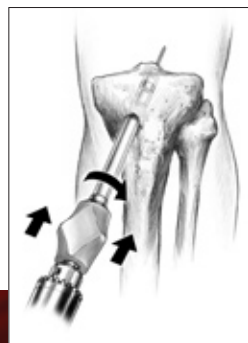


Autogenous Bone Coring System



Developed in conjunction with David R. Schmidt, M.D.

ARTHROTEK
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Developed in conjunction with David R. Schmidt, M.D., San Antonio, Texas.

This brochure is presented to demonstrate the surgical technique utilized by David R. Schmidt, M.D. Arthrotek, as the manufacturer of this device, does not practice medicine and does not recommend this or any other surgical technique for use on a specific patient. The surgeon who performs any procedure is responsible for determining and utilizing the appropriate techniques and products for each individual patient. Arthrotek is not responsible for selection of the appropriate surgical technique to be utilized for an individual patient.

Autogenous Bone Coring: A Scientific Approach

The strength and stiffness of a quadruple stranded hamstring tendon graft fixed using the Bone Mulch™ Screw and WasherLoc™ washer has been well documented in the literature.¹ What remains a concern for some is the rapidity of tendon-bone healing, the fate of the bony tunnels, the ability to achieve aperture fixation, and intratunnel graft motion.

The rapidity of tendon-bone healing seems to be directly related to graft/tunnel match,² the rigidity of interference fixation³ and the amount of graft tunnel motion.^{4,5}

A number of studies have shown significant femoral and tibial tunnel widening associated with hamstring tendons,⁶⁻⁹ although no study has shown a correlation between tunnel enlargement and long term functional outcome.

The literature has clearly documented that aperture fixation is beneficial in several aspects. There is higher strain on a graft fixed outside the tunnel versus at the aperture.¹⁰ Aperture fixation has been proven to decrease the incidence of tibial tunnel enlargement.^{11,12}

Intratunnel graft motion appears to have a deleterious effect on tendon-bone healing. Graft fixation closer to the joint line substantially decreases graft motion.^{4,5}

The Autogenous Bone Coring system allows for the preparation and placement of autogenous bone in an interference fashion at the aperture of both the femoral and tibial tunnels. This provides a number of scientifically proven advantages over current methodologies. The rapidity of tendon-bone healing is increased. Aperture fixation is achieved with autogenous bone greatly reducing the potential for intratunnel graft motion and tunnel alignment. The use of the Autogenous Bone Coring system appears to have eliminated a number of the concerns associated with hamstring tendon graft ACL reconstruction.



Figure 1

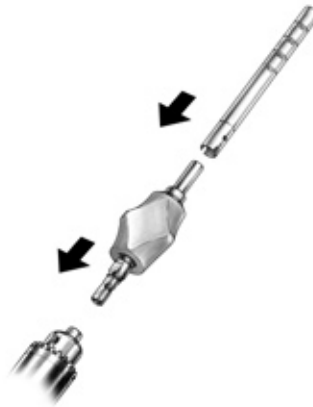


Figure 2



Figure 3

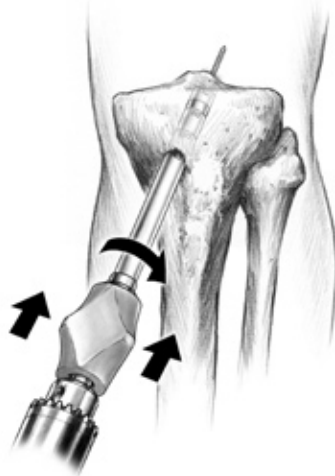


Figure 4

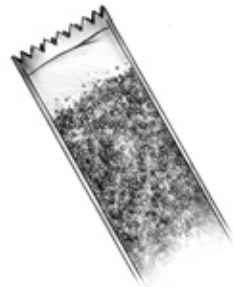


Figure 5

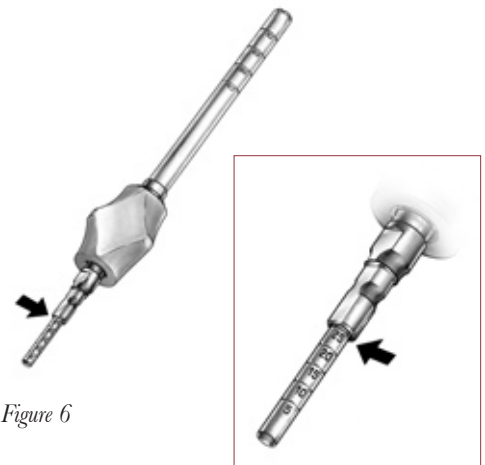


Figure 6

Harvesting an Autogenous Bone Plug from the Tibial Tunnel

Using the Bone Mulch™ Screw/WasherLoc Surgical Technique (Y-BMT-668R), harvest the hamstring grafts. Once the diameter has been determined, and a short tibial guide pin is in place, a step drill bit that corresponds to the graft diameter should be used to score the tibial cortex by drilling to the calibrated notch on the step drill (15mm) (Figure 1).

To assemble the Autogenous Bone Coring System, chuck the collet into a drill and then lock the coring trephine that corresponds to the graft diameter into the collet (Figure 2).

After the distal cortex has been penetrated, place the appropriately sized cannulated plunger over the tibial guide pin flush with the cancellous bone (Figure 3).

Take the coring trephine/collet assembly, place it over the plunger and gently drill the complete tibial tunnel applying force directly in line with the plunger/guide pin (Figures 4 & 5).

Remove the coring trephine/collet assembly from the drill and read the calibrated end of the plunger to assess the length of the harvested bone plug (Figure 6).

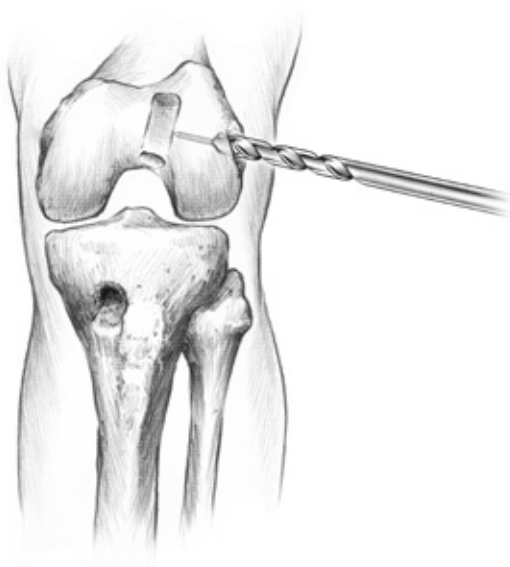


Figure 7

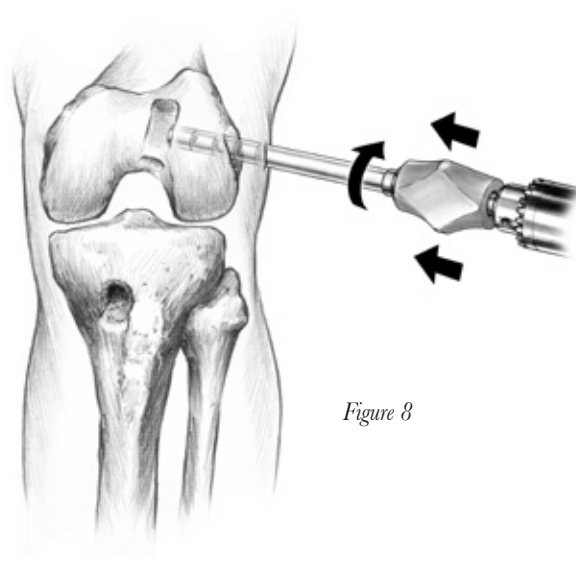


Figure 8



Figure 9



Figure 10

Harvesting an Autogenous Bone Plug from the Femoral Transverse Tunnel

Using the Bone Mulch™ Screw/WasherLoc Surgical Technique (Y-BMT-668R), place the transverse K-wire in the femur. Using an 8mm step drill, score the lateral femoral cortex (Figure 7). Position an 8mm plunger over the transverse K-wire flush with the cancellous bone.

Drill over the plunger with an 8mm coring trephine until the femoral tunnel is reached (Figure 8).

Remove the coring trephine/collet assembly from the drill. Push the bone plug out of the coring trephine (Figure 9). Place the bone plug in the bone compactor. Mallet the top of the bone compactor to compress the bone plug to a 4-5mm diameter (Figure 10).

Turn the compactor over and, while holding it slightly above a sterile surface, push the center of the compactor to release the bone plug.

Figure 11

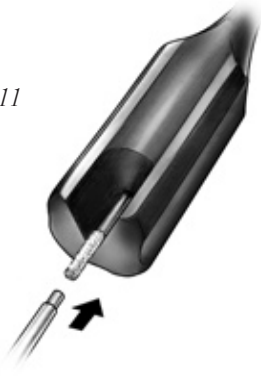


Figure 12



Figure 13

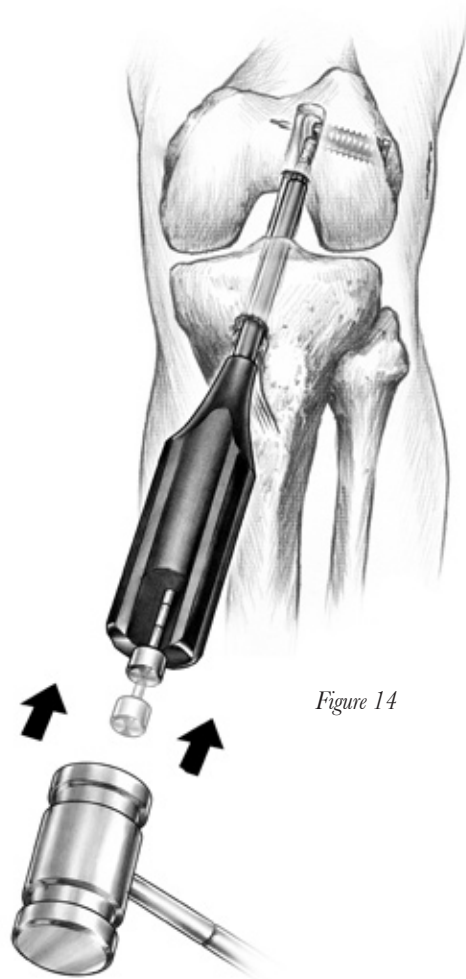


Figure 14

Positioning an Autogenous Bone Plug in the Femoral Tunnel

Place the compacted bone plug into the femoral bone graft inserter (Figure 11). Place the femoral bone graft insertion rod in the inserter behind the compacted bone plug.

After femoral fixation has been achieved with the Bone Mulch™ Screw (Y-BMT-668R), introduce the inserter through either the inferior medial portal (Figure 12) or the tibial tunnel (Figure 13), position the tip of the femoral bone graft inserter to the laser mark of the compacted bone plug. Impact the insertion rod until it is flush with the Inserter (Figure 14).

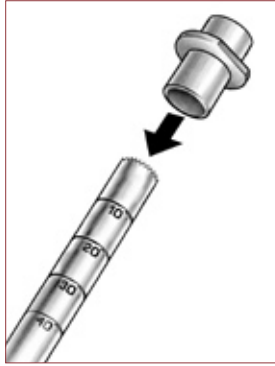


Figure 15

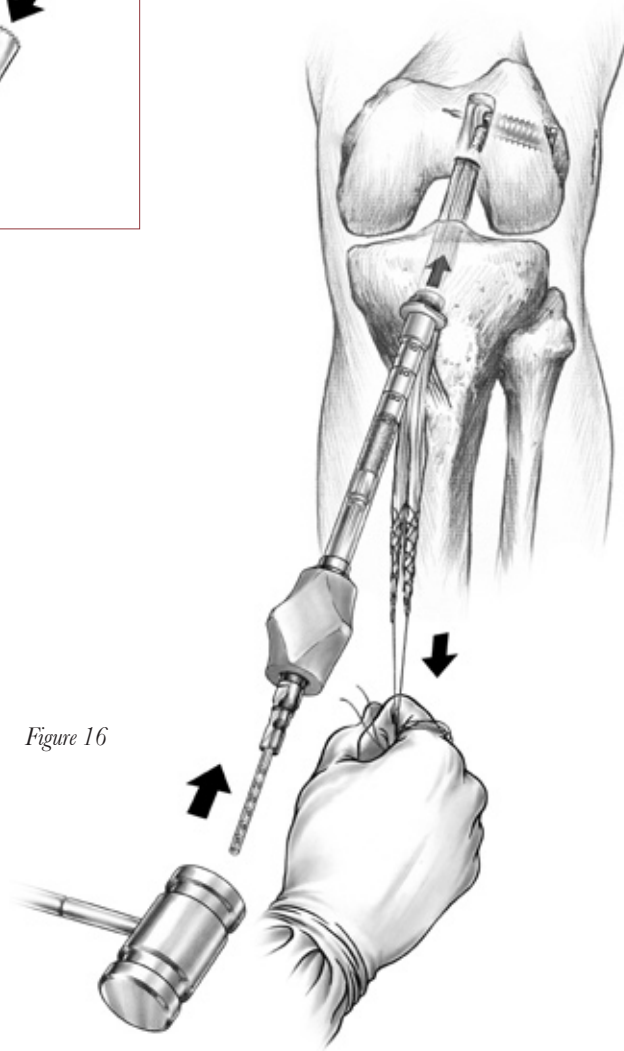


Figure 16

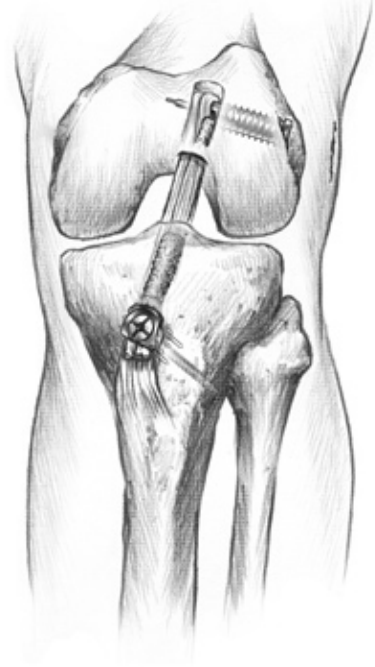


Figure 17

Positioning an Autogenous Bone Plug in the Tibial Tunnel

Before the bone plug can be positioned, a graft protection sleeve must be placed on the cutting end of the coring trephine (Figure 16).

Position the soft tissue graft in the desired location. Place the covered cutting tip of the coring trephine/collet assembly in the desired location in the tibial tunnel. While maintaining tension on the distal end

of the soft tissue graft, impact the calibrated end of the plunger until it is flush with the collet (Figure 17). Continue with tibial fixation method of choice.

Evaluate positioning of bone cores arthroscopically to confirm they are in an appropriate location (Figure 18).

Ordering Information

Drill Tip K-Wire

906870

Collets

900717 7mm
900718 8mm
900719 9mm
900720 10mm
900721 11mm

Step Drills

900747 7mm
900748 8mm
900749 9mm
900750 10mm
900751 11mm

Plungers

900722 7mm
900723 8mm
900724 9mm
900720 10mm
900721 11mm

Coring Trephines

900727 7mm
900728 8mm
900729 9mm
900730 10mm
900731 11mm

Bone Compactor

900734

Femoral Bone Graft Inserter

900732

Femoral Bone Graft Insertion Rod

900733

Instrument Case

900710

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