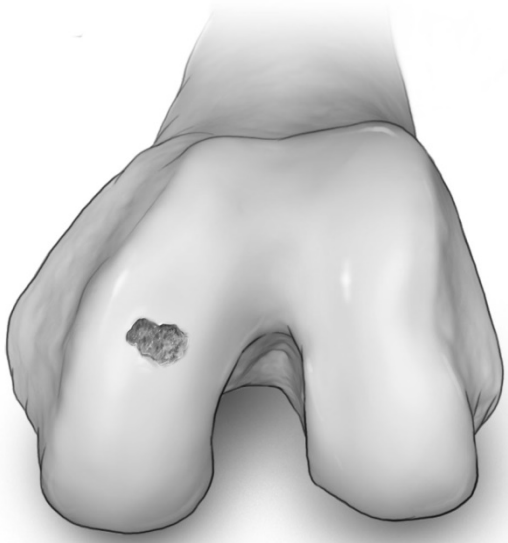
beyond movement

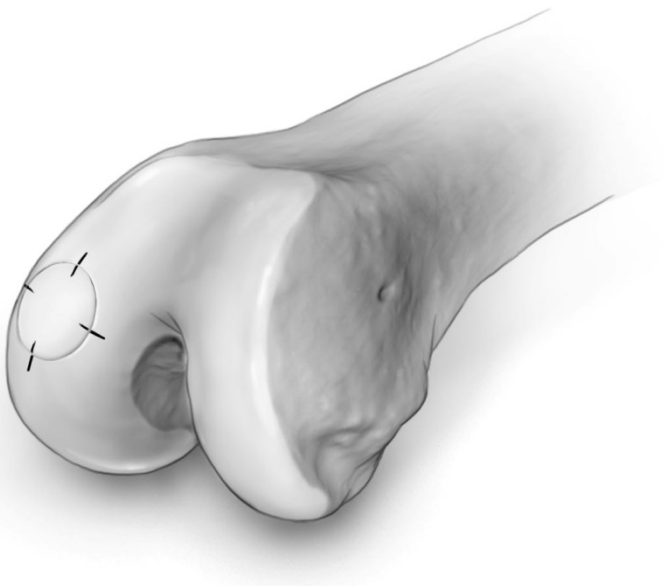
JRFORTHO

6746 S Revere Pkwy, Ste B-125, Centennial, CO 80112
M 877-255-6727 F 303-649-1658 JRFORTHO.org

Articular Cartilage Resurfacing

Single Osteochondral Allograft Plug Surgical Technique





PATIENT CONDYLE PREPARATION

Step 1: Perform a parapatellar arthrotomy, and retract the patella to expose the condyle. Identify the defect on the condyle (Fig. 1a), and select a cutter/guide such that the cutter/guide covers the entire defect.

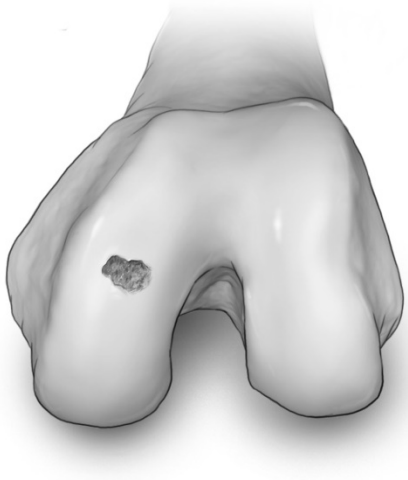


Fig. 1a

Step 2: The initial use of the cutter/guide is to orient a Steinmann pin perpendicular to the condylar surface. Rest, but do not push, the cutter/guide against the condylar surface. The cutter guide should contact the joint surface throughout its circumference. Prior to removing the cutter/guide, trace the entire circumference with a marker. Make hash marks on the circumference at the 12, 3, 6, and 9 o'clock positions (double mark at 12 o'clock). Holding the guide in place, drill the Steinmann pin approximately 25mm into the condyle (Fig. 1b).

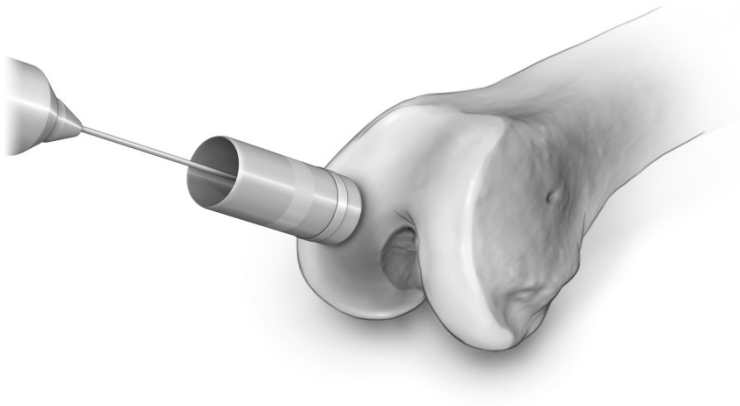


Fig. 1b

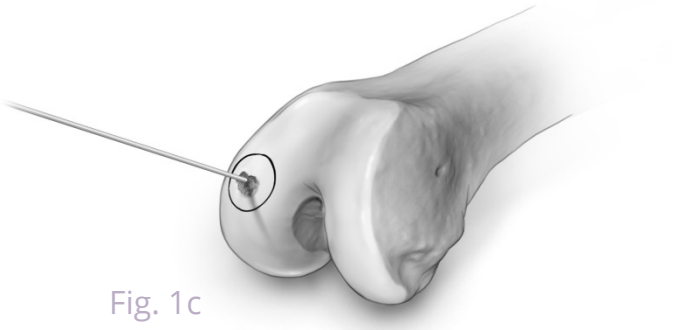


Fig. 1c

Step 3: Remove the cutter/guide, leaving the pin inserted. The pin should be perpendicular to the condylar surface (Fig. 1c).

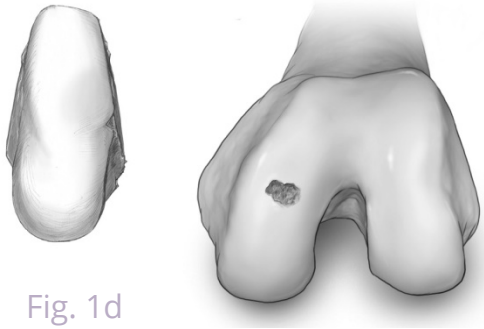


Fig. 1d

Step 4: Set up the vise on a sterile workstation. After rinsing the allograft, bring the allograft close to the patient's condyle to compare and determine the defect location and the site of allograft harvest (Fig. 1d). Secure the allograft in the vise in the same orientation of the patient's exposed condyle.

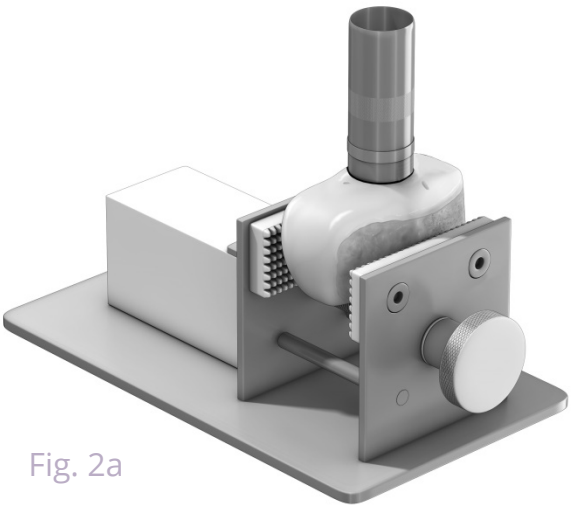


Fig. 2a

Step 5: Place the cutter/guide on the allograft at the corresponding location of the patient's condylar defect. It is imperative to contact the articular surface throughout the circumference of the cutter/guide. Place a guide pin (blunt side down) over the center of the area corresponding to the location of the patient's condylar defect. Compare the angle and location of the pin to the one previously placed in the patient's condyle. Make orientation adjustments to ensure conformity (Fig. 2a). Trace the entire circumference with a marker.

Step 6: With the cutter/guide and pin placed on the allograft, slide the alignment collar over the cutter/guide. Secure the short collar pins into the perimeter holes of the alignment collar (Fig. 2b). Some holes may not overlap the condyle; do not drive pins into these holes. Remove the cutter/guide and make hash marks, inside the alignment collar, on the circumference at the 12, 3, 6, and 9 o'clock positions (double mark at 12 o'clock). This mark will be used for orientation. Cover the allograft with wet gauze, set it aside, and keep it moist through the entire procedure; this is essential to maintain cell viability.

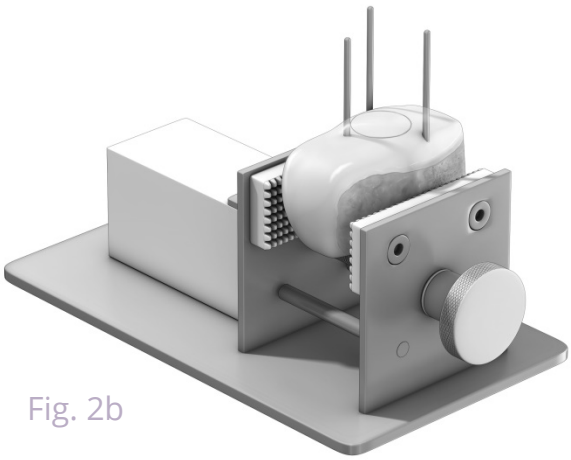


Fig. 2b

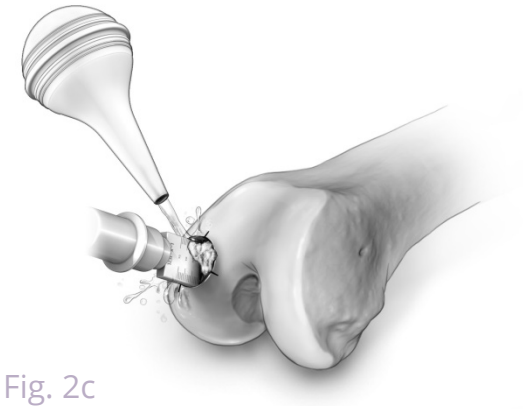


Fig. 2c

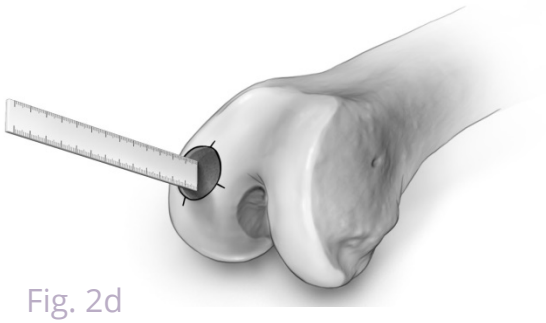


Fig. 2d

Step 7: Ensure that the location and orientation of the marked surfaces are identical. Place the cutter/guide over the pin in the patient's condyle. By hand, rotate the cutter/guide until the complete thickness of the articular cartilage is cut and the instrument is against cortical bone.

Step 8: Select the same size drill bit and coring reamer from the instrument set. Mount the drill bit on a cannulated drill, and place it over the pin in the patient's condyle. With constant irrigation, slowly advance the drill through the articular surface, through the conical bone, and into cancellous bone (Fig. 2c). The surgeon should examine the advancement after every 2-3mm. Proper depth is achieved when there is a minimum of 5-6mm of cancellous bone along the perimeter. Measure and note the depths from the articular cartilage surface at the 12, 3, 6, and 9 o'clock hash marks (Fig. 2d).

ALLOGRAFT PLUG PREPARATION

Step 9: Reset the cutter/guide inside the ring guide on the allograft. By hand, rotate the cutter/guide until the complete thickness of the articular cartilage is cut and the instrument is against cortical bone. (Fig. 3a)

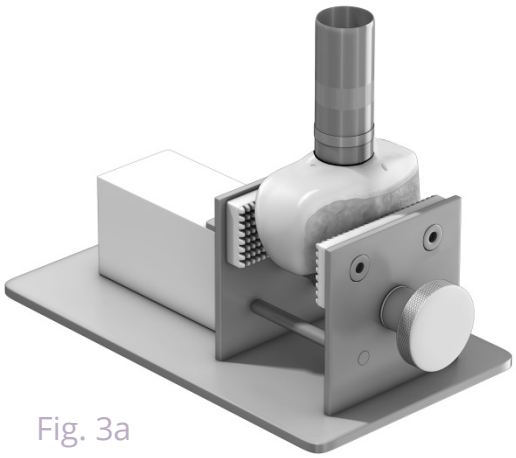


Fig. 3a

Step 10: With constant irrigation, slowly advance the coring reamer into the allograft approximately 25mm. (There is a 25mm depth marking on the reamer.) Do not advance the coring reamer completely through the allograft. While continuing irrigation and forward rotation of the coring reamer, slowly back the reamer out of the allograft. (Fig. 3b)

Step 11: If the plug remains in the coring reamer, unscrew the hub of the coring reamer from the main cutting sleeve. Advance the plug out proximally by pushing the distal end of the sleeve down over a smaller sized blunt end of a cutter/guide.

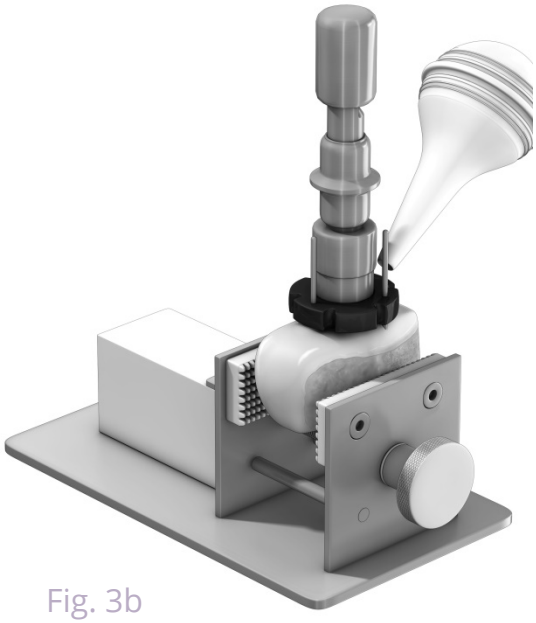


Fig. 3b

ALLOGRAFT PLUG PREPARATION (cont.)

Step 12: Remount the allograft on the vise with the plug in a vertical position. Remove the push-out plate and guide pin. The plug is excised by transecting the allograft with an oscillating saw approximately 20 mm below the cartilage surface. To prevent abrupt dislocation or propelling of the plug, either place a finger or graft holder on the surface of the allograft (Fig. 4a). Remove the plug from the condyle (Fig. 4b).

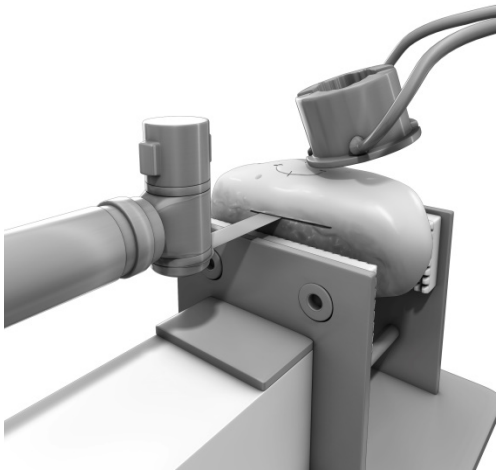


Fig. 4a

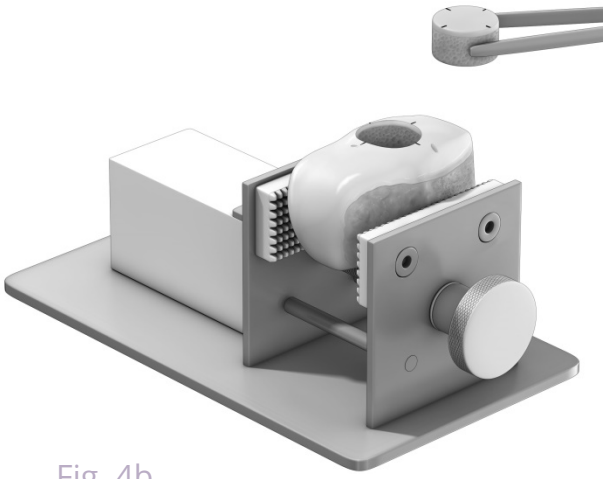


Fig. 4b

Step 13: Using the depth locations of the defect hole, mark the depth of the plug at the 12, 3, 6, and 9 o'clock positions. Connect these depth markers to form a circumferential mark at the proper plug depth (Fig. 4c). Prior to proceeding, re-verify these depth measurements.

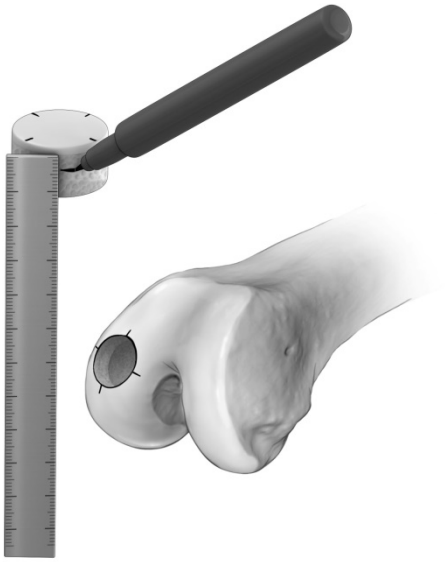


Fig. 4c

Step 14: Open the graft holder to 2-3 mm wider than the plug. Orient the plug such that the depth ring is along the surface of the jaws of the graft holder. The plug should be secure, but not distorted (Fig. 4d).

Fig. 4d

ALLOGRAFT INSERTION

Fig. 5a

Step 15: Use the face of the graft holder as a cutting guide. Under constant irrigation, advance an oscillating saw from the outer perimeter inward (Fig. 5a). Remove the plug from the graft holder. With a rongeur, chamfer the edge of the bone. Check depth dimensions with condylar cavity. Using a pulse lavage, thoroughly remove blood and marrow from the graft (Fig. 5b).

Fig. 5b

Step 17: The articular cartilage around the perimeter of the patient's condylar cavity may slightly migrate to interfere with the press fit dimensions. Remove any excess cartilage either by reinserting the cutter/guide into the patient's condylar cavity or by trimming with a knife.

Step 18: Remove the Steinmann pin, and orient the plug to the 12, 3, 6, and 9 o'clock positions. If any interference is noted, carefully correct the plug and/or cavity prior to reducing the plug.

Step 19: The appropriate press fit reduction is accomplished by advancing the plug into the cavity with a tamp. Using a small mallet with the tamp, slowly push the plug into the condyle (Fig. 5c). Care should be taken to ensure that all edges advance equally. Remove any fragmentary cartilage around the perimeter of the reduced plug (Fig. 5d). Cycle knee to check congruity.

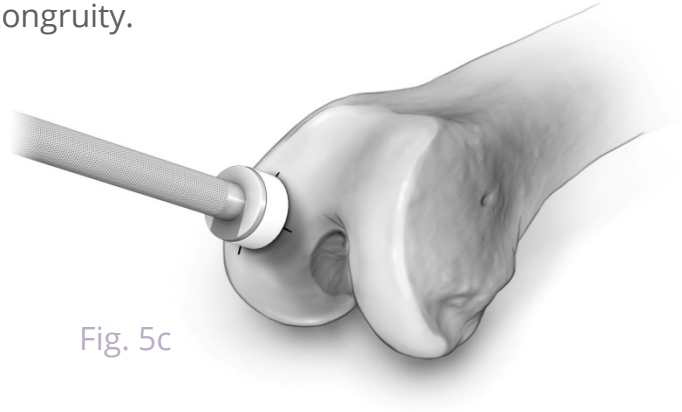


Fig. 5c

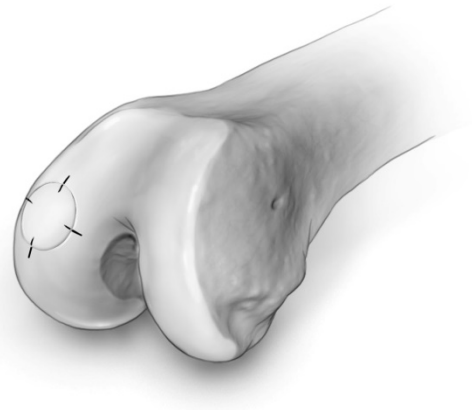
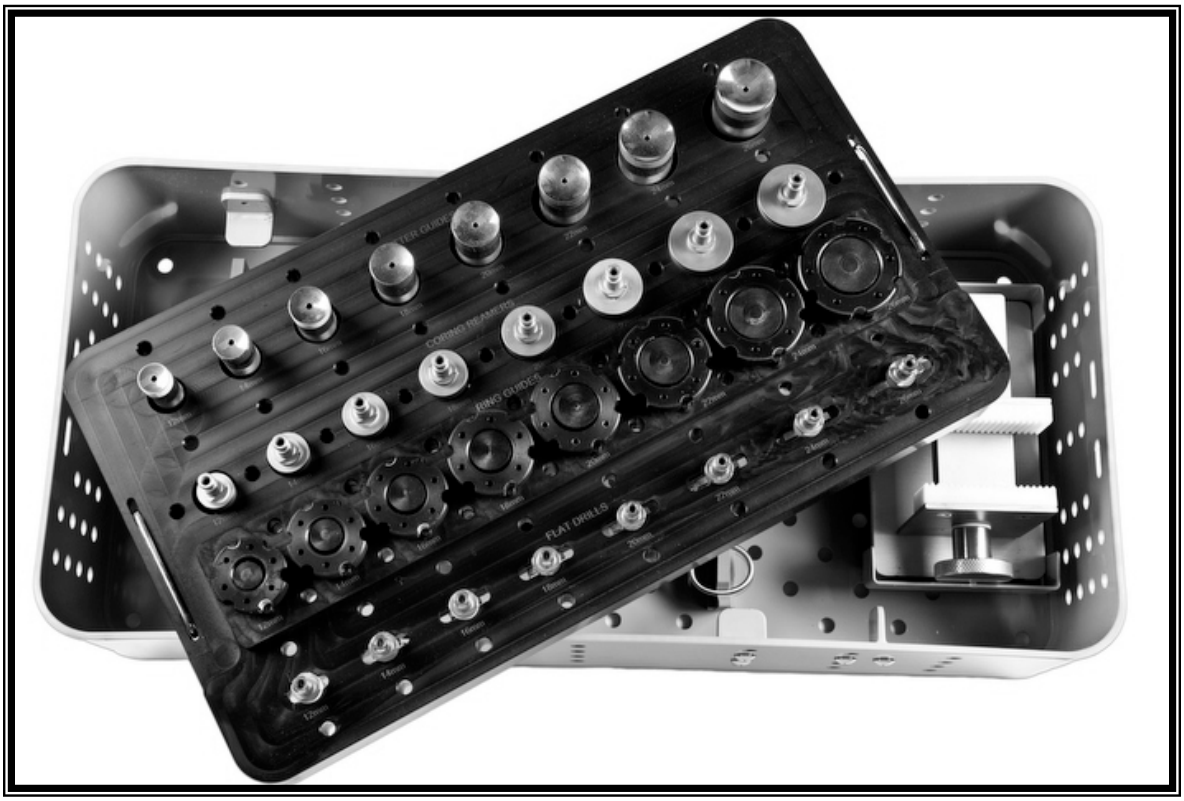


Fig. 5d

JRF Ortho Osteochondral Allograft Plug Instrumentation



The techniques presented herein are intended to demonstrate the practice of surgeons who incorporate allograft tissue into their articular cartilage resurfacing surgical procedure. Although articular cartilage allografts are distributed through JRF Ortho, JRF Ortho does not practice medicine, does not recommend these or other surgical techniques or specific products for the treatment of a particular defect or injury. Further, JRF Ortho does not endorse any surgeon or surgical practice. JRF Ortho does not warrant the accuracy, adequacy or completeness of the content of this brochure and under no circumstances shall JRF Ortho, its suppliers, distributors or other third parties are liable for any damages or injury whatsoever, including direct, indirect, special or consequential damages, arising out of the use of the techniques or products described herein.

JRF Ortho specializes in providing orthopedic surgeons with the highest viability, most widely available fresh osteochondral allograft joint repair solutions helping patients regain movement and improve their quality of life.

JRFORTHO