COR™ Precision Targeting Cartilage Repair System

Arthroscopic Technique for Repair of Osteochondral Defects
Planning the Procedure

An 18-gauge spinal needle is initially used to plan a perpendicular approach to the defect and autograft donor sites. Chondral defect and donor sites are arthroscopically inspected, debrided and measured to determine the number and size of grafts to be harvested. Beginning at the margin of the lesion, a probe or COR™ Cartilage Transplant System Plunger (4mm, 6mm, 8mm) can be used to measure the defect size, determine harvester size(s), and plan graft placement within the lesion. When using more than 1 graft, a 2mm bone bridge should be preserved between the graft sites to ensure a good press fit.

When considering an arthroscopic or open approach, these factors should be evaluated:

- Perpendicular access to donor cartilage
- Matching donor and recipient site articular cartilage contours
Preparing the Recipient Insertion Site using COR™ Cartilage Transplant System

The ability to reproducibly identify a perpendicular position with the COR™ Cartilage Transplant System makes it feasible to drill the recipient site before harvesting the graft plug(s). Drilling the recipient site before harvesting the graft plugs allows selecting the best match between the donor grafts and the articular cartilage adjacent to the recipient sites. The recipient site should be prepared, creating well-defined, vertical articular cartilage margins.

Loose fragments should be debrided with a shaver, arthroscopic knife, or curette. The size, number, and location of the recipient sites are determined and the recipient sites drilled, keeping a 2mm bone bridge intact between sites to allow a press fit fixation of the grafts. Since the recipient sites are prepared first, the COR Cartilage Transplant System lets the surgeon choose the best donor location on the femoral surface to harvest a graft.

A. Prepare Drill Guide with Perpendicularity Rod

To prepare the COR Cartilage Transplant System for drilling, insert the Perpendicularity Rod (6mm, 8mm, and 10mm sizes only) into the distal end of the Drill Guide and attach the Perpendicularity Rod Cap to the proximal end of the Perpendicularity Rod to create a tight assembly interface (Figure 1).

Note: COR Cartilage Transplant System is available with and without perpendicularity. If using a COR Cartilage Transplant System without perpendicularity, drilling will be accomplished without the use of a drill guide. When introducing the Harvester Delivery Guide with Cutting Tool into the joint, a white plastic trocar, laser marked with a “T”, will be used in place of the perpendicularity device to help facilitate entry.
B. Recipient Site Drilling

- Insert the Drill Guide and Perpendicularity Rod assembly into the knee. Position the drill guide on the defect site and remove the Perpendicularity Rod Cap (Figure 2).

- Ensure the Drill Guide is perpendicular to the recipient site by maintaining pressure while positioning the Drill Guide until the Perpendicularity Rod is centered.

- While maintaining the Guide/Cutter position, turn the Perpendicularity Rod counterclockwise until it disengages with an audible click or slight recoil. Remove the rod.

- Drilling should be done under direct visualization, keeping the drill oriented perpendicular to the adjacent articular surface. While maintaining this perpendicularity, introduce the same size drill bit from the disposable kit and drill the recipient site to the desired depth to match the planned graft length (Figure 3). Remove drill and drill guide.

- Depth markings are at 5mm, 8mm, 10mm, 12mm, 15mm, and 20mm (Figure 4). The sharp tip on the end of the drill allows for a precise placement by creating a starter hole that avoids the drill “walking away” from the desired location. In addition, the concave sides of the fluted drill remove bone during drilling to reduce friction and heat.
Focused Graft Harvesting with COR™ Cartilage Transplant System

A. Prepare COR™ Cartilage Transplant System for Harvesting

The Harvester Delivery Guide comes with the Harvest Cutting Tool preassembled. To prepare the COR™ Cartilage Transplant System for harvesting, retighten the Perpendicularity Rod and insert it (6, 8, and 10mm sizes only) into the distal end of the Harvester Delivery Guide/Cutter (Figure 5).

**Note:** To retighten the perpendicularity rod, place the distal end against a firm surface and hold stationary. Push downward on the rod to engage and turn it clockwise with downward pressure until tight. Minimize finger pressure in the tip while tightening.

- The Perpendicularity Rod is properly seated when the cutting tooth engages the distal cutout groove on the Perpendicularity Rod (Figures 6a and 6b).
- Attach the Perpendicularity Rod Cap to the proximal end of the Perpendicularity Rod to create a tight interface with the Perpendicularity Rod and the Guide/Cutter (Figure 7). The Perpendicularity Rod functions as an obturator to minimize soft tissue capture as the assembly is inserted into the knee.

B. Harvest Donor Site

- Position the Harvester Delivery Guide/Cutter/Perpendicularity assembly on the selected non-weight-bearing surface to harvest a graft. The common donor sites for harvest are the superior lateral intercondylar notch and the lateral or medial trochlear ridge above the linea terminalis (Figure 8).
• Remove the Perpendicularity Rod Cap and ensure that the Guide/Cutter is perpendicular to the desired graft site by maintaining pressure on the Guide/Cutter while slowly positioning it until the Perpendicularity Rod is centered (Figures 9, 10a, and 10b).
• While maintaining the Guide/Cutter position, turn the Perpendicularity Rod counterclockwise (A) until it disengages with an audible click or slight recoil and then remove (B) the Rod (Figure 11).

• While maintaining perpendicularity, use a mallet (A) to tap the Guide/Cutter to the desired depth mark. Depth markings are at 5mm, 8mm, 10mm, 12mm, 15mm, and 20mm (Figure 12).

• A unique feature of the COR® Cartilage Transplant System is the Cutting Tooth on the harvester blade (Figures 6a and 12). The cutting tooth underscores the cancellous bone at the distal end of the harvester tube and allows for a precise depth cut, enabling a plug length that closely matches the depth of the recipient site.

• The T-handle of the Guide/Cutter is rotated 2 full revolutions (B) and the plug is removed by gently twisting the T-handle while withdrawing (Figure 13). Care should be taken to avoid toggling or rocking the Guide/Cutter when removing.
C. Prepare graft for delivery to recipient site

- On a firm surface, insert the Guide/Cutter into the graft loader (Figure 14a).
- Push the Guide/Cutter firmly until it makes contact with the bottom of the loader by pushing the graft on the cancellous bone side of the graft plug, thus positioning the graft in the Harvester/Delivery Guide (Figures 14b and 14c).
• Remove the Cutter from the Guide by twisting the bayonet ring to the unlock position (Figures 15a and 15b).

• Inspect the graft for quality, length, and shape. To protect chondrocyte viability, the graft plug will remain within the Harvester Delivery Guide until it is ready for transplant into the defect site (Figure 15c).
D. Graft Insertion

- Insert the Plunger into the Harvester/Delivery Guide carefully to avoid premature graft deployment.
- Insert the Guide into the knee over the recipient site and align the Guide perpendicularly over the drilled recipient hole.
- While holding the Guide aligned over the recipient hole, gently tap the Plunger with a mallet until it is seated at the bottom of the guide to deliver the graft into the pre-drilled matching recipient hole (Figures 16 and 17). Remove the guide and evaluate the position of the graft.
- The system is designed to minimize the force required to pass the graft from the Harvester/Delivery Guide into the recipient hole, thus minimizing impaction forces on the articular cartilage.

The Universal Tamp may be used to fine tune graft placement. 8mm side is recommended for 4mm and 6mm grafts and the 12mm side is recommended for 8mm and 10mm grafts. The repair is now completed.
E. Multiple Graft Repair

In many cases multiple grafts may be needed to repair a full thickness articular cartilage lesion. If additional grafts are required, the Harvester/Delivery Guide and Cutter may be reassembled and the process repeated until the appropriate number of grafts have been taken. It is important to maintain a 2mm bone bridge between the drilled holes to allow for a secure graft press fit (Figure 18).
### COR™ Cartilage Transplant System

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### COR™ Sizing Instruments (Optional/Reusable)

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