Oblique Lateral Interbody Fusion Technique

Kambin's Triangle can easily be located as a silent window with an electrophysiological probe. Discectomy is performed through a single access portal with a 10 mm diameter. After a discectomy, the disc space is packed with beta-tricalcium phosphate soaked in autologous bone marrow, aspirated, and the cage is inserted. Finally, a minimally invasive posterior fixation is performed.

OLLIF's major innovation is to approach the disc through Kambin's Triangle, aided by bilateral fluoroscopy.

OLIF accesses the disc between the psoas muscle and prevertebral structures such as vessels and the ureter [1) 2)].

The patient is placed in the prone position on the operating table. To simplify the approach, the patient is tilted away from the surgeon by 3-5º until after the cage is inserted. Then, the patient is planed back into a true prone position. To enable quick readjustment, 3M Ioban transparent plastic draping (3M Center, St. Paul, MN) is used to help the surgeon get a good sense of the patient's positioning.

Next, bilateral fluoroscopy is set up. The endplates of the target level should line up well in the lateral view. In the anterior-posterior (AP) view, the disc needs to be visible but not necessarily completely aligned, and the spinous process should be centered between the pedicles. Electrophysiological monitoring is set up on the major muscle groups and the skull. The somatosensory evoked potentials (SSEP) and electromyogram (EMG) are checked and monitored throughout the surgery [3)].

Marking

In the AP view, the midline and each disc is marked. A vertical line showing the midpoint of each disc is marked in the lateral view. To find the incision point, the depth of the disk in the lateral view is measured and marked as a distance from the midline in the AP view to give a natural 45º angle to the patient's back for approach, as illustrated in Figure Figure2.2. Usually, the incision is placed 10-13 cm from the midline. Multiple levels can be approached through the same incision by shifting the skin or approaching the disc at a slight angle [4)].

Videos

<html><iframe width="560" height="315" src="https://www.youtube.com/embed/q6CPyLSFarc" frameborder="0" allow="accelerometer; autoplay; encrypted-media; gyroscope; picture-in-picture" allowfullscreen></iframe></html>

1)
Davis TT, Hynes RA, Fung DA, Spann SW, MacMillan M, Kwon B, Liu J, Acosta F, Drochner TE. Retroperitoneal oblique corridor to the L2-S1 intervertebral discs in the lateral position: an anatomic study. J Neurosurg Spine. 2014 Nov;21(5):785-93. doi: 10.3171/2014.7.SPINE13564. Epub 2014 Sep 12. PubMed PMID: 25216400.

2)
McAfee PC, Regan JJ, Geis WP, Fedder IL. Minimally invasive anterior retroperitoneal approach to the lumbar spine. Emphasis on the lateral BAK. Spine (Phila Pa 1976). 1998 Jul 1;23(13):1476-84. PubMed PMID: 9670400.
3) 4)
Abbasi H, Abbasi A. Oblique Lateral Lumbar Interbody Fusion (OLLIF): Technical Notes and Early Results of a Single Surgeon Comparative Study. Cureus. 2015 Oct 15;7(10):e351. doi: 10.7759/cureus.351. PubMed PMID: 26623206; PubMed Central PMCID: PMC4652919.