overture
ORTHOPAEDICS®

OvertureTi Knee Resurfacing System®

FOCALPLASTY® TECHNIQUE

SURGICAL TECHNIQUE GUIDE

REUSABLE INSTRUMENTS

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INTRODUCTION

The OvertureTi Knee Resurfacing System is composed of femoral and tibial implants that are intended to be used in the partial replacement of the articular surfaces of the knee.* These implants are designed with sizing options that allow the surgeon to replace only the diseased or damaged region of the joint while preserving healthy surrounding cartilage and meniscus. We refer to this technique of replacing only the affected areas and preserving healthy tissue as Focalplasty.

SYSTEM COMPATIBILITY

The tibial and femoral implant components are compatible across all sizes. Any sized tibial component can be used with any sized femoral component and vice versa. Instruments described in this technique shall only be used with the Overture Ti Knee Resurfacing System.

PATIENT POSITION

The patient should be positioned in the supine position. A lateral knee post is recommended to stabilize the knee in the flexed position. Alternatively, a dynamic lower extremity positioner may also be used. The hip and knee should be freely movable. A minimum of 120 degrees of knee flexion should be achievable with this proposed set-up.

TYPICAL PATIENT PROFILE

- Age Range: 30-60
- 50% or more meniscal volume
- Competent collateral and cruciate ligaments
- Focal articular cartilage loss/thinning in affected compartment (femur, tibia)
- Normal stability examination
    - Negative Lachman
    - Negative Drawer test
    - Negative Pivot Shift
- Less than 3mm pseudo-laxity in affected compartment with coronal plane stability testing
- Patellar mobility at least 10mm medially and laterally
- Preserved joint space in affected compartment
- Minimal osteophyte formation
- Weight bearing line (weight bearing axis) falls within central 75% of the affected compartment
- Ideally, bone edema should not be present in the remaining two compartments

**See the IFU at www.overtureortho.com for a complete indications statement.*

EXPOSURE

The exposure techniques listed below are provided by Dr. Riley Williams, sports medicine and orthopedic surgeon at the Hospital for Special Surgery in New York City. Overture Orthopaedics does not require any particular method for surgical exposure, and encourages surgeons to use their experience and judgment to achieve both a safe and effective exposure method for the patient.

MEDIAL JOINT EXPOSURE

A longitudinal skin incision is made along the medial border of the patellar tendon. A medial parapatellar arthrotomy is made. The quadriceps insertion should be preserved. Removal of the retro-patellar fat pad is recommended for visualization. The periosteum and soft tissues of the proximal medial tibia are elevated and dissected medially, taking care to preserve the superficial medial collateral ligament. Deep retractors are placed. Release anterior meniscal insertion to provide access to the tibial plateau. Upon closure, the anterior meniscal insertion should be repaired at the native site using suture anchors. Additional repair of the meniscus may be necessary more posteriorly at the tibial plateau. This should be accessed intra-operatively by the surgeon. A sharped tipped retractor should be used to translate the affected compartment forward for resurfacing of the tibia. This would ideally be placed behind the affected compartment.

LATERAL JOINT EXPOSURE

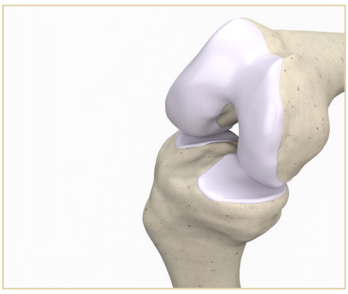
A longitudinal skin incision is made along the lateral border of the patellar tendon. A lateral parapatellar arthrotomy is made. The quadriceps insertion should be preserved. The proximal portion of the arthrotomy may be extended into the iliotibial band. Removal of the retro-patellar fat pad is recommended for visualization. The periosteum and soft tissues of the proximal lateral tibia are elevated and dissected laterally, taking care to preserve the insertion of the IT Band at Gerdy's tubercle and lateral collateral ligament. Deep retractors are placed. Release anterior meniscal insertion to provide access to the tibial plateau. Upon closure, the anterior meniscal insertion should be repaired at the native site using suture anchors. Additional repair of the meniscus may be necessary more posteriorly at the tibial plateau. This should be accessed intra-operatively by the surgeon. A sharped tipped retractor should be used to translate the affected compartment forward for resurfacing of the tibia. This would ideally be placed behind the affected compartment.

TIBIAL IMPLANTATION

DEFECT ACCESS AND SIZING

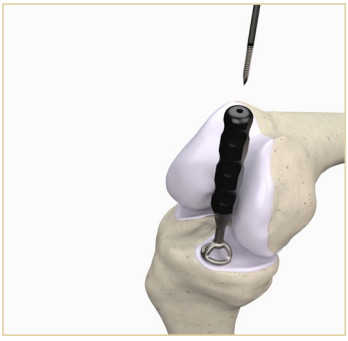
Once the initial exposure is complete, flex the knee into deep flexion with external rotation (medial side) or internal rotation (lateral side) of the tibia to expose the surface of the tibial plateau (Figure 1). To gain better visualization of the plateau surface, it is recommended that the anterior horn of the meniscus be detached. The meniscus is left adherent to the joint capsule during the dissection. This technique is meniscus sparing. The anterior horn insertion is re-attached at the conclusion of the case using suture anchors.

FIGURE 1



Use the base of Tibial Pin Guide/Sizer to assess the necessary implant sizing on the tibial surface (Figure 2). The instrument should be rotated such that the cutout in the base is rotated towards the femur. This will allow for greater clearance with the femur and ease instrument insertion. It is important that the base of Tibial Pin Guide/Sizer fully extend beyond the edges of defect to ensure adequate implant coverage and complete removal of the affected area.

FIGURE 2



NOTE:
When the base of the instrument is flush with the tibia, the handle will be tilted to 10 degrees anteriorly from being perpendicular to the articular surface.

NOTE:
Proper sizing should result in full coverage of the defect; central placement of the implant is recommended.

With the Tibial Pin Guide/Sizer flush to the tibial surface, drill the Pin into the tibia using the guide. The laser mark line on the Pin should ultimately be flush with the top of the Tibial Pin Guide/Sizer (Figure 3A). Carefully remove the Tibial Pin Guide/Sizer (Figure 3B).

FIGURE 3A

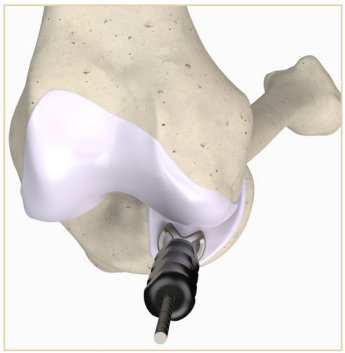


FIGURE 3B

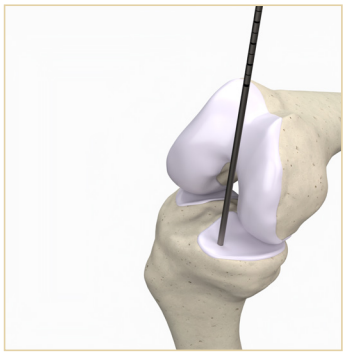
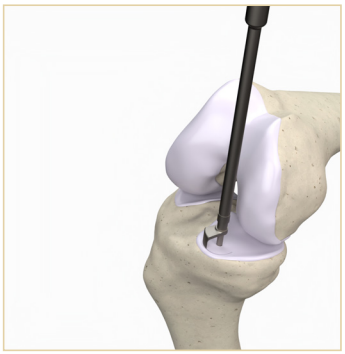


FIGURE 4



NOTE:
Very little pressure is required to cut into cartilage. It is not necessary to cut into bone at this step.

CARTILAGE SCORING

Place the appropriately sized Cartilage Scoring Tool over the Pin (Figure 4). Manually rotate the tool one revolution to create a clean, shallow cut on the surface of the articular cartilage. The cut should fully encompass the pre-existing defect if possible. If this step does not capture all damaged area, a larger size implant may be needed.

TECHNIQUE TIP:
If the Cartilage Scoring Tool becomes stuck in bone, stop applying torque and re-engage before continuing.

REAMING

Place the Primary Tibial Reamer over the Pin using power (Figure 5A). Ensure the cutout section of the reamer is rotated towards the femur (Figure 5B). This will allow for additional clearance when inserting the instrument. Ream until the shoulder on the Primary Tibial Reamer contacts the cartilage surface. Note that this contact may not occur along the entire periphery of the Primary Tibial Reamer. Carefully remove the Primary Tibial Reamer with the cutout facing the femoral condyle.

Hand ream over the Pin using the Secondary Tibial Reamer until the high side (with laser mark) of the reamer is recessed into the anterior aspect of the tibial plateau 0.5mm-1.0mm below the cartilage surface. (Figure 6A). Note that the shape of the top surface of the Secondary Tibial Reamer approximately matches the surface/thickness of the final implant. Make a mark on the tibial plateau to correspond with the laser mark on the Secondary Tibial Reamer using a surgical marker to indicate the high side (thicker side of the implant) (Figure 6B). This will help to ensure the trial and final implant is properly rotated during insertion. Remove the Secondary Tibial Reamer and Pin. Irrigate to remove debris prior to proceeding to the next step. Always check fit with corresponding sized Tibial Trial to ensure appropriate fit and depth of implant prior to final implantation.

TECHNIQUE TIP:
If the Primary Tibial Reamer becomes stuck in bone, reverse power attachment and apply axial force to remove.

FIGURE 5A

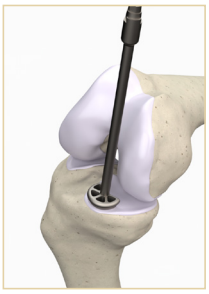
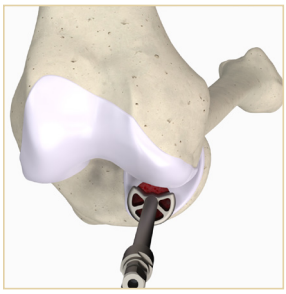


FIGURE 5B



TECHNIQUE TIP:
To avoid thermal necrosis of the bone, apply saline irrigation to the reamer during tibial reaming.

FIGURE 6A

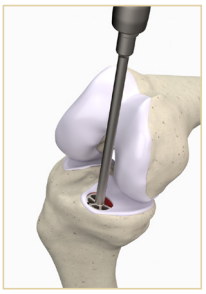
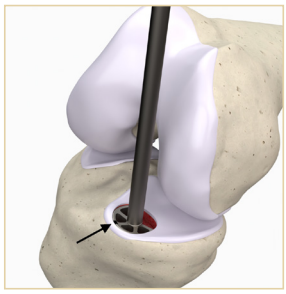
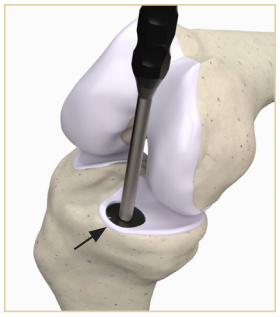


FIGURE 6B



TECHNIQUE TIP:
The hand-reamer has the cutout or notched region at the base to avoid damage to the femur during insertion. This notched section does not have the ability to cut, so to ream the posterior tibial bone appropriately, the reamer must be rotated 360^0 while in contact with the tibia.

FIGURE 7



TRIALING

Attach the correctly sized Tibial Trial to the Universal Handle. Insert the Trial, rotating it to align the laser marked line on the trial with the mark made on the cartilage (Figure 7). Visually inspect to ensure the Trial is flush or recessed below the articular surface. Check for depth particularly at the posterior edge of the trial, since the reamer cutout prevented assessment here previously. Remove the Tibial Trial using the Universal Handle.

If Tibial Trial sat proud prior to removal, re-insert Pin and Secondary Tibial Reamer to hand ream until the proper depth is achieved. If the Tibial Trial sat too low, apply additional cement under the implant to build it up to the proper height.

NOTE:
When the knee joint is under normal physiologic loading, it is reasonable to expect the healthy articular cartilage to compress. Ensure the implant is recessed 0.5 - 1.0mm to prevent premature cartilage wear on the articular surfaces of the adjacent femur. Since the Trial is the same thickness as the actual implant, the Trial allows the user a visual confirmation the implant will be placed at the correct depth below the articular cartilage.

PEG PREPARATION AND CEMENTATION

Insert the peg Drill into the hole created by the Pin, and drill under power until the shoulder on the drill bit contacts the bone (Figure 8A). Remove the Peg Drill. Irrigate the area to remove any loose debris and dry the area using a lap sponge.

Apply approximately 1cc of bone cement into the central drill hole only (Figure 8B).

FIGURE 8A

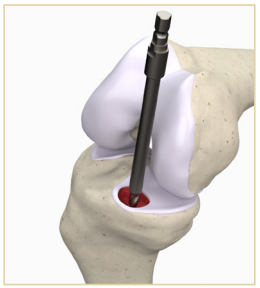


FIGURE 8B

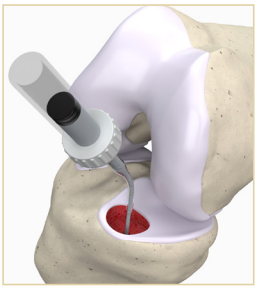
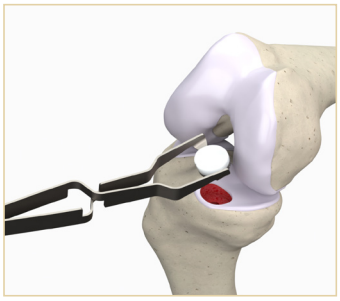


FIGURE 9A



TIBIAL IMPLANTATION

Align the vertical mark on the OvertureTi Tibial Implant® with the mark on the tibial plateau created during the hand reaming stage. Using the optional inserter or fingers, place the implant into position (Figure 9A). Using the Tibial Impactor, fully seat the implant, ensuring that periphery of the Tibial Implant is 0.5mm-1.0mm recessed relative to the adjacent articular cartilage (Figures 9B, 9C). Excessive impaction force is not necessary. Start with light taps and progress until implant is properly seated.

FIGURE 9B

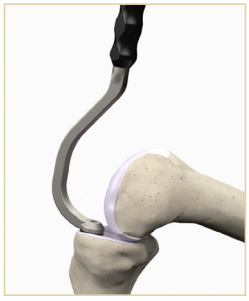


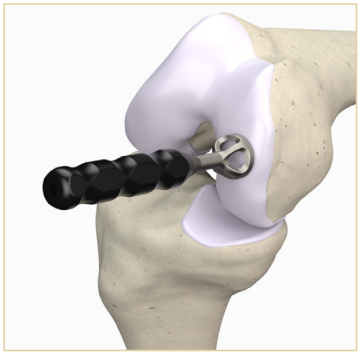
FIGURE 9C

FEMORAL IMPLANTATION - ROUND

DEFECT ACCESS AND SIZING

With the knee in flexion, the Femoral Round Pin Guide/Sizers are used to assess proper implant size. Select a Femoral Round Pin Guide/Sizer so the base fully extends beyond the defect to ensure full removal of the affected area and proper implant coverage. The chosen implant size should be surrounded by normal articular cartilage on all sides. Adjust the guide until the circular base is in full contact with the condyle on all sides (Figure 10). This will ensure that the guide is perpendicular to the femoral surface and will result in proper implant alignment. If it is not possible to achieve full contact with the condyle, consider selecting a different size or an oblong implant. Prioritize full contact in areas of greatest articulation.

FIGURE 10



NOTE:
Proper size should fully cover the defect while minimizing excess bone removed.

With the Femoral Round Pin Guide/Sizer flush with the surface of the native cartilage, drive the Pin into the center guide hole on the Femoral Round Pin Guide/Sizer until the laser mark line is flush with the handle of the Femoral Round Pin Guide/Sizer (Figure 11). Remove the Femoral Pin Guide/Sizer.

FIGURE 11

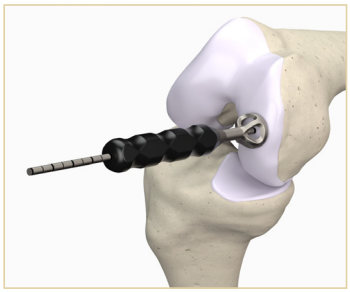


FIGURE 12A

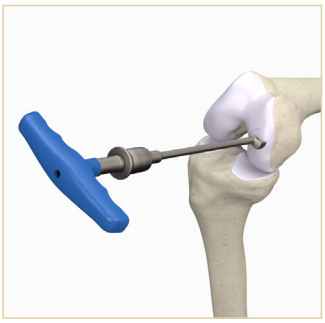
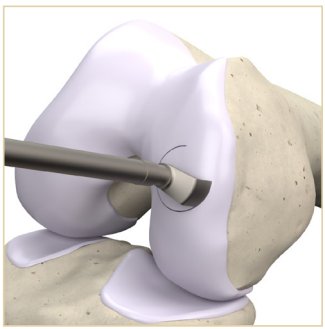


FIGURE 12B



CARTILAGE SCORING

Place the appropriately sized Cartilage Scoring Tool over the Pin (Figure 12A). Manually rotate the tool one revolution to create a clean, shallow cut on the surface of the articular cartilage (Figure 12B). The cut should encompass any existing damage or defect. If it does not capture all damaged areas, a larger size implant may be needed.

NOTE:
Very little pressure is required to cut into cartilage. It is not necessary to cut into bone at this step.

TECHNIQUE TIP:
If Cartilage Scoring Tool becomes stuck in bone, stop applying torque and re-engage before continuing.

PRIMARY AND SECONDARY REAMING

Snap the appropriate Hard Stop component into the Femoral Central Reamer to match the selected diameter (Figure 13A). Place the Femoral Central Reamer over the Pin (Figure 13B). Drive the Femoral Primary Reamer until proper depth is achieved via the Hard Stop at the base of the Reamer. Remove the Femoral Primary Reamer (Figure 13C). Irrigation should be used to prevent thermal necrosis during reaming.

Hand ream over the Pin using the Femoral Secondary Reamer until the top surface of the reamer is slightly recessed below the adjacent cartilage surface (Figure 14A). This will ensure that the implant is positioned at the proper level upon final implantation (Figure 14B).

TECHNIQUE TIP:
If Primary Round Reamer becomes stuck in bone, reverse power attachment and apply axial force to remove.

FIGURE 13A

FIGURE 13B

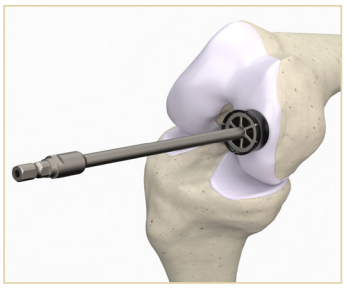


FIGURE 13C

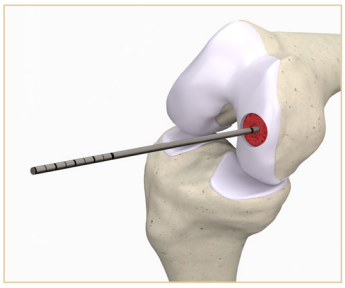


FIGURE 14A

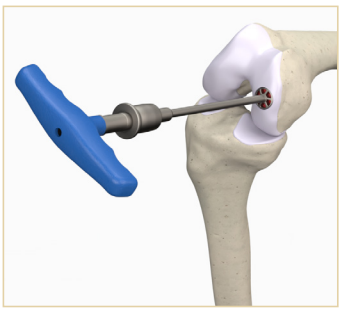


FIGURE 14B

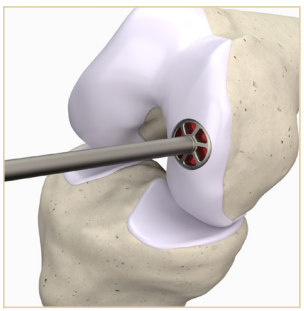
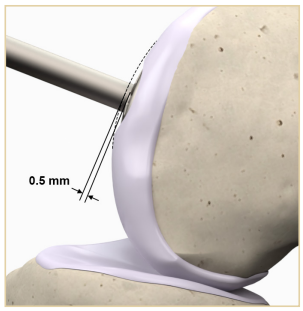


FIGURE 14C



The final Implant should sit 0.5mm-1.0mm recessed relative to the adjacent cartilage surface (Figure 14C). Remove the Femoral Secondary Reamer and Pin before proceeding with femoral trialing. Always check fit with corresponding sized Femoral Round Trial to ensure appropratie fit and depth of implant prior to final implantation.

NOTE:
The shape of the top surface of the Femoral Secondary Reamer approximately matches the shape/thickness of the final implant. This can be used as indicator of final implant position.

TRIALING

Insert the correctly sized Round Femoral Trial using the Universal Handle (Figure 15A). Visually inspect to ensure the top of the Trial is correctly recessed below the articular surface (Figures 15B, 15C). Remove the Round Femoral Trial with the Universal Handle. If Femoral Round Trial sat proud prior to removal, re-insert Pin and Secondary Femoral Round Reamer to hand ream until the proper depth is achieved. If the Femoral Round Trial sat too low, apply additional cement under the implant to build it up to the proper height.

FIGURE 15A

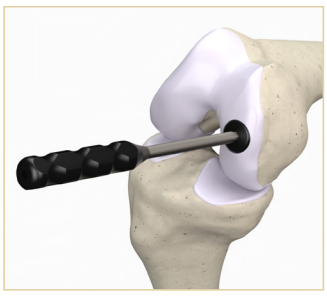


FIGURE 15B

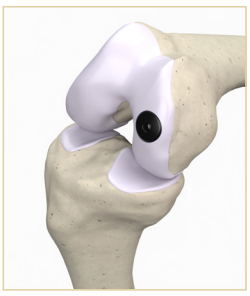
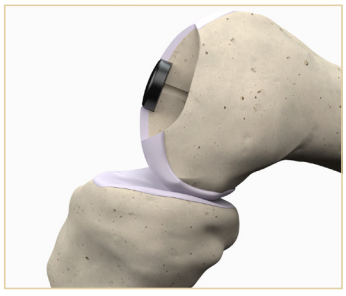


FIGURE 15C



NOTE:
When the knee joint is under normal physiologic loading, it is reasonable to expect the healthy articular cartilage to compress. Ensure the implant is recessed 0.5 - 1.0mm to prevent premature cartilage wear on the articular surfaces of the adjacent tibia. Since the Trial is the same thickness as the actual implant the Trial allows the user a visual confirmation the implant, will be placed at the correct depth below the articular cartilage.

PEG PREPARATION AND CEMENTATION

Insert the distal end of the Peg Drill into the hole created by the Pin, and drill until the shoulder on the drill bit reaches the bone (Figure 16A). Remove the Peg Drill. Irrigate the area to remove any loose debris and dry using a lap sponge. Apply approximately 1cc of bone cement into the central drill hole only (Figure 16B).

FIGURE 16A

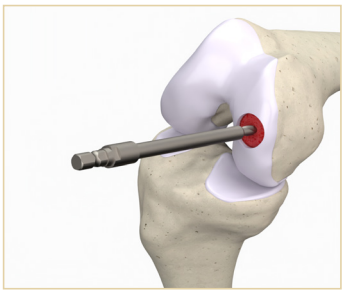


FIGURE 16B

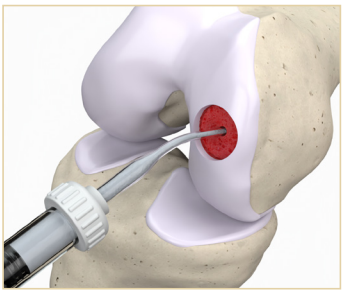


FIGURE 17A

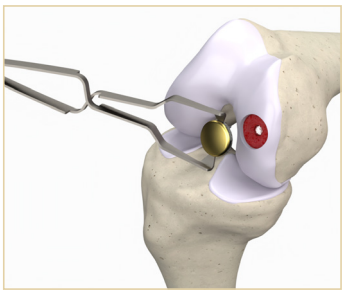


FIGURE 17B

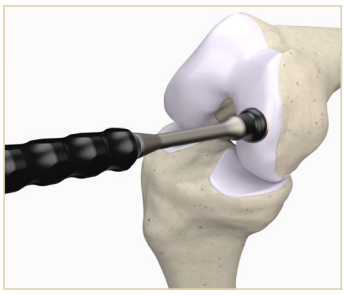


FIGURE 17C

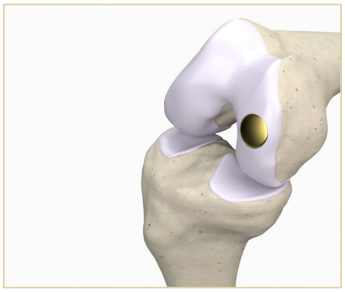
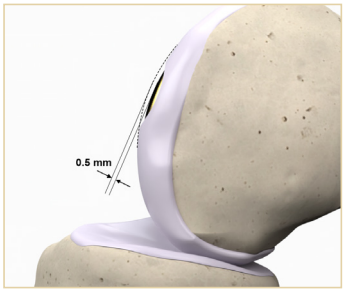


FIGURE 17D



NOTE:
There are four pockets evenly spaced around the implant. Align pockets in either the M/L or A/P plane.

IMPLANTATION

Using the optional inserter or fingers, align the peg of the Round OvertureTi Femoral Implant® with the drilled hole (Figure 17A). Using the Femoral Impactor (Figure 17B), fully seat the implant ensuring that periphery of the implant is recessed relative to the adjacent cartilage (0.5-1.0mm below) (Figures 17C, 17D). Excessive impaction force is not necessary. Start with light taps and progress until implant is properly seated.

NOTE:
Take care to center the Femoral Impactor over the implant to ensure that the instrument does not contact the adjacent tissues to avoid unwanted trauma to the native articular surface.

After implantation, and prior to sending instruments to SPD, remove Hard Stop from Femoral Central Reamer. Follow the instructions provided in the "Central Scoring and Reaming" section of the femoral oblong technique.

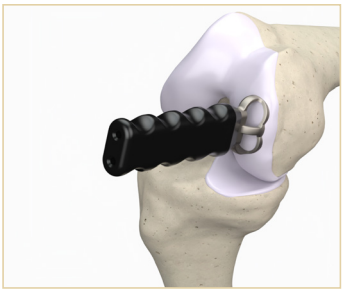
FEMORAL IMPLANTATION - OBLONG

DEFECT ACCESS AND SIZING

With the knee in flexion, use the Femoral Oblong Pin Guide/Sizer to assess the proper implant size. Select a Femoral Oblong Pin Guide/Sizer so the base fully extends beyond the defect to ensure full removal of the affected area and proper implant coverage (Figure 18). In addition, ensure the base of the sizer is in full contact with the cartilage on all sides. This will ensure that the guide is perpendicular to the femoral surface and will result in proper implant placement. If the Guide/Sizer is not flush on all sides, re-adjust until it is in intimate contact. If it is not possible to achieve full contact with the condyle, consider readjusting or selecting a different size implant. Prioritize full contact in areas of greatest articulation.

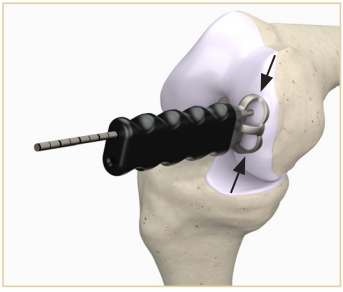
With the Femoral Oblong Pin Guide/Sizer flush with the surface of the native cartilage, drive the Pin into the superior hole on the Femoral Oblong Pin Guide/Sizer so the laser mark line is flush with the handle of the Femoral Oblong Pin Guide/Sizer (Figure 19). Mark two lines on the cartilage at the superior and inferior poles of the Guide/Sizer to record its orientation. Remove the Femoral Oblong Pin Guide/Sizer.

FIGURE 18



NOTE:
Proper size should fully cover the defect while minimizing excess bone removed.

FIGURE 19



CARTILAGE SCORING

Place the appropriately sized Cartilage Scoring Tool over the superior Pin. Manually rotate the tool one revolution to create a clean, shallow cut on the surface of the articular cartilage. The cut should extend beyond any existing defect. If it does not capture all damaged area on the superior and lateral aspects, a larger size implant may be needed (Figure 20).

NOTE:
Very little pressure is required to cut into cartilage. It is not necessary to cut into bone at this step.

TECHNIQUE TIP:
If the Cartilage Scoring Tool becomes stuck in bone, stop applying torque and re-engage before continuing.

FIGURE 20

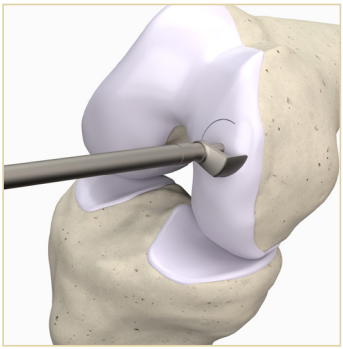


FIGURE 21A

FIGURE 21B

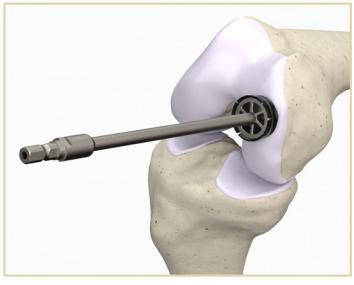
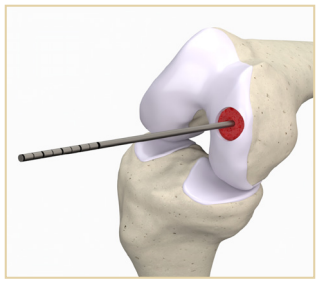


FIGURE 21C



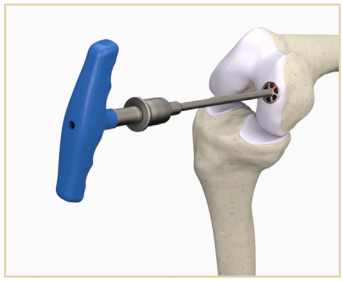
TECHNIQUE TIP:
If Femoral Central Reamer becomes stuck in bone, reverse power attachment and apply axial force to remove.

PRIMARY AND SECONDARY REAMING

Snap the appropriate Hard Stop component into the Femoral Central Reamer to match the selected diameter (Figure 21A). Place the Femoral Central Reamer over the superior Pin using power (Figure 21B). Drive the Femoral Central Reamer until proper depth is achieved via the Hard Stop at the base of the reamer. Irrigation should be used to prevent thermal necrosis during reaming. Leave pin in place following reaming (Figure 21C).

Hand ream over superior Pin using the Femoral Secondary Oblong Reamer until the reamer is 0.5mm recessed below the adjacent cartilage level (Figure 21D). When checking for depth, the laser marked line on the reamer should align with the superior mark on the cartilage. In this orientation of the reamer, the shape of the top surface of the Femoral Secondary Reamer approximately matches the surface/ thickness of the final implant (Figure 21E).

FIGURE 21D



Place the Femoral Oblong Pin Guide/Sizer over the superior Pin. Orient the Sizer to align its superior-inferior axis with the lines previously marked on the cartilage. Insert the inferior Pin through the Guide until the first laser marked line is flush with the top of the handle to ensure Pin has achieved appropriate depth (Figures 22A, 22B). Remove the

FIGURE 21E

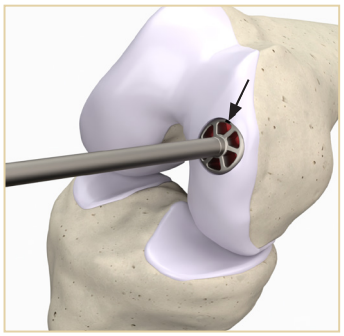


FIGURE 22A

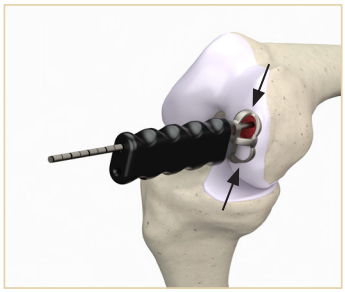
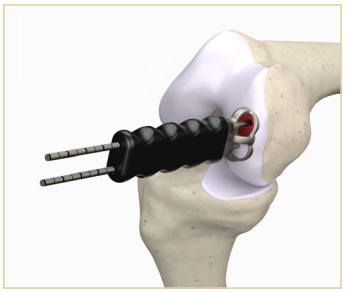


FIGURE 22B



The inferior defect is now ready for preparation. Repeat the steps for cartilage scoring, primary reaming under power, and secondary reaming over the inferior Pin (Figures 22C, 22D, 22E). Ensure the Hard Stop is installed in the Primary Reamer prior to attaching to power. When secondary reaming, orient the laser marked line with the inferior mark on the cartilage (Figure 22F). Perform additional hand reaming until Femoral Secondary Oblong Reamer is between 0.5mm-1.0mm recessed. The superior and inferior reamed surfaces should be at the same depth without a step.

FIGURE 22C

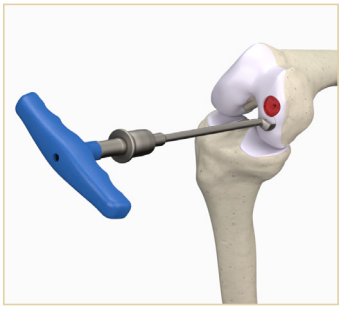


FIGURE 22D

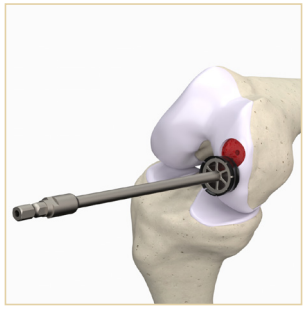


FIGURE 22E

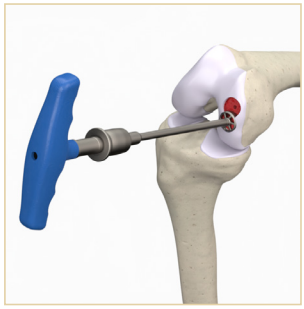
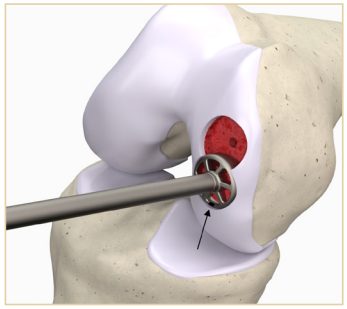


FIGURE 22F



CENTRAL SCORING AND REAMING

Select the correctly sized Femoral Reamer Guide and insert into the reamed implant defect using the Universal Handle (Figure 23A). Push the tip of the Instrument Handle into the opening at the top of the Femoral Reamer Guide until a tactile “click” is felt. Relatively little force is required when attaching the Instrument Handle to the Femoral Reamer Guide. There are six flats around the tip of the Instrument Handle. If it does not engage easily at first, try rotating it to engage the next flat. The user may notice some play or wobble at the connection point. This is normal. There will be ~2mm gap between the top of the Femoral Reamer Guide and the shoulder of the Instrument Handle (Figure 23B). Using a scalpel, score the remaining cartilage visible through the Femoral Reamer Guide (Figure 23C).

FIGURE 23A

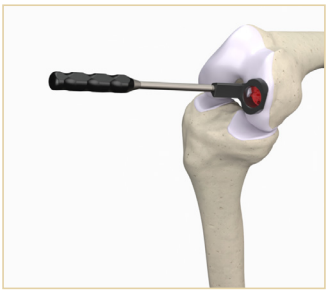


FIGURE 23B

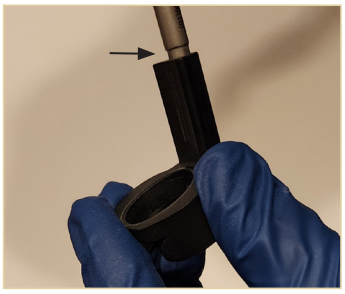


FIGURE 23C

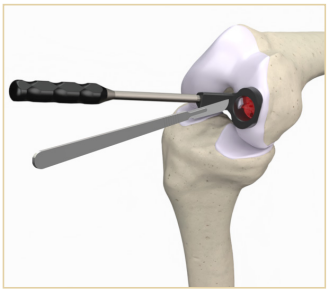


FIGURE 23D

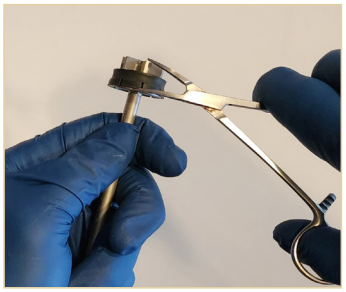


FIGURE 23E

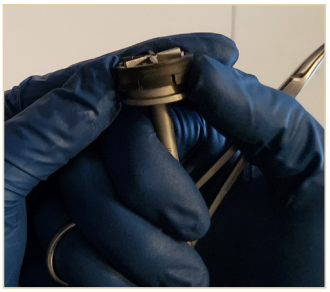
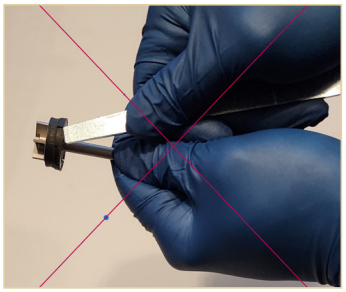


FIGURE 23F



Prior to reaming, remove the Hard Stop from the Femoral Central Reamer. If the Primary Reamer Hard Stop is difficult to remove by hand from the Femoral Central Reamer, take a non-toothed forceps such as a Hemostat or Kelly and place one tong of the forceps on the edge of the Primary Reamer Hard Stop and the other tong on the blade of the Femoral Central Reamer and squeeze to release (Figure 23D). Once the edge is released, remove it by hand (Figure 23E). Do not use an instrument or tool to lever the Primary Reamer Hard Stop off the Femoral Central Reamer. Breakage may occur (Figures 23F, 23G).

FIGURE 23G

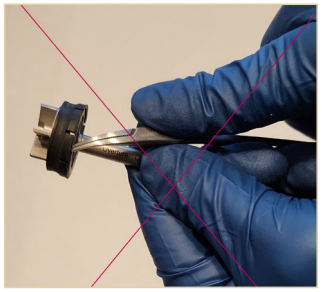


FIGURE 23H

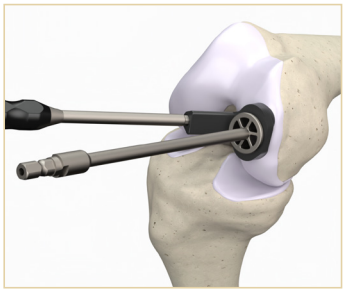


FIGURE 23I

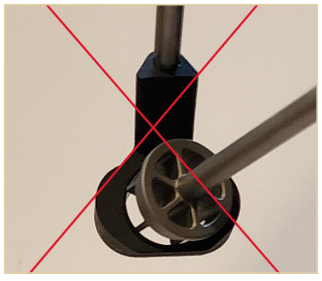
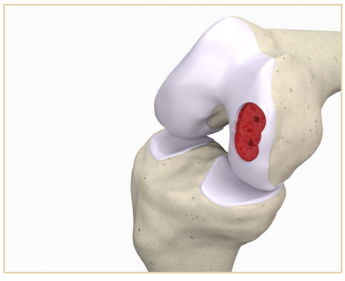


FIGURE 23J



Place the corresponding Central Femoral Reamer through the round port on the Femoral Reamer Guide (Figure 23H). Ensure the Central Femoral Reamer is fully aligned within the opening of the Femoral Reamer Guide prior to attaching and engaging power for reaming. Do not engage the power equipment while the Femoral Central Reamer is not aligned within the opening of the Femoral Reamer Guide (Figure 23I). The Femoral Central Reamer blades could catch on to the interior of the Femoral Reamer Guide and cause breakage. Drive the Central Femoral Reamer until it reaches the built-in depth stop (Figure 23J). Always check fit with corresponding sized Oblong Femoral Trial to ensure appropriate fit and depth of implant prior to final implantation.

TRIALING

Attach the Oblong Femoral Trial to the Universal Handle and introduce it into the reamed cavity (Figure 24A). Visually inspect to ensure the top of the Trial is correctly recessed below the articular surface (Figures 24B, 24C). Remove the Oblong Femoral Trial with the Universal Handle. If the trial sits too low, apply additional cement under the implant to build it up to the proper height. If trial sits proud prior to removal, re-insert Pin and Secondary Femoral Oblong Reamer to hand ream until the proper depth is achieved.

FIGURE 24A

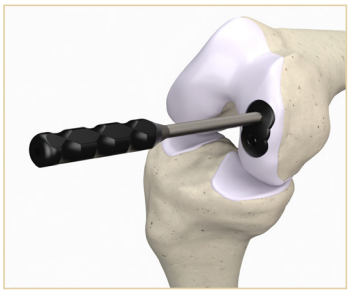
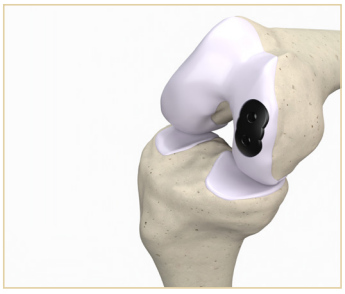


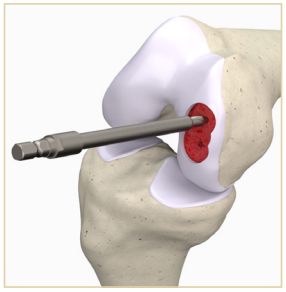
FIGURE 24B



NOTE:
When the knee joint is under normal physiologic loading, it is reasonable to expect the healthy articular cartilage to compress. Ensure the implant is recessed 0.5 - 1.0mm to prevent premature cartilage wear on the articular surfaces of the adjacent tibia. Since the Trial is the same thickness as the actual implant the Trial allows the user a visual confirmation the implant, will be placed at the correct depth below the articular cartilage.

FIGURE 24C

FIGURE 25A



PEG PREPARATION AND CEMENTATION

Insert the distal end of the Peg Drill into the hole created by the Pin, and drill under power until the shoulder on the Peg Drill contacts the bone (Figure 25A).

Repeat for the second hole. Irrigate the area to remove any loose debris and dry using a lap sponge. Apply approximately 1cc of bone cement into the drill holes only (Figure 25B).

FIGURE 25B

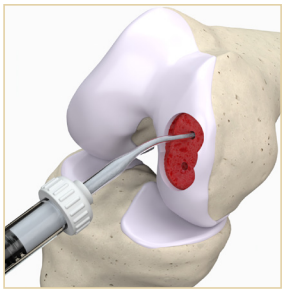


FIGURE 26A

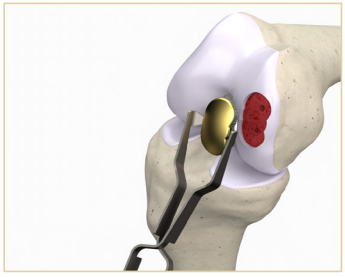
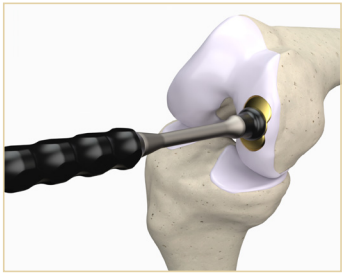


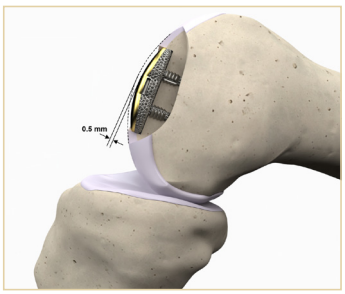
FIGURE 26B



IMPLANTATION

Using the optional inserter or fingers, align the pegs of the Oblong OvertureTi Femoral Implant® with the drilled holes (Figure 26A). Using the Femoral Impactor, fully seat the implant, ensuring that periphery of the implant is recessed relative to the adjacent cartilage (0.5mm-1.0mm) (Figures 26B, 26C). Excessive impaction force is not necessary. Start with light taps and progress until implant is properly seated.

FIGURE 26C



NOTE:
Take care to center the Femoral Impactor over the implant to ensure that the instrument does not contact the adjacent tissues as it may cause unwanted trauma.

FEMORAL IMPLANT REMOVAL - ROUND

The Femoral Round Implant has a set of four removal pockets equally spaced around the implant, just below the articular surface. To gain access to the pockets, place the Hole Saw around the Femoral Round Implant under power and drill until the Hole Saw reaches its full depth to the surface of the Femoral Round Implant (Figures 27A, 27B). Remove the Hole Saw.

FIGURE 27A

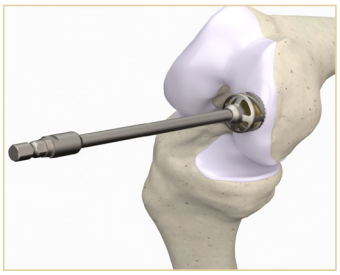
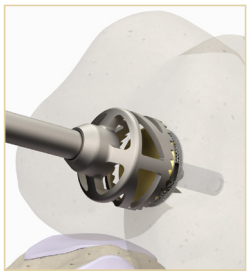


FIGURE 27B



Place the Removal Tool around the Femoral Round Implant in the groove created by the Hole Saw. Line up the prongs of the Removal Tool with the removal pockets of the Femoral Round Implant (Figures 28A, 28B). Squeeze the grip of the removal tool to grab the implant. Attach the Slap Hammer as necessary to aid in removal (Figure 28C).

FIGURE 28A

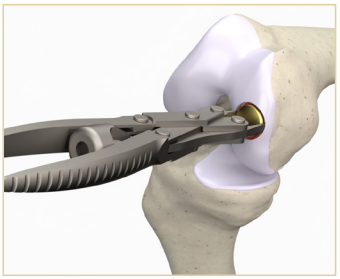


FIGURE 28B

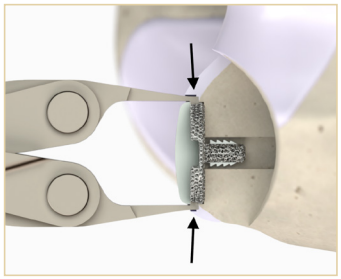
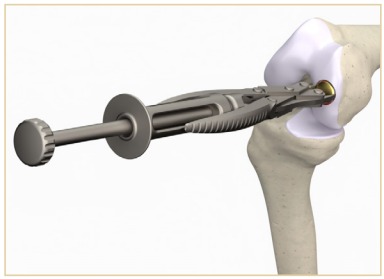


FIGURE 28C



NOTE:
The removal pockets are likely oriented on the M/L or A/P axes.

FEMORAL IMPLANT REMOVAL - OBLONG

Similar to the Femoral Round Implant, the Femoral Oblong Implants have a set of removal pockets on opposite M/L sides of the midline of the implant just below the articular surface of the implant (Figure 29A). Chisel around the edges of the Femoral Oblong Implant using the Straight Femoral Removal Punch and Curved Femoral Removal Punch (Figures 29B, 29C). This will aid in freeing it from any adjacent bone (Figure 29D).

FIGURE 29A

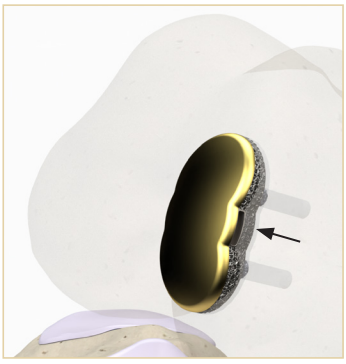


FIGURE 29B

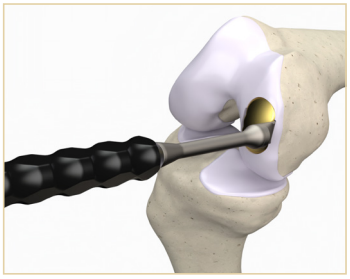


FIGURE 29C

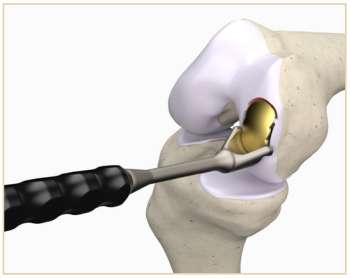
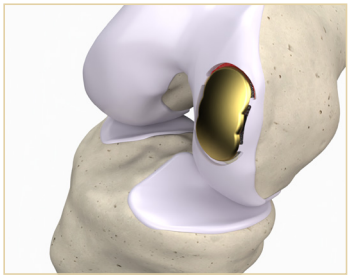


FIGURE 29D



Place the Removal Tool around the Femoral Oblong Implant in the lateral grooves created by the Punch. Line up the prongs of the Removal Tool with the removal pockets of the Femoral Oblong Implant (Figure 30A). If it is difficult to get both prongs connected, with the Slap Hammer attached, tap lightly downward on the Removal Tool until you feel the prongs gasp into the implant removal pockets. Squeeze the grip of the Removal Tool to grasp the Femoral Oblong Implant (Figure 30B).

FIGURE 30A

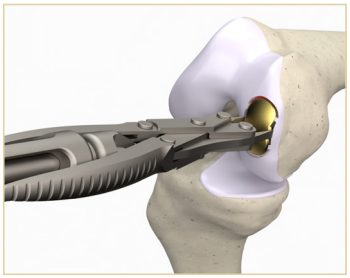
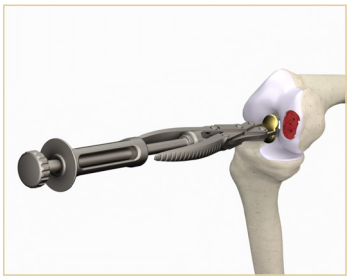


FIGURE 30B



TIBIAL IMPLANT REMOVAL

The Tibial Implant has a circumferential groove just below the articular surface which can be used for removal (Figure 31A).

To gain access to the removal groove, place the appropriately sized Hole Saw around the Tibial Implant and drill under power until the Hole Saw reaches its full depth to the surface of the Tibial Implant (Figure 31B). Remove the Hole Saw.

Alternatively, manual instruments may be utilized to create holes adjacent to the Tibial Implant. The holes just need to be wide enough to accommodate insertion of the tips of the working end of the Removal Tool.

Place the Removal Tool around the Tibial Implant in the groove created by the Hole Saw. Line up the prongs of the Removal Tool with the removal groove of the Tibial Implant (Figures 32A, 32B). If it is difficult to get both prongs connected, with the Slap Hammer attached, tap lightly downward on the Removal Tool until you feel the prongs grasp into the implant removal groove. Squeeze the grip of the removal tool to grab the Tibial Implant (Figure 32C).

FIGURE 31A

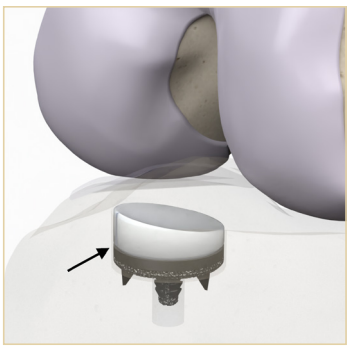


FIGURE 31B

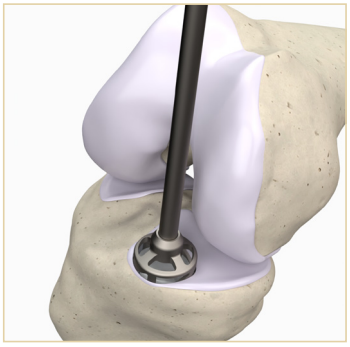


FIGURE 32A

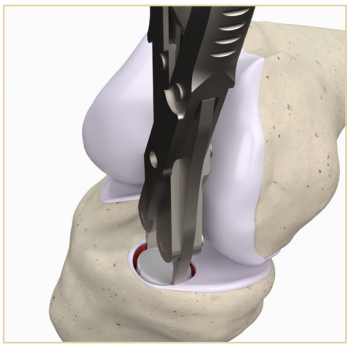


FIGURE 32B

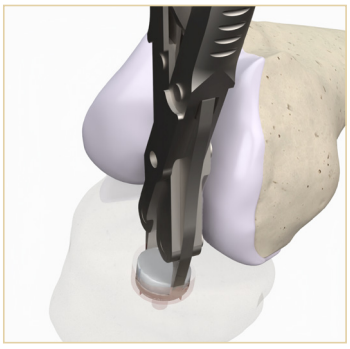
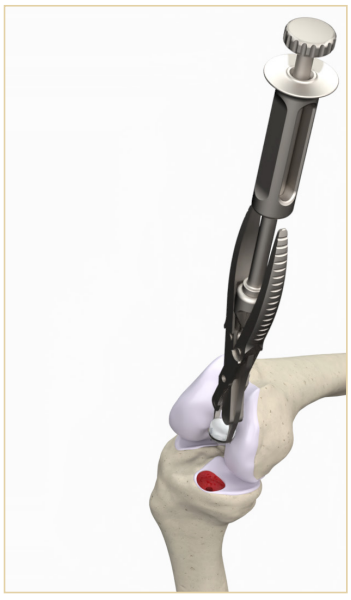
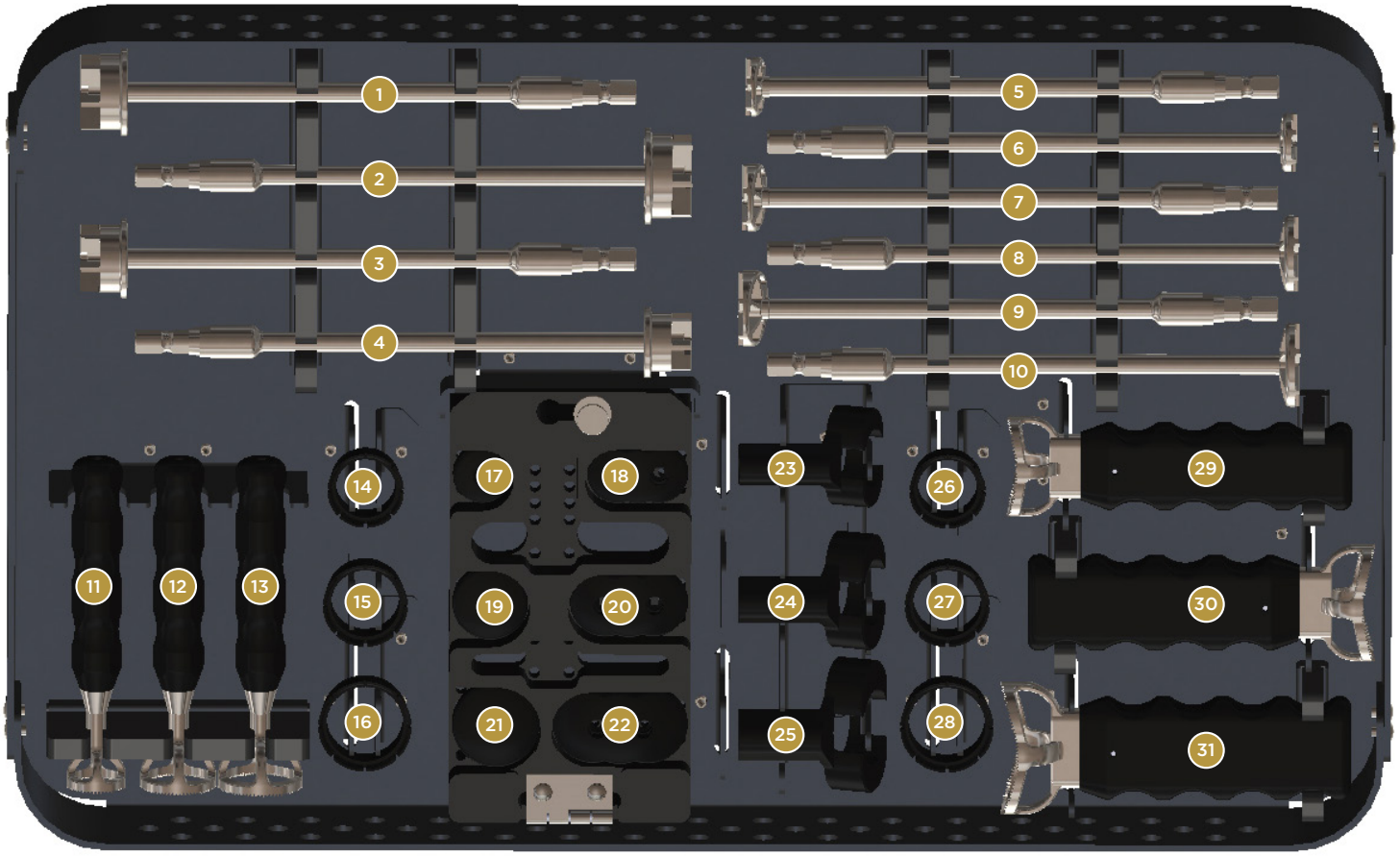


FIGURE 32C

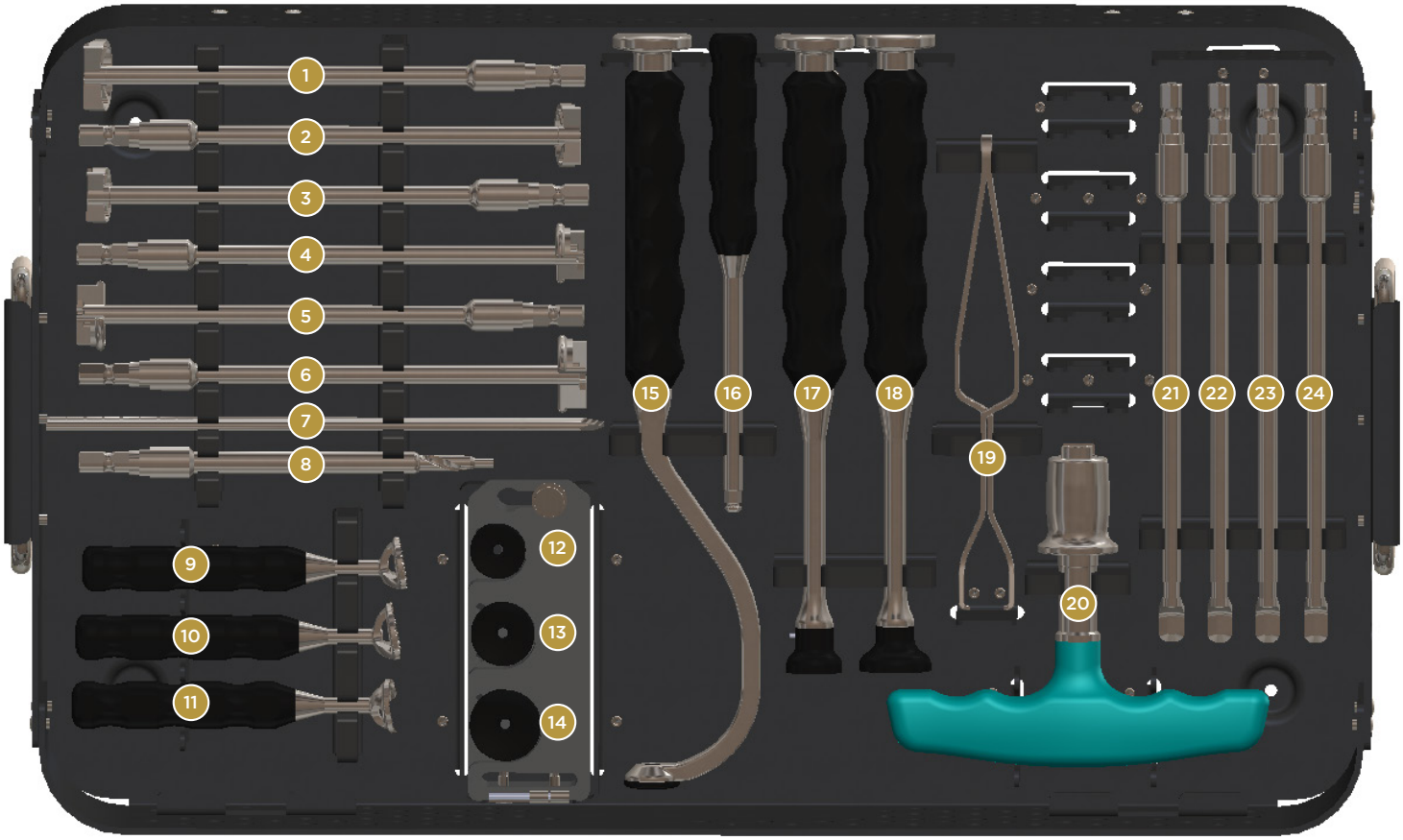


TOP INSERTION TRAY



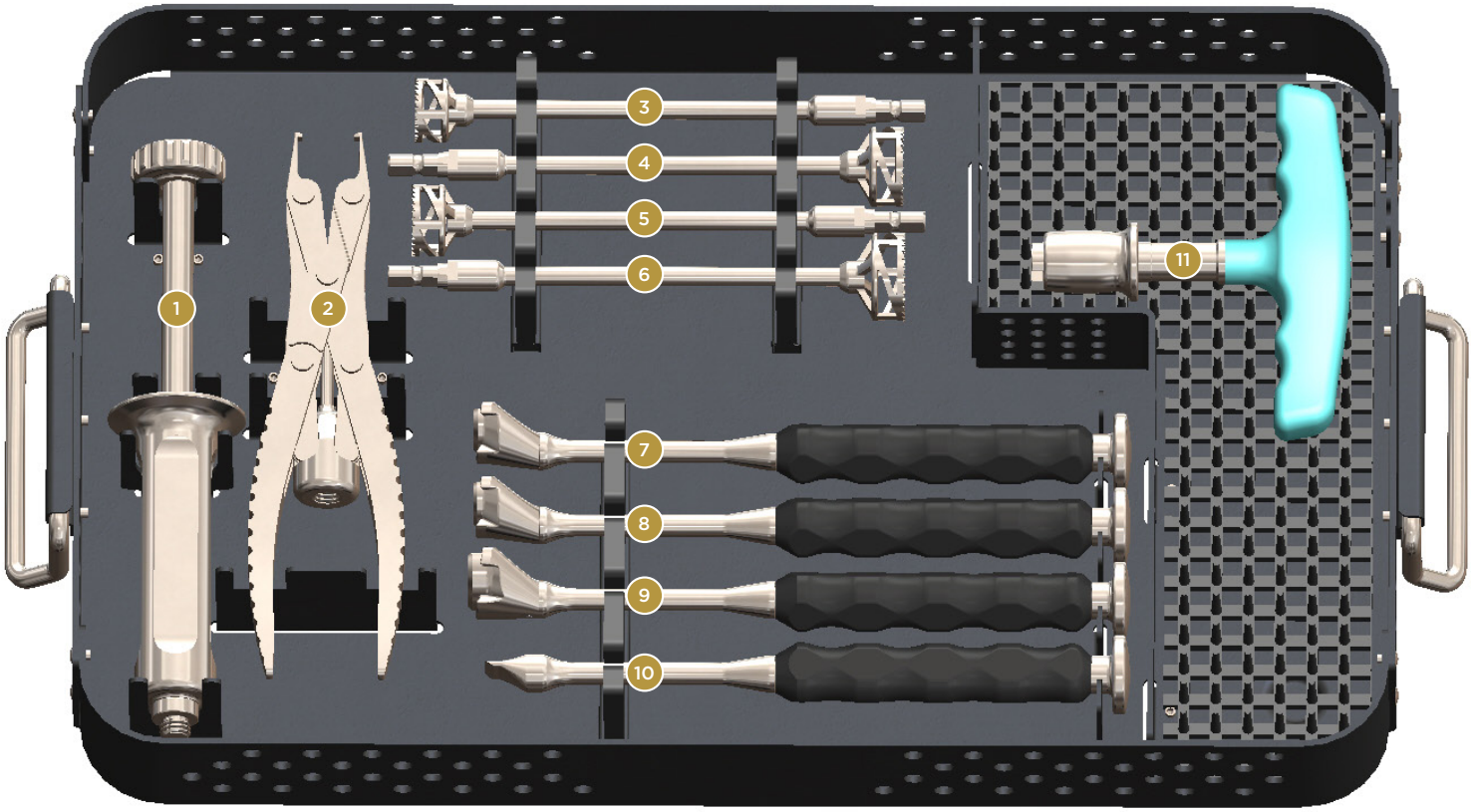
1	90-OVR-780025	Femoral Central Reamer, 25.0mm
2	90-OVR-780022	Femoral Central Reamer, 22.5mm
3	90-OVR-780020	Femoral Central Reamer, 20.0mm
4	90-OVR-780017	Femoral Central Reamer, 17.5mm
5	90-OVR-501730	Femoral Secondary Reamer, Oblong 17.5X30mm
6	90-OVR-500017	Femoral Secondary Reamer, Round 17.5mm
7	90-OVR-502035	Femoral Secondary Reamer, Oblong 20.0X35mm
8	90-OVR-500022	Femoral Secondary Reamer, Round 22.5mm
9	90-OVR-502240	Femoral Secondary Reamer, Oblong 22.5X40mm
10	90-OVR-500025	Femoral Secondary Reamer, Round 25.0mm
11	90-OVR-540017	Femoral Round Pin Guide/Sizer 17.5mm
12	90-OVR-540022	Femoral Round Pin Guide/Sizer 22.5mm
13	90-OVR-540025	Femoral Round Pin Guide/Sizer 25.0mm
14	90-OVR-510017	Femoral Primary Ream Hard Stop, Round 17.5mm
15	90-OVR-510022	Femoral Primary Ream Hard Stop, Round 22.5mm
16	90-OVR-510025	Femoral Primary Ream Hard Stop, Round 25.0mm
17	90-OVR-580017	Femoral Trial, Round, 17.5mm
18	90-OVR-561730	Femoral Trial, Oblong, 17.5x30mm
19	90-OVR-580022	Femoral Trial, Round, 22.5mm
20	90-OVR-562035	Femoral Trial, Oblong, 20.0x35mm
21	90-OVR-580025	Femoral Trial, Round, 25.0mm
22	90-OVR-562240	Femoral Trial, Oblong, 22.5x40mm
23	90-OVR-551730	Femoral Reamer Guide 17.5x30mm
24	90-OVR-552035	Femoral Reamer Guide 20.0x35mm
25	90-OVR-552240	Femoral Reamer Guide 22.5X40mm
26	90-OVR-511730	Femoral Primary Ream Hard Stop, Oblong 17.5x30mm
27	90-OVR-512035	Femoral Primary Ream Hard Stop, Oblong 20.0x35mm
28	90-OVR-512240	Femoral Primary Ream Hard Stop, Oblong 22.5x40mm
29	90-OVR-531730	Femoral Oblong Pin Guide/Sizer 17.5X30mm
30	90-OVR-532035	Femoral Oblong Pin Guide/Sizer 20.0X35mm
31	90-OVR-532240	Femoral Oblong Pin Guide/Sizer 22.5X40mm

BOTTOM INSERTION TRAY



1	90-OVR-620022	Tibial Secondary Reamer 22.5mm
2	90-OVR-620020	Tibial Secondary Reamer 20.0mm
3	90-OVR-620017	Tibial Secondary Reamer 17.5mm
4	90-OVR-610017	Tibial Primary Reamer 17.5mm
5	90-OVR-610020	Tibial Primary Reamer 20.0mm
6	90-OVR-610022	Tibial Primary Reamer 22.5mm
7	90-OVR-710000	Pin
8	90-OVR-720000	Drill
9	90-OVR-650022	Tibial Pin Guide/Sizer 22.5mm
10	90-OVR-650020	Tibial Pin Guide/Sizer 20.0mm
11	90-OVR-650017	Tibial Pin Guide/Sizer 17.5mm
12	90-OVR-630017	Tibial Trial, 17.5mm
13	90-OVR-630020	Tibial Trial, 20.0mm
14	90-OVR-630022	Tibial Trial, 22.5mm
15	90-OVR-640017	Tibial Impactor
16	90-OVR-730000	Instrument Handle
17	90-OVR-570017	Femoral Impactor 17.5mm
18	90-OVR-570022	Femoral Impactor 22.5mm
19	90-OVR-740000	Inserter (optional)
20	90-OVR-750000	T-Handle
21	90-OVR-725025	Cartilage Scoring Tool 25.0mm
22	90-OVR-725022	Cartilage Scoring Tool 22.5mm
23	90-OVR-725020	Cartilage Scoring Tool 20.0mm
24	90-OVR-725017	Cartilage Scoring Tool 17.5mm

REMOVAL TRAY



1	90-OVR-760000	Slap Hammer
2	90-OVR-770000	Removal Tool
3	90-OVR-660017	Implant Removal Hole Saw 17.5mm
4	90-OVR-660020	Implant Removal Hole Saw 20.0mm
5	90-OVR-660022	Implant Removal Hole Saw 22.5mm
6	90-OVR-660025	Implant Removal Hole Saw 25.0mm
7	90-OVR-520017	Femoral Removal Punch, Curved 17.5mm
8	90-OVR-520020	Femoral Removal Punch, Curved 20.0mm
9	90-OVR-520022	Femoral Removal Punch, Curved 22.5mm
10	90-OVR-521000	Femoral Removal Punch, Straight
11	90-OVR-750000	T-Handle

IMPLANTS

TIBIAL

90-OVR-350017	17.5 MM
90-OVR-350020	20.0 MM
90-OVR-350022	22.5 MM

FEMORAL ROUND

90-OVR-200017	17.5 MM
90-OVR-200022	22.5 MM
90-OVR-200025	25.0 MM

FEMORAL OBLONG

90-OVR-101730	17.5 X 30.0 MM
90-OVR-102035	20.0 X 35.0 MM
90-OVR-102240	22.5 X 40.0 MM