

# ASSOC. PROF. WORAWAT LIMTHONGKUL



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## Education & Qualifications

- 2012 Certified Thai Board of Emergency Medicine. The medical council of Thailand.
- 2010 Certified Research visiting scholar Spine Fellowship program, Rothman Institute, Philadelphia, PA, USA
- 2009 Certified Spine Research fellow, Northshore University Health System, University of Chicago, Evanston, Illinois, USA
- 2006 Certified Thai Board of Orthopaedic Surgery. The medical council of Thailand and Royal Thai College of Orthopedic Surgeons
- 1999 Doctor of Medicine, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

## Professional Appointments

2022- current	Vice President	Academic Affairs, Spine Society of Thailand (SST)
2021- current	Assistant head of Orthopaedics Department for Academic Affairs and education	Department of Orthopaedics, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand
2020- current	Director	Center of Excellence in Biomechanics and Innovative Spine Surgery Chulalongkorn University
2020- 2022	Vice President	Spine fellowship training, Spine Society of Thailand (SST)
2018-2020	Vice President	Academic Affairs, Spine Society of Thailand (SST)
2016-2018	Director	Spine Surgery Unit, Department of Orthopaedics, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand
2014-current	<i>Associate Professor</i>	Department of Orthopaedics, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand
2013-current	Editorial Board	The Thai Journal of Orthopaedic Surgery
2012-2014	Director	Patient Care Team of emergency room (PCT-ER), King Chulalongkorn Memorial Hospital, Bangkok, Thailand

## BOOK CHAPTER

1. Classification of Spinal Injury (Kris Radcliff, MD; **Worawat Limthongkul, MD**; Lawrence Delasotta, MD, MPH; Jeffrey Moore, BS; Alan Levine, MD; Alexander R. Vaccaro, MD, PhD), Spine Trauma, 2nd Edition
2. Oblique lumbar interbody fusion, Worawat Limthongkul, ISBN 978-616-407-683-9

## PEER REVIEW PUBLICATIONS

1. Karaikovic EE, Rattner Z, Bilimoria MM, Sener SF, McGee JP, Metrick LB, Szokol JW, **Limthongkul W**. Coil embolization of a lumbar artery to control vascular injury during intradiscal surgery. Spine (Phila Pa 1976). 2010;35(5):E163-6.
2. **Limthongkul W**, Karaikovic EE, Savage JW, Markovic A. Volumetric analysis of thoracic and lumbar vertebral bodies. Spine J. 2010;10(2):153-8.
3. **Limthongkul W**, Savage J, Nenonene EK, Karaikovic EE. Evaluation of the intrinsic properties of pedicle screws: do diameter, manufacturing and screw design affect resistance and/or resistivity. Bosn J Basic Med Sci. 2009;9 Suppl 1:77-82.
4. Li J, Dumonski ML, Liu Q, Lipman A, Hong J, Yang N, Jin Z, Ren Y, **Limthongkul W**, Bessey JT, Thalgot J, Gebauer G, Albert TJ, Vaccaro AR. A multicenter study to evaluate the safety and efficacy of a stand-alone anterior carbon I/F Cage for anterior lumbar interbody fusion: two-year results from a Food and Drug Administration investigational device exemption clinical trial. Spine 2010. Dec 15;35(26):E1564-70.

5. Savage JW, **Limthongkul W**, Park HS, Zhang LQ, Karaikovic EE. A comparison of biomechanical stability and pullout strength of two C1-C2 fixation constructs. *Spine J*. 2011 Jul;11(7):654-8.
6. **Limthongkul W**, Yingsakmongkol W. Case Report: Cauda Equina Syndrome Associated With an Interspinous Device. *Clin Orthop Relat Res*. 2012 Jun;470(6):1668-72.
7. Anderson DG, **Limthongkul W**, Sayadipour A, Kepler CK, Harrop JS, Maltenfort M, Vaccaro AR, Hilibrand A, Rihn JA, Albert TJ. A radiographic analysis of degenerative spondylolisthesis at the L4-5 level. *J Neurosurg Spine*. 2012 Feb;16(2):130-4.
8. Radcliff KE, **Limthongkul W**, Kepler CK, Sidhu GD, Anderson DG, Rihn JA, Hilibrand AS, Vaccaro AR, Albert TJ. Cervical Laminectomy Width and Spinal Cord Drift Are Risk Factors for Postoperative C5 Palsy. *J Spinal Disord Tech*. 2012 Mar 20. [Epub ahead of print]
9. Liu Q, **Limthongkul W**, Sidhu G, Zhang J, Vaccaro A, Shenck R, Hickok N, Shapiro I, Freeman T. Covalent attachment of P15 peptide to titanium surfaces enhances cell attachment, spreading, and osteogenic gene expression. *J Orthop Res*. 2012 Oct;30(10):1626-33
10. Vaccaro AR, Kepler CK, Rihn JA, Suzuki H, Ratliff JK, Harrop JS, Morrison WB, **Limthongkul W**, Albert TJ. Anatomical relationships of the anterior blood vessels to the lower lumbar intervertebral discs: analysis based on magnetic resonance imaging of patients in the prone position. *J Bone Joint Surg Am*. 2012 Jun 20;94(12):1088-94.
11. Anderson DG, Sayadipour A, **Limthongkul W**, Martin ND, Vaccaro A, Harrop JS. Traumatic central cord syndrome: neurologic recovery after surgical management. *Am J Orthop (Belle Mead NJ)*. 2012 Aug;41(8):E104-8.
12. Honsawek S, Poonpukdee J, Chalermpanpipat C, Payungporn S, **Limthongkul W**, Yingsakmongkol W, Thanakit V, Parkpian V. Hypertrophy of the ligamentum flavum in lumbar spinal canal stenosis is associated with increased bFGF expression. *Int Orthop*. 2013 Jul;37(7):1387-92.
13. Yingsakmongkol W, Chaichankul C, **Limthongkul W**. Percutaneous interspinous distraction device for the treatment of lumbar spinal canal stenosis: clinical and radiographic results at 2-year follow-up. *Int J Spine Surg*. 2014 Dec 1;8.
14. Kristjánsson B, **Limthongkul W**, Yingsakmongkol W, Thantivorasit P, Jirathanathornnukul N, Honsawek S. Isolation and Characterization of Human Mesenchymal Stem Cells From Facet Joints and Interspinous Ligaments. *Spine*. 2016 Jan;41(1):E1-7.
15. Jirathanathornnukul N, **Limthongkul W**, Yingsakmongkol W, Singhatanadgige W, Parkpian V, Honsawek S. Increased expression of vascular endothelial growth factor is associated with hypertrophic ligamentum flavum in lumbar spinal canal stenosis. *J Investig Med*. 2016 Apr;64(4):882-7.
16. Singhatanadgige W, **Limthongkul W**, Valone F 3rd, Yingsakmongkol W, Riew KD. Outcomes following Laminoplasty or Laminectomy and Fusion in Patients with Myelopathy Caused by Ossification of the Posterior Longitudinal Ligament: A Systematic Review. *Globe Spine J*. 2016 Nov;6(7):702-709.
17. Mabey T, Singhatanadgige W, Yingsakmongkol W, **Limthongkul W**, Honsawek S. Vitamin D and spine surgery. *World J Orthop*. 2016 Nov 18;7(11):726-730. Review.
18. Amarase C, Thimasarn W, Tantavisut S, Huanmanop T, Wangroongsub Y, **Limthongkul W**. Different effect of percutaneous plate insertion via anteromedial vs anterolateral approach on intracompartmental pressure of the leg: A cadaveric study. *Injury*. 2017 Nov;48(11):2407-2410. doi: 10.1016/j.injury.2017.08.070. Epub 2017 Sep 6
19. Singhatanadgige W, Kang DG, Wiranuwat D, Tanavalee C, Yingsakmongkol W, **Limthongkul W**. Awareness of middle sacral artery pathway: A cadaveric study of the presacral area. *J Orthop Surg (Hong Kong)*. 2018 Jan-Apr;26(1):2309499017754094. doi: 10.1177/2309499017754094.
20. Dechsupa S, Yingsakmongkol W, **Limthongkul W**, Singhatanadgige W, Honsawek S. Relative telomere length and oxidative DNA damage in hypertrophic ligamentum flavum of lumbar spinal stenosis. *PeerJ*. 2018 Aug 9;6:e5381. eCollection 2018.
21. Mahatthanatrakul A, Itthipanichpong T, Ratanakornphan C, Numkarunarunrote N, Singhatanadgige W, Yingsakmongkol W, **Limthongkul W**. Relation of lumbar sympathetic chain to the open corridor of retroperitoneal oblique approach to lumbar spine: an MRI study. *Eur Spine J*. 2018 Oct 16. doi: 10.1007/s00586-018-5779-6. Epub 2018 Oct 16.
22. Singhatanadgige W, Suebsombut Y, Riew KD, Tanavalee C, Yingsakmongkol W, **Limthongkul W**. Cervical paraspinous muscle compartment pressure after laminoplasty: A cadaveric study. *J Clin Neurosci*. 2018 Nov 21. pii: S0967-5868(18)31722-3. doi: 10.1016/j.jocn.2018.11.047. Epub 2018 Nov 22.
23. Kaliya-Perumal AK, **Limthongkul W**, Oh JY. Utilization of Spinal Navigation to Facilitate Hassle-Free Rod Placement during Minimally-Invasive Long-Construct Posterior Instrumentation. *Asian Spine J*. 2019 Jan 30. doi: 10.31616/asj.2018.0233. Epub 2019 Jan 30.
24. Tanavalee C, **Limthongkul W**, Yingsakmongkol W, Luksanapruksa P, Singhatanadgige W. A comparison between repeat discectomy versus fusion for the treatment of recurrent lumbar disc herniation: Systematic review and meta-analysis. *J Clin Neurosci*. 2019 Aug;66:202-208. doi: 10.1016/j.jocn.2019.05.004. Epub 2019 May 27.
25. **Limthongkul W**, Tanasansomboon T, Yingsakmongkol W, Tanaviriyachai T, Radcliff K, Singhatanadgige W. Indirect Decompression Effect to Central Canal and Ligamentum Flavum After Extreme Lateral Lumbar Interbody Fusion (XLIF)

- and Oblique Lumbar Interbody Fusion (OLIF). *Spine (Phila Pa 1976)*. 2020 Apr 23. doi: 10.1097/BRS.0000000000003521. Online ahead of print.
26. Tejapongvorachai T, Tanaviriyachai T, Daniel Riew K, **Limthongkul W**, Tanavalee C, Keeratihatayakorn S, Buttongkum D, Singhatanadgige W. Curved versus straight-cut hinges for open-door laminoplasty: A finite element and biomechanical study. *J Clin Neurosci*. 2020 May 5:S0967-5868(20)30374-X. doi: 10.1016/j.jocn.2020.04.056.
  27. Singhatanadgige W, Chanchaoenchai T, Honsawek S, Kotheeranurak V, Tanavalee C, **Limthongkul W**. No Difference in Pain After Spine Surgery with Local Wound Filtration of Morphine and Ketorolac: A Randomized Controlled Trial. *Clin Orthop Relat Res*. 2020 Jun 4. doi: 10.1097/CORR.0000000000001354.
  28. Kotheeranurak V, Singhatanadgige W, Ratanakornphan C, Yingsakmongkol W, Hynes RA, **Limthongkul W**. Neutral hip position for the oblique lumbar interbody fusion (OLIF) approach increases the retroperitoneal oblique corridor. *BMC Musculoskelet Disord*. 2020 Aug 31;21(1):583. doi: 10.1186/s12891-020-03592-9.PMID: 32867737
  29. Tanasansomboon T, Tejapongvorachai T, Yingsakmongkol W, **Limthongkul W**, Kotheeranurak V, Singhatanadgige W. Minimally Invasive Percutaneous Modified Iliac Screw Placement Using Intraoperative Navigation: A Technical Note. *World Neurosurg*. 2021 Feb;146:240-245. doi: 10.1016/j.wneu.2020.11.112. Epub 2020 Nov.
  30. Singhatanadgige W, Songthong K, Pholprajug P, Yingsakmongkol W, Kotheeranurak V, **Limthongkul W**. Trajectory of Lumbar Translaminar Facet Screw Under Navigation: A Cadaveric Study. *Global Spine J*. 2020. doi: 10.1177/2192568220962444.
  31. Singhatanadgige W, Promsuwan M, Tanasansomboon T, Yingsakmongkol W, **Limthongkul W**. Is Unilateral Minimally Invasive Transforaminal Lumbar Interbody Fusion Sufficient in Patients with Claudication? A Comparative Matched Cohort Study. *World Neurosurg*. 2021 Jun;150:e735-e740. doi: 10.1016/j.wneu.2021.03.116. Epub 2021 Mar 30.
  32. Yingsakmongkol W, Wathanavasin W, Jitpakdee K, Singhatanadgige W, **Limthongkul W**, Kotheeranurak V. Psoas Major Muscle Volume Does Not Affect the Postoperative Thigh Symptoms in XLIF Surgery. *Brain Sci*. 2021 Mar 11;11(3):357. doi: 10.3390/brainsci11030357.
  33. Singhatanadgige W, Sukthuyat A, Tanaviriyachai T, Kongtharvonskul J, Tanasansomboon T, Kerr SJ, **Limthongkul W**. Risk factors for polyetheretherketone cage subsidence following minimally invasive transforaminal lumbar interbody fusion. *Acta Neurochir (Wien)*. 2021 Jul 23. doi: 10.1007/s00701-021-04923-y.
  34. Kotheeranurak V, Jitpakdee K, Lin GX, Mahatthanatrakul A, Singhatanadgige W, **Limthongkul W**, Yingsakmongkol W, Kim JS. Subsidence of Interbody Cage Following Oblique Lateral Interbody Fusion: An Analysis and Potential Risk Factors. *Global Spine J*. 2021 Dec 17:21925682211067210. doi: 10.1177/21925682211067210. Online ahead of print.
  35. **Limthongkul W**, Chantharakomen R, Tanasansomboon T, Yingsakmongkol W, Yoong-Leong Oh J, Kotheeranurak V, Singhatanadgige W. Comparison of unremoved intervertebral disc location between two lateral lumbar interbody fusion (LLIF) techniques. *World Neurosurg*. 2022 Jan 8:S1878-8750(22)00014-6. doi: 10.1016/j.wneu.2022.01.011. Online ahead of print.
  36. Yingsakmongkol W, Jitpakdee K, Varakornpipat P, Choentrakool C, Tanasansomboon T, **Limthongkul W**, Singhatanadgige W, Kotheeranurak V. Clinical and Radiographic Comparisons among Minimally Invasive Lumbar Interbody Fusion: A Comparison with Three-Way Matching. *Asian Spine J*. 2022 Jan 25. doi: 10.31616/asj.2021.0264. Online ahead of print.
  37. Yingsakmongkol W, Poriswanich K, Kotheeranurak V, Numkarunarunrote N, **Limthongkul W**, Singhatanadgige W. How Prone Position Affects the Anatomy of Lumbar Nerve Roots and Psoas Morphology for Prone Transpsoas Lumbar Interbody Fusion. *World Neurosurg*. 2022 Apr;160:e628-e635. doi: 10.1016/j.wneu.2022.01.104. Epub 2022 Jan 30.PMID: 35108649
  38. Kotheeranurak V, Jitpakdee K, Singhatanadgige W, **Limthongkul W**, Yingsakmongkol W, Kim JS. Anterior transcorporeal full-endoscopic drainage of a long-span ventral cervical epidural abscess: A novel surgical technique. *N Am Spine Soc J*. 2021 Feb 12;5:100052. doi: 10.1016/j.xnsj.2021.100052. eCollection 2021 Mar.
  39. Singhatanadgige W, Pholprajug P, Songthong K, Yingsakmongkol W, Triganjananun C, Kotheeranurak V, **Limthongkul W**. Comparative Radiographic Analyses and Clinical Outcomes Between O-Arm Navigated and Fluoroscopic-Guided Minimally Invasive Transforaminal Lumbar Interbody Fusion. *Int J Spine Surg*. 2022 Feb;16(1):151-158. doi: 10.14444/8183. Epub 2022 Feb 17.
  40. Chalermkitpanit P, **Limthongkul W**, Yingsakmongkol W, Thepsoparn M, Pannangpetch P, Tangchitcharoen N, Tanasansomboon T, Singhatanadgige W. Analgesic Effect of Intravenous Nefopam for Postoperative Pain in Minimally Invasive Spine Surgery: A Randomized Prospective Study. *Asian Spine J*. 2022 Mar 11. doi: 10.31616/asj.2021.0337. Online ahead of print.
  41. Kotheeranurak V, Jitpakdee K, Rujiramongkolchai N, Atikankul T, Singhatanadgige W, **Limthongkul W**, Tejapongvorachai T, Kim JS. Remodeling of the Lumbar Facet Joint After Full Endoscopic Resection for Lumbar Osteoid Osteoma: Case Report and Literature Review. *Int J Spine Surg*. 2022 Apr;16(2):378-383. doi: 10.14444/8210. Epub 2022 Mar 10.
  42. Kotheeranurak V, Liawrungueang W, Kuansongtham V, Sriphirom P, Bamrunghin N, Keorochana G, Pruttikul P, **Limthongkul W**, Singhatanadgige W, Pongmanee S, Arunakul R, Ruangchainikom M, Sasiprapha P, Chitragarn R, Pairuchvej S, Tanasansomboon T, Jitpakdee K. Surgeons' Perspective, Learning Curve, Motivation, and Obstacles of

- Full-Endoscopic Spine Surgery in Thailand: Results From A Nationwide Survey. *Biomed Res Int.* 2022 Mar 11;2022:4971844. doi: 10.1155/2022/4971844. eCollection 2022.
43. Tanasansomboon T, Kittipibul T, **Limthongkul W**, Yingsakmongkol W, Kotheeranurak V, Singhatanadgige W. Thoracolumbar Burst Fracture without Neurological Deficit: Review of Controversies and Current Evidence of Treatment. *World Neurosurg.* 2022 Jun;162:29-35. doi: 10.1016/j.wneu.2022.03.061. Epub 2022 Mar 19.
  44. Kotheeranurak V, Pholprajug P, Jitpakdee K, Pruttikul P, Chitragran R, Singhatanadgige W, **Limthongkul W**, Yingsakmongkol W, Kim JS. Full-Endoscopic Anterior Odontoid Screw Fixation: A Novel Surgical Technique. *Orthop Surg.* 2022 May;14(5):990-996. doi: 10.1111/os.13271. Epub 2022 Apr 20.
  45. Singhatanadgige W, Jaruprat P, Kerr SJ, Yingsakmongkol W, Kotheeranurak V, **Limthongkul W**. Incidence and risk factors associated with superior-segmented facet joint violation during minimal invasive lumbar interbody fusion. *Spine J.* 2022 Apr 18:S1529-9430(22)00149-8. doi: 10.1016/j.spinee.2022.04.002. Online ahead of print.
  46. Singhatanadgige W, Chamadol H, Tanasansomboon T, Kang DG, Yingsakmongkol W, **Limthongkul W**. Surgical Outcomes of Minimally Invasive Transforaminal Lumbar Interbody Fusion Using Surgical Microscope vs Surgical Loupes: A Comparative Study. *Int J Spine Surg.* 2022 Jul 14:8303. doi: 10.14444/8303. Online ahead of print.
  47. Yingsakmongkol W, Jitpakdee K, Kerr S, **Limthongkul W**, Kotheeranurak V, Singhatanadgige W. Successful Criteria for Indirect Decompression With Lateral Lumbar Interbody Fusion. *Neurospine.* 2022 Sep;19(3):805-815. doi: 10.14245/ns.2244058.029. Epub 2022 Aug 10.
  48. Singhatanadgige W, Suranaowarat P, Jaruprat P, Kerr SJ, Tanasansomboon T, **Limthongkul W**. Indirect Effects on Adjacent Segments After Minimally Invasive Transforaminal Lumbar Interbody Fusion. *World Neurosurg.* 2022 Aug 25:S1878-8750(22)01197-4. doi: 10.1016/j.wneu.2022.08.087. Online ahead of print.
  49. Singhatanadgige W, Tangchitcharoen N, Kerr SJ, Tanasansomboon T, Yingsakmongkol W, Kotheeranurak V, **Limthongkul W**. Comparison of PEEK and TiPEEK in Minimally Invasive Transforaminal Lumbar Interbody Fusion: a Randomized Clinical Trial. *World Neurosurg.* 2022 Oct 7:S1878-8750(22)01411-5. doi: 10.1016/j.wneu.2022.10.006. Online ahead of print.
  50. **Limthongkul W**, Wannaratsiri N, Sukjamsri C, Benyajati CN, Limthongkul P, Tanasansomboon T, Yingsakmongkol W, Singhatanadgige W. Biomechanical Comparison Between Posterior Long-Segment Fixation, Short-Segment Fixation, and Short-Segment Fixation With Intermediate Screws for the Treatment of Thoracolumbar Burst Fracture: A Finite Element Analysis. *Int J Spine Surg.* 2023 Jan 23:8441. doi: 10.14444/8441. Online ahead of print.
  51. Dechsupa S, Yingsakmongkol W, **Limthongkul W**, Singhatanadgige W, Jitjumnong M, Honsawek S. Vitamin D Inadequacy Affects Skeletal Muscle Index and Physical Performance in Lumbar Disc Degeneration. *Int J Mol Sci.* 2023 Feb 5;24(4):3152. doi: 10.3390/ijms24043152.
  52. Kotheeranurak V, Tangdamrongtham T, Lin GX, Singhatanadgige W, **Limthongkul W**, Yingsakmongkol W, Kim JS, Jitpakdee K. Comparison of full-endoscopic and tubular-based microscopic decompression in patients with lumbar spinal stenosis: a randomized controlled trial. *Eur Spine J.* 2023 Apr 3:1-12. doi 10.1007/s00586-023-07678-5. Online ahead of print.

### ***International Membership Spine community***

- EUROSPINE
- AO Spine
- Society for Minimally Invasive Spine Surgery (SMISS)
- Pacific and Asian Society of Minimally Invasive Spine Surgery (PASMIS)
- ISASS