

8<sup>th</sup> International Conference on  
Spine and Spinal Disorders

March 18-19, 2022 | Webinar

## Percutaneous Endoscopic Transforaminal Lumbar Interbody Fusion: a novel technique Sentinel Pinning with Lateral Retractor for protection of exiting root

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The Endoscopic Spine Surgery (ESS) is rapidly developed and ESS combined with TLIF (endoTLIF) is new trend due to the least traumatization. The safe zone of foramen (Kambin triangle) is so limited, therefore implanting a cage into disc space away from the exiting root or dura injury is a major challenge. A novel technique was created by us "sentinel pinning with lateral retractor" to protect the exiting root as application of tunnel protector and implanted fixed size cage. The complete procedures were well described and effectiveness was surveyed.

**Methods and material:** We inserted contralateral percutaneous pedicle screws firstly, inserted the guide-pin to the SAP, performed foraminoplasty, discectomy and endplate preparing and inserted the sentinel pin docking at inferolateral border of the cranial vertebral body under the monitor of endoscope and fluoroscope. We harvested synthetic bone graft mixing with bone marrow aspirated from vertebral body and implanted a fixed size cage through the safe quadrangular space created by sentinel pin and lateral retractor. We secured the screws and rods finally. Demographics of patients, operation time and blood loss were recorded. Preoperative and postoperative Visual

Analogue Scale of back and legs and ODI scores were quantitatively assessed at 1, 3, 6, and 12 months after surgery.

**Results:** To Dec.2019, a total of 35 patients and 45 levels (mean age 62.2 y/o) were evaluated. The overall mean VAS score for back pain improved statically significantly, and mean ODI scores from 50.9 to 3.6 ( $P < 0.01$ ) postoperatively was significantly improved with a mean follow-up of 15 months There was no postoperative permanent exiting root injury, iatrogenic durotomy and other neurogenic damage.

**Conclusions:** Postoperative scores for endo-TLIF by this novel technique significantly improved and no disabled complications. The procedure could be considered as a safe and effective TLIF.

### Speaker Biography

Yi-Hung Huang is Director of the Department of Orthopedic Surgery and Assistant professor at Chia Yi Christian Hospital. He is also a Medical Association member at Taiwan society of endoscopic spine surgery (TSESS) and Pacific and Asian Society of Minimally invasive Spine Surgery (PASMIS).

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