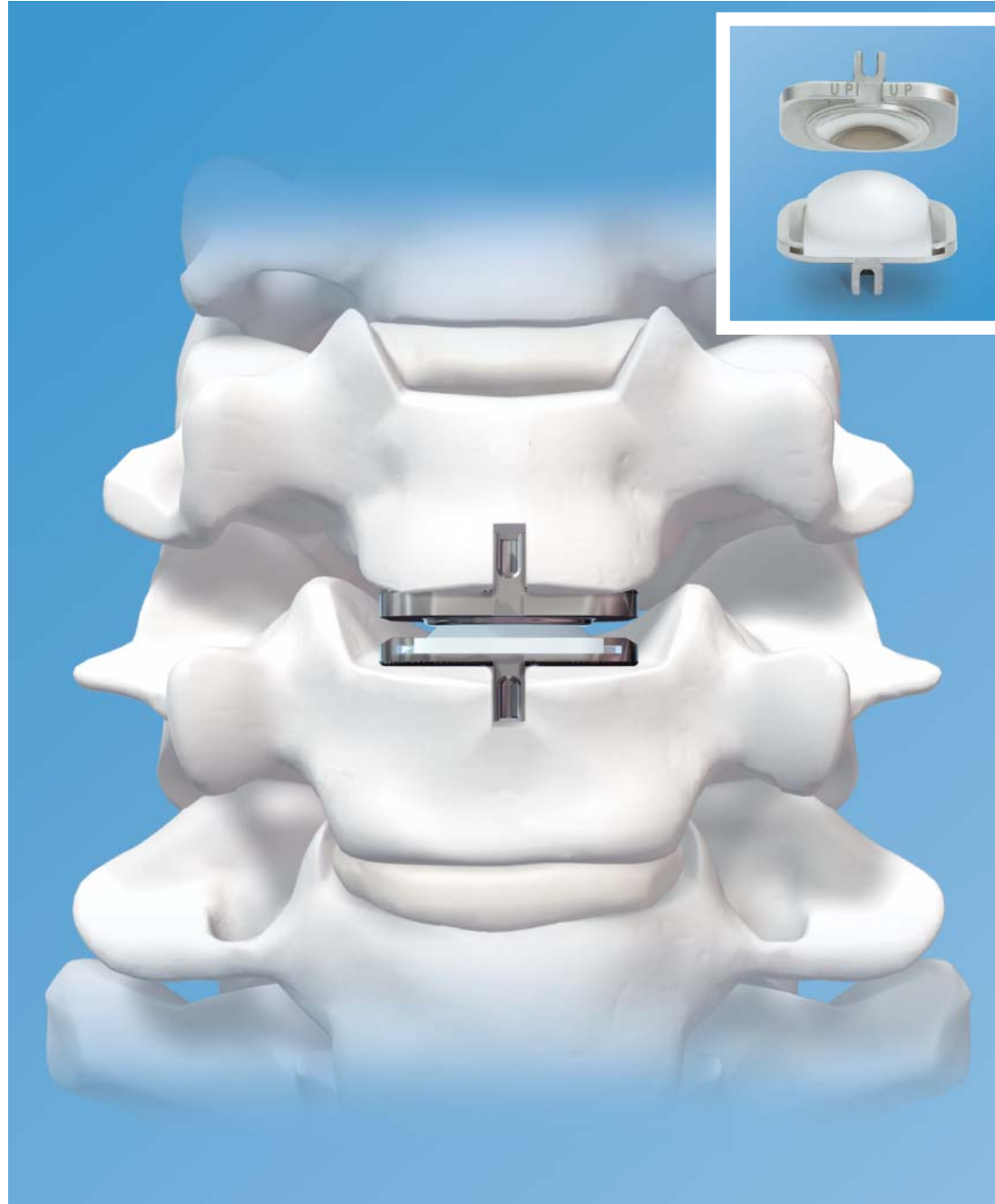


**prodisc® C Total Disc Replacement.**  
For single level spinal arthroplasty from  
C3 to C7.

Technique Guide



**CENTINEL**   
**SPINE**®



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# prodisc C Total Disc Replacement

The prodisc C Total Disc Replacement (Figure 1) is intended to replace a diseased and/or degenerated intervertebral disc of the cervical spine in patients with symptomatic cervical disc disease (SCDD). The prodisc C Total Disc Replacement procedure is intended to significantly reduce pain by allowing for the removal of the diseased disc while restoring disc height and providing the potential for motion at the affected vertebral segment.

The prodisc C Total Disc Replacement is a modular implant consisting of two CoCrMo (cobalt chromium molybdenum) endplates and one UHMWPE (ultra-high molecular weight polyethylene) inlay. The inferior CoCrMo alloy endplate has a midline keel that is anchored into the endplate of the inferior vertebral body. The UHMWPE insert is preassembled snap-locked into a tray detail in the inferior CoCrMo alloy endplate and provides the inferior convex bearing surface. The superior CoCrMo alloy endplate has a midline keel that anchors to the superior vertebral body and has a highly polished concave bearing surface that articulates with the convex UHMWPE spherical dome. Immediate anchoring of prodisc C Total Disc Replacement to the vertebral bodies is achieved through a midline keel that is oriented anterior-posterior on the surface of each of the two endplates. In addition, the bone-contacting surfaces of the inferior and superior endplates, as well as both keels, are titanium plasma spray coated to allow for long-term fixation (Figure 2).

The plasma sprayed titanium surface texture also provides a high coefficient of friction to aid in immediate implant fixation. CoCrMo alloy was used in prodisc C Total Disc Replacement for its superior strength, proven biocompatibility, superior abrasion resistance, and superior wear characteristics when coupled with UHMWPE.

prodisc C Total Disc Replacement is labeled MR Conditional, where it has been demonstrated to pose no known hazards in a specified MR environment with specified conditions of use. Please refer to page 6 for further information.



Figure 1

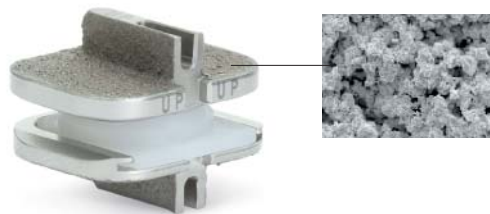


Figure 2



# Features and Potential Benefits

## Ball and socket design

- Allows for the potential for motion in the treated segment
- Provides a fixed center of rotation
- Resists shear forces

## Device design range of motion (as measured through in vitro testing)

- 20° flexion/extension (17.5° for 5 mm large, large deep, extra large, and extra large deep implants)
- 20° lateral bending (17.5° for 5 mm large, large deep, extra large, and extra large deep implants)
- Unconstrained in axial rotation

## Anatomical sizing

- Six (6) endplate footprints (medium, medium deep, large, large deep, extra large, extra large deep)
- 5 mm, 6 mm and 7 mm heights
- 18 implant configurations

## Dimensions—endplates

Implant Size	AP (mm)	Lateral (mm)	Disc heights (mm)
Medium	12	15	5, 6, 7
Medium Deep	14	15	5, 6, 7
Large	14	17	5, 6, 7
Large Deep	16	17	5, 6, 7
Extra Large	16	19	5, 6, 7
Extra Large Deep	18	19	5, 6, 7

## Stable fixation

- Patented central keels (oriented anterior-posterior) provide secure primary fixation
- Titanium porous coating aids in long-term fixation



Figure 3

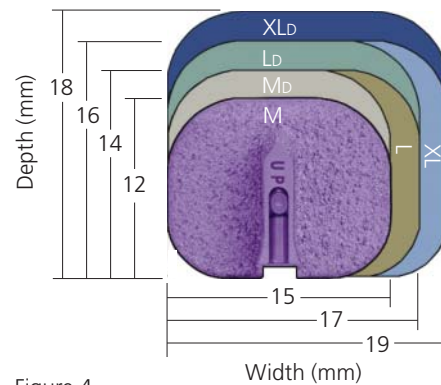


Figure 4



Figure 5

# Indications and Contraindications

## Indications for use

The **prodisc C** Total Disc Replacement is indicated in skeletally mature patients for reconstruction of a single disc from C3–C7 following discectomy for intractable symptomatic cervical disc disease (SCDD). Symptomatic cervical disc disease is defined as neck or arm (radicular) pain and/or a functional/neurological deficit with at least one of the following conditions confirmed by imaging (CT, MRI, or x-rays): herniated nucleus pulposus, spondylosis (defined by the presence of osteophytes), and/or loss of disc height. The **prodisc C** Total Disc Replacement is implanted via an open anterior approach. Patients receiving the **prodisc C** Total Disc Replacement should have failed at least six weeks of nonoperative treatment prior to implantation of the **prodisc C** Total Disc Replacement.

## Contraindications

The **prodisc C** Total Disc Replacement should not be implanted in patients with the following conditions:

- Active systemic infection or infection localized to the site of implantation
- Osteoporosis defined as DEXA bone density measured T-score  $\leq -2.5$
- Marked cervical instability on neutral resting lateral or flexion/extension radiographs; translation  $> 3$  mm and/or  $> 11^\circ$  of rotational difference to either adjacent level
- Allergy or sensitivity to the implant materials (cobalt, chromium, molybdenum, polyethylene, titanium)
- Severe spondylosis characterized by bridging osteophytes or a loss of disc height  $> 50\%$  or an absence of motion ( $< 2^\circ$ ). The treatment of patients with more advanced cervical degeneration with this device has many potential implications on outcomes and the potential for heterotopic ossification. For example, from a surgical standpoint, more highly collapsed cervical disc spaces require more aggressive endplate resection and distraction in order to restore disc height. The surgical release of these more collapsed disc spaces can lead to a highly osteogenic environment. Extremely collapsed disc spaces can lead to the placement of a “tight” implant that would limit motion and further encourage bone formation and possible fusion
- Clinically compromised vertebral bodies at the affected level due to current or past trauma (e.g., by radiographic appearance of fracture callus, malunion, or nonunion)

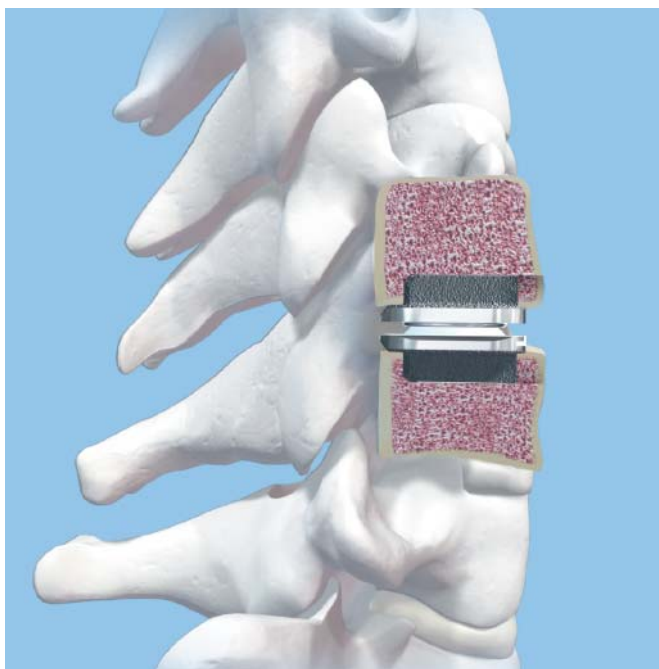


Figure 6

# Patient Exclusion Recommendations

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## Patient exclusion recommendations

Patient selection is one of the most important factors contributing to the outcome of the total disc replacement procedure. The following may affect clinical outcomes:

- The patient's occupation or activity level
- A condition of senility, mental illness, alcoholism, or drug abuse
- Degenerative diseases that may be so advanced at the time of implantation that they limit the expected life of the implant

## Warnings

Correct placement of the device is essential to optimal performance. Use of the **prodisc C** Total Disc Replacement should only be undertaken after the surgeon has become thoroughly knowledgeable about spinal anatomy and biomechanics, has had experience with anterior cervical spinal surgeries, and has had hands-on training in the use of this specific device. A lack of adequate experience and/or training may lead to a higher incidence of adverse events, including neurological complications.

There were no patients in the pivotal study who were less than 22 years of age. The safety and effectiveness of this device has not been studied in the pediatric or adolescent age group (< 22 years old).

Due to the proximity of vascular and neurological structures to the implantation site, there are risks of serious or fatal hemorrhage and risks of neurological damage with the use of this device.

## Precautions

Patient selection is extremely important. In selecting patients for a total disc replacement the following factors can be of importance to the success of the procedure: the patient's occupation or activity level, a condition of senility, mental illness, alcoholism, or drug abuse. In addition, certain degenerative diseases may be so advanced at the time of implantation that the expected useful life of the device is substantially decreased.

Furthermore, correct selection of the appropriate implant size is extremely important to assure the placement and function of the device. Please refer to this technique guide for step-by-step instructions on the required surgical technique, including determining the correct implant size.

The safety and effectiveness of this device has not been established in patients with the following conditions:

- not skeletally mature
- patients under the age of 22 or over the age of 60
- more than one vertebral level with SCDD
- prior fusion surgery at an adjacent vertebral level
- prior surgery at the level to be treated
- patients with progressive symptoms and signs of spinal cord/nerve root compression with less than six weeks of conservative treatment
- facet joint disease or degeneration at the level to be treated
- neck or arm pain of unknown etiology
- Paget's disease, osteomalacia, or other metabolic bone disease
- pregnancy
- taking medications known to potentially interfere with bone/soft tissue healing (e.g., steroids)
- rheumatoid arthritis or other autoimmune disease
- severe diabetes mellitus requiring daily insulin treatment
- systemic disease including AIDS, HIV, and hepatitis
- active malignancy

In order to minimize the risk of periprosthetic vertebral fractures, surgeons must consider all comorbidities, past and present medications, previous treatments, etc. A screening questionnaire for osteoporosis, SCORE (Simple Calculated Osteoporosis Risk Estimation), may be used to screen patients to determine if a DEXA bone mineral density measurement is necessary. If DEXA is performed, the patient should be excluded from receiving the device (per the contraindications listed above) if the DEXA bone density measured T-score is  $\leq -2.5$ , as the patient may be osteoporotic.

Use aseptic technique when removing the **prodisc C** Total Disc Replacement implant from the innermost packaging.

Use care when handling the **prodisc C** Total Disc Replacement implant to ensure that it does not come in contact with objects that could damage the implant. Exercise care to ensure that implantation instruments do not contact the highly polished articulating surfaces of the endplates. Damaged implants are no longer functionally reliable.

To prevent unnecessary damage to the bearing surfaces, ensure that blood or other debris is not trapped within the device.

**prodisc C** Total Disc Replacement implant should not be used with components or instruments of spinal systems from other manufacturers. See the surgical technique guide for step-by-step instructions.

Surgical implants must never be reused or reimplanted. Even though the device appears undamaged, it may have small defects and internal stress patterns that may lead to early breakage.

Patients should be instructed in postoperative care procedures and should be advised of the importance of adhering to these procedures for successful treatment with the device, including the avoidance of heavy lifting, repetitive bending, and prolonged or strenuous activity initially and for a period of weeks to months depending on the individual patient's progress and the stability and functioning of the implant.

### Preoperative considerations

Perform a thorough review of patient history, physical exam and imaging studies to identify possible contraindications to total disc replacement and to identify the appropriate symptomatic level. Upon reviewing all pertinent information, determine whether a bone density scan is appropriate.

### MRI information

Centinel Spine **prodisc C** implants are labeled MR Conditional according to the terminology specified in ASTM F 2503-05, Standard Practice for Marketing Medical Devices and Other Items for Safety in the Magnetic Resonance Environment.

Nonclinical testing of the **prodisc C** demonstrated that the implant is MR Conditional. A patient with a **prodisc C** implant may be scanned safely under the following conditions:

- Static magnetic field of 1.5 Tesla and 3.0 Tesla at Normal Operating Mode or First Level Controlled Mode
- Highest spatial gradient magnetic field of 900 Gauss/cm or less
- Maximum MR system reported whole body averaged specific absorption rate (SAR) of 2 W/kg for the Normal Operating Mode and 4 W/kg for the First Level Controlled Mode for 15 minutes of scanning.

**Note:** In nonclinical testing, a **prodisc C** implant of largest geometrical volume and mass was tested for heating and results showed a maximum observed heating of 1.1°C for 1.5 T and a maximum observable heating of 1.9°C for 3.0 T with a machine reported whole body averaged SAR of 2 W/kg as assessed by calorimetry.

Patients may be safely scanned in the MRI chamber at the above conditions. Under such conditions, the maximal expected temperature rise is less than 2°C. To minimize heating, the scan time should be as short as possible and the SAR as low as possible. Temperature rise values obtained were based upon a scan time of 15 minutes.

The above field conditions tested in a 1.5 T and a 3.0 T Philips Achieva (Philips Healthcare, Software release 2.6.3 SP4) MR scanner should be compared with those of the user's MR system in order to determine if the item can safely be brought into the user's MR environment. Centinel Spine MR Conditional **prodisc C** implants may have the potential to cause artifact in the diagnostic imaging.

### Artifact Information

MR image quality may be compromised if the area of interest is in the same area or relatively close to the position of the **prodisc C** implant and it may be necessary to optimize MR imaging parameters in order to compensate for the presence of the implant.

A representative implant has been evaluated in the MRI chamber and worst case artifact information is provided below. Overall, artifacts created by **prodisc C** implants may present issues if the MR imaging area of interest is in or near the area where the implant is located.

- For FFE sequence: Scan duration: 3 min, TR 100 ms, TE 15 ms, flip angle 15°, worst case artifact will extend approximately 3.5 cm from the implant
- For SE sequence: Scan duration: 4 min, TR 500 ms, TE 20 ms, flip angle 70°, worstcase artifact will extend approximately 2.5 cm from the implant





# Patient Positioning

## Patient positioning

- AP and lateral imaging is used frequently throughout the prodisc C surgical procedure. Set up the OR table, patient and C-arm to allow for circumferential use of fluoroscopy at the operative level; and for unobstructed cranial and caudal movement of the C-arm, avoiding frequent passage in and out of the sterile field (Figure 7).

Position the patient supine on the operating table. Support the neck with a cushioned neck roll to keep the neck in a normal lordotic (“neutral”) position (Figure 8). Correct

- any malrotation of the neck and head. Confirm true AP orientation with spot fluoroscopy. Tape or strap the head in place to maintain this position.

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**Note: The use of head weights is not recommended. Adjacent disc spaces are also distracted, giving false impression of disc height.**

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**Caution: The inability to reproduce neutral alignment in the sagittal plane may result in improper implant position.**

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- Both vertebral bodies of the affected level must be clearly visible on fluoroscopy before proceeding with surgery. If the shoulders obstruct the view of the operative level, depress the shoulder girdle using caudal traction on the upper extremities (Figures 7, 8 and 9).

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**Note: A fusion procedure may be necessary if visualization of the target disc space does not allow for an optimal lateral view.**

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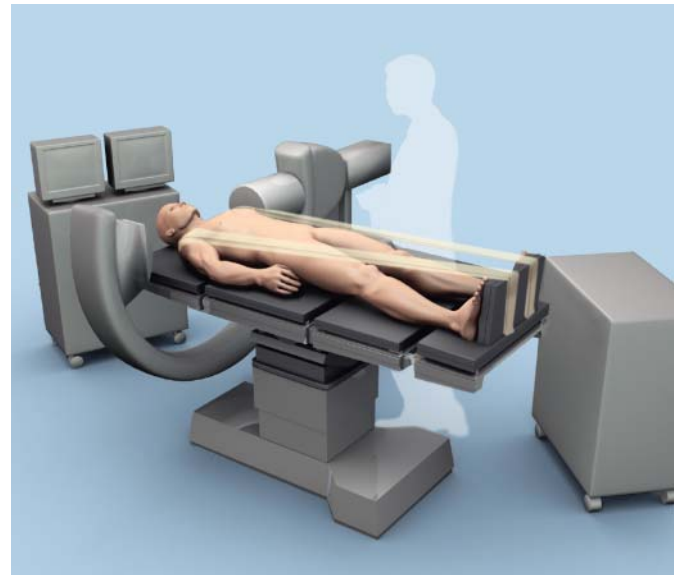


Figure 7



Figure 8



Figure 9

# Exposure

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## Exposure

Expose the operative level via a standard transverse approach to the anterior cervical spine. Verify the operative level with fluoroscopy.

**Note: The presence of anatomical abnormalities and/or deformities, such as the presence of scoliosis, kyphosis or abnormal segmentation, may reduce the ability to ensure proper placement of the instrumentation and/or prosthesis and may require that a fusion procedure be performed.**

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## Marking the midline

- Use AP fluoroscopy to identify the midline of the operative level. Mark both the superior and inferior bodies at the disc so the mark is visible throughout the implantation procedure (Figure 10).



Figure 10

# Discectomy, Decompression, and Remobilization

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## Instruments

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03.820.100	Awl, 12 mm
03.820.101	Self-Retaining Screwdriver
03.820.110	Retainer Nut
03.820.111	Vertebral Body Retainer
03.820.112	Vertebral Distractor

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## Standard Screws

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03.820.102–	Retainer Screws, 3.5 mm
03.820.105	x 12 mm, 14 mm, 16 mm, and 18 mm

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## Rescue Screws

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03.820.106–	Retainer Screws, 4.5 mm
03.820.109	x 13 mm, 15 mm, 17 mm, and 19 mm

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**Note: Performing a complete and meticulous discectomy, decompression, and remobilization of the disc space is critical to the success of the surgery. The surgeon must remobilize the diseased segment and restore the disc height prior to implantation of the prodisc C Total Disc Replacement.**

---

Thorough disc space preparation is best performed with controlled, parallel distraction of the operative level. Distraction should be obtained using the vertebral distractor and maintained with the specially-designed screw-and-retainer device. Technique for use is:

1. Insert retainer screws in the vertebral bodies;
2. Attach the retainer to the screws, apply initial predistraction to the disc space and perform preliminary discectomy;
3. Insert the vertebral distractor and apply parallel distraction; and
4. Complete the discectomy, decompression and remobilization of the space.

Retainer screws maintain parallel distraction of the disc space. Screws should be inserted parallel to the operative disc space and within the “distal”  $\frac{1}{3}$  of the vertebral body to allow adequate working room for keel preparation and implant insertion (Figure 11).

- ① Perforate the anterior cortex with the awl, using lateral fluoroscopy to ensure its trajectory is parallel to the affected endplate (Figure 12).

Insert retainer screws which are long enough to engage the posterior cortex. Engage the screw into the awl track with the self-retaining screwdriver, using fluoroscopy to confirm trajectory and screw depth (Figure 13).

**Note: Use only the 3.5 mm diameter, color-coded screws. The 4.5 mm diameter screws should only be used as “rescue” screws.**

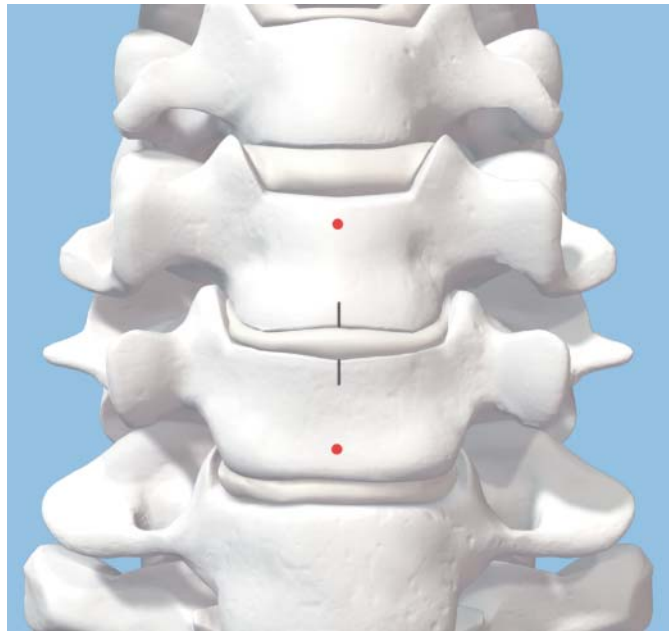


Figure 11

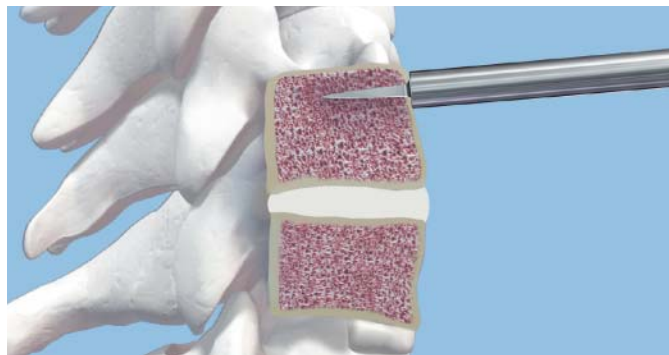


Figure 12

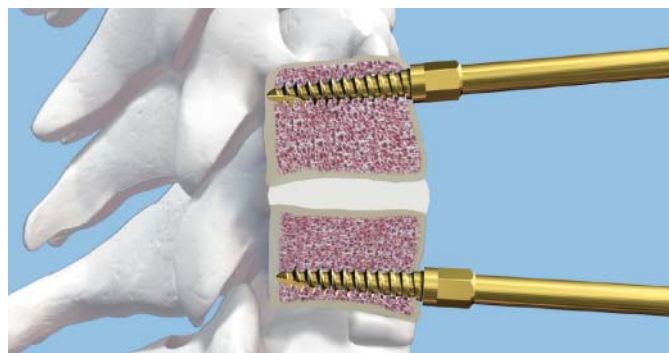


Figure 13

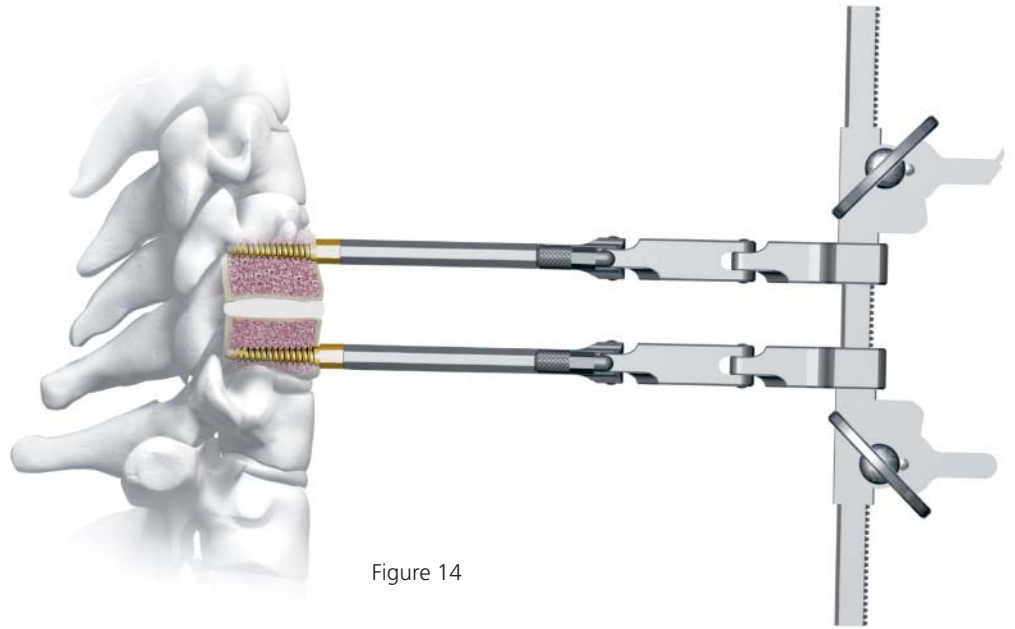


Figure 14

Slide the vertebral body retainer over the screws; lock it in place with retainer nuts (Figure 14).

**Note: The vertebral body retainer is not intended to distract the segment as with a Caspar retractor. Distraction is achieved with the vertebral distractor.**

Apply light pretension to the operative disc space with the retainer—do not apply enough force to distract the segment, as with a Caspar-type distractor. Create an anterior annulotomy centered on midline and wide enough to accommodate the prodisc C implant. Perform the preliminary discectomy using standard rongeurs and curettes.

- ① Insert the vertebral distractor to the posterior aspect of the disc space under lateral fluoroscopy. Ensure the distractor tips reach the posterior margin of the vertebral bodies to avoid penetration of the vertebral end plates (Figure 15). Manually distract the space with the distractor. Adjust the retainer to maintain the distraction achieved with the distractor. Remove the distractor and complete the discectomy, decompression and remobilization as indicated.

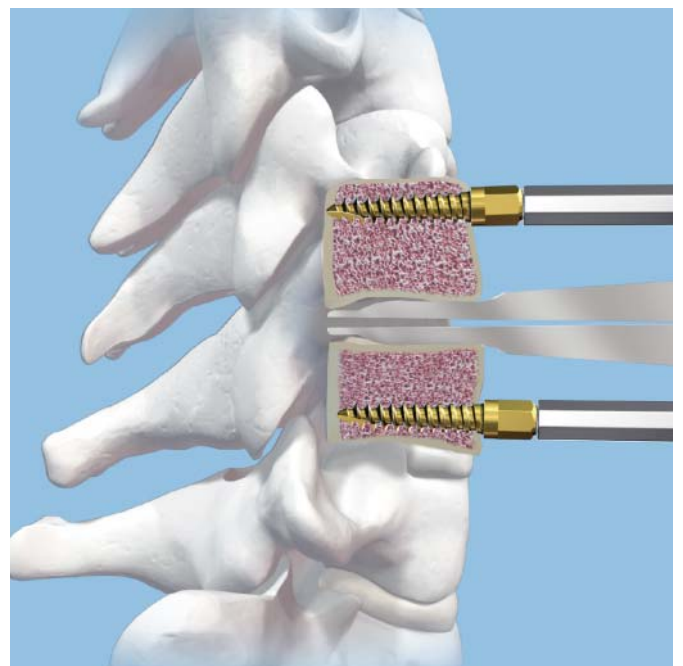


Figure 15

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### Notes:

Preserve the integrity of the bony endplates; only the cartilaginous endplate should be excised. Endplate remodeling should only be performed if posterior osteophytes interfere with implant positioning or excision is necessary for neural decompression. The uncinatus process should be preserved, when possible—only the posterior  $\frac{1}{3}$  should be removed as needed for decompression. Use manual instruments, such as Ker-risons and curettes, when bony remodeling is necessary (Figure 16).

More highly collapsed cervical disc spaces may require aggressive endplate remodeling and distraction for remobilization, which could create a highly osteogenic environment. Disc spaces that are not remobilized adequately may have limited motion, which may encourage bone formation and possible fusion.

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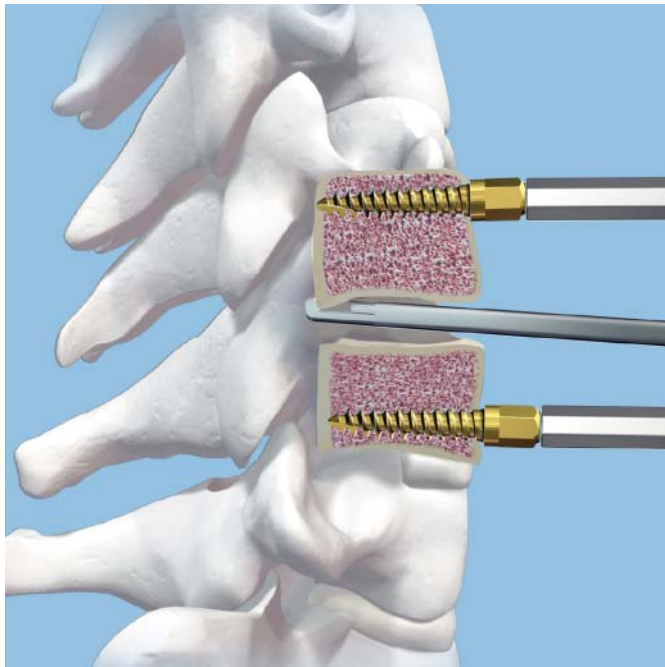


Figure 16

# Implantation

Implantation of the **prodisc C** total disc replacement implant is performed in three steps:

1. Trial
2. Keel preparation
3. Implant insertion

The **prodisc C** total disc replacement system contains 18 trial implants that correspond to the 18 **prodisc C** implant sizes. Trials are placed into the disc space intraoperatively to determine the appropriate implant footprint, disc height and position.

## 1

### Trial

#### Instruments

03.820.000	Handle, for Trial Implants
03.820.025– 03.820.077	Trial Implants (medium, medium deep, large, large deep, extra large, extra large deep)
03.820.113	Slotted Mallet

**Select the largest footprint to maximize coverage of the vertebral bodies and the smallest appropriate height to match normal adjacent discs.**

Connect the trial handle to the trial implant (Figures 17 and 18). Ensure that the trial stop is fully seated by turning the trial handle clockwise until it will not advance any further.



Figure 17

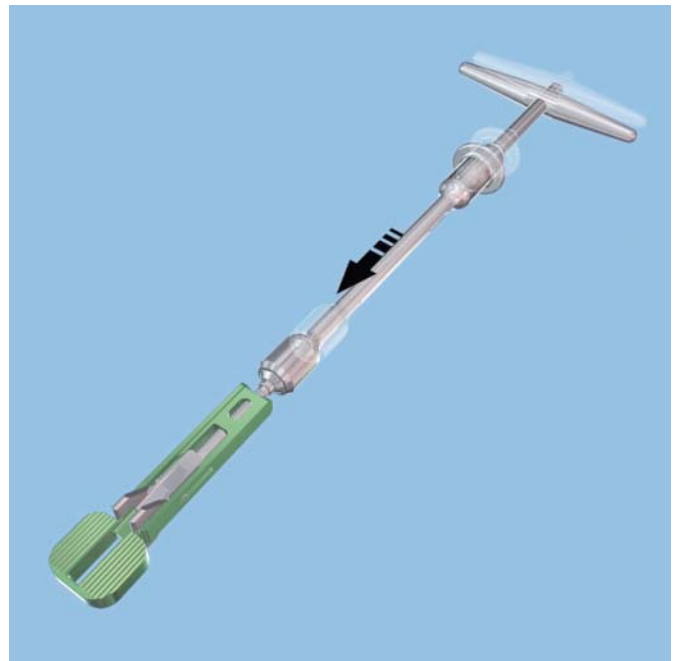


Figure 18

## 1

### Trial continued

- Under lateral fluoroscopic control, insert the trial into the disc space using the mallet (Figure 19). The trial stop can be backed out to allow the trial to advance more posteriorly (Figure 20). Each full counterclockwise rotation of the handle allows the trial to be advanced 0.5 mm. The optimal position of the trial is at the posterior margin of the vertebral bodies, centered on the midline (Figures 21 and 22).

**Note:** Ensure that distraction is released while assessing the trial height.

Release the distraction while assessing the trial height. Trial height should be the smallest appropriate height to match normal adjacent discs. Selecting an implant that is too tall can limit the segmental range of motion. Correct sizing and placement are critical for optimal implant performance. If the implant footprint is too small and does not cover the entire vertebral endplate it may lead to exposed bone surfaces that will predispose to bone formation and potential fusion. It is important to carefully select the height of the implant to be tight enough to provide initial stability while still allowing motion. If the implant is positioned too far anteriorly the implant will act as a wedge and inhibit motion at the segment, which may encourage bone formation and possibly fusion.

Ensure that the trial stop is fully seated against the vertebral bodies, apply compression with the vertebral body retainer, and remove the trial handle from the trial. Leave the trial in the disc space.

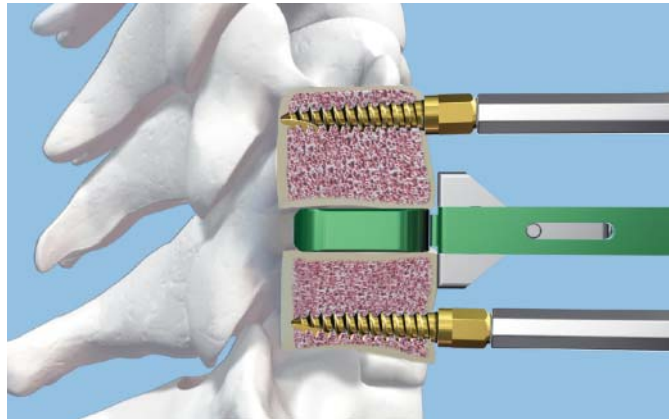


Figure 19

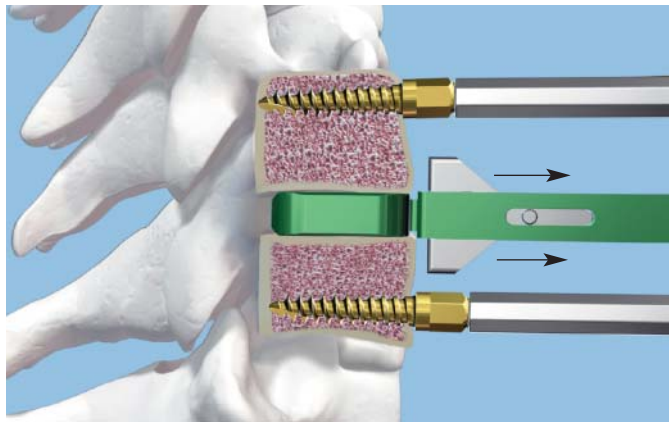


Figure 20

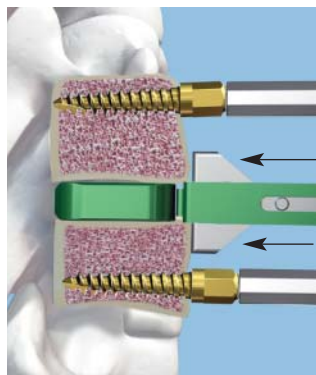


Figure 21



Figure 22



## 2

### Keel preparation

There are two surgical options for keel preparation of the vertebral bodies: milling or chiseling.

#### Option A: Milling

##### Instruments

03.820.114– 03.820.116	Milling Guides, 5 mm–7 mm
03.820.1175	Milling Bit, sterile
03.820.126	Keel Cut Cleaner
03.820.136	Temporary Fixation Pin, sharp
03.820.137	Temporary Fixation Pin, blunt

- Slide the appropriate milling guide over the shaft of the trial and tighten the locking nut. Under AP fluoroscopy, confirm that the guide and trial are centered on the midline and oriented in the AP sagittal plane (Figure 23).

To ensure construct stability, place the sharp temporary fixation pin through the inferior hole in the guide and manually drive the pin into the bone (Figure 24).

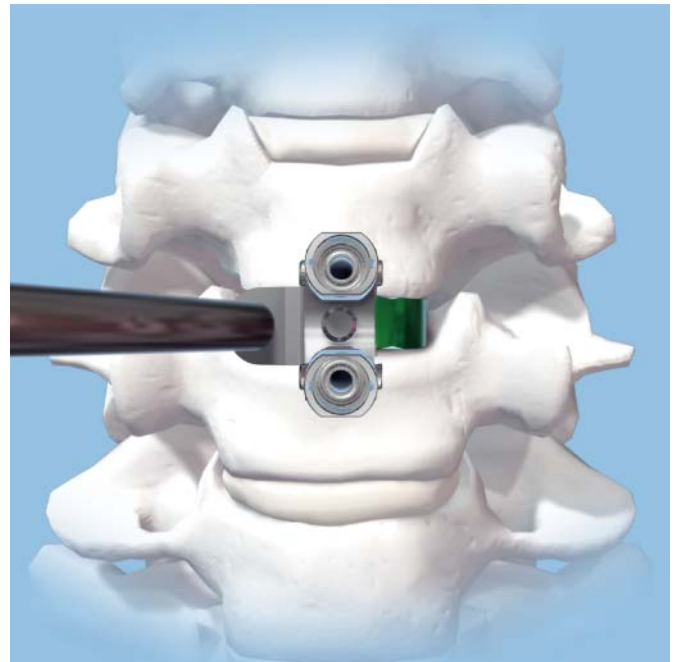


Figure 23

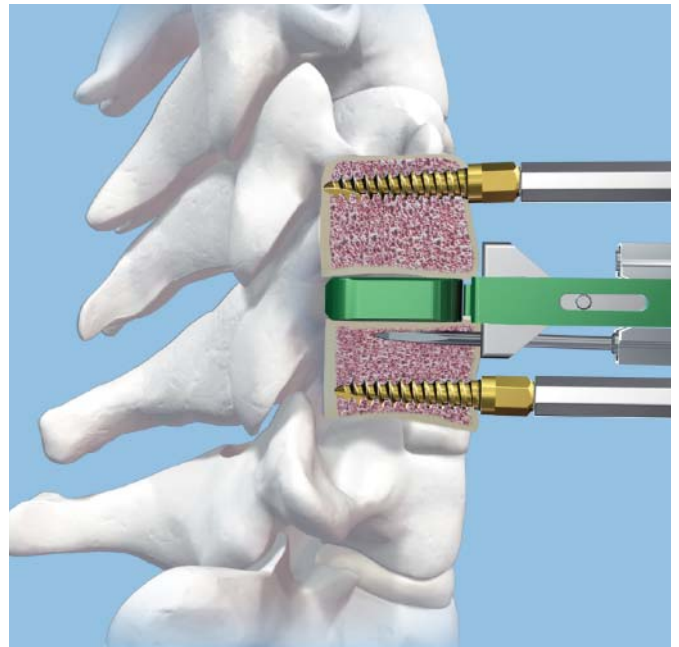


Figure 24

## 2

### Keel preparation continued

#### **Option A: Milling** continued

- Under lateral fluoroscopy, insert the milling bit into the superior hole of the guide until the tip of the mill touches the anterior cortex (Figure 25).

**Note: Do not power on the device until the mill is at the cortex.**

Under full power, plunge the bit into the vertebral body until it reaches the positive stop in the guide (Figure 26). Keeping the drill at full power, sweep the mill bit toward the trial until it reaches the inner limit of the guide, then away from the trial to the full outer limit (Figure 27). Remove the bit and insert the blunt temporary fixation pin into the superior hole of the guide.

Remove the sharp temporary fixation pin from the inferior hole of the guide. Repeat the milling procedure in the inferior body.

Ensure that the depth and height of the keel channels are equal in the superior and inferior vertebral bodies.

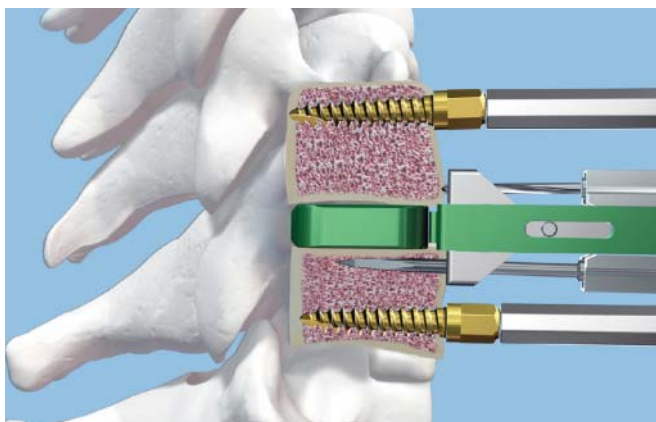


Figure 25

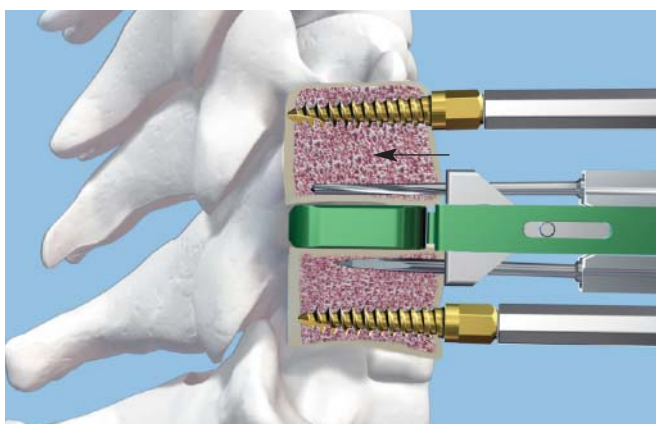


Figure 26

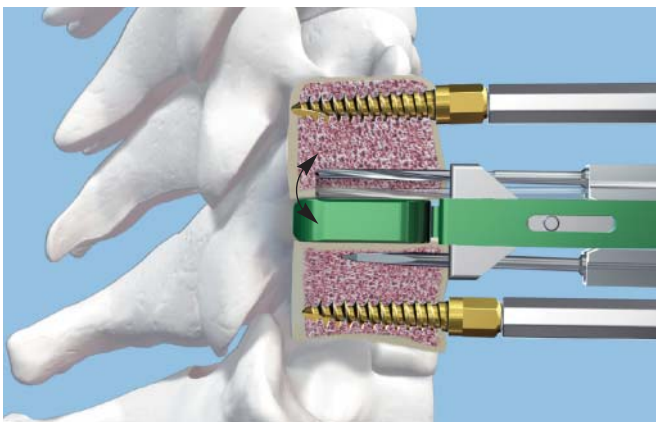


Figure 27

- Remove the guide and trial. Under fluoroscopic control, use the keel cut cleaner to verify the depth of the keel channels and to remove any bony debris from both the superior and inferior vertebral bodies (Figure 28). Irrigate the wound to ensure the disc space is clear of debris.

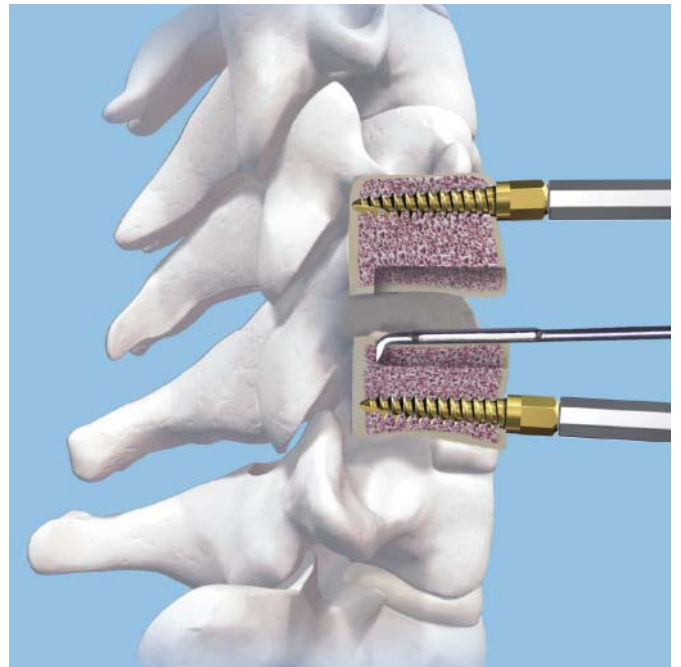


Figure 28

## 2

### Keel preparation continued

#### Option B: Chiseling

##### Instruments

03.820.113 Slotted Mallet

03.820.119– Primary Chisels, 5 mm–7 mm  
03.820.121

03.820.122– Secondary Chisels, 5 mm–7 mm  
03.820.124

03.820.126 Keel Cut Cleaner

Compress the vertebral body retainer onto the trial. Slide the primary chisel over the shaft of the trial. Under AP fluoroscopy, confirm the chisel is centered on midline and oriented in the AP sagittal plane. Under lateral fluoroscopy, advance the chisel into the vertebral bodies with the slotted mallet. The trajectory of the chisel should remain on midline while advancing. Continue advancing the chisel until it is fully seated on the trial (Figure 29).

Ensure that the depth and height of the keel channels are equal in the superior and inferior vertebral bodies. Repeat the chisel procedure with the secondary chisel (Figure 30).

Remove the chisel and trial. Under fluoroscopic control, use the keel cut cleaner to verify the depth of the keel channels and to remove any bony debris from both the superior and inferior vertebral bodies (see Figure 28 on page 17). Irrigate the wound to ensure the disc space is clear of debris.

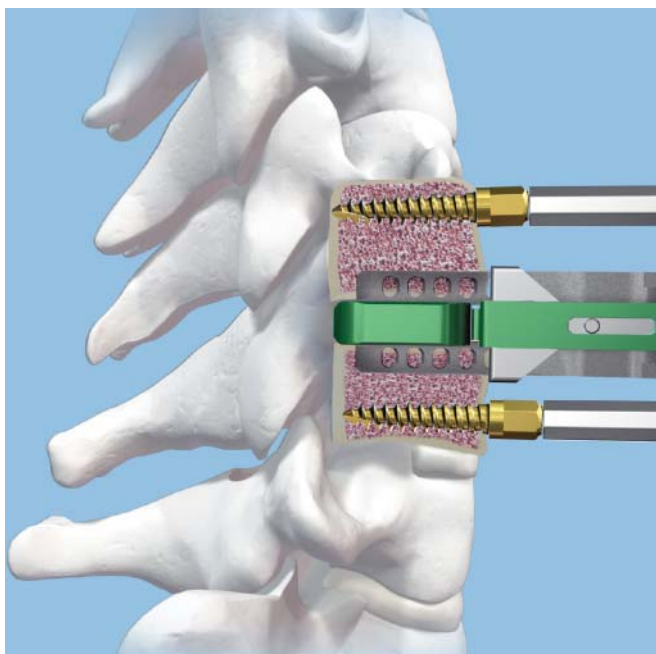


Figure 29

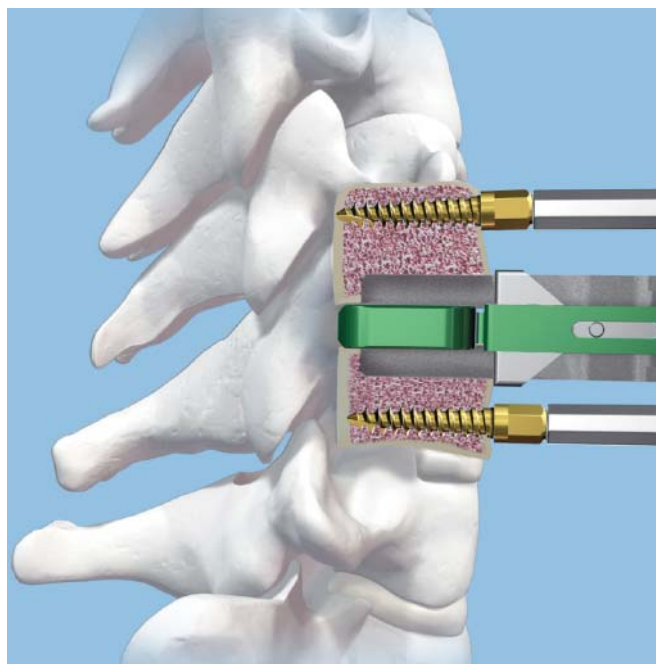


Figure 30

### 3

#### Implant insertion

##### Instruments

03.820.129 Implant Inserter

03.820.130S– Inserter Tips

03.820.142S

The **prodisc C** implant is loaded onto the implant inserter “en-bloc” directly from the package tray. Insert the appropriate inserter tip into the distal end of the inserter and prepare it for loading (Figure 31).

Engage the implant inserter onto the **prodisc C** implant (Figure 32). Confirm that the “UP” indicator on the implant is attached to the inserter arm marked “UP”. Visually confirm the inferior endplate with the polyethylene inlay is attached to the inserter arm marked “DOWN”. Tighten the locking nut firmly to lock the implant to the inserter.

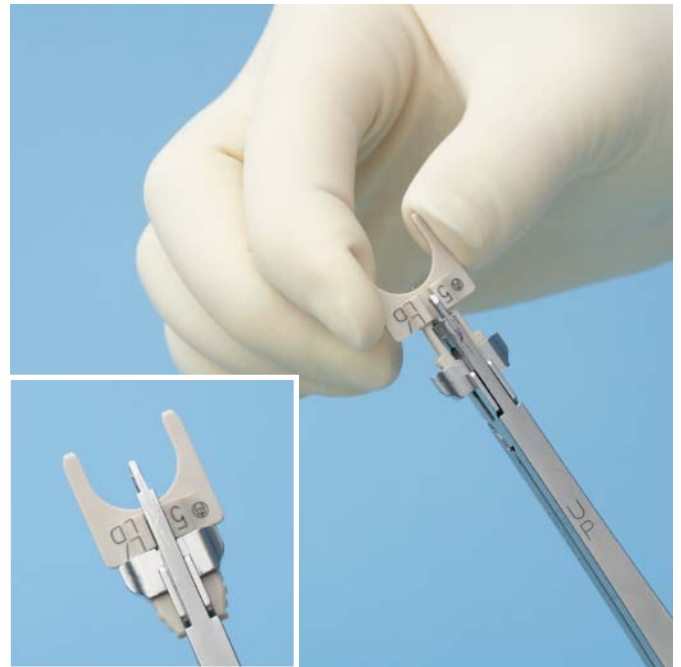


Figure 31

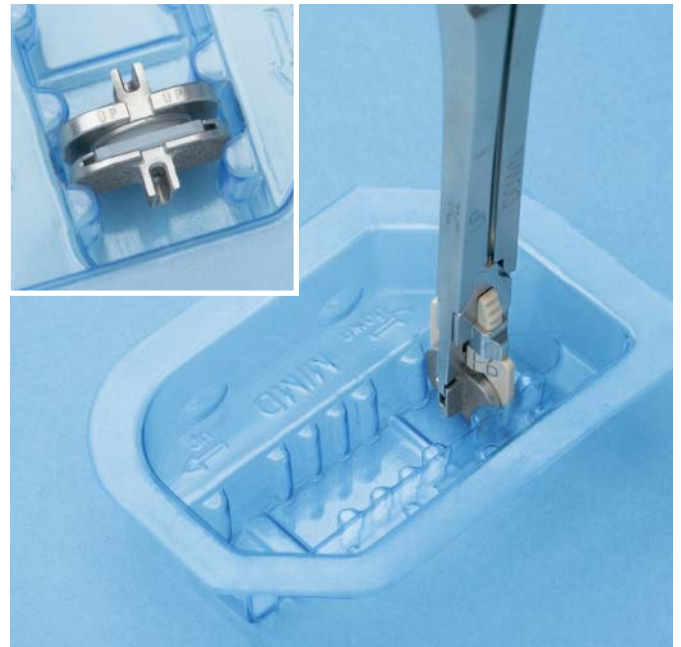


Figure 32

## 3

### Implant insertion continued

- Align the keels of the **prodisc C** implant with the keel channels. Ensure the “UP” sides of the inserter and implant are oriented cranially. Under lateral fluoroscopic control, advance the **prodisc C** implant to the posterior margin of the vertebral bodies (Figure 33).

Visually confirm that the anterior edge of the implant is within the anterior edge of the vertebral body.

Release the locking nut on the inserter and squeeze gently to remove the inserter from the **prodisc C** implant.

Remove the retainer nuts, vertebral body retainer, and screws.

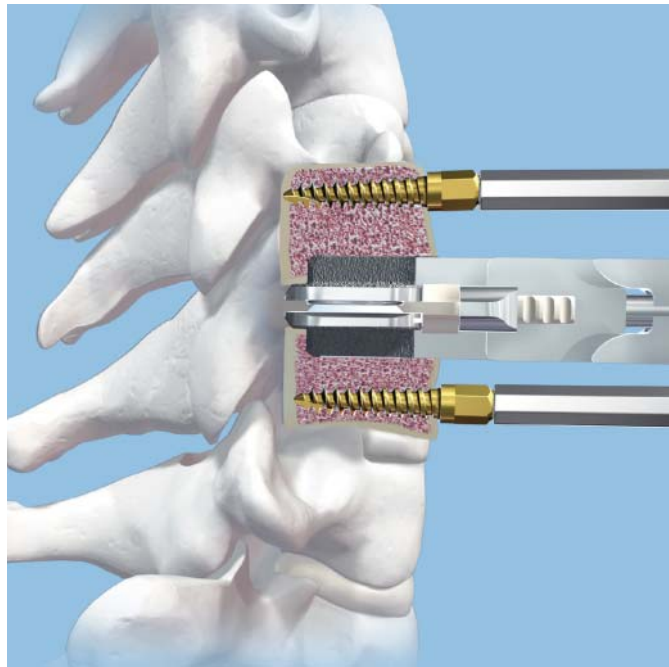


Figure 33

- ① Confirm final implant position with lateral and AP imaging (Figures 34 and 35).

**Copious saline lavage is recommended to remove osteogenic stimuli (blood/bone marrow). Apply standard homeostatic techniques to control bleeding.**

Close the surgical wound in a routine fashion.



Figure 34

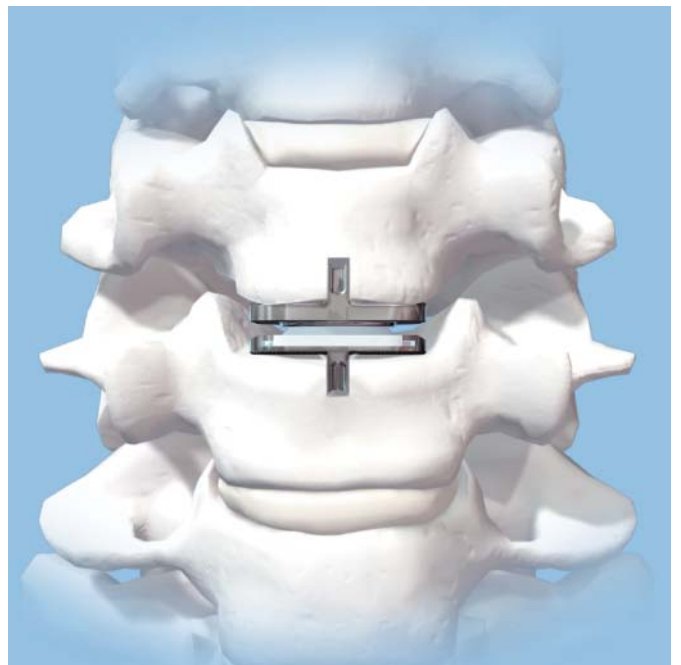


Figure 35

# Postoperative Care and Implant Removal

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## Postoperative care

Patients can begin ambulating immediately postoperatively. A soft or hard collar may be used if deemed necessary. Patients should be instructed to avoid prolonged or strenuous activity; heavy physical activity should not be resumed until the surgeon is confident, based on review of postoperative radiographs, that the implant is stable and functioning. Patients should be instructed to immediately report any change in their pain or neurologic status.

## Implant removal

Approach the level through the original anterior incision. Expose, identify and isolate the **prodisc C** implant from any overlying scar tissue. Excise any bony tissue from the anterior aspect of the endplates and keels to expose the implant-bone junction. Use an interbody distractor or retainer device to distract the disc space. Using a fine osteotome, pry the superior endplate from the vertebral body and extract the superior endplate from the space with a Kocher clamp or other grasping instrument. Repeat this technique on the inferior endplate. If distraction is not achievable, it may be necessary to pry the polyethylene insert from the inferior endplate first, before removing the superior and inferior endplates.

Should it be necessary to remove a **prodisc C** Total Disc Replacement, please contact Centinel Spine to receive instructions regarding data collection, including histopathological, mechanical, and adverse event information. All explanted devices must be returned to Centinel Spine for analysis.

Please note that the **prodisc C** Total Disc Replacement should be removed as carefully as possible in order to keep the implant and surrounding tissue intact. Also, please provide descriptive information about the gross appearance of the device in situ, as well as descriptions of the removal methods, i.e., intact or in pieces.

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**Note: All implant removals must be reported immediately to Centinel Spine.**

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# Implants

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## prodisc C Total Disc Replacement Implants, sterile

09.820.025S Medium, 5 mm  
09.820.026S Medium, 6 mm  
09.820.027S\* Medium, 7 mm



09.820.035S Medium, deep, 5 mm  
09.820.036S Medium, deep, 6 mm  
09.820.037S\* Medium, deep, 7 mm



09.820.045S Large, 5 mm  
09.820.046S Large, 6 mm  
09.820.047S Large, 7 mm



09.820.055S Large, deep, 5 mm  
09.820.056S Large, deep, 6 mm  
09.820.057S Large, deep, 7 mm



09.820.065S Extra large, 5 mm  
09.820.066S Extra large, 6 mm  
09.820.067S Extra large, 7 mm



09.820.075S Extra large, deep, 5 mm  
09.820.076S Extra large, deep, 6 mm  
09.820.077S Extra large, deep, 7 mm



\* Also available

# Instruments

03.820.000 Handle, for Trial Implants



Trial Implants, medium

03.820.025 5 mm

03.820.026 6 mm

03.820.027\* 7 mm



Trial Implants, medium, deep

03.820.035 5 mm

03.820.036 6 mm

03.820.037\* 7 mm



Trial Implants, large

03.820.045 5 mm

03.820.046 6 mm

03.820.047\* 7 mm



Trial Implants, large, deep

03.820.055 5 mm

03.820.056 6 mm

03.820.057\* 7 mm



Trial Implants, extra large

03.820.065 5 mm

03.820.066 6 mm

03.820.067\* 7 mm



Trial Implants, extra large, deep

03.820.075 5 mm

03.820.076 6 mm

03.820.077\* 7 mm



03.820.100 Awl, 12 mm



\*Also available

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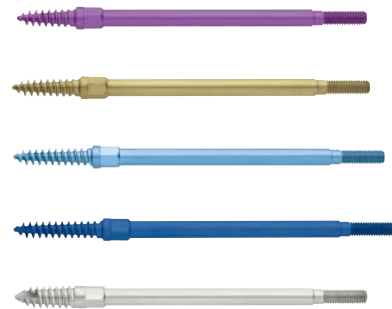
03.820.101 Self-Retaining Screwdriver



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Retainer Screws

- 03.820.102 3.5 mm x 12 mm
- 03.820.103 3.5 mm x 14 mm
- 03.820.104 3.5 mm x 16 mm
- 03.820.105 3.5 mm x 18 mm
- 03.820.106 4.5 mm x 13 mm
- 03.820.107 4.5 mm x 15 mm
- 03.820.108 4.5 mm x 17 mm
- 03.820.109 4.5 mm x 19 mm



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03.820.110 Retainer Nut



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03.820.111 Vertebral Body Retainer



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03.820.112 Vertebral Distractor



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03.820.113 Slotted Mallet



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Milling Guides

- 03.820.114 5 mm
- 03.820.115 6 mm
- 03.820.116\* 7 mm



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03.820.117S Milling Bit, sterile



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Primary Chisels

- 03.820.119 5 mm
- 03.820.120 6 mm
- 03.820.121\* 7 mm



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Secondary Chisels

- 03.820.122 5 mm
- 03.820.123 6 mm
- 03.820.124\* 7 mm



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03.820.126 Keel Cut Cleaner



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03.820.128 Chisel Cleaner



\*Also available

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03.820.129 Implant Inserter



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                    Inserter Tips, sterile  
                    for Medium and Medium Deep Implants,  
03.820.130S 5 mm height  
03.820.131S 6 mm height  
03.820.132S\* 7 mm height  
                    for Large and Large Deep Implants  
03.820.133S 5 mm height  
03.820.134S 6 mm height  
03.820.135S 7 mm height  
                    for Extra Large and Extra Large Deep Implants  
03.820.140S 5 mm height  
03.820.141S 6 mm height  
03.820.142S 7 mm height



---

                    Temporary Fixation Pins  
03.820.136 sharp  
03.820.137 blunt



---

03.820.143 2.0 mm Hexagonal Screwdriver



---

03.820.144 Tamp



\*Also available

# prodisc C Instrument and Implant Set (01.820.003)

## Graphic Case

60.820.001 Graphic Case, for prodisc C Instruments

## Instruments (in graphic case)

03.820.000 Handle, for Trial Implants, 2 ea.

### Trial Implants

03.820.025 Medium, 5 mm

03.820.026 Medium, 6 mm

03.820.035 Medium, deep, 5 mm

03.820.036 Medium, deep, 6 mm

03.820.045 Large, 5 mm

03.820.046 Large, 6 mm

03.820.055 Large, deep, 5 mm

03.820.056 Large, deep, 6 mm

03.820.065 Extra large, 5 mm

03.820.066 Extra large, 6 mm

03.820.075 Extra large, deep, 5 mm

03.820.076 Extra large, deep, 6 mm

03.820.100 Awl, 12 mm

03.820.101 Self-Retaining Screwdriver, 2 ea.

### Retainer Screws

03.820.102 3.5 mm x 12 mm, 2 ea.

03.820.103 3.5 mm x 14 mm, 2 ea.

03.820.104 3.5 mm x 16 mm, 2 ea.

03.820.105 3.5 mm x 18 mm, 2 ea.

03.820.106 4.5 mm x 13 mm

03.820.107 4.5 mm x 15 mm

03.820.108 4.5 mm x 17 mm

03.820.109 4.5 mm x 19 mm

03.820.110 Retainer Nut, 6 ea.

03.820.111 Vertebral Body Retainer

03.820.112 Vertebral Distractor

03.820.113 Slotted Mallet

03.820.114 Milling Guide, 5 mm

03.820.115 Milling Guide, 6 mm



03.820.119 Primary Chisel, 5 mm

03.820.120 Primary Chisel, 6 mm

03.820.122 Secondary Chisel, 5 mm

03.820.123 Secondary Chisel, 6 mm

03.820.126 Keel Cut Cleaner

03.820.128 Chisel Cleaner

03.820.129 Implant Inserter

03.820.136 Temporary Fixation Pin, sharp, 2 ea.

03.820.137 Temporary Fixation Pin, Blunt

03.820.143 2.0 mm Hexagonal Screwdriver

03.820.144 Tamp

Note: For additional information, please refer to package insert.

For detailed cleaning and sterilization instructions, please refer to [http://www.centinelspine.com/prodisc\\_reprocessing.html](http://www.centinelspine.com/prodisc_reprocessing.html) or to the below listed inserts, which will be included in the shipping container:

– Processing Centinel Spine Reusable Medical Devices—Instruments, Instrument Trays and Graphic Cases—DJ1305

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**Instruments** (supplied sterile packaged)

- 03.820.117S Milling Bit, sterile, 4 ea.
- Inserter Tips, for Medium and Medium Deep Implants, sterile
- 03.820.130S 5 mm height, 2 ea.
- 03.820.131S 6 mm height, 2 ea.
- Inserter Tips, for Large and Large Deep Implants, sterile
- 03.820.133S 5 mm height, 2 ea.
- 03.820.134S 6 mm height, 2 ea.
- 03.820.135S 7 mm height
- Inserter Tips, for Extra Large and Extra Large Deep Implants, sterile
- 03.820.140S 5 mm height, 2 ea.
- 03.820.141S 6 mm height
- 03.820.142S 7 mm height

**Implants** (supplied sterile packaged)

## prodisc C Total Disc Replacement Implants, sterile

- 09.820.025S Medium, 5 mm, 2 ea.
- 09.820.026S Medium, 6 mm, 2 ea.
- 09.820.035S Medium, deep, 5 mm, 2 ea.
- 09.820.036S Medium, deep, 6 mm, 2 ea.
- 09.820.045S Large, 5 mm, 2 ea.
- 09.820.046S Large, 6 mm, 2 ea.
- 09.820.047S Large, 7 mm
- 09.820.055S Large, deep, 5 mm, 2 ea.
- 09.820.056S Large, deep, 6 mm, 2 ea.
- 09.820.057S Large, deep, 7 mm
- 09.820.065S Extra large, 5 mm, 2 ea.
- 09.820.066S Extra large, 6 mm
- 09.820.067S Extra large, 7 mm
- 09.820.075S Extra large, deep, 5 mm, 2 ea.
- 09.820.076S Extra large, deep, 6 mm
- 09.820.077S Extra large, deep, 7 mm

**Also Available****Implants**

## prodisc C Total Disc Replacement Implants, sterile

- 09.820.027S Medium, 7 mm
- 09.820.037S Medium, deep, 7 mm

**Instruments**

- Trial Implants
- 03.820.027 Medium, 7 mm
- 03.820.037 Medium, deep, 7 mm
- 03.820.047 Large, 7 mm
- 03.820.057 Large, deep, 7 mm
- 03.820.067 Extra large, 7 mm
- 03.820.077 Extra large, deep, 7 mm
- 03.820.116 Milling Guide, 7 mm
- 03.820.121 Primary Chisel, 7 mm
- 03.820.124 Secondary Chisel, 7 mm
- 03.820.132S Inserter Tip, for Medium and Medium Deep Implants, 7 mm height, sterile

## Retainer Screws, sterile, 2/pkg.

- 03.820.102.02S 3.5 mm x 12 mm
- 03.820.103.02S 3.5 mm x 14 mm
- 03.820.104.02S 3.5 mm x 16 mm
- 03.820.105.02S 3.5 mm x 18 mm
- 03.820.110.02S Retainer Nut, sterile, 2/pkg.



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