



Curved Anatomic Patellar Tendon ACL Reconstruction

Using GraftMax™ Curved Reaming System,
GraftMax™ Button BTB and GENESYS™ Matryx®

A complete guide to ACL Repair utilizing GraftMax™ Curved Reaming System and GraftMax™ Button BTB. As the newest addition to CONMED's Knee Preservation System, the GraftMax™ System facilitates secure, precise anatomic ACL reconstruction with maximum graft fill.



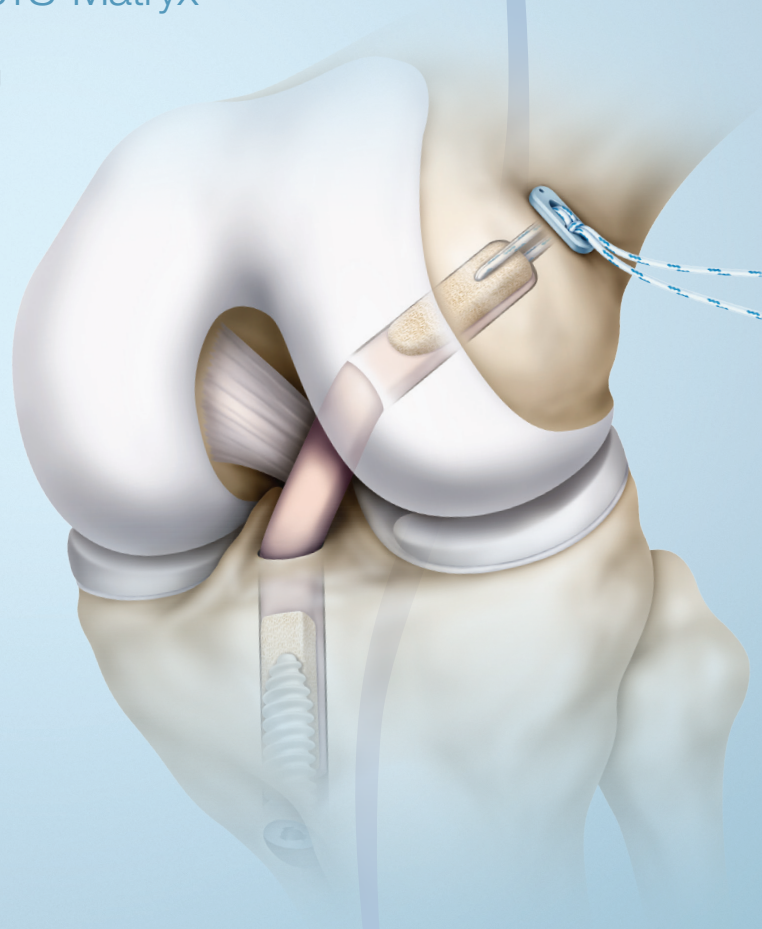
Technique featured by

Warren R. Dunn, MD, MPH

University of Wisconsin, Sports Medicine – USA

In partnership with

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Introduction by Warren R. Dunn, MD, MPH

ACL reconstruction is performed to restore the anatomy and function of the native ACL. Anatomic ACL reconstruction is best achieved by approaching drilling the femoral tunnel independent of the tibial tunnel.

Curved instrumentation facilitates anatomic femoral tunnel placement by reducing the need to hyperflex the knee when drilling the femoral tunnel from a medial portal.

Curved instrumentation using flexible reamers are also less technically demanding and likely enhance tunnel accuracy in order to replicate native ACL anatomy. Flexible reamers are also safer because they help avoid potential damage to the medial femoral condyle articular cartilage.

The GraftMax™ Button fixation system is an excellent option for surgeons performing anatomic ACL reconstruction. The adjustable length loop of the GraftMax™ Button allows flexibility in the depth of insertion of the graft into the femoral tunnel while providing excellent biomechanical fixation. ■

WARREN R. DUNN, MD, MPH

Chairman of the Division of Sports Medicine,
Head Team Physician for the University of Wisconsin – USA

Warren R. Dunn, MD, MPH is Chairman of the Division of Sports Medicine, and Head Team Physician for the University of Wisconsin.

He is board certified in orthopedics, fellowship trained in sports medicine and shoulder surgery, and holds a Certificate of Added Qualification (CAQ) in sports medicine.

He specializes in sports medicine surgical procedures of the shoulder and knee including anterior cruciate ligament (ACL) reconstruction.

Dr. Dunn has published many indexed scientific papers regarding both primary and revision ACL reconstruction.

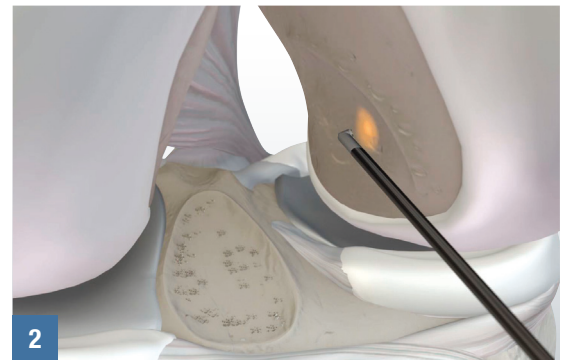


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Authored by Warren R. Dunn, MD, MPH

FEMORAL TUNNEL POSITIONING AND DRILLING



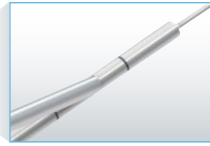
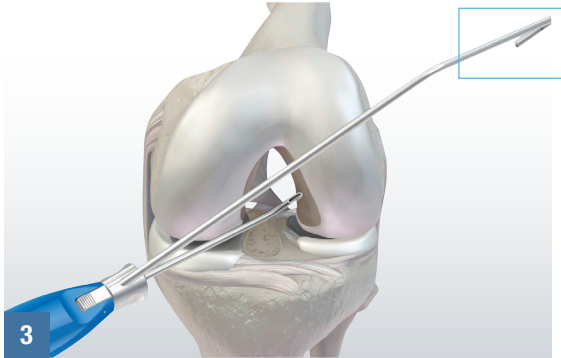
The GraftMax™ Curved Guide and Reamers are designed to be used through the anteromedial (AM) portal without the need for hyperflexing the knee.

Debride unwanted remnant ACL tissue. Identify the femoral ACL footprint and select the desired location of the femoral tunnel.

The center of the desired tunnel location can be marked using an awl, a radiofrequency wand or a shaver.



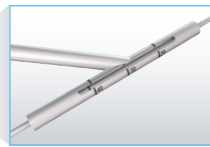
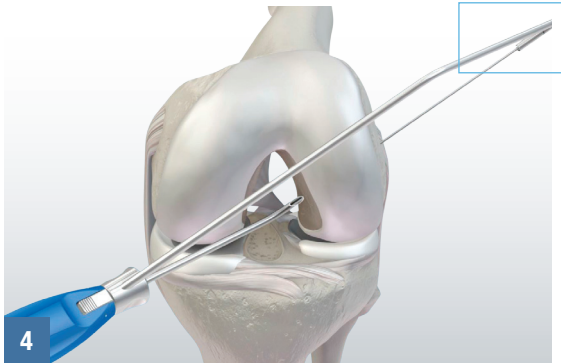
FEMORAL TUNNEL POSITIONING AND DRILLING



GRAFTMAX™
CURVED GUIDE

Insert the GraftMax™ Curved Guide into the AM portal with the knee flexed at 90°.

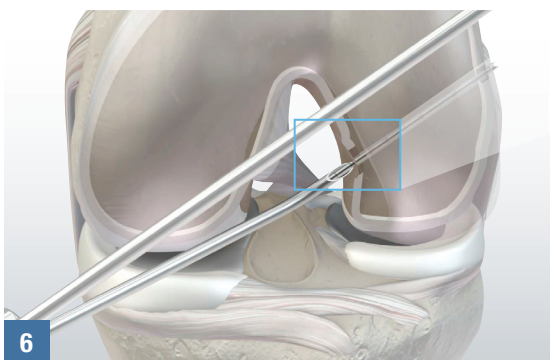
Attach the GraftMax™ Indicator onto the Curved Guide.



Insert the GraftMax™ Indicator Pin into the Indicator and down through the skin to bone. Assess the projected GraftMax™ Flex XACTPIN™ Guide Pin exit and femoral aperture to cortex (AC) length.



Once the correct position and angulation are achieved, advance the Flex XACTPIN™ through the Curved Guide so that the pin enters the bone at the desired location of the femoral tunnel. Then advance the pin through the femoral cortex.

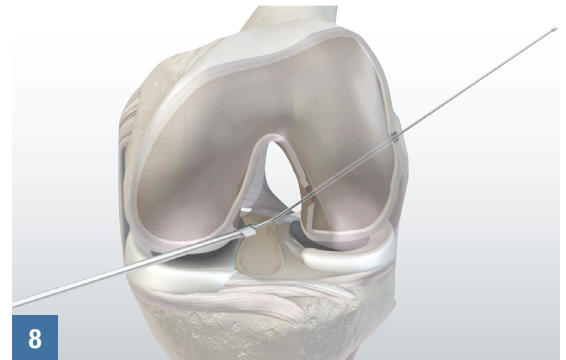


The Flex XACTPIN™ can be pulled back to confirm AC length by hooking the head and reading the markings at the femoral aperture. Flex XACTPIN™ can then be advanced out through the skin laterally using the pin driver. ■

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FEMORAL TUNNEL POSITIONING AND DRILLING

Curved Anatomic Patellar Tendon **ACL Reconstruction** Using GraftMax™ Curved Reaming System, GraftMax™ Button BTB and GENESYS™ Matryx®



Remove the Indicator and Curved Guide leaving the Flex XACTPIN™ in place.

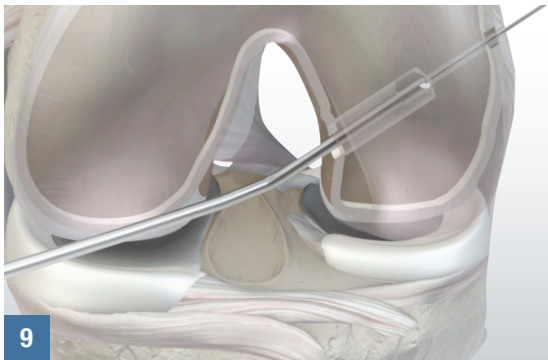
Insert the GraftMax™ Flex Sentinel® Reamer over the Flex XACTPIN™ through the AM portal with the cutting flute facing away from the femoral condyle and advance the reamer to the femoral ACL footprint.

Do not run the power during insertion through the soft tissues as damage to the medial femoral condyle may occur.



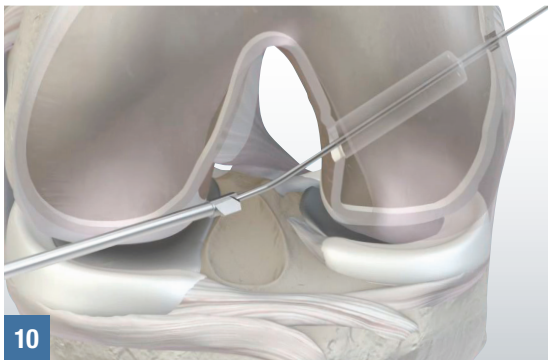
**GRAFTMAX™
FLEX SENTINEL® REAMER**

FEMORAL TUNNEL POSITIONING AND DRILLING

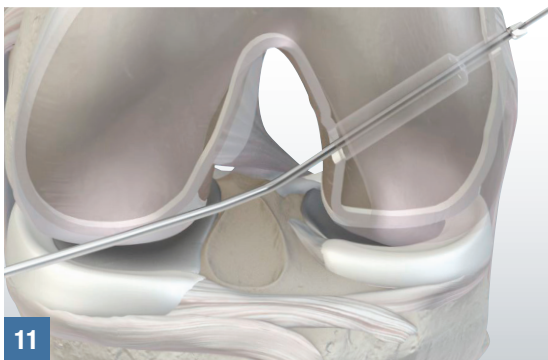


Advance the Flex Sentinel® under power to drill the femoral socket to the desired depth leaving a minimum 5mm bone bridge.

**GRAFTMAX™ FLEX
XACTPIN®** GUIDE PIN



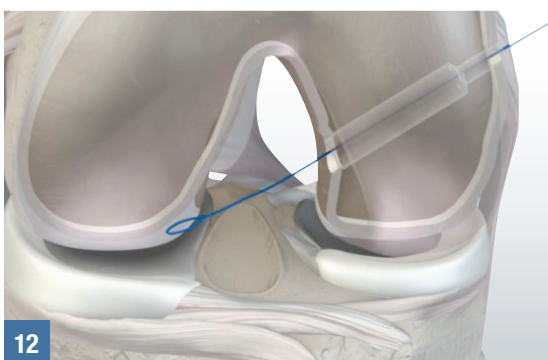
Manually remove the Flex Sentinel® from the joint making sure to keep the cutting flute oriented away from the condylar surface.



Use the GraftMax™ Flex Channel Reamer to ream the femoral channel. Advance the reamer through the lateral cortex.

TIP:

The Flex Channel Reamer can be pulled back to confirm AC length by hooking the head and reading the markings at the femoral aperture.



Remove the Flex Channel Reamer leaving the Flex XACTPIN™ in place.

Place the two free ends of a #2 passing suture through the eyelet of the Flex XACTPIN™. Pull the guide pin through the femur laterally, positioning the suture to be used for graft passage after tibial tunnel creation. ■

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TIBIAL TUNNEL POSITIONING AND DRILLING

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Set the angle of the Bullseye® Tibial Footprint Guide.

Place the tip of the guide into the center of the tibial ACL footprint and advance the pin sleeve flush to the anterior tibial cortex.



Advance the tibial guide pin under power until it meets the point of the guide arm.

Depress the guide lever to remove the pin sleeve.

Remove the Bullseye® Tibial Footprint Guide from the joint.



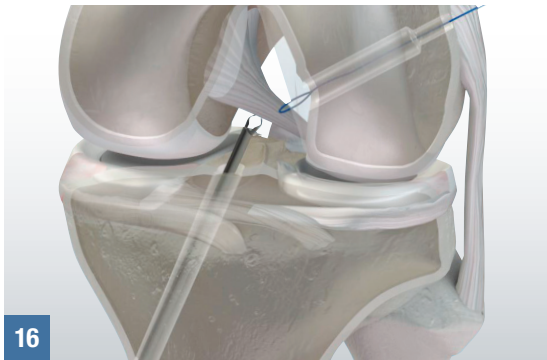
Place a curette over the point of the guide pin to protect against inadvertent advancement when drilling.

Use the appropriate size reamer for the tibial tunnel.

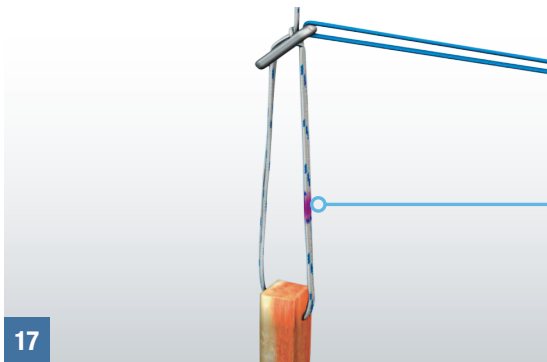
BULLSEYE® TIBIAL
FOOTPRINT GUIDE



GRAFT POSITIONING AND FIXATION



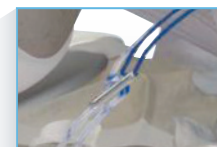
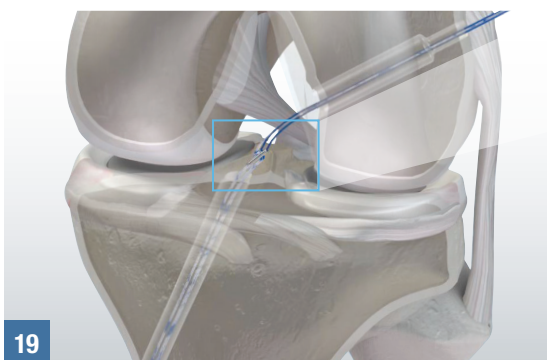
Retrieve the looped end of the passing suture through the tibial tunnel.



Mark the button's striped loop at the AC length, measuring from the end of the button.



Load the free ends of the blue and white striped sutures of the GraftMax™ Button into the passing suture loop. Pull the suture loop up through the knee so that all four suture ends from the GraftMax™ Button exit skin superolateral to knee. It is recommended to keep graft construct outside the tibial tunnel.



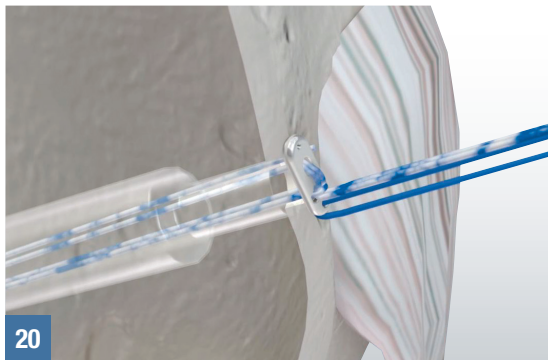
Keeping the graft outside the tibial tunnel, apply tension to the blue lead suture to advance the button into the knee joint.

Carefully take slack out of the striped loop sutures taking care to not shorten the loop. ■

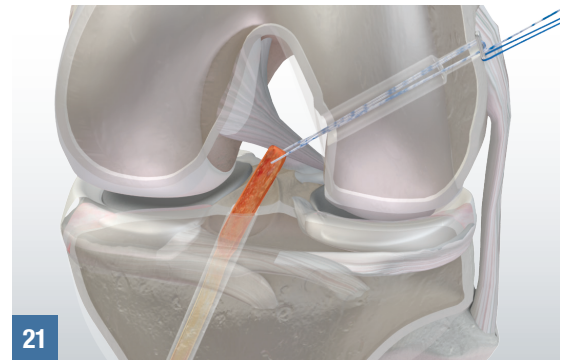
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GRAFT POSITIONING AND FIXATION

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The button should now be external to the cortex and deployment can be confirmed by pulling back on the graft.



Pull the bone patellar tendon bone (BTB) graft into the joint by pulling the striped adjustable loop reducing the loop length until the tissue is in the desired position.

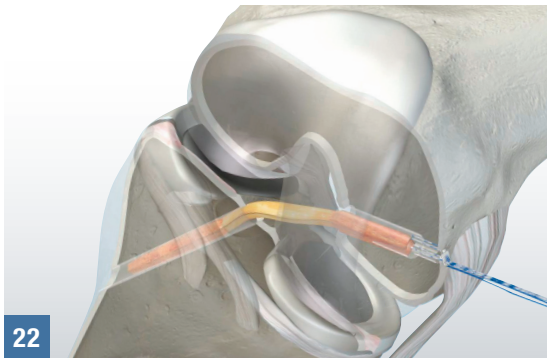
TIP:

Guide the tibial bone block into the tibial tunnel to ensure that it does not get caught on the tibia.

GENESYS™ MATRYX®
INTERFERENCE SCREW

GRAFT POSITIONING AND FIXATION

In partnership with
MTF Musculoskeletal
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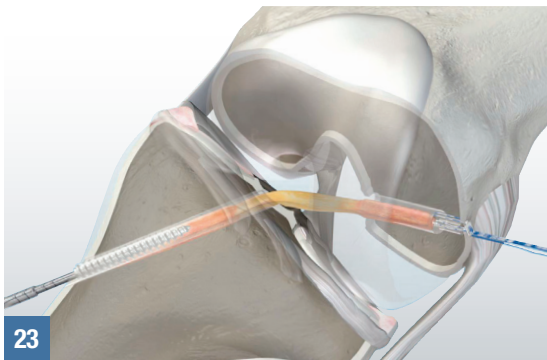


Cycle the knee with tension on the graft and set knee at desired knee flexion angle, usually 0-15°.

If desired, the button can be retensioned by pulling the sutures from the anterolateral thigh.



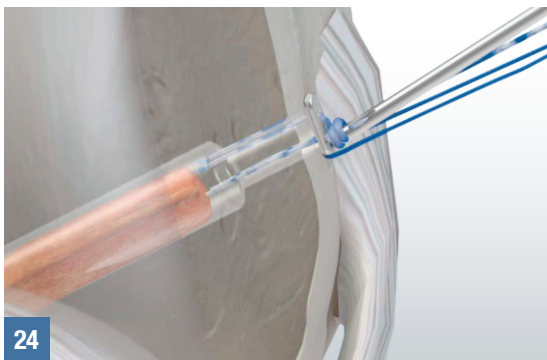
BONE-TENDON-BONE
ALLOGRAFT TENDONS
WITH BONE BLOCK



With the knee in the desired position, keep tension on the graft and apply posterior drawer force to the knee and insert the BioScrew® Hyperflex® Guidewire.

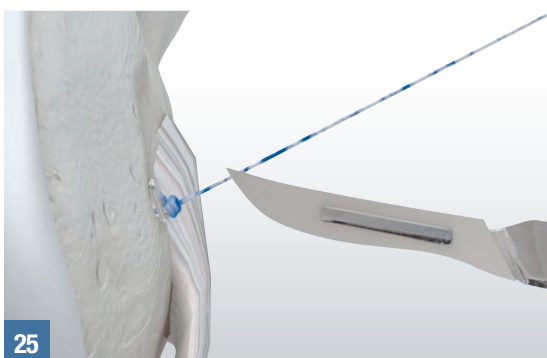
Tap the tibial tunnel and BTB graft.

Then, load the appropriately sized GENESYS™ Matryx® Interference Screw and driver onto the guidewire and advance it in the tunnel until it is flush.



OPTIONAL STEP:

An arthroscopic knot pusher can be used to tie a knot in the striped sutures over the top of the button. This can be done percutaneously from the anterolateral thigh.



Remove the blue passing suture by pulling one suture limb unthreading it from the button.

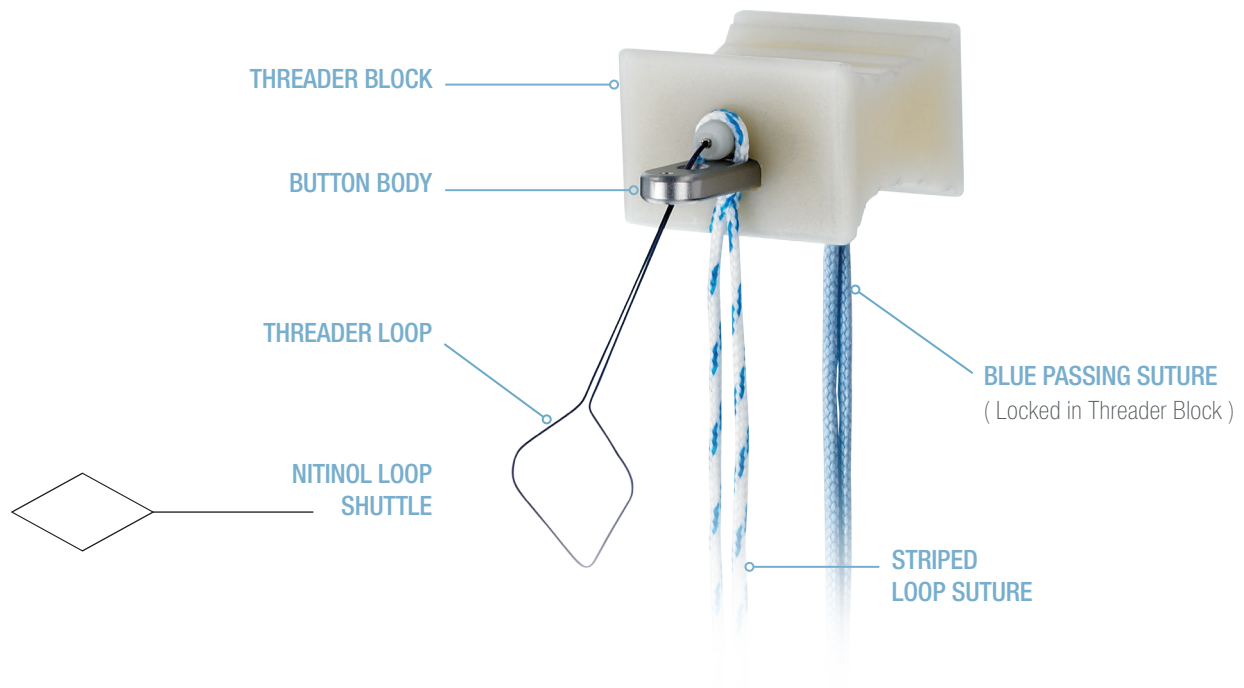
Trim the two strands of the striped adjustable loop tails flush to the skin with a sharp blade.

Follow the normal procedures to close the incisions. ■

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ANATOMY OF THE GRAFTMAX™ BUTTON BTB

QUICK REFERENCE

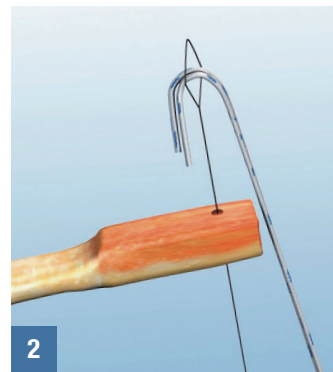


LOADING AND ADJUSTING GRAFTMAX™ BUTTON BTB

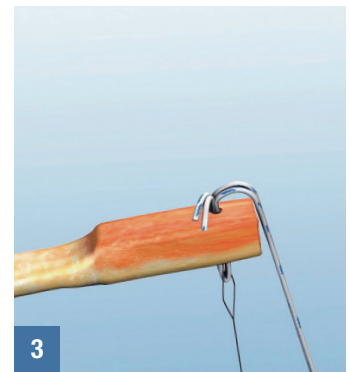
Prepping the BTB Graft



Drill a 2mm hole in the femoral BTB bone block to load the adjustable loop onto the bone block.



Remove the GraftMax™ Button and nitinol loop shuttle from the packaging. Pass the nitinol loop shuttle through the 2mm diameter hole.



Pull the nitinol loop shuttle to pass the striped suture tails through the 2mm bone block hole.

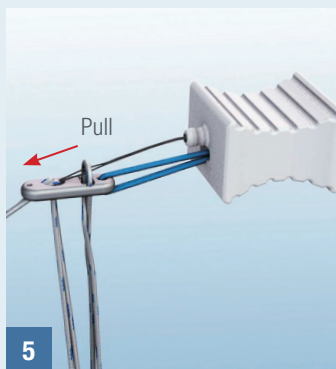
Place the tails of the striped loop suture into the nitinol loop shuttle.

Prepping the GraftMax™ Button BTB with Graft

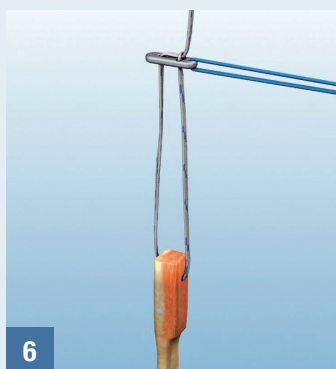


Load the tails of the striped loop suture into the threader loop.

Unlock the blue passing suture from the threader block to release the button.



Pull the button off of the threader block, pulling the sutures through the button and loading the graft onto the adjustable loop.



Size the button-graft assembly to determine the appropriate tunnel diameter. ■

ADJUSTING THE GRAFTMAX™ BUTTON BTB

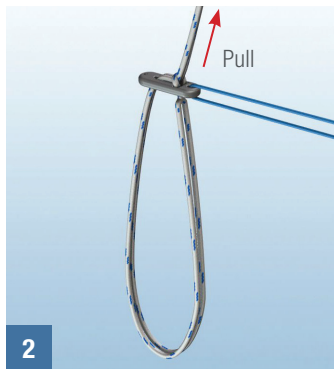
Adjusting the GraftMax™ Button BTB Loop



It is suggested that the loop length be kept at a length that will allow for the button body to be positioned on the lateral femoral cortex while keeping the graft outside of the knee.

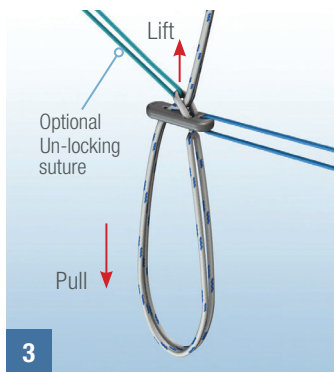
NOTE:

This will make the button easier to pass and allow for visual and tactile confirmation of deployment of the button on the lateral femoral cortex.



Pulling the striped loop suture tails will make the loop smaller.

Care should be taken not to pull the striped suture loop tails unless intending to re-size the loop.



In order to make the loop larger, lift up the locking loop on top of the button body and pull the striped loop suture limb below the button body.

OPTIONAL STEP:

An additional suture may be positioned under the locking loop on top of the button to provide a means for unlocking and enlarging the loop in-situ if desired. ■

ORDERING INFORMATION

To order any of our GraftMax™ Button products including instrumentation and accessories, GENESYS™ Matryx® Interference Screws and instrumentation, PINN-ACL® Cruciate Guide System and other accessories please call CONMED Customer Service at: (US) **800-237-0619** or, (Global) **727-392-6464**.

GRAFTMAX™ BUTTONS

GraftMax™ Button BTB	KS-BTB
GraftMax™ Button Cradle	KS-BCA

GRAFTMAX™ BUTTON ACCESSORIES

GraftMax™ Flex Channel Reamer	KS8550
GraftMax Flex XACTPIN™ Guide Pin	KS-FGP24
XO Button Holder	PS8834

GRAFTMAX™ CURVED REAMING SYSTEM

GraftMax™ Curved Guide	KS-CDG
GraftMax™ Indicator	KS-IND
GraftMax™ Indicator Pin	KS-ACP

GRAFTMAX™ FLEX SENTINEL® REAMERS

5.5mm x 9 in	KS8555	9.0mm x 9 in	KS8590
6.0mm x 9 in	KS8560	9.5mm x 9 in	KS8595
6.5mm x 9 in	KS8565	10mm x 9 in	KS8510
7.0mm x 9 in	KS8570	10.5mm x 9 in	KS85105
7.5mm x 9 in	KS8575	11mm x 9 in	KS8511
8.0mm x 9 in	KS8580	12mm x 9 in	KS8512
8.5mm x 9 in	KS8585	13mm x 9 in	KS8513

TIBIAL GUIDE SYSTEM

PINN-ACL® Cruciate Guide includes ACL Guide Arm and Pin-Sleeve	8731
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BULLSEYE® TIBIAL FOOTPRINT GUIDE

5.0mm	DB5TAM	7.0mm	DB7TAM
6.0mm	DB6TAM	8.0mm	DB8TAM

ACL ACCESSORIES

Suture Handle	HDL-CLT
Graft Sizing Ring, Large	GFT-LG
Graft Sizing Ring, Small	GFT-SM
EL Depth Probe	21.1001
Bullseye® Femoral Footprint Ruler	RL1000

GENESYS™ MATRYX® INTERFERENCE SCREWS

5.0mm x 15mm	235015M5	7.0mm x 30mm	237030M5
5.0mm x 20mm	235020M5	8.0mm x 20mm	238020M5
5.0mm x 25mm	235025M5	8.0mm x 25mm	238025M5
5.0mm x 30mm	235030M5	8.0mm x 30mm	238030M5
5.5mm x 15mm	235515M5	8.0mm x 35mm	238035M5
5.5mm x 20mm	235520M5	9.0mm x 20mm	239020M5
5.5mm x 25mm	235525M5	9.0mm x 25mm	239025M5
5.5mm x 30mm	235530M5	9.0mm x 30mm	239030M5
6.0mm x 15mm	236015M5	9.0mm x 35mm	239035M5
6.0mm x 20mm	236020M5	10.0mm x 20mm	231020M5
6.0mm x 25mm	236025M5	10.0mm x 25mm	231025M5
6.0mm x 30mm	236030M5	10.0mm x 30mm	231030M5
6.5mm x 15mm	236515M5	10.0mm x 35mm	231035M5
6.5mm x 20mm	236520M5	11.0mm x 20mm	231120M5
6.5mm x 25mm	236525M5	11.0mm x 25mm	231125M5
6.5mm x 30mm	236530M5	11.0mm x 30mm	231130M5
7.0mm x 20mm	237020M5	11.0mm x 35mm	231135M5
7.0mm x 25mm	237025M5		

GENESYS™ MATRYX® INSTRUMENTATION

Universal Driver, Modular Ratcheting Handle	D8640
Short Fixed Tri-Lobe Driver for 5.0mm Interference Screws	D8652
Short Modular Tri-Lobe Driver for 5.0mm Interference Screws	D8650
Extended Length Modular Tri-Lobe Driver for 5.0mm Interference Screws	D8660
Short Fixed Tri-Lobe Driver for 5.5-6.5mm Interference Screws	D8653
Short Modular Tri-Lobe Driver for 5.5-6.5mm Interference Screws	D8651
Extended Length Modular Tri-Lobe Driver for 5.5-6.5mm Interference Screws	D8661
Short Fixed Tri-Lobe Driver for 7.0-11.0mm Interference Screws	DFS70
Short Modular Tri-Lobe Driver for 7.0-11.0mm Interference Screws	DMS70
Extended Length Modular Tri-Lobe Driver for 7.0-11.0mm Interference Screws	C8716
7.0-8.0mm, GENESYS™ Matryx®/Matryx Interference Screw Tap, Fixed	TFS70
7.0-8.0mm, GENESYS™ Matryx®/Matryx Interference Screw Tap, Short Modular	TMS70
7.0-8.0mm, GENESYS™ Matryx®/Matryx Interference Screw Tap, Extended Length Modular	D8607
9.0-10.0mm, GENESYS™ Matryx®/Matryx Interference Screw Tap, Fixed	TFS90
9.0-10.0mm, GENESYS™ Matryx®/Matryx Interference Screw Tap, Short Modular	TMS90
9.0-10.0mm, GENESYS™ Matryx®/Matryx Interference Screw Tap, Extended Length Modular	D8609
11.0mm, GENESYS™ Matryx®/Matryx Interference Screw Tap, Fixed	TFS11
11.0mm, GENESYS™ Matryx®/Matryx Interference Screw Tap, Short Modular	TMS11
11.0mm, GENESYS™ Matryx®/Matryx Interference Screw Tap, Extended Length Modular	D8611

To order Allograft Tissue please call MTF Customer Service at: (US) **800-433-6576** or, (Global) **732-661-0202**.

ALLOGRAFT TENDON w/Bone Blocks FREEZE-DRIED FROZEN

Bone-Tendon-Bone Hemi w/Quadriceps, 10-12mm Width	400005	.....	430005
Bone-Tendon-Bone Hemi w/10mm Shaped Bone-Block	400007	.....	430007
Bone-Tendon-Bone Hemi w/Quadriceps, ≥ 13mm Width	400010	.....	430010
Bone-Tendon-Bone Hemi w/o Quadriceps	400015	.....	430015
Bone-Tendon-Bone Whole w/5cm Quadriceps .....	-	.....	430034
Bone-Tendon-Bone Whole w/8cm Quadriceps .....	-	.....	430036

ALLOGRAFT TENDON w/Bone Blocks FREEZE-DRIED FROZEN

Achilles Tendon w/Calcaneus, ≥ 19.5cm Length	400203	.....	430200
Achilles Tendon w/10mm Shaped Bone-Block, ≥ 19.5cm Length .....	-	.....	430207
Achilles Tendon w/Calcaneus, 16-19.5cm Length ...	400278	.....	430250
Achilles Tendon w/o Calcaneus, 16-19.5cm Length ..	400279	.....	430521
Quadriceps Tendon w/Bone Block, ≥ 16cm Length ...	-	.....	430700
Quadriceps Tendon w/o Bone Block .....	-	.....	430705
Quadriceps Tendon w/10mm Shaped Bone-Block, ≥ 16cm Length	-	430707



Knee Preservation System™

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