

Oblique lumbar interbody fusion

Lumbar interbody fusion is a standard procedure for the management of various spinal diseases such as lumbar degenerative disc disease and spinal deformities and other conditions including trauma and infections. Currently, anterior lumbar interbody fusion (ALIF), posterior lumbar interbody fusion, and transforaminal lumbar interbody fusion are widely practiced. Recently, lateral lumbar interbody fusion which utilizes access to the disc via transmuscular interval through the psoas has gained significant popularity due to minimal tissue disruption and minimal blood loss. However, several unique sets of complications and potential hazards have been identified and reported. In order to mitigate these risks, a novel approach which utilizes a bare area between the great vessels and the psoas muscle known as the “oblique corridor” has been coined the term oblique lumbar interbody fusion (OLIF).

OLIF or sometimes known as anterior to psoas has provided solutions to the approach morbidity such as potential neural plexus injury, psoas weakness, transient leg numbness, as well as select difficult anatomy cases, i.e., Mickey Mouse psoas, high iliac crest, and transitional anatomy.

OLIF can obtain adequate operating space via retroperitoneal plane and docking the tubular retractor anterior to psoas muscle and reflecting the muscle from the annulus if needed. This space is fairly constant between L2 and L5, which always increases from supine to lateral positioning of the patient. Usually, there is no need for posterior retraction of the psoas muscle and therefore does not require neuromonitoring.^[1]

OLIF at L5/S1 takes a different approach window; it utilizes the space between the common iliac vessels which is the interval used in ALIF. The OLIF surgery takes the same plane and procedural steps as ALIF. The key step is the mobilization of common iliac vessels and securing adequate operative window for the interbody fusion.^[2] A growing body of evidence is being gathered and it appears to carry similar or less approach-related morbidity with similar efficacy as a traditional supine ALIF.

One of the key attractions for OLIF is the indirect decompression of the spinal canal. As reported by Fujibayashi *et al.*,^[3] one can achieve 19.0%–30.2% increase in cross-sectional area of thecal sac and 61.0%–82.3% increase in disc height after OLIF. This serves as a boon in

cases of foraminal stenosis and mild-to-moderate central canal stenosis with instability, whereby excellent results can be achieved with minimal morbidity. Similarly, even in cases of rigid and severe degenerative deformities, OLIF alleviates the need for Ponte osteotomies and pedicle subtraction osteotomies. It has been shown to provide excellent correction of sagittal and coronal parameters in these elderly patients where blood loss and complications lead to suboptimal surgical outcomes.^[4] It is worthwhile to mention the expedited and high fusion rates^[5] achieved with OLIF even in these difficult patients in challenging situations.

However, OLIF has its own unique set of approach-related morbidity and complications and has been reported in the literature: ureteric injury, abdominal vessel injury, the peritoneum breach and its contents, as well as potential injury to neurological structures such as sympathetic chain, genitofemoral nerve, hypogastric nerve plexus, as well as nerve roots.^[6,7]

OLIF is a relatively new procedure, and there is a paucity of high-quality literature which limits the widespread acceptance among spine surgeons. Nonetheless, the benefits of OLIF surgery are being substantiated and refinement of surgical techniques and dedicated instruments/implants (Acceloc O-AL, L&K Biomed Co., Ltd., Seoul, South Korea) is paving the way to mitigate the risks and further improve outcomes and applicability of the surgery. Future studies are required to validate these perceived benefits and early experiences of OLIF surgery.

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