

Discectomy

The discectomy and decompression are performed in the standard fashion.

The anterior longitudinal ligament is resected over the corresponding vertebrae and large anterior osteophytes are removed. The anterior portion of the annulus fibrosus is excised with a knife. A window equivalent to the width of the device to be implanted should be made.

The intervertebral disc is then removed out to the uncovertebral joints using curettes and/or rongeurs. Distraction is achieved using a distractor (i.e. Caspar) against pins placed into the adjacent vertebral bodies (Figure 1).

Caution: Care should be taken to ensure that all exposed blood vessels are properly retracted prior to discectomy so as to avoid unintended contact with the curettes and rongeurs.

Caution: Ensure sharpness of curettes and rongeurs prior to use.

Under distraction and using visual assistance (either surgical microscope or loupes), neural decompression is accomplished. If large posterior osteophytes exist, including the posterior part of the uncinous process, they are trimmed.

Preparation of the endplates is then carried out. Curettes and/or burrs are used to remove the cartilaginous endplates and to create a flat surface of bleeding bone. The minimum amount of endplate should be removed to reach bleeding bone (Figure 2).

Warning: Excessive force applied to the curettes and rongeurs can inadvertently rupture the disc annulus or damage the vertebral endplates.



Figure 1



Figure 2



Figure 3

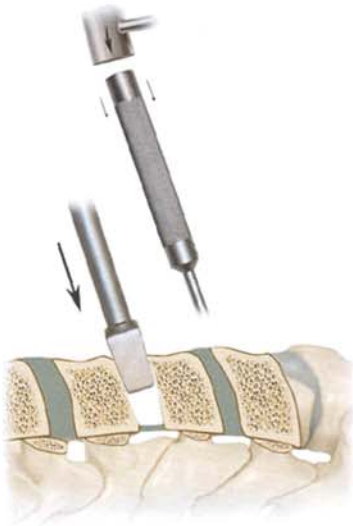


Figure 4



Figure 5

Implant Selection

Implant size is determined by measuring the disc space (Figure 3), and/or inserting one or more implant trials and selecting the size that sufficiently fits the disc space (Figures 4 and 5). A trial exists for each implant.

Note: Implant trials are 0.5 mm undersized in height. (A 7 mm trial is actually 6.5 mm in height. The width and depth of the trials are identical in size to the implant.)

The surgeon should select the size that appropriately tensions the soft tissue crossing that disc level. This will be reflected in the amount of force necessary to fully seat the trial. If the trial seats without force, the trial is too small. Place the next larger trial until force is necessary to fully seat the trial.

Caution: If the trial used within the disc space is solidly engaged and difficult to realign laterally when proper position within disc space has been obtained, the surgeon should consider implanting a device 1 mm smaller than the trial being used.

Note: 1993, An et.al. established the optimal thickness for Smith-Robinson-type anterior cervical fusion grafts from cadaveric studies. The ideal thickness appeared to be approximately 2 mm greater than the pre-operative baseline disc height.

Bone Grafting

The hole in the implant may be filled with cancellous bone harvested from the iliac crest. A stab incision is made over the iliac crest and a trephine is used to harvest cancellous bone. The bone is placed in the hole.

Implant Insertion

The implant inserter is used to hold the TM-100 device and place it in the disc space. Ensure the inserter is engaging the anterior edge of the TM-100 device by evaluating its geometry after opening the packaging. The inserter has a flat bar to facilitate impaction (Figure 6).

Note: It may be necessary to apply additional distraction to facilitate insertion.

Final seating, if required, is accomplished with the implant tamp. The concave surface of the instrument matches the convex anterior wall of the device. Moderate tapping on the implant tamp may be required to complete insertion (Figure 7). Tapping on the device should move the implant posteriorly. If no motion occurs, the surgeon should evaluate the situation by removing the device and checking for an obstruction of bone or a narrow posterior opening.

Caution: More vigorous tapping should not be done without removing the impediment to posterior translation of the device. Excessive driving force on the implant may deform the anterior face of the device.

The device should be slightly posterior (1-2 mm) to the anterior aspect of the vertebral bodies in its final position (Figure 8).

Following final implant insertion, the distraction force can be removed to apply compression on the implant. Lateral and A/P radiographs may be taken to assure proper implant placement.

Post-Operative Management

Post-operative regimens may include the following:

1. Use of a soft collar or a Philadelphia collar for 6-8 weeks, at the discretion of the surgeon.
2. Avoidance of overhead lifting, repetitive neck bending, (especially neck extension), or heavy lifting for at least 60 days post-operatively.
3. Avoidance of nonsteroidal anti-inflammatory and steroidal drugs for at least 45 days post-operatively.

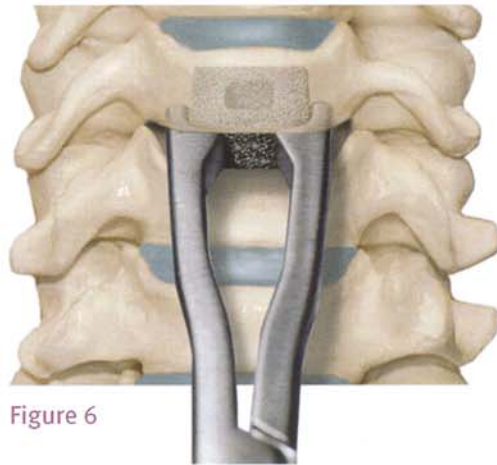


Figure 6

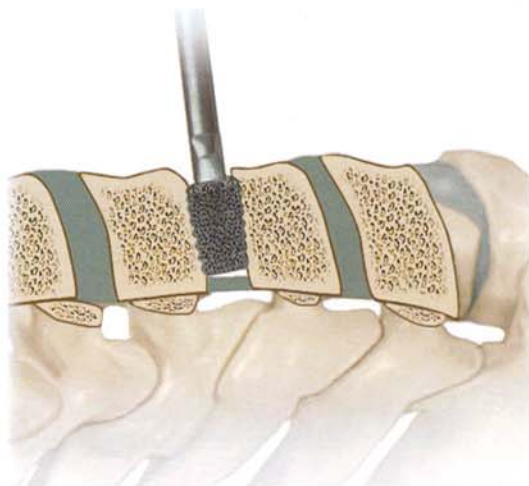


Figure 7

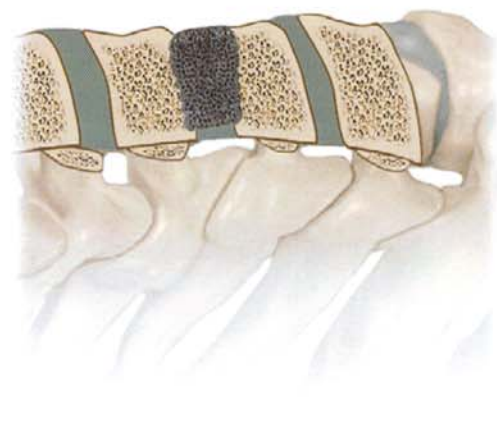


Figure 8