into a clavicle insert and a large pec button preloaded onto an inserter, which allows surgeons to perform an open or mini-open “push-through” technique without having to use a scope or access beneath the coracoid.



Trauma

ALPHA Proximal Humerus Plating System

The ALPHA plate is a unique, side-specific, anatomically designed option for fractures of the proximal humerus.

Features and Benefits

- Proximal contour helps prevent soft-tissue stripping of the deltoid and postoperative adhesions, in addition to preserving vascular supply to the bone
- Secondary, distal contour creates a favorable structure for fractures featuring shaft extension
- 90° opposition from the proximal cluster to the anterior shaft provides increased torsional stability
- Convergent screw pattern in the head allows for longer screws to be placed into subchondral bone of the humeral head



Trauma Mini Fragment System

The Trauma Mini Fragment System is designed to aid in the reduction and fixation of small- and long-bone trauma injuries. The modular tray provides the most comprehensive offering on the market, with screw and plate options in 2.0 mm, 2.4 mm, and new 2.7 mm variants.



Each caddy features a compact instrumentation drawer with size-specific instrumentation. Reduction instruments and multiple plate-bending options are available to meet anatomic needs and surgeon preferences.

Foot & Ankle

PARS Achilles Midsubstance SpeedBridge™ Implant System

The PARS Achilles Midsubstance SpeedBridge Implant System is a percutaneous, minimally invasive technique used to repair Achilles tendon ruptures. Using color-coded 1.3 mm SutureTape, the PARS system makes it easy to create a percutaneous locking stitch in the Achilles tendon, while staying inside the paratenon sheath.

The system works with the PARS jig, a minimally invasive instrument that allows for percutaneous passage of SutureTape without a large incision. The technique is performed with a knotless construct by fixating the SutureTape in the proximal tendon and using DX 3.9 mm BioComposite SwiveLock® anchors for distal fixation in the calcaneus.

Features and Benefits

- Combined, all-in-one kit
- New SutureTape colors (now collagen-coated)
- New DX 3.9 mm BioComposite SwiveLock anchors
- Cannulated instrumentation
- Stronger repair with less displacement than a traditional Krackow end-to-end construct¹

Reference

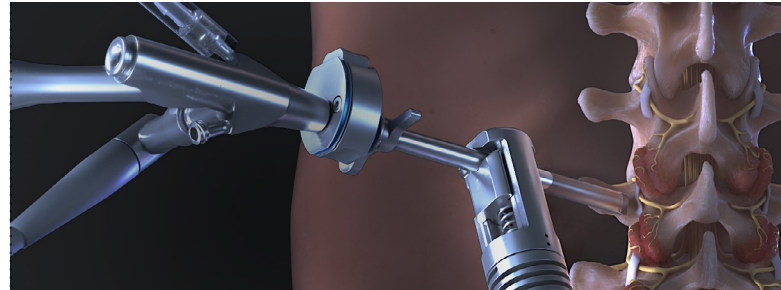
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Spine

Medial Branch Nerve Transection

Back pain is the number one reason in the US for doctor visits and prescription opioids,^{1,2} and nine out of 10 people will experience back pain in their lives.³



As a spine surgeon, do you send patients to pain doctors for radiofrequency ablations (RFAs)? How often do you see patients experiencing short-term pain relief from RFA?

Medial branch transection (MBT) is a surgical endoscopic spine procedure, performed under direct visualization, that denervates painful facet joints due to facet joint arthropathy or spondylosis. This provides greater and longer-term pain relief than RFA as it completely transects the nerve.⁴

The medial branch of the spinal dorsal ramus is a bifurcating nerve that travels across the transverse process and lateral facet wall junction. It is clearly identifiable through an endoscope and verified by anatomical landmarks including the mamillary process, cranial aspect of the transverse process, and lateral edge of the facet joint. Because of these reliable anatomic landmarks and the distance from vital nervous structures, such as the dura and spinal nerves, MBT is an easily mastered introductory endoscopic procedure that helps surgeons become comfortable with the endoscope.

Prior to surgery, facet injections or medial branch blocks can confirm the pain generators to select for MBT. Even patients who had temporary relief from RFAs may have longer-lasting relief from MBT.⁴

Arthrex is focused on helping orthopedic and neuro spine surgeons add motion-preserving, endoscopic procedures to their continuum of care to fill the treatment gap between injections and fusions in an ultra-minimally invasive fashion. MBT is just one example of earlier intervention where a fusion may have previously been the only option available.

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Feature Article



What Is Arthrex Spine?

With minimal nonpermanent options for back pain, patients often undergo frequent treatments and invasive procedures that result in limited motion, damage to soft-tissue structures, and unsightly scars. In today's continuum of care, there is a clear gap between conservative treatment options and maximally invasive surgical procedures. Arthrex seeks to bridge this gap by leveraging more than 40 years of expertise in orthopedics in the spine space, with endoscopic surgical approaches and orthobiologic innovations designed to help spare soft tissue, preserve motion, and provide the best possible outcomes for patients.

Following its debut at the 2023 North American Spine Society annual meeting, Arthrex Spine & Biologics held the first six medical education courses before year-end with another 22 courses completed as of June 2024. To continue our all-in dedication and support escalating demand, we added more courses and constructed a new lab dedicated to spine procedures.

In January 2024, the inaugural two-day Spine Evolutions course featured an exclusive lab for surgeons with light to moderate experience in spinal endoscopy and didactic sessions, both creating an electric atmosphere and drawing impressive crowds.

What sparks this palpable excitement? “For the past 42 years, Arthrex has pioneered motion-preserving products and techniques for sports medicine. Now, we are bringing that same expertise to the field of spine surgery,” says Zak Kemp, Arthrex Global Director of Spine. He emphasizes how, in contrast with the current market trends, the new endoscopic portfolio promotes ultra-minimally invasive approaches designed to minimize muscle and soft-tissue damage. These techniques may not only improve outcomes by reducing blood loss and time in the operating room¹⁻⁴ but also help patients return to normal activities more quickly.²

Orthopedic and neuro spine surgeons, including those who are new to Arthrex, recognize the potential impact of a “sports spine” approach and how Arthrex seamlessly fits into this space.

“[Arthrex is] well-positioned to provide the necessary training to a substantial number of surgeons, facilitating the broader adoption of endoscopic spine procedures.”⁵

— Paul Houle, MD (Hyannis, MA)

“This company has the potential to make a real difference in this field. We then created what is now the Spine Scorpion™ [suture passer] to assist in the fascial closure of minimally invasive spine surgeries. Rather than solely focusing on metal screws, they prioritized soft-tissue and motion preservation. It's crucial that we start considering the treatment of spinal diseases in a manner similar to how we approach sports injuries.”⁶

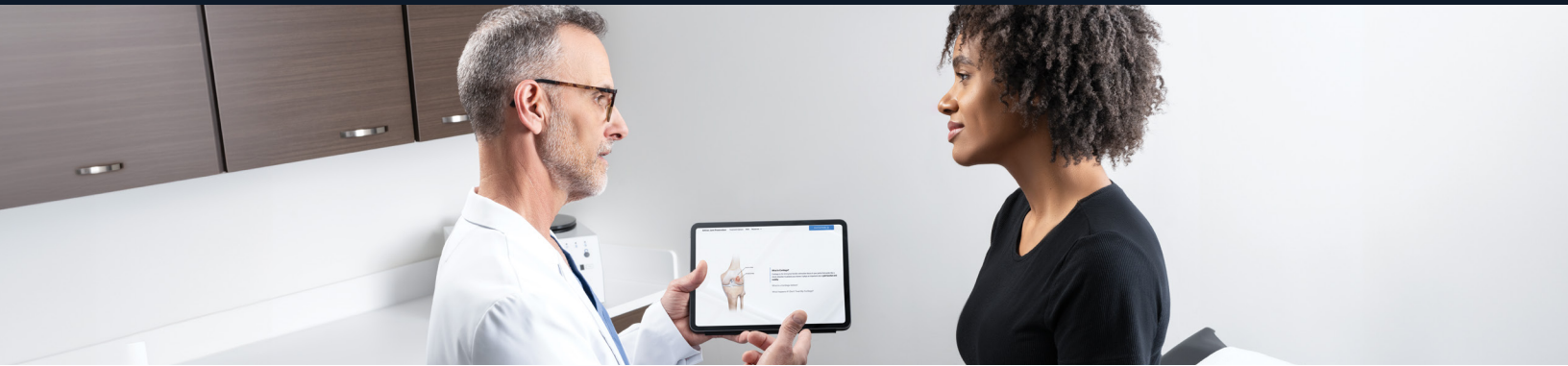
— Michael A. Gallizzi, MD (Vail, CO)

World-class medical education for HCPs and administrators helps make less-invasive surgery simpler, safer, and more reproducible. Our endoscopic spine-specific surgical curriculum pathway includes individualized and expert faculty instruction and immersive, hands-on training in our dedicated spine lab, as well as practice support, to set surgeons and facilities up for success in endoscopic approaches to the spine.

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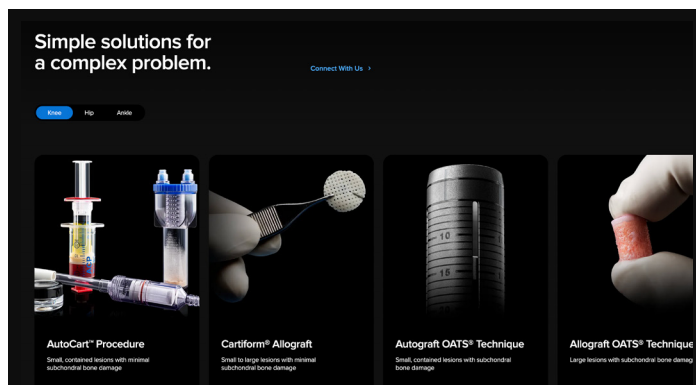
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Feature Article



A Physician's Perspective with Dr. Grant Garcia

Arthrex provides the most comprehensive cartilage restoration portfolio on the market and a wide array of options for going beyond the cartilage to treat concomitant pathologies - such as meniscal repair, joint alignment and more - all with the goal of joint preservation. JointPreservation.Arthrex.com is a new site that showcases the Arthrex joint preservation continuum of care, simplifies the cartilage repair treatment algorithm, and provides a seamless way to connect with an Arthrex Technology Consultant.



Treating cartilage often requires an algorithmic approach and a vast portfolio of products allows for tailored treatments for different defect sizes and locations and unique patient needs. JointPreservation.Arthrex.com demonstrates the Arthrex cartilage repair algorithm for various anatomical areas and a comprehensive overview of common concomitant procedures that can help achieve joint preservation.

According to Grant H. Garcia, MD (Seattle, WA), cartilage treatment “is complicated and a bigger-picture issue.”



Dr. Garcia emphasizes that having an algorithm for cartilage repair and joint preservation helps create a standard of care for patients and makes it easier for surgeons to choose the treatments that best fit their patients' needs.

The new site also features dedicated product pages that inform surgeons how each product fits within the Arthrex cartilage repair algorithm, as well as reimbursement support information and the impactful scientific data behind the extensive portfolio of products.

Additionally, Arthrex has launched JointPreservation.com, a patient-facing website developed to support surgeons in educating patients about cartilage repair and joint preservation.

“Helping patients understand their cartilage pathology is a crucial step of their joint preservation journey.”

—Grant H. Garcia, MD

With its mobile-friendly design ideal for any electronic device, JointPreservation.com can be used anytime, anywhere to help break down what cartilage is, how cartilage damage can occur, and what treatment options are recommended to help patients achieve their goals. This new reference tool saves valuable clinic time by allowing patients to explore treatment options before, during, and after their visit.

Dr. Garcia says that, in his experience, well-informed patients feel more confident and satisfied.

With these new sites, Arthrex continues to innovate simple solutions for complex problems and elevate the surgeon and patient experience.



Visit JointPreservation.Arthrex.com

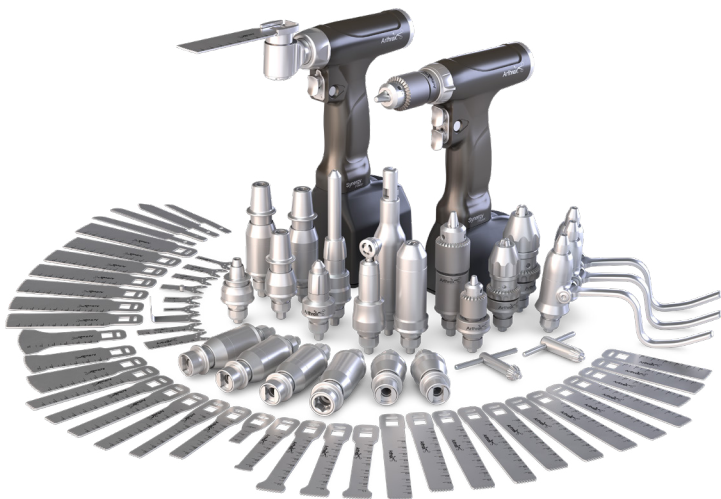


Visit JointPreservation.com, a patient education hub

Introducing the Synergy Power™ System

Arthrex is excited to introduce the Synergy Power system, a powerful, versatile, and reliable battery-powered system designed for a multitude of orthopedic applications, including sports, arthroplasty, trauma, and distal extremities procedures.

With two handpieces—the dual trigger rotary drill and sagittal saw—the Synergy Power system provides surgeons and facilities with precision, power, and flexibility. The dual trigger rotary drill features an intuitive twist collet mechanism for a smooth connection and removal of attachments. The proprietary open hub of the sagittal saw allows for easy blade connection and sterile processing. This system includes a comprehensive selection of attachments and blades for use in many orthopedic procedures.



The Synergy Power system is powered by sterilizable lithium-ion battery packs, which are available in a smaller size for light-duty procedures and a larger size for heavy-duty procedures. The battery charger features a simple user interface, four charging bays, and quick charging times.

The new Synergy Power system brings power, versatility, and reliability to the OR.

Updated Patient Outreach and Education Kit

Arthrex understands performing surgery is only a fraction of your responsibility to your patients, so we developed innovative tools to help you educate, build trust, and guide positive experiences with them. Use these resources to increase engagement and free your valuable clinic time.



Before Clinic Visit

- **Educational videos** and **animations** can be used to enhance your website
- Our **Find a Doctor** service increases your visibility among potential patients
- **Curated content** makes it easy to engage your patients on social media

During Clinic Visit

- **Acrylic models** allow patients to explore shoulder anatomy on their own
- **Magnetic clinic posters** can be used to help patients visualize recommended procedures
- Our **educational brochure** encourages interactive use to build trust in your patients

After Clinic Visit

- Our **patient surgery guide** provides details for patients to take home and explore on their own
- Use our **automated text messaging system** to effortlessly relay vital information to patients
- **Holographic implant cards** are a unique takeaway to spark word of mouth



View the Patient Resource Kit

What's in My Bag?



Remplissage With Knotless FiberTak® Soft Anchors: An Evolution From Knotted to Knotless

Patrick J. Denard, MD
Medford, OR

What is your current clinical rationale for adding remplissage to an instability procedure?

Perhaps the real question is “when should we not add a remplissage?” Evidence indicates that remplissage lowers the risk of recurrent instability by 4×, even in the setting of an on-track lesion.^{1,2} The surgical risk of remplissage is extremely low, with evidence now showing that patients do not lose external rotation. Large series have shown that the risk of recurrent dislocation after remplissage is equal to or lower than that after Latarjet, with a much lower complication rate (1% vs 8%).³ For these reasons, I add remplissage to every Bankart repair in patients younger than 25 years of age and those older than 25 years of age who are at high risk (extreme sports) or who have off-track lesions. With this approach, I currently add remplissage to more than 90% of my Bankart repairs.

What has been your technique evolution for remplissage repair?

As technology has progressed, so has my technique. Initially, I performed a knotted repair with a double-pulley technique between two 4.5 mm anchors. With the development of knotless anchors, I transitioned to a knotless technique with the 3.0 mm knotless SutureTak® anchor, and then finally to the 1.8 mm Knotless FiberTak anchor in 2018. I have been very pleased with the strength of the 1.8 mm Knotless FiberTak anchor. Additionally, placement of these anchors is less invasive as they require a smaller hole in the posterior tissue for placement.

How has tensionable knotless technology improved your technique for Bankart/remplissage repairs?

A knotless remplissage technique demonstrates improved biomechanics compared to tying knots.⁴ More importantly, a knotless technique allows me to place anchors through a posterior cannula and avoid going into the subacromial space to locate sutures. Whereas previously the procedure required 20 minutes, I now can perform a remplissage in 5 minutes. Truth be told, it was the improved efficiency that allowed me to lower my threshold for remplissage. After that, we discovered that the risk of recurrent dislocation was lowered, even in on-track lesions.^{1,2}

Do you have specific surgical pearls to help optimize anchor placement and suture management?

My top three pearls are:

1. View from the anterosuperlateral portal to obtain a complete view of the defect and ensure that anchor placement is perpendicular to the posterior tissue.
2. Place the anchors prior to performing the Bankart repair. If you wait, the posterior soft tissue can swell and limit visibility.
3. After placing the anchors, clamp each suture set to keep them separated. This helps to keep the sutures from each anchor separated while performing the Bankart repair. After completing the Bankart repair, link the repair suture from each anchor into the opposing anchor.

3. After placing the anchors, clamp each suture set to keep them separated. This helps to keep the sutures from each anchor separated while performing the Bankart repair. After completing the Bankart repair, link the repair suture from each anchor into the opposing anchor.

What has been your experience with external rotation loss?

This was an early concern that has been debunked. Anatomically, loss of external rotation occurs from tightening the anterior structures. Systematic review has demonstrated that there is no difference in loss of external rotation between a Bankart repair and a Bankart with remplissage. If the remplissage anchors are placed properly (perpendicular to the posterior tissue), loss of external rotation is not a concern.

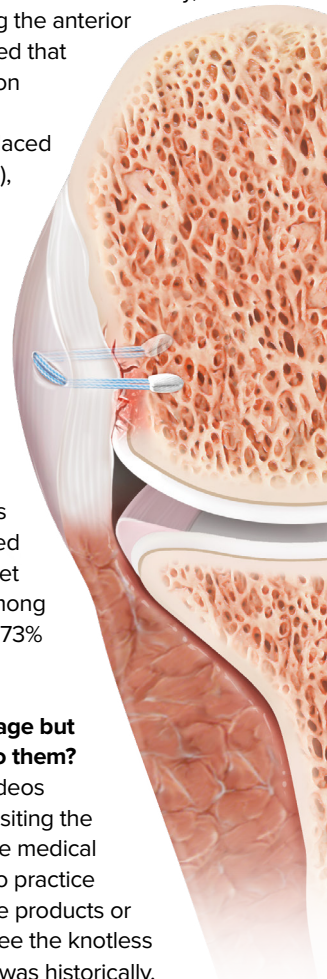
One area of controversy is the throwing athlete. Some argue against remplissage in this population, citing loss of external rotation and thus velocity as a concern. There are two problems with this argument. First, as I have described, loss of external rotation is not due to remplissage. Second, who is more at risk of recurrent instability than the throwing athlete who regularly places their arm in the abducted and externally rotated position? In fact, in our study comparing Latarjet and remplissage, return to sport was 91.5% among overhead athletes after remplissage and only 73% after Latarjet.³

If a surgeon is interested in adding remplissage but has concerns, what advice would you give to them?

I would advise watching surgical technique videos and performing in the lab first. As an option, visiting the Arthrex campus in Naples, FL, for a lab with the medical education team can be a beneficial exercise to practice the technique and ask questions related to the products or technique. Most surgeons tell me once they see the knotless technique, remplissage is much easier than it was historically.

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Pointers & Pearls



ACL Reconstruction Using the Pano™ Scope and NanoNeedle Scope

James E. Voos, MD
Cleveland, OH

What are the main benefits of using the Pano scope compared to a traditional arthroscope during ACL procedures?

Generally in my ACL procedures, I use a 30° scope for the diagnostic portion and switch to a 70° scope to visualize the notch in the femoral wall. This would normally require a scope change to achieve the visualization required for these procedures and is an additional step in the OR. The Pano scope's ultrawide view has improved my ability to see around the joint space during arthroscopy. This unique scope can change views instantly for enhanced visualization with the press of a button.

In addition, the 70° and ultrawide views allow me to visualize more accurately the ACL footprint and back wall. The Pano scope also allows more accurate tunnel drilling to measure the depth of the posterior portion of the tunnel where mismatch can occur.

You published a research paper on switching between 30° and 70° scopes for your ACL cases. How much time does this typically take in the OR? Does the Pano scope increase your case efficiencies?

Exchanging the scope during the case typically takes 30 seconds to 1 minute to complete and reset the image in the joint. When this is performed several times during the case, the time definitely adds up. Even more important, using a single scope reduces the added burden and cost to central sterile processing and eliminates the need to carry scopes with two different degrees.

How do you use the Synergy Vision™ system with both the Pano scope and NanoNeedle Scope in the knee?

For difficult areas to see, such as a PCL tear, the combined views from the Pano scope and NanoNeedle Scope are incredibly useful. Although the Pano scope can visualize the tibial footprint,

a supplemental posterior medial view may be beneficial to confirm safe tunnel placement. With the NanoNeedle Scope, we can keep the posterior medial portal minimally invasive and protect nearby structures. Using both the Pano scope and the NanoNeedle Scope, fluoroscopy in the OR may not be necessary for PCL tibial wire placement and drilling. Overall, this can save time and space in the OR and minimize or eliminate radiation.

How does the NanoNeedle Scope differ as an adjunct view?

The unique part about this technology is that there are many cases in which you can use both scopes at the same time to visualize very challenging locations. Some of these situations include putting your cuff patches on or PASTA lesions where you're putting things in from the top down and you are not quite sure what's going on underneath. Using the NanoNeedle Scope from one view and the Pano scope as your main view allows you to see exactly what is going on in two different places.

What is your experience with NanoNeedle Scope in the OR?

Using the NanoNeedle Scope in an operating environment is very advantageous in a high-volume arthroscopic setting. This helps avoid sterile processing challenges, which necessitate turning devices over quickly or having to open additional products to support these high volumes. I have been able to use the NanoNeedle Scope to fill in gaps in the OR to decrease the burden on our central sterile processing. This has been received very well from the efficiency mark in the hospital.

You treat world-class athletes as well as the general population. How do you feel Nano arthroscopy affects the time it takes your patients to return to sport and daily activities?

Nano arthroscopy provides me with an additional tool to confirm and refine the diagnosis in injuries that can have major implications on an athlete's recovery. For example, in arthroscopy for a high ankle fracture, the NanoNeedle Scope allows me to assess the articular cartilage and ligament integrity. In the elbow, the scope helps me assess articular cartilage injuries or loose bodies. Finally, in challenging scenarios, such as a high-energy multiligament knee injury, the NanoNeedle Scope allows for direct visualization of ligamentous structures. This can all be done with soft-tissue techniques that minimize swelling and scarring.



Pointers & Pearls



Setting the SutureLoc™ Implant to Ensure Aperture Fixation

Justin J. Mitchell, MD
LaCrosse, WI

There has been a big debate in the industry on the healing potential of inlay versus onlay techniques. Why did you switch from a socket technique to using the SutureLoc implant, an onlay bone-healing technique?

It has been a natural evolution. Almost everything that we do from a reparative standpoint, in orthopedics and specifically orthopedic sports medicine, has transitioned from inlay to onlay procedures.

Rotator cuff repairs were transosseous and are now done using an onlay transosseous-equivalent technique. Biceps tendon repairs, whether they be distal or proximal, have also evolved. Essentially every inlay technique that we used to do has transitioned to an onlay technique, and the biomechanics support that. So when we look at the advantages of onlay versus inlay from a biomechanical standpoint, onlay wins most of the time. Especially when we talk about meniscal root tears, a perfectly anatomic repair is the most important thing. I think the onlay technique much more readily approximates normal anatomy, so we get the correct length-tension relationship with the structures we are repairing.

Regarding the SutureLoc implant, the less invasive approach of using a 2.4 mm cannulated pin reduces the bony disruption that we previously performed when drilling a 6 mm socket and pulling the tissue into that socket. We can now drill a much smaller hole and get improved fixation at the joint line, and patients have less postoperative pain because we're not disrupting as much bone. I have seen improved early motion and reduced early swelling in my patients because there is so much less disruption. People are pushing harder to rehab faster as they don't have the amount of pain and swelling that they had when previous techniques were used.

How do you solve bone-quality variability when using an all-suture implant like the SutureLoc implant?

I believe the huge benefit of the SutureLoc implant is that you get joint-line fixation, which in general is better-quality bone than metaphyseal bone. But there are still some instances when the patient's bone quality is less than ideal. In those situations, the SutureLoc implant allows you to pull on all four sutures inside the joint and set the implant directly below the joint line directly below the joint line, directly beneath the subchondral bone. As you bunch up the implant at the joint line, using the bunching suture at the distal tibia and tugging on all four of those sutures coming out of the joint itself allows you to set the implant very nicely in any bone quality. The SutureLoc implant is perfectly designed to set, even in bone that is less than ideal.

Do you have any tips or pearls to help new users in their first cases with the SutureLoc implant?

I think there are several key steps when using the SutureLoc implant.

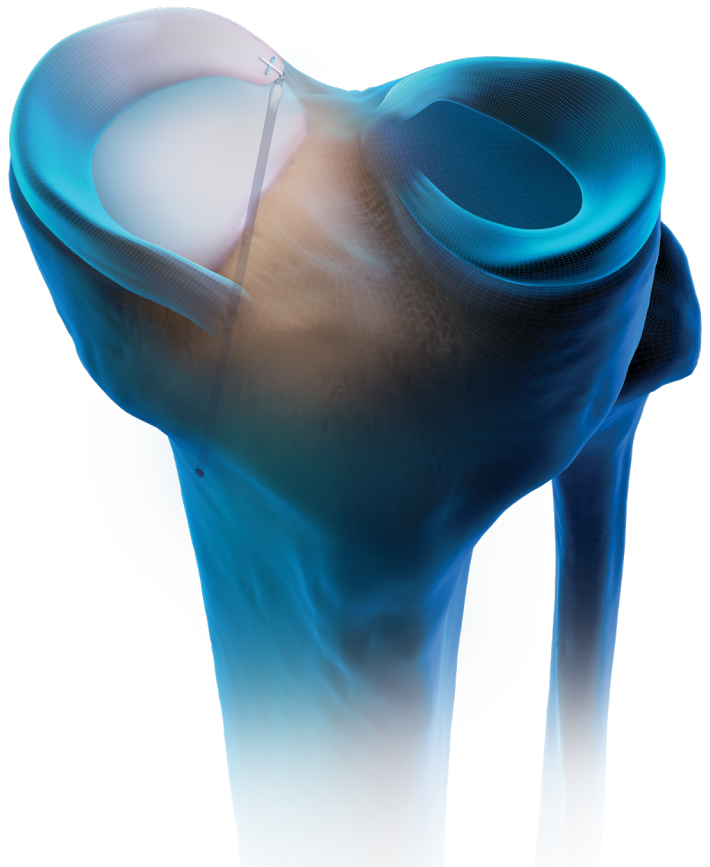
The first one is using the point-to-point meniscal root marking hook. This guide helps you get things perfectly anatomic because an anatomic repair is the most crucial part of this whole procedure.

Second, ensure that you set the implant below the cartilage and in the subchondral bone. Using the four sutures in the joint to set the implant is important to make sure you get the joint line fixation you want.

Third, once the implant is set, shuttling the sutures through PassPort Button™ cannulas helps make sure that you don't cross or tangle your sutures. I think that has been a serious benefit to passing repair sutures in a safe and appropriate manner.

Fourth, make sure to have a snap on the distal part of the implant so the sutures don't disengage from the implant when moving between portals and the sutures can be shuttled safely.

Finally, the SutureLoc implant allows for tensioning and retensioning. You can set the meniscus in an anatomic position, then put the knee in the appropriate degree of flexion, which is usually 90°, and then retension to make sure you get an optimal anatomic repair every time.



Research Corner

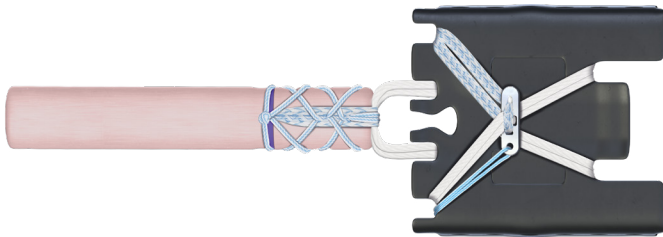
New Publication Finds Quadriceps Tendon ACL Reconstruction Has Superior Biomechanical Performance With the QuadLink™ Technique

In a paper recently accepted for publication by the Orthopaedic Journal of Sports Medicine, Bedi et al biomechanically compared the QuadLink technique to three other soft-tissue quadriceps tendon (QT) graft preparations proposed by leading medical device manufacturers.¹ The authors concluded that the QuadLink technique had the most favorable time-zero biomechanical profile. These findings highlight a marked improvement in the suspensory fixation of this single-stranded, multilaminar graft.

Adjustable-loop devices (ALDs) were secured to full-thickness QT grafts (6 samples per group) for femoral fixation in 4 different ways per the manufacturer's instructions, using identical or similar devices:

1. Tape-reinforced group (TR): Arthrex QuadLink technique
2. Onlay group (OL): Stryker QuadCinch
3. Luggage tag group (LT): Smith & Nephew UltraTRAC™ QUAD
4. Staggered group (SG): DePuy-Mitek SPEEDTRAP® with BTB TightRope® implant

The grafts were tested on an Instron materials testing machine per a validated in vitro reconstruction model of intraoperative procedure and postoperative ACL kinematics, cyclic loading, and load to failure.



FiberTag® TightRope II implant used in the QuadLink technique



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Results

The TR group had the least tension loss and cyclic elongation, 32% ($P = .002$) and 52% less ($P = .032$), respectively, compared to the next closest construct. The TR group was the only group with <3 mm of cyclic elongation, defined as clinical failure. The stiffness of the TR group was within native ACL limits (220 ± 72 N/mm), and the ultimate load exceeded a normal ACL load limit of 454 N (Table 1).

The time-zero findings suggest that the QuadLink technique may help preserve QT graft function and protect it during initial healing and in turn reduce the risk of premature graft failure in ACL reconstruction.

Table 1. Mean \pm Standard Deviation for ALD constructs

Group	Tension Loss (%)	Cyclic Elongation (mm)	Stiffness (N/mm)	Ultimate Load (N)
TR (Arthrex)	24 \pm 11 ^a	1.6 \pm 0.3 ^b	217 \pm 21 ^b	739 \pm 216 ^a
OL (Stryker)	56 \pm 15 ^b	3.3 \pm 1.2 ^b	203 \pm 24 ^a	547 \pm 67 ^{a,b}
LT (S&N)	69 \pm 16 ^b	7.9 \pm 1.7 ^c	197 \pm 18 ^a	769 \pm 122 ^a
SG (DePuy)	90 \pm 9 ^c	11.3 \pm 2.6 ^c	208 \pm 11 ^c	346 \pm 197 ^b

^a Significant difference ($P < .05$) versus TR

^b Significant difference ($P < .05$) versus OL

^c Significant difference ($P < .05$) versus LT

Cells that do not share a letter are significantly different ($P < .05$) from each other within columns.

*Excluded from statistical analysis due to 50% sample loss preceding load-to-failure.

Reference

1. Bedi A, Smith BL, Mitchell JJ, Frank RM, Hauck OL, Wijdicks CA. The impact of quadriceps tendon autograft preparation and fixation on graft laxity during suspensory anterior cruciate ligament reconstruction: a biomechanical analysis. *Orthop J Sports Med*. Accepted May 2024.

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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.

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