



Asst Prof. Pang Hung Wu

MBBS(S'pore), MRCS (Ireland) ,MMED Ortho (S'pore) ,GDFM(S'pore), FRCS(Orth) Edinburgh

Consultant

Ng Teng Feng General Hospital
Member of National University Hospital Systems

Adjunct Assistant Professor

Yong Loo Lin School Of Medicine
National University of Singapore

Personal details

Name	Pang Hung <u>Wu</u>
Address	27A, Tavistock Avenue, Singapore 555171
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Professional registration	Singapore Medical Council – M13239Z

Professional Qualifications

- MBBS with Dean's List Award National University of Singapore March 2006
- Membership of Royal College of Surgeons of Ireland Feb 2009 Royal College of Ireland
- Graduate Diploma of Family Medicine March 2010 National University of Singapore

- Master of Medicine Orthopaedic Surgery Aug 2014 National University of Singapore
- Fellows of Royal College of Surgeons Edinburgh (Orth) May 2016 Edinburgh

Specialist Qualification

- Specialist Orthopaedic Surgery Singapore
- Diploma of Family Medicine

Membership in Society

Member, Royal College of Surgeon Ireland

Member of Singapore Orthopaedic Association

Member of Singapore Spine Society

Permanent Member, Executive Committee (22/23) Online Education Subcommittee of Asia Pacific Spine Society

Member of AO spine

Fellow of Royal College of Surgeons, Edinburgh

Languages spoken

English, Chinese, Cantonese

Charity /Social Enterprise Memberships

Ex Board Member Cerebral Palsy
Association of Singapore and Honorary
Board Member Children Charities
Association of Singapore

Medical Honors/Awards

- Dean List Final MBBS National University of Singapore in March 2006

- Best Houseman Award Orthopaedics National University Hospital in Nov 2006
- Best Houseman Award General Surgery National University Hospital in Feb 2007
- Winner of the Best Oral Presentation Competition in Annual Scientific Congress Singapore in 2007. With the paper Correlation of the long term outcome with completeness of surgical evacuation of Intracerebral haemorrhage- A retrospective Study
- Singapore Ministry of Health Training Scholar in April 2010
- Competed in Young Orthopaedic Investigator Award 2014 Singapore Orthopaedic Association Annual Scientific Meeting
- Competed in Young Surgeon's Award in 49th Singapore Malaysia Congress of Medicine in Feb 2015
- Winner of Pacific and Asian Society of Minimally Invasive Spine Surgery (PASMISS) Best poster November 2015 Korea
- Winner of Outstanding Oral Presentation of International Society for the Study of the Lumbar Spine held in June 2015 USA.
- Joint top score candidate in Joint Specialty Fellowship Examination FRCS (Orth) Edinburgh Exit Examination in May 2016
- Orthopaedic Teaching Excellence Award , National University Singapore for 2015-2016
- Orthopaedic Teaching Excellence Award , National University Singapore for 2016-2017
- Service Star Award Ng Teng Feng General Hospital September 2017
- Service Story: Unsung Hero Award Jan 2018
- Service Ambassador Award Ng Teng Feng General Hospital September 2018
- Winner of the Best Paper Award for 2019 Korean Minimally Invasive Surgery Society
- Winner of Best Oral Presentation Award in Virtual World Spine Congress 2020

Fellowship Experience

- Spinal Endoscopy Fellow of Nanoori Gangnam Hospital, Spine Division , Seoul , South Korea: Sept 2019- Mar 2020
- AO Spine North America Fellowship: Complex Spine Surgery Fellow in Toronto Western Hospital , Canada: Sept 2018-Sept 2019
- Spine Trauma Fellow of Sunnybrook Health Sciences, Toronto , Canada: July 2019-Sept 2019
- Paediatric Spine Fellow at Hospital For Sick Children(SICKIDS) , Toronto, Canada: Sept 2018-July 2019
- AO trauma fellow of University of Heidelberg, BG Klinik Ludwigshafen, Germany

- Association of South East Asian Nations(ASEAN) Travelling fellowship 2014 to South East Asia Orthopaedics Centre
- Hong Kong Orthopaedic Association, Singapore Ambassador 2014.

Reviewer /Editor of Journal	
Neurospine Journal	1) Reviewer 2) NASS- Neurospine Journal – Editorial board for Endoscopy Section of June 2020 issue
World Neurosurgery	1) Reviewer 2) Editorial board for Endoscopy Section of Sept 2020 issue
BMC Musculoskeletal Disorders	Reviewer
Journal of Minimally Invasive Spine Surgery and Technique(JMISST)	1) Reviewer 2) Editorial board for Endoscopy Section of June 2021 issue
Medicine Journal	Reviewer
Asian Journal of Neurosurgery	Reviewer
Interdisciplinary Neurosurgery	Reviewer
Clinical Neurology And Neurosurgery	Reviewer
Fellowship /Ambassador	
ASEAN Orthopaedic Association Junior Travelling Fellowship 2014	Travelling Fellow for Singapore Orthopaedic Association
HKOA – SOA Ambassador 2014	Singapore SOA Ambassador
AO trauma Fellowship 2017	Germany June-July 2017 in BGU Ludwigshafen, University of Heidelberg
Nanoori Suwon Hospital Endoscopic Spine Fellowship	December 2017
Spine Fellowship in University Health Network Toronto Canada – Toronto Western Hospital, SickKids and Toronto General Hospital	Sept 2018 to June 2019
Spine Fellowship in Sunnybrook Hospital Toronto, Canada	July 2019 to Aug 2019
Nanoori Gangnam Hospital Endoscopic Spine Fellowship	Sept 2019 to March 2020.
Academic Position	
Yong Loo Lin School of Medicine Adjunct Clinical Educator Scheme	Adjunct Assistant Professor
Yong Loo Lin School of Medicine	Clinical Lecturer

Clinical Faculty Scheme	<ul style="list-style-type: none"> • Orthopaedic Teaching Excellence Award , National University Singapore for 2015-2016 • Orthopaedic Teaching Excellence Award , National University Singapore for 2016-2017
Convener of Royal College Of Surgeons Edinburgh Professional Examination	Convener of FRCS Exit Examination in 2017
Asia Pacific Spine Society Executive Committee	April 2022 to June 2023
Asia Pacific Spine Society Online Education Subcommittee	April 2022 to June 2023
Current Employment	
National University Health System- Juronghealth Campus, Ng Teng Feng General Hospital, Singapore	Consultant from July 2018 - Current

Research and Publications	
1. Socioeconomic aspect of Diabetics with and without foot problems.	Poster Presentation in APOA 2007. Published as book chapter in <u>Diabetic Foot Problems</u> , pp. 15-28 (2008) World Scientific
2. Correlation of the long term outcome with completeness of surgical evacuation of Intracerebral haemorrhage- A retrospective Study	Winner of the Best Oral Presentation Competition in Annual Scientific Congress 2007. Published in Singapore Medical Journal 2010 ;51(4) 320
3. Spontaneous Perforation of the Oesophagus	Published in Singapore Surgical Bulletin January ,the Chapter of General Surgeons, College of Surgeons, Singapore. 2010
4. A Patient with Thyroid Storm Presenting with Apathetic Thyrotoxicosis and Features of Meningoencephalitis	Yang SPL, Wu PH , Tey BH, Tan CK (2011) A Patient with Thyroid Storm Presenting with Apathetic Thyrotoxicosis and Features of Meningoencephalitis. Thyroid 21:675-678
5. Osteomyelitis and Septic Arthritis in a Single tertiary paediatric centre: A ten year study on epidemiology and antibiotics therapy	Presentation SOA ASM 2012
6. Metastatic Spinal Tumor Surgery.	Winner of Outstanding Oral Presentation of

A Comparison of minimally invasive versus Open percutaneous pedicular screw fixation	International Society for the Study of the Lumbar Spine held in June 2015 USA Published Clin Spine Surg. 2016 Jun 27 Kumar N, Malhotra R, Maharajan K, Zaw AS, Wu PH , Makandura MC, Po Liu GK, Thambiah J, Wong HK (2017) Metastatic Spine Tumor Surgery: A Comparative Study of Minimally Invasive Approach Using Percutaneous Pedicle Screws Fixation Versus Open Approach. Clinical spine surgery 30:E1015-e1021
7.Versatility of Percutaneous Pedicular Screw Fixation In Metastatic Spine Tumour Surgery. A Prospective Analysis	Competed in SOA ASM Young Orthopaedic Investigator Award 2014 Winner of Pacific and Asian Society of Minimally Invasive Spine Surgery (PASMIS) Best poster November 2015 Korea Published in Annals of Surgical Oncology: Volume 22, Issue 5 (2015), Page 1604-1611 Kumar N, Zaw AS, Reyes MR, Malhotra R, Wu PH , Makandura MC, Thambiah J, Liu GKP, Wong H-K (2015) Versatility of percutaneous pedicular screw fixation in metastatic spine tumor surgery: a prospective analysis. Annals of surgical oncology 22:1604-1611
8.Evaluation of Headless Compression Screw fixation outcome between simple and complex radial head fractures. A case series with minimum 1 year follow up	HKOA – SOA ambassador award 2014.
9.Surgical Fixation Of Radial Head Fractures using Cannulated Headless Compression Screws. Treatment protocol and outcomes in a prospective case series	Finalist in Young Surgeon's Award in 49 th Singapore Malaysia Congress of Medicine.
10."Comparison of headless compression screws with plate fixation and primary radial head arthroplasty as surgical treatment for complex three parts radial head fractures"	Screw fixation versus arthroplasty versus plate fixation for 3-part radial head fractures. Wu PH , Shen L, Chee YH.J Orthop Surg (Hong Kong). 2016 Apr; 24(1):57-61.

11.Prospective Study Of Surgical Fixation Of Radial Head Fractures using Cannulated Headless Compression Screws For Simple And Complex Radial Head	Prospective study of surgical fixation of radial head fractures using cannulated headless compression screws for simple and complex radial head fractures. Wu PH , Dixit A, Kiat Tan DM, Shen L, Chee YH.J Orthop Surg (Hong Kong). 2017 May-Aug; 25(2)
12.Minimally Invasive Lateral Access Corpectomy for a Solitary Renal Cell Carcinoma Spinal Metastasis: A Case Report	JLee , Wu PH , Tan YH Journal of Minimally Invasive Spine Surgery and Technique 2018; 3(2): 70-74.
13.How I do it ? Uniportal Full endoscopic contralateral approach for Lumbar foraminal stenosis with Double Crush Syndrome.	Wu PH , Kim HS, Jang I-T. How I do it? Uniportal full endoscopic contralateral approach for lumbar foraminal stenosis with double crush syndrome. <i>Acta Neurochirurgica</i> . 2019.
14.Complications and limitations of Endoscopic spine surgery and Percutaneous instrumentation	Kim, H.-S.; Sharma, S.; Wu, PH. ; Raorane, H.; Adsul, N.; Singh, R.; Jang, I.-T., Complications and limitations of endoscopic spine surgery and percutaneous instrumentation. <i>Indian Spine Journal</i> 2020, 3, (1), 78-85
15.Incidental Durotomy during Endoscopic Stenotic Lumbar Decompression (ESLD): incidence, classification and proposed management strategies	Kim, H. S.; Raorane, H. D.; PH Wu. ; Heo, D. H.; Sharma, S. B.; Jang, I. T., Incidental Durotomy during Endoscopic Stenotic Lumbar Decompression (ESLD): incidence, classification and proposed management strategies. <i>World Neurosurg</i> 2020.
16.Lumbar Degenerative Disease Part 1: Anatomy and Pathophysiology of Intervertebral Discogenic Pain and Radiofrequency Ablation of Basivertebral and Sinuvertebral Nerve Treatment for Chronic Discogenic Back Pain: A Prospective Case Series and Review of Literature.	Kim, H.S.; Wu, P.H. ; Jang, I.-T. Lumbar Degenerative Disease Part 1: Anatomy and Pathophysiology of Intervertebral Discogenic Pain and Radiofrequency Ablation of Basivertebral and Sinuvertebral Nerve Treatment for Chronic Discogenic Back Pain: A Prospective Case Series and Review of Literature. <i>Int. J. Mol. Sci.</i> 2020, 21, 1483. Joint first Author
17.Intervertebral Disc Diseases PART 2: A Review of the Current Diagnostic and Treatment Strategies for Intervertebral Disc Disease.	Wu, P. H. ; Kim, H. S.; Jang, I.-T., Intervertebral Disc Diseases PART 2: A Review of the Current Diagnostic and Treatment Strategies for Intervertebral Disc Disease. <i>International journal of molecular sciences</i> 2020, 21, (6), 2135.

18.Current and Future of Endoscopic Spine Surgery	Kim, H. S.; Wu, P. H. ; Jang, I.-T., Current and Future of Endoscopic Spine Surgery: What are the Common Procedures we Have Now and What Lies Ahead? <i>World Neurosurgery</i> 2020 , 140, 642-653. Joint first author of the article.
19.Technical Note On Uniportal Full Endoscopic Posterolateral Approach Transforaminal Lumbar Interbody Fusion with Reduction for Grade 2 Spondylolisthesis	Winner of KOSMISS Best Oral Presentation. Joint first author of the article. Kim, H. S.; Wu, P. H. ; Jang, I.-T., Technical note on Uniportal full endoscopic posterolateral approach transforaminal lumbar interbody fusion with reduction for grade 2 spondylolisthesis. <i>Interdisciplinary Neurosurgery</i> 2020, 21, 100712.
20.Feasibility of Endoscopic Transforaminal Lumbar Interbody Fusion(eTLIF) through the Posterior Paraspinal Approach: Technical Note and Preliminary Result	Kim HS, Raorane HD, Wu PH , et al. Feasibility of Endoscopic Transforaminal Lumbar Interbody Fusion (eTLIF) Through the Posterior Paraspinal Approach: Technical Note and Preliminary Result. <i>J Minim Invasive Spine Surg Tech.</i> 4 2021;6(1):35-41. doi:10.21182/jmisst.2021.00045
21.Endoscopic Resection of Asymmetric Superior Articular Process Tip Fracture Of Lumbar Spine, An Unusual Cause Of Severe Back Pain. Report of 2 cases and Technical Note	Joint first author of the article. Kim HS, Wu PH , Raorane HD, Heo DH, Lee YJ, Yang K-H, Jang I-T (2020) Endoscopic Resection of Symptomatic Degenerative Repetitive Stress Related Fracture of the Tip of Superior Articular Process. An Unusual Cause of Severe Back Pain: Report of 2 Cases and Technical Note. <i>J Minim Invasive Spine Surg Tech</i> 5:36-41
22.Safe Extraforaminal Docking and Floating Technique in Endoscopic Transforaminal Thoracolumbar Junction Disc Herniation Decompression, A Case Review.	Wu PH , Kim HS, Raorane HD, Heo DH, Yi YJ, Yang K-H, Jang I-T (2020) Safe Extraforaminal Docking and Floating Technique in Transforaminal Endoscopic Discectomy for Thoracolumbar Junction for Calcified Disc Herniation: A Case Report and Technical Review for Calcified Disc Herniation. <i>J Minim Invasive Spine Surg Tech</i> 5:26-30 Winner of JMISST 2020 Top Paper Award
23.Lumbar Endoscopic Unilateral Laminotomy for Bilateral Decompression (LE-ULBD) Outside- In Approach: A Proctorship Guideline with 12 Steps of Effectiveness and Safety	Joint first author of the article. Kim, H.-S.; Wu, P. H. ; Jang, I.-T., Lumbar Endoscopic Unilateral Laminotomy for Bilateral Decompression Outside-In Approach: A Proctorship Guideline With 12 Steps of Effectiveness and Safety. <i>Neurospine</i> 2020 , 17, (Suppl 1), S99-S109
24.Uniportal Endoscopic Lateral To Medial Direction	Wu PH , Kim HS, Jang I-T. Uniportal Endoscopic Lateral to Medial Direction Transforaminal Lumbar

Transforaminal Lumbar Interbody Fusion (Endo(LM) –TLIF): A Technical Guide For Navigating Through Landmarks In Revision Lumbar Surgery.	Interbody Fusion: A Case Report and Technical Guide for Navigating Through Landmarks in Left Lumbar 4/5 Post Laminotomy Revision Lumbar Fusion Surgery. <i>J Minim Invasive Spine Surg Tech.</i> 4 2021;6(1):66-73. doi:10.21182/jmisst.2020.00199
25. Full-Endoscopic Lumbar Decompression with Minimal Nerve Root Retraction for Impending Neurologic Deficit in Degenerative Lumbar Spine Diseases.	Kim HS, Raorane HD, Choi I, Wu PH , Yang KH, Yi YJ, Jang IT. Full-Endoscopic Lumbar Decompression with Minimal Nerve Root Retraction for Impending Neurologic Deficit in Degenerative Lumbar Spine Diseases. <i>J Neurol Surg A Cent Eur Neurosurg.</i> 2021 Jul 8. doi: 10.1055/s-0041-1725955. Epub ahead of print. PMID: 34237776.
26. Retrospective Case Control Study: Clinical and Computer Tomographic Fusion and Subsidence Evaluation for Single Level Uniportal Endoscopic Posterolateral Approach Transforaminal Lumbar Interbody Fusion Versus Microscopic Minimally Invasive Transforaminal Interbody Fusion.	Abstract in Korean Neurosurgical Society 2020. Kim HS, Wu PH , Kim JY, Lee JH, Lee YJ, Kim DH, Lee JH, Jeon JB, Jang IT. Retrospective Case Control Study: Clinical and Computer Tomographic Fusion and Subsidence Evaluation for Single Level Uniportal Endoscopic Posterolateral Approach Transforaminal Lumbar Interbody Fusion Versus Microscopic Minimally Invasive Transforaminal Interbody Fusion. <i>Global Spine J.</i> 2022 Jun 1:2192568221994796. doi: 10.1177/2192568221994796. Epub ahead of print. PMID: 35649510.
27.Full Endoscopic Disc Adhesion Drilling(EDAD) Technique of Transforaminal Lumbar Interbody Fusion (TLIF) for high grade spondylolisthesis: Technical note and preliminary result	Joint first author of the article. Kim HS, Wu PH , Jang I-T: Technical note on Uniportal full endoscopic posterolateral approach transforaminal lumbar interbody fusion with reduction for grade 2 spondylolisthesis. Interdisciplinary Neurosurgery 21 : 100712, 2020
28.Evolution of endoscopic transforaminal lumbar approach for degenerative lumbar disease. <i>Journal of Spine Surgery</i>	Kim, H. S.; Raorane, H. D.; Wu, P. H. ; Yi, Y. J.; Jang, I. T., Evolution of endoscopic transforaminal lumbar approach for degenerative lumbar disease. <i>Journal of Spine Surgery</i> 2020.
29.Full Endoscopic Posterior Endoscopic Cervical Foramiotomy And Discectomy: A Technical Note With Clinical And Radiological Computer Tomography Evaluation On The Bony Effect Of Decompression With 2 Years Follow Up.	Wu PH , Kim HS, Lee YJ et al. Posterior endoscopic cervical foramiotomy and discectomy: clinical and radiological computer tomography evaluation on the bony effect of decompression with 2 years follow-up. European Spine Journal 2020: DOI: 10.1007/s00586-020-06637-8

30.A Narrative Review of Development of Full-Endoscopic Lumbar Spine Surgery	Wu, P. H. ; Kim, H. S.; Jang, I.-T., A Narrative Review of Development of Full-Endoscopic Lumbar Spine Surgery. <i>Neurospine</i> 2020 , 17, (Suppl 1), S20-S33.
31.Development Of Endoscopic Spine Surgery For Healthy Life: To Provide Spine Care For Better, For Worse, For Richer, For Poorer, In sickness And In Health	Joint first author of the article. Kim, H. S.; Wu, P. H. ; Jang, I.-T., Development of Endoscopic Spine Surgery for Healthy Life: To Provide Spine Care for Better, for Worse, for Richer, for Poorer, in Sickness and in Health. <i>Neurospine</i> 2020 , 17, (Suppl 1), S3-S8.
32.Technical Considerations Of Uniportal Endoscopic Posterolateral Lumbar Interbody Fusion. A Review Of Its Early Clinical Results In Application In Adult Degenerative Scoliosis.	Joint first author of the article. Kim, H.-S.; Wu, P. H. ; Lee, Y. J.; Kim, D. H.; Jang, I. T., Technical Considerations of Uniportal Endoscopic Posterolateral Lumbar Interbody Fusion: A Review of Its Early Clinical Results in Application in Adult Degenerative Scoliosis. <i>World Neurosurgery</i> 2020 .
33.Safe Route for Cervical Approach: Partial Pediculotomy , Partial Vertebrotoomy Approach For Posterior Endoscopic Cervical Foraminotomy and Discectomy	Joint first author of the article. Kim HS, Wu PH , Lee YJ, et al. Safe Route for Cervical Approach: Partial Pediculotomy , Partial Vertebrotoomy Approach For Posterior Endoscopic Cervical Foraminotomy and Discectomy [published online ahead of print, 2020 May 10]. <i>World Neurosurg.</i> 2020;S1878-8750(20)30993-1.
34.Cervical Spinal Inflammatory Myofibroblastic Tumor: A Rare tumor With Difficult Resection With Possibility of Tumor Recurrence. A Case Report and Literature Review.	Under Review World Neurosurgery
35.Generation Change Of Practice In Spinal Surgery: Can Endoscopic Spine Surgery Expand Its Indications To Fill In The Role of Conventional Open Spine Surgery In Most Of Degenerative Spinal Diseases: A Study Of 616 Spinal Cases 3 Years	Joint first author of the article. Kim HS, Wu PH , Raorane HD et al. Generation Change of Practice in Spinal Surgery: Can Endoscopic Spine Surgery Expand its Indications to Fill in the Role of Conventional Open Spine Surgery in Most of Degenerative Spinal Diseases and Disc Herniations: A Study of 616 Spinal Cases 3 Years. <i>Neurology India</i> 2020; 68: 1157-1165 DOI: 10.4103/0028-3886.299145
36.Infected Schmorl's node: a case report	Kim, H.S., Raorane, H.D., Sharma, S., Wu, P.H et al. Infected Schmorl's node: a case report. <i>BMC</i>

	<i>Musculoskelet Disord</i> 21 , 280 (2020).
37.Full Endoscopic Posterolateral Transforaminal Lumbar Interbody Fusion with Endoscopic Disc Drilling Preparation Technique for Symptomatic Foraminal Stenosis Secondary to Severe Collapsed Disc Space: A Clinical and Computer Tomographic Study with Technical Note.	Wu, P.H. ; Kim, H.S.; Lee, Y.J.; Kim, D.H.; Lee, J.H.; Jeon, J.B.; Raorane, H.D.; Jang, I.-T. Uniportal Full Endoscopic Posterolateral Transforaminal Lumbar Interbody Fusion with Endoscopic Disc Drilling Preparation Technique for Symptomatic Foraminal Stenosis Secondary to Severe Collapsed Disc Space: A Clinical and Computer Tomographic Study with Technical Note. <i>Brain Sci.</i> 2020 , <i>10</i> , 373.
38.Comparative Clinical And Radiographic Cohort Study: Uniportal Thoracic Endoscopic Laminotomy With Bilateral Decompression Using One Block Resection Technique And Thoracic Open Laminotomy With Bilateral Decompression For Thoracic Ossified Ligamentum Flavum	Winner of Best Oral Presentation Award (Second) in Virtual World Spine 2020 Congress Kim HS, Wu PH , Kim JY, Lee YJ, Kim DH, Lee JH, Jeon JB, Jang IT. Comparative Clinical and Radiographic Cohort Study: Uniportal Thoracic Endoscopic Laminotomy With Bilateral Decompression by Using the 1-Block Resection Technique and Thoracic Open Laminotomy With Bilateral Decompression for Thoracic Ossified Ligamentum Flavum. <i>Oper Neurosurg (Hagerstown)</i> . 2022 Apr 5. doi: 10.1227/ons.000000000000145. Epub ahead of print. PMID: 35383681.
39.A Systematic Review of Complications Associated with Initial Learning Curve of Endoscopic Spine Surgery Highlighting the Necessity of Introducing an Effective Fellowship to Train Competent Endoscopic Spine Surgeons	Pang Hung Wu , Hyeun Sung Kim, Dong Hwa Heo, and Gamaliel Yu Heng Tan, Il-Tae Jang, et al. "A Systematic Review of Complications Associated with Initial Learning Curve of Endoscopic Spine Surgery Highlighting the Necessity of Introducing an Effective Fellowship to Train Competent Endoscopic Spine Surgeons." <i>J Spine</i> 9 (2020): 456. DOI: 10.37421/ jsp.2020.9.456
40. Early Career Challenges In Setting Up An Endoscopic Spine Surgery Practice.	Wu PH . Early Career Challenges in Setting Up an Endoscopic Spine Surgery Practice. <i>World Neurosurg.</i> 2020 Dec;144:264-269. doi: 10.1016/j.wneu.2020.09.056. PMID: 33227850.
41.Uniportal thoracic endoscopic decompression using one block resection technique for thoracic ossified ligamentum flavum technical report.	Wu PH , Kim HS, Kim J-Y et al. Uniportal thoracic endoscopic decompression using one block resection technique for thoracic ossified ligamentum flavum technical report. <i>Interdisciplinary Neurosurgery</i> 2021; 23: 100963 DOI: https://doi.org/10.1016/j.inat.2020.100963
42. Effect of dorsal root ganglion retraction in endoscopic lumbar decompressive surgery for foraminal pathology: a retrospective cohort study of	Kim HS, Kim JY, Wu PH et al. Effect of dorsal root ganglion retraction in endoscopic lumbar decompressive surgery for foraminal pathology: a retrospective cohort study of Interlaminar Contralateral Endoscopic Lumbar

Interlaminar Contralateral Endoscopic Lumbar Foraminotomy and Discectomy (ICELF) Versus Transforaminal Endoscopic Lumbar Foraminotomy and Discectomy (TELD)	Foraminotomy and Discectomy (ICELF) Versus Transforaminal Endoscopic Lumbar Foraminotomy and Discectomy (TELD). <i>World Neurosurg</i> 2021; DOI: 10.21037/jss-20-620 10.1016/j.wneu.2020.12.176
43. Overview of Tips in Overcoming Learning Curve in Uniportal And Biportal Endoscopic Spine Surgery	Wu PH , Kim HS, Choi DJ, Gamaliel Y-HT. Overview of Tips in Overcoming Learning Curve in Uniportal and Biportal Endoscopic Spine Surgery. <i>J Minim Invasive Spine Surg Tech.</i> 4 2021;6(Suppl 1):S84-S96. doi:10.21182/jmisst.2020.00024
44. Review of Techniques of Uniportal Full Lumbar Endoscopic Unilateral Laminotomy For Bilateral Decompression.	Kim HS, Wu PH , Jang I-T. Clinical Results And Review of Techniques of Lumbar Endoscopic Unilateral Laminotomy With Bilateral Decompression (LE-ULBD) for Lumbar Stenosis. <i>J Minim Invasive Spine Surg Tech.</i> 4 2021;6(Suppl 1):S117-S122. doi:10.21182/jmisst.2021.00038
45. Rationale Of Endoscopic Spine Surgery: A New Paradigm Shift in Spine Surgery From Patient's benefits to Public Interest In This New Era Of Pandemic.	Kim HS, Wu PH , Jang I-T. Rationale of Endoscopic Spine Surgery: A New Paradigm Shift In Spine Surgery From Patient's benefits to Public Interest In This New Era of Pandemic. <i>J Minim Invasive Spine Surg Tech.</i> 4 2021;6(Suppl 1):S77-S80. doi:10.21182/jmisst.2021.00031
46. Anatomical Importance of Inner Ligamentum Flavum Parameters for Successful Endoscopic Lumbar Decompression Surgery.	Kim JY, Kim HS, Wu PH , Jang I-T. Anatomical Importance of Inner Ligamentum Flavum Parameters for Successful Endoscopic Lumbar Decompression Surgery. <i>J Minim Invasive Spine Surg Tech.</i> 4 2021;6(1):26-34. doi:10.21182/jmisst.2020.00213
47. How I do it? Uniportal full endoscopic pseudoarthrosis release of left L5/S1 Bertolotti's syndrome under intraoperative computer tomographic guidance in an ambulatory setting.	Wu PH , Sebastian M, Kim HS, Heng GTY (2021) How I do it? Uniportal full endoscopic pseudoarthrosis release of left L5/S1 Bertolotti's syndrome under intraoperative computer tomographic guidance in an ambulatory setting. <i>Acta Neurochir (Wien)</i> . doi: 10.1007/s00701-021-04975-0
48. Alleviating Paravertebral Muscle Spasm after Radiofrequency Ablation Treatment of Hypersensitive Basivertebral and Sinuvertebral Nerves for Chronic Discogenic Back Pain.	Kim JY, Kim HS, Wu PH , Jang IT. Alleviating Paravertebral Muscle Spasm after Radiofrequency Ablation Treatment of Hypersensitive Basivertebral and Sinuvertebral Nerves for Chronic Discogenic Back Pain. <i>Pain physician.</i> Sep 2021;24(6):E883-e892.
49. Differentiation of pain related	Charalampidis A, Canizares M, Kalsi PS, Pang

functional limitations in surgical patients with Lumbar Spinal Stenosis (LSS) using the ODI: a Canadian Spine Outcomes and Research Network (CSORN) study. The Spine Journal.	Hung Wu , Johnson M, Soroceanu A, Nataraj A, Glennie A, Rasoulinejad P, Attabib N, Hall H, Fisher C, Thomas K, Raja Rampersaud Y (2021) Differentiation of pain related functional limitations in surgical patients with Lumbar Spinal Stenosis (LSS) using the ODI: a Canadian Spine Outcomes and Research Network (CSORN) study. The Spine Journal. doi: https://doi.org/10.1016/j.spinee.2021.10.008
50. Postoperative Paraspinal Muscles Assessment After Endoscopic Stenosis Lumbar Decompression: Magnetic Resonance Imaging Study	An JW, Kim HS, Raorane HD, Pang Hung Wu, Jang IT. Postoperative Paraspinal Muscles Assessment After Endoscopic Stenosis Lumbar Decompression: Magnetic Resonance Imaging Study. <i>International journal of spine surgery</i> . Apr 2022;16(2):353-360. doi:10.14444/8217
51. Spinal arachnoid cysts: A case series & systematic review of the literature.	Kalsi P, Hejrati N, Charalampidis A, Wu PH , Schneider M, Wilson JRF, Gao AF, Massicotte EM, Fehlings MG (2022) Spinal arachnoid cysts: A case series & systematic review of the literature. <i>Brain and Spine</i> 2:100904. doi: https://doi.org/10.1016/j.bas.2022.100904
52.Cervical Disc Herniation And Foraminal Stenosis	Kim HS, Wu PH , Kim JY, Lee YJ, Lee JH, Jeon JB, Jang I-T (2022) CERVICAL DISC HERNIATION AND FORAMINAL STENOSIS. <i>Journal of Musculoskeletal Research</i> :2240001. doi: 10.1142/S0218957722400012
53. Remodeling of Epidural Fluid Hematoma after Uniportal Lumbar Endoscopic Unilateral Laminotomy with Bilateral Decompression: Comparative Clinical and Radiological Outcomes with a Minimum Follow-up of 2 Years.	Wu PH, Kim HS, Grasso G, An JW, Kim M, Lee I, Park JS, Lee JH, Kang S, Lee J, Yi Y, Lee JH, Park JH, Lim JH, Jang I-T (2022) Remodeling of Epidural Fluid Hematoma after Uniportal Lumbar Endoscopic Unilateral Laminotomy with Bilateral Decompression: Comparative Clinical and Radiological Outcomes with a Minimum Follow-up of 2 Years. <i>Asian Spine J</i> 0. doi: 10.31616/asj.2021.0366
Textbook Chapters	
Pang Hung's Guide to NUH Orthopaedics for the House Officers	Printed as Internal Publication in May 2010 for new houseman.
Author of 3 chapters in Diabetic Foot Problems.	Published in 2008.

<ul style="list-style-type: none"> Diabetes Mellitus and Its Complications: A Global Problem Socio-Economic Factors of Diabetics with and without Foot Problems in Singapore <p>Clinical Examination of Diabetic Foot Problem</p>	
Book chapter in Youmans and Winn Neurosurgery Eighth Edition 2022	Co-author of Prognosis of Spinal Trauma
Book chapter Posterior Stenotic Lumbar Decompression	Advanced Techniques of Endoscopic Lumbar Spine Surgery Kim, Mayer, Heo, Park et al
Co-Author of chapter Contralateral approach to spinal foramen.	Advanced Techniques of Endoscopic Lumbar Spine Surgery Kim, Mayer, Heo, Park et al
First Author of book chapter Bentham Books Contemporary Endoscopic Spine Surgery Second edition- Cervical Edition	Full Endoscopic Partial Pediculotomy , Partial Vertebrectomy Technique For Cervical Degenerative Spinal Disease
First Author of book chapter Bentham Books Contemporary Endoscopic Spine Surgery Second edition- Thoracic Edition	Full Endoscopic One Block Resection Technique For Thoracic Ossified Ligamentum Flavum
First Author of book chapter Bentham Books Contemporary Endoscopic Spine Surgery Second edition- Lumbar Edition	Visualized Endoscopic Radiofrequency Ablation Of Sinuvertebral Nerve And Basivertebral Nerve For Chronic Discogenic Back Pain
Presentations	
Case Presentation of Atypical Chest Pain In NUH Emergency Department Case Conference	Winner of Best Presentation Award in 2010 Emergency Department Presentation Award.
Minimally Invasive Treatment to Metastatic Spine Diseases	Invited Speaker to BIT's 4 th Annual World Congress of Orthopaedics 2017 and 19th Xi An Orthopaedic Conference
Cervical Spine Research Society ,Toronto	Participant , Nov 2016
North America Spine Society, Orlando	Participant Oct 2017
Global Spine Congress Singapore	Participant May 2018
Minimally invasive Lateral Access Corpectomy for a solitary renal cell carcinoma spinal metastasis : a case	Published in Journal of Minimally Invasive Spine Surgery and Technique 3(2) 70-74, 2018 as senior author

report	
Fellows (Cadavers), Las Vegas, NV, USA,	Participant 13-16 th September 2018.
4 th Annual International Spinal Deformity Symposium in New York	Participant 1-3 rd Dec 2018
17 th Annual AOSpine North America Fellows Forum in Banff Canada	Oral Presentation Primary Outcomes of Prospective Evaluation of Elderly Deformity Surgery at 2 years follow up
12th Asia Pacific Spine Society Meeting in Incheon	<p>Presentation Outpatient 1, 2 or 3 level anterior cervical discectomy and fusion procedures have similar complication and 30 day readmission rates compared to overnight stay; analysis of 284 patients in the public healthcare setting</p> <p>presentation: Minimally invasive Lateral Access Corpectomy for a solitary renal cell carcinoma spinal metastasis : a case report</p>
Global Spine Congress Toronto May 2019	Minimally Invasive Lateral Access Lumbar Interbody Fusion: Preliminary results poster presentation
Korean Neurosurgical Society October 2019 Meeting	<p>Cross Link-Laminar Hooks And Central Rod Technique (CHART) Construct in Reduction of Fixation of Revision of Proximal Junction Kyphosis at the Upper Thoracic Curve. a Case Series Review and Literature Review of Osteotomy Closure Techniques</p> <p>Patch Blocking Dural Repair Technique Using Fibrin Sealant Patch During Endoscopic Lumbar Decompression.</p> <p>Feasibility of Endoscopic Transforaminal Lumbar Interbody Fusion Through The Posterior Paraspinal Approach.</p>
Korean Minimally Invasive Surgery Society Advance Spinal Endoscopic Course 2019 Meeting	Best Paper Award Winner: How I do it? uniportal endoscopic transforaminal lumbar interbody fusion in grade 2 isthmic spondylolisthesis.
KOESS Winter Camp 2020	Podium Presentation. Incidental Durotomy During Endoscopic Stenotic Lumbar decompression incidence ,classification and proposed treatment strategies in our retrospective case series

Virtual World Spine 2020	<ul style="list-style-type: none"> • Winner of Best Oral Presentation Award in Virtual World Spine Congress 2020
First World Congress On Spine Endoscopy: World Masters Series 2020	Guest Speaker On A Narrative Review And Clinical Applications Of Endoscopic Spine Surgery
Singapore Spine Society 2020	Guest Speaker On Biportal Endoscopic Spine Surgery
International Society of Unilateral Biportal Endoscopy Shangdong Station	Comparison Of Uniportal And Biportal Endoscopic Spine Surgery
6 th ASEAN MISST Indonesia 2021	Faculty and Speaker on 2 topics <ul style="list-style-type: none"> • Transforaminal Endoscopic Lumbar Discectomy Lumbar Five Sacral One • Versatility Of Unilateral Biportal Endoscopy in Lumbar Spine
International Society of Unilateral Biportal Endoscopy Shangdong Station	Comparison Of Uniportal And Biportal Endoscopic Fusion
Kyiv Biportal Endoscopic Spine Surgery Meeting 2021	Faculty
3 rd ISMISS Asia –Japan and 13 th MISS Summit Forum	Faculty and Speaker on topic <ul style="list-style-type: none"> • Multiple Level Lumbar Endoscopic Unilateral Laminotomy And Bilateral Decompression On Morbid Obese Patient, Tips and Tricks
6 th ASSEAN MISST Indonesia	Live Surgical Demonstration Biportal Talk Uniportal Transforaminal Talk
Second World Congress On Spine Endoscopy: World Masters Series 2021	Uniportal Endoscopic Release Of Bertolotti Syndrome 18 th to 19 th September 2021
Elliquence Key Opinion Leader Education Webinar Series	Versatility In Interlaminar Endoscopic Decompression With Or Without Discectomy
2021 International Joint Meeting Of Korean Society Of Neurosurgery, World Spinal Column Society and 1 st Annual Society Of Minimally Invasive Spine Surgery Asia Pacific Meeting : Seoul South Korea	3 Oral presentations papers <ol style="list-style-type: none"> 1) Comparative Clinical And Radiographic Cohort Study: Uniportal Thoracic Endoscopic Laminotomy With Bilateral Decompression Using One Block Resection Technique And Thoracic Open Laminotomy With Bilateral Decompression For Thoracic Ossified Ligamentum Flavum 2) Safe Route for Cervical Approach: Partial Pediculotomy , Partial Vertebrotoomy

	<p>Approach For Posterior Endoscopic Cervical Foraminotomy and Discectomy</p> <p>3) Endoscopic Transforaminal Lumbar Interbody Fusion Achieved Improved Radiological And Clinical Outcome Compared To Open Microscopic Transforaminal Lumbar Interbody Fusion: A Retrospective Case Study</p>
2021, The 61 st Annual Meeting Of The Korean Neurosurgical Society	Oral Presentation : Cervical Endoscopic Foraminotomy
Global Spine Congress November 2021	<p>2 Podium Oral Presentations:</p> <ol style="list-style-type: none"> 1) Partial Pediculotomy , Partial Vertebrotoomy Approach For Posterior Endoscopic Cervical Foraminotomy And Discectomy 2) Comparative Clinical And Radiologic Cohort Study: Uniportal Thoracic Endoscopic Laminotomy With Bilateral Decompression Using One Block Resection Technique And Thoracic Open Laminotomy With Bilateral Decompression For Thoracic Ossified Ligamentum Flavum <p>1 Poster: Uniportal Full Endoscopic Posterolateral Transforaminal Lumbar Interbody Fusion with Endoscopic Disc Drilling Preparation Technique for Symptomatic Foraminal Stenosis Secondary to Severe Collapsed Disc Space: A Clinical and Computer Tomographic Study with Technical Note</p>
Global Spine Congress May 2022	<p>2 Podium Oral Presentations:</p> <ol style="list-style-type: none"> 1) Comparative Interventional Cohort Study: Clinical And Computer Tomographic Fusion And Subsidence Evaluation For Uniportal Endoscopic Posterolateral Approach Transforaminal Lumbar Interbody Fusion Versus Minimally Invasive Open Transforaminal Lumbar Interbody Fusion 2) Evaluation Of Two Methods (Inside-Out / Outside-in) Inferior Articular Process Resection For Uniportal Full Endoscopic Posterolateral Transforaminal Lumbar Interbody fusion: Technical Note
APSS Annual Scientific Meeting June 2022 in Coimbatore India	Selected for Best Oral Presentation Comparative Clinical And Radiographic Cohort Study: Uniportal Thoracic Endoscopic Laminotomy With Bilateral

	Decompression Using One Block Resection Technique And Thoracic Open Laminotomy With Bilateral Decompression For Thoracic Ossified Ligamentum Flavum.
1 st International Society Of Unilateral Biportal Endoscopy and formation of China UBE society	VIP Chairman.
7 th Asean MISST in Chiang Mai Thailand July 2022	Faculty and moderator
1 st NTFGH UBE and Expandable Cage Workshop 6 th August 2022	Chairman of organizing committee
Third World Congress On Spine Endoscopy: World Masters Series Sept 2022 Mumbai	Faculty
AO spine East Asia Asia Pacific Meeting Singapore 20/8/22 to 21/8/22	Invited Guest Speaker
<u>Education</u>	
Royal College of Surgeons of Edinburgh Orthopaedics	Joint Top Score Candidate in FRCS Orthopaedics Examination 2016
Master of Medicine(Orthopaedics) Singapore	Completed
Graduate Diploma Family Medicine, National University of Singapore	Completed
Royal College of Surgeons Ireland	Member of MRCS Ireland
Medicine Bachelor and Bachelor of Surgery, Yong Loo Lin School of Medicine, National University of Singapore.	Graduated in National University of Singapore with MBBS as top 10 students Dean List Final MBBS
<u>Professional Experience</u>	
National University Hospital (NUH) General Surgery	Outstanding House Officer Award of the posting
NUH Orthopaedic Department House Officer	Awarded Dean's Award For Best House Officer in the HO posting
Tan Tock Seng Hospital (TTSH) General Medicine	Good performance
Medical Officer in NUH Orthopaedic Dept	Attained the Highest score among the Medical Officers. A* in NUH Orthopaedics

National University Health System General Surgery Department	Medical Officer for 6 months
Jurong General Hospital Anesthesia	Medical Officer for 6 months
NUH Emergency Medicine	Medical Officer for 6 months
TTSH Orthopaedics	Medical Officer for 6 months
National University Health System Orthopaedics	Service Registrar for 6 months
National University Health System Orthopaedics	Registrar for 6 months
Singapore General Hospital Orthopaedic	Registrar for 6 months
National University Health System Hand Surgery	Registrar for 3 months
Kandang Kerbau Women and Children Hospitals Paediatrics Orthopaedics	Registrar for 3 months
Changi General Hospital Orthopaedics	Registrar for 6 months
<u>SGH orthopaedics</u>	Registrar for 6 months
NUH Orthopaedics	Registrar for 6 months
Ng Teng Feng General Hospital Jurong Health Service	Associate Consultant from July 2016- July 2018
National University Health System, Juronghealth Campus, Singapore	Consultant , July 2018 - Present
<u>National Service in Singapore Armed Forces</u>	
Headquarters Starlight Taiwan 2008-2009	Medical Officer of Singapore Armed Forces Headquarters in Taiwan in charge of Triservice(army, navy and airforce medical services)
Maju Camp Medical Centre	Medical Officer In Charge
<u>8th Combat Support Hospital Battalion 2010-present</u>	Platoon Commander of Surgical Company of 8CSH battalion holding the Rank of Major
<u>COURSES</u>	
Distinguished Editor series Master Class on Medical Writing by NUS Singapore	Participant. 2006
Communication Skill in Clinical Skill Practice by National Health Group	Participant 2006
Basic Fracture fixation Technique by NUHS	Participant 2007

Cadaveric Dissection Course on anatomical surgical lower extremity approach by NUHS	Participant 2007
X ray reading workshop by National Health Group	Participant 2007
Advanced Trauma Life Support Course by NHG at Tan Tock Seng Hospital	Participant 2007
Third Asia Pacific Pain Summit in Penang Malaysia	Participant 2007
Tendon repair workshop in Tan Tock Seng Hospital	Participant. 2007
Psychological Trauma Management Course by Singapore Armed Forces Medical Training Institute	Participant 2008
Open Fracture Management Course by NUHS	Participant 2010
Basic Orthopaedics Biomechanics	Participant 2011
Cadaveric Acetabular Reconstruction Workshop by NUHS	Participant 2012
AO Trauma Principle in Operative Fracture Management	Participant 2012
Management of Open Tibia Fracture Course	Participant 2013
Flexor Tendon Workshop by KTPH	Participant 2013
AO Trauma Advanced Course in Operative Fracture Management	Participant 2013
AO TRAUMA MASTER CLASS LOWER EXTREMITY IN CHIANG MAI	Participant 2013
COMPREHENSIVE HAND REVIEW COURSE	Participant 2014
Medical Ethics Professionalism and Health Law by Singapore Medical Association	Participant 2014
Foundation Spine Surgery Course by NUHS	Participant 2014

Microsurgery Training Laboratory Certificate Course by NUHS	Participant 2014
Primary and Revision Knee Arthroplasty Workshop by Academia SGH	Participant 2014
Team STEPPS Fundamental Course	Participant 2014
Postgraduate Course In Orthopaedic Singapore by NUHS	Participant 2015 and 2016
Third Singapore Foot and Ankle Arthroscopy and reconstruction workshop by TTSH	Participant 2015
Advance Trauma Life Support Course by Singapore Armed Forces Medical Training Institute	Participant 2016
AO spine Principles Course	Participant 2016
Revision Hip Arthroplasty by Zimmer Training Institute in SGH	Participant 2016
Primary Hip Arthroplasty by Zimmer Training Institute in SGH	Participant 2016
Anterior Cruciate Ligament Surgical Technique Workshop by NUHS	Participant 2016
AO Trauma Principle Course in Operative Fracture Management	Faculty table instructor 2015
Resident Orientation Course by NUHS	Faculty 2014 and 2016
EXTREME LATERAL LUMBAR INTERBODY FUSION BY NUVASIVE TRAINING INSTITUTE SGH ACADEMIA.	Participant 2016
Early Cervical Course by Medtronic Training Institute Siriraj Hospital Thailand	Participant 2016
Minimally Invasive Course by Johnson and Johnson	Participant 2016
Medtronic O arm Course by Medtronic Sydney Australia	Participant 2017
North America Spine Society : Evaluation and Treatment of Adult Spinal Deformity : Skull to Sacrum	October 2017
Advance Extreme Lateral Interbody Fusion with Anterior Column	October 2017

Resection Course in Nuvasvie San Diego	
Oblique Lateral Lumbar Interbody Fusion Observership with Dr. Chris Hoffman Wellington General Hospital New Zealand	April 2018
Basic Spine Course of Asia Pacific Spine Society Singapore	Faculty ,May 2018
Canadian Spine Society Meeting	March 2019
Daejeon Unilateral biportal Endoscopic Spine Conference	Oct 2019
AO Advanced Symposium 2020 South Korea	Participant.
kns endoscopic spine surgery workshop	Participant
KOSMISS Endoscopic cadaveric workshop dec 2019	Participant
KOESS endoscopic spine surgery workshop jan 2020	Participant
Pohang wooidul Didactic and cadaveric endoscopic spine surgery course jan 2020	Participant
Situational Leadership Course II	Participant
International Society Of Unilateral Biportal Endoscopy Shandong Station, May 2021	Faculty
6 th Association Of South East Asian Nations Minimally Invasive Spine Surgical Techniques July 2021	Faculty
International Society Of Unilateral Biportal Endoscopy Shandong Station, 16 th July 2021	Faculty
<u>ADMINISTRATIVE DUTIES</u>	
DEPARTMENT CHIEF ROSTER IN CHARGE	2017-2018
CONTINUAL MEDICAL EDUCATION IN CHARGE	2017-2018
INFECTIOUS DISEASE COMMITTEE	2016-2018

EIPIC ADHOC PROJECT: SPINE, HIP AND KNEE AND SHOULDER TEMPLATE	2017
EPIC SPINAL INJURY PATHWAY COORDINATOR	2017
<u>Team doctor for sporting events</u>	
Singapore youth olympics	Team Doctor 14 th -26 th 2010
HSBC RUDBY SEVENS SINGAPORE	Team Doctor 15 th -16 th April 2017
<u>VOLUNTEER WORK</u>	
Children Charities Association	Director Representative of Cerebral Palsy Association of Singapore 2012 -2019
Singapore Disability Sports Council	Honorary Board Member 2011-2012
Old Victoria Association	Council Member 2010-2014
Cerebral Palsy Association Of Singapore	Board Member of the Executive Committee 2006 - 2019
Singapore International Foundation	Volunteer
Social Enterprise/	
SMA House Officer Seminar	Guest Speaker - Night Call
Victoria Junior College Annual Medical Seminar	Invited speaker
Victoria School Student Leader Investiture	Guest of Honour, May 2018