Neurosurgery, Kettering, OH, USA; [3] *Allegheny Health Network Research Institute, Pittsburgh, PA, USA*

PURPOSE: To demonstrate the safety of the OLIF including the L5-S1 level in the early postoperative period.
STUDY DESIGN/SETTING: Multicenter prospective date: this is a multicenter study including eight centers performing the OLIF approach for primarily degenerative disorders of the lumbar spine. Patients agreed to data collection and IRB approvals were obtained. Patient-reported outcomes (PRO), surgical information and complications were obtained for review.
PATIENT SAMPLE: A total of 50 subjects underwent a multilevel OLIF procedure that included L5-S1. None of the subjects had a primary diagnosis of lumbar deformity. There were 30 males and 20 females; the mean age was 63.6 years. There were 10 single-stage cases and 40 two-stage cases. There was an average of three levels per case.
OUTCOME MEASURES: EBL, vascular injury, neurologic injury, retrograde ejaculation, ventral hernia, ODIEQ5D.
RESULTS: Overall mean EBL per case was 229.6cc. Operative time per case was 200.4 minutes; mean hospital stay was 6.4 days. There were 12 stand-alone constructs versus 38 OLIF with posterior instrumentation. Neuromonitoring was used in 40/50 stage 1 procedures, and 38/40 stage 2 procedures. Bone grafting included rhBMP-2 in 41 cases. Prior to discharge, there was one paresthesia and five weaknesses reported in six subjects, at 6 weeks, one of these events had resolved. There was one vascular injury, and two renal injuries. There were no reports of retrograde ejaculation, or ventral hernia. ODI ($p<.001$) back pain ($p<.001$), leg pain ($p=.007$), and EQ5D ($p<.001$) had statistically significant improvements from baseline at 6 months postoperatively.
CONCLUSIONS: OLIF including the L5-S1 level is a safe procedure and approach to the lumbar spine. OLIF for the L2-L5 levels (O25) using the corridor anterior to the psoas, facilitates lateral interbody fixation with minimal to no risk to femoral and obturator nerve while obviating the postoperative muscle pain that occurs with complementary transpsoas procedures. OLIF for the L5-S1 level (O51), is as safe and less invasive than the supine L5-S1 ALIF approach and eliminates the requirement to flip the patient in these cases that require lumbar fusion at L4-5 and L5-S1. This is extremely beneficial considering that 60% of the lumbar lordosis is based in these two specific levels and the concomitant high incidence of discopathology which includes L4-S1. Although not statistically significant, injury to the superior hypogastric plexus (SHP), the cause of retrograde ejaculation, was not found. There is the possibility if not the probability that by lessening the traction, displacement and retraction blade forces on the retroperitoneum during O51 compared the ALIF, that the SHP is at less risk a crush injury, vascular supply injury and traction injury. Incidence of ileus was low due to more minimally invasive retroperitoneal exposure compared to ALIF. Significant improvement noted in the PROs is expected considering OLIF mitigates psoas injury and major nerve injury by using the corridor anterior to the psoas for the approach. This as well as no major vessel mobilization nor ligation of the iliolumbar vein in O51 compared to ALIF results in at least equivalent safety profile for the inclusion of the L5-S1 disc level, not previously possible with other lateral approaches to the lumbar spine.
FDA DEVICE/DRUG STATUS: This abstract does not discuss or include any applicable devices or drugs.

https://doi.org/10.1016/j.spinee.2018.06.465

201. Safe posterior thoracic discectomy through a modified transforaminal thoracic interbody fusion (TTIF) approach: technique description and case series

Michael Millgram, MD[1], William Beutler, MD, FACS[2], Richard D. Guyer, MD[3], Ely Ashkenazi, MD[4]; [1] *Israel Spine Center, Tel Aviv, Israel;* [2] *Pennsylvania Spine Institute, Harrisburg, PA, USA;* [3] *Texas Back Institute, Plano, TX, USA;* [4] *Israel Spine Center, Assuta Hospital, Tel Aviv, Israel*

BACKGROUND CONTEXT: The appropriate approach for surgical removal of thoracic disc herniations is controversial. The posterior approach historically acquired a bad reputation due to high rates of neurological deterioration subsequent to spinal cord manipulation. The anterior approach has consequently gained popularity but entails a larger magnitude of surgery if open and is technically demanding if approached thoracoscopically. Approaching the thoracic disc posteriorly following unilateral facetectomy and pediculectomy was suggested in 1978. This study presents a technique for posterior unilateral thoracic discectomy through a hemilaminectomy, unilateral facetectomy, and hemipediculectomy, facilitated by a curved dorsally-shielded high-speed bone removal device. Introducing the device ventral to the dural sac allows removal of calcified and soft disc fragments without relying on forceful manual maneuvers and avoiding manipulation of the spinal cord.
PURPOSE: Describing the proposed method and a case series of 10 patients treated using this technique.
STUDY DESIGN/SETTING: Technique description and case series.
PATIENT SAMPLE: Ten procedures were performed in our service between June 2014 and February 2017. Patients included four males and six females, aged 23-74 years. The levels operated were T3-4 (1), T5-6 (1), T7-8 (1), T9-10(1), T10-11(1), T11-12 (4) and T12-L1 (1). All patients presented with neurological deterioration and all but two with pyramidal signs (one T11–12 and one T12–L1).
OUTCOME MEASURES: Patient condition was assessed before and after the surgery and at follow up. One patient was lost to follow-up and the other nine patients had an average follow up of 2 years. Outcome measures included physician assessment of patient motor ability and neurological outcome and patients reports on pain, motor ability and symptoms.
METHODS: The maximal disc protrusion side is approached through a hemilaminectomy, unilateral facetectomy, and hemipediculectomy removing the superior half of the pedicle and exposing the disc transforaminally, allowing its removal using the device. Pedicle fixation and fusion concluded all procedures (TTIF).
RESULTS: Before surgery, all patients presented with neurological deterioration and all but two with pyramidal signs. All procedures were uneventful without dural tears and other complications. At follow up, all patients showed improvement in pain and motor ability.
CONCLUSIONS: The proposed method allows a safe limited posterior exposure thoracic discectomy. This approach is supported by this small series.
FDA DEVICE/DRUG STATUS: The Dreal Tissue Removal Device (Approved for this indication).

https://doi.org/10.1016/j.spinee.2018.06.466

Friday, September 28, 2018
1:00 PM–2:30 PM
A New Look at Imaging

202. The functional relevance of diffusion tensor imaging in comparison to conventional MRI in patients with cervical compressive myelopathy

Seok Woo Kim IV, MD, PhD; Hallym University Sacred Heart Hospital, Anyang-si, Republic of Korea

BACKGROUND CONTEXT: Most cases of cervical myelopathy are easily diagnosed by conventional T2-weighted magnetic resonance imaging together with a history of specific symptoms and neurological examinations. Although MRI has played an important role in the diagnosis and follow-up of spinal cord lesions at present, it still lacks relevance to the functional outcome and prognosis. A recently introduced technique, diffusion tensor imaging (DTI), has been investigated for estimating the neural tissue integrity in the brain and spinal cord. It would be important to validate the advantage of DTI in terms of functional relevance compared to conventional MRI.
PURPOSE: To determine the functional relevance of diffusion tensor imaging (DTI) metrics and conventional MRI (signal intensity change in T2, compression ratio) by measuring the correlation of these parameters