

# Retroperitoneal Oblique Corridor to the L2-S1 Intervertebral Discs in the Lateral Position: an Anatomic Study

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#### Introduction

Access to the intervertebral discs from L2-S1 in one surgical position can be challenging. The direct lateral transpsoas approach poses potential risk to the lumbar plexus as it courses through the psoas. The plexus and iliac crest cause access to the L4-5 disc to be more complex and makes the L5-S1 level inaccessible. This studies purpose is to investigate a MIS oblique approach to the L2-S1 intervertebral disc space while keeping the patient in a lateral decubitus position with minimal disruption of the psoas and lumbar plexus.

#### Methods

Twenty one fresh frozen cadaveric specimens were dissected. An oblique anatomic corridor to access the L2-S1 discs was examined. Measurements were taken with and without retraction of the psoas. The access corridor was defined at L2-3, L3-4, and L4-5 as the left lateral border of the aorta (or iliac artery) and the anterior medial border of the psoas. The L5-S1 corridor of access was defined transversely from the mid-sagittal line of the inferior endplate of L5 to the medial border of the common iliac vessel and vertically to the first vascular structure that crosses midline.

#### Results

The mean static/retracted access corridor was as follows; L2-3 = 17.7mm/24.4mm, L3-4 = 18.3mm/25.9mm, L4-5 = 14.3mm/23.6mm. The L5-S1 disc space means were 14.8mm between midline and left common iliac vessel, and 24mm from the first midline vessel to the inferior endplate of L5.



L2-3, L3-4, L4-5 oblique windows with psoas muscle retracted



L5-S1 saggital and transverse window with common iliac vessels retracted.

## Conclusions

The MIS oblique corridor allows access to the L2 -S1 discs while keeping the patient in a lateral decubitus position. Minimal psoas retraction without significant tendon disruption allowed for a generous corridor to the disc space. The L5-S1 disc space can be accessed from an oblique angle consistently with gentle retraction of the iliac. This study supports the potential of an MIS oblique retroperitoneal approach to the L2-S1 discs.

### Learning Objectives

This studies purpose is to investigate a MIS oblique approach to the L2-S1 intervertebral disc space while keeping the patient in a lateral decubitus position with minimal disruption of the psoas and lumbar plexus.

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