Surgical Technique Guide

Oblique Lateral Lumbar
Interbody Fusion System:
Lumbar IBFD - OLLIF
Oblique Lateral Lumbar Interbody Fusion System: Lumbar IBFD - OLLIF

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Advanced Research Medical, LLC
1515 Highway 13 East
Burnsville, MN 55337
Phone: (612) 405-8811

Disclaimer:
The surgical technique shown is for illustrative purposes only. The technique(s) actually employed in each case will always depend upon the medical judgment of the surgeon before and during surgery as to the best mode of treatment for each patient. Please reference the 510K or package insert for additional information and a complete list of intended indications, warnings, precautions, and other medical information.
Instrument Guide

Neuromonitoring Probe with Sleeve
MP214-3.0/1

Guide Wire
01-9080-18T

1/4” Quick Connect Palm Handle
01-100

Dilator
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Instrument Guide

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Small Mallet
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Impactor
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01-101

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Anatomic Approach

The surgical approach for the OLLIF technique is based on the anatomic structure known as Kambin’s Triangle. The implant and instruments were created to take advantage of the safe, minimally disruptive pathway that leads through Kambin’s Triangle to the lumbar disc spaces. This technique guide will demonstrate the technique for Kambin’s Triangle access.

Kambin’s Triangle is defined by the combination of the anatomic structure of the lumbar neural foramen. On the inferior leg of the triangle is the endplate of the caudal vertebral body. The medial leg of the triangle is bordered by the superior articular process of that same vertebral body and the hypotenuse of Kambin’s Triangle is defined by the nerve root exiting from the foramen.
How The OLLIF Approach Differs From Other Surgical Approaches:

TLIF – the TLIF approach removes the entire facet on the side of approach, which allows for a more lateral approach to the disc space, at an angle that is more vertical than the oblique approach. While the TLIF approach removes bone from the facet structure, the OLLIF approach preserves the facet structure.

Considerable scarring is often seen in TLIF approaches and can lead to adhesions to the dura and the exiting nerve roots. The OLLIF technique is intended to minimize the disruption to the adjacent tissues and reduce the occurrence of scarring.

XLIF/DLIF – the trans-psoas lateral approach enters the disc space anterior to the structure referred to as Kambin’s Triangle, and must pass through the psoas muscle. The nerves of the lumbar plexus are near the pathway of the trans-psoas approach. Due to the large cage profile, the trans-psoas approach requires significant retraction and dilation of the psoas muscle. The OLLIF approach requires minimal to no dilation and retraction as it passes through Kambin’s Triangle because it is completely posterior to iliopsoas.
Targeting

Preparing for the skin incision can be carried out by use of fluoroscopic imaging.

A critical step is to confirm that the imaging is oriented correctly on the target level. Confirm that the A/P image is properly centered and is showing the correct image of the vertebral body. This can be achieved by laying a guide wire or other radiopaque instrument on the midline to confirm that the A/P image shows the pedicles are equally spaced on each side of the midline. Mark this line. (Figure 1- Red Line)

Next, the trajectory of the target disc should be identified and a mark placed across the skin to locate the center of the disc. (Figure 1- Orange Line)

Figure 1
Targeting

Moving to a lateral view, an opaque object should be placed to estimate the center of the disc, between the endplates, with the tip of the instrument located at approximately the center of the disc, endplates must be perfectly aligned in lateral view.

Mark the skin to record the angle of the disc and make that mark over the posterior flank (Figure 2- Green Line)

The distance from the center of the disc to the vertex of the curve of the flank is measured, then this distance is transferred in the same plane from the midline of the spine.

This is the same distance that will be used to measure from the midline to the appropriate incision point. This will create a theoretical right triangle with the end of the hypotenuse in the center of the disc.

Figure 2
To confirm the incision point is in a place that will lead to Kambin’s Triangle without obstruction, a spinal needle may be placed to confirm the trajectory.
After confirming the trajectory, make a 10mm incision in the skin and through the lumbar fascia.

Place the neuromonitoring probe through the incision, approaching the neural foramen and targeting the inferior pedicle. The final placement of the probe is correct when the tip is between the medial and lateral aspect of the pedicle and in the inferior section of the neural foramen.

By a combination of fluoroscopic imaging and neuromonitoring, the pathway to the neural foramen and the disc can be achieved.
Targeting

After completing the navigation to the disc, press the neuromonitoring sleeve forward onto the disc and remove the monopolar neuromonitoring probe.

Place an 18” guide wire through the neuromonitoring probe sleeve and into the center of the disc. Confirm the placement of the guide wire via fluoroscopy.
Targeting

After the pathway to the disc has been safely established, the rest of the surgery can be done with EMG and SSEP Monitoring.

Place the dilator over the guide wire, and confirm fluoroscopically that the tip passes the center of the disc on A/P and lateral images.
Targeting

Remove the guide wire and the handle.

Advance the access portal over the dilator until the end of the portal is secured inside the disc space.
Targeting

The impact sleeve can be used to facilitate this placement.

Remove the impact sleeve and dilator, while controlling the portal.
Discectomy

Introduce the 8mm drill through the access portal to remove a segment of the nucleus pulposus and prepare a space for further discectomy instruments, under biplanar imaging.

The distance which the 8mm drill protrudes past the cannula may be used as a method to determine the appropriate length of implant to be placed. Markings on the proximal shaft of the drill can be used to make this measurement.
Discectomy

To prepare the endplate and debulk the nucleus of the disc, several instruments are included in the OLLIF instrument set.

**Expanding Paddle Shaper**- rotate this instrument ONLY clockwise and expand by 1mm increments to prepare the endplate and to determine the height of the implant to be used. The window of the sliding sleeve of the body indicates the approximate height.
Discectomy

Flexible Ring Curette – the nitinol blade of the flexible curette expands when introduced in the disc space and can be used in a fashion similar to a ring curette to scrape parallel to the endplate. The lateral reach of the flexible curette blade allows wide pathway to be prepared.

Articulating Rake Curette – this curette functions as an angled pull cup curette with the ability to adjust in height. Place it distally in the disc and articulate the handles to push the flat rake tip against the endplate while pulling back to the cannula.

By using this combination of instruments and repeating the steps as necessary, a thorough discectomy may be achieved through the safe portal that maintains the shielded pathway to the disc space.
Graft Delivery

A graft delivery system is included in the OLLIF instrument set to allow for delivery of graft material before the implant is introduced. The length of the graft delivery sleeve is matched to the length of the access portal and the graft plunger is matched to the sleeve.

The beveled tip of the sleeve allows for delivery of the graft material in a direction chosen by the surgeon. An indicator on the flange relates to the direction that the graft is directed within the disc.
Interbody Delivery

To complete the interbody delivery, place a guide wire through the access portal and into the graft mass inside the disc.

Remove the access portal.
Interbody Delivery

The cannulated implant and inserter are placed over the guide wire to follow the safe path created into the center of the disc.

Use the mallet to impact the inserter and place the graft securely in the center of the disc. The location of the titanium implant can be easily determined through fluoroscopy.
Interbody Delivery

To release the implant from the inserter, turn the retainer knob in a counterclockwise fashion until the implant is not connected to the inserter and withdraw the inserter.

A wrench is included to add leverage and grip at this point.
Revision

In the event that an implant needs to be removed after placement, follow the same surgical approach to place the dilator through Kambin’s Triangle. Pass a guide wire through the dilator and into the threaded aperture on the interbody device.

Remove the dilator and place the OLLIF inserter inner shaft over the guide wire to connect to the threads of the implant. Thread the inner shaft into the implant as far as possible.

Using a mallet, tap the inner shaft to withdraw the implant.