

A/Prof (Dr) NARESH KUMAR

**M.B.B.S., M.S (Orth), D.N.B (Orth)
F.R.C.S. ED., F.R.C.S. (Trauma & Orth),
DM [University of Nottingham] (Orth & Spinal Surgery)**



**Correspondence to:
Department of Orthopaedics,
NUHS Tower Block, Level 11,
National University Health Systems,
National University Hospital
1E Kent Ridge Road,
Singapore-119228
Telephone: +65-64049150
Fax: +65-64049150**

Contents

Personal Details	3
Professional Qualifications	3
Awards & Achievements	4
Nominations for Awards & Achievements	5
International/National Recognition	7
Invitation as a Keynote Speaker at International/Regional Conferences/Courses	8
Most Impactful Papers, Which Have the Ability to Change Healthcare Practices	10
Innovative Ideas and Research Causing A Paradigm Shift in Spinal Surgery, Orthopaedic Surgery & Orthopaedic Education	11
Brief Synopsis of Research	13
Brief Synopsis of Teaching	13
SOA Involvement	Error! Bookmark not defined.
Postgraduate Teaching Program	Error! Bookmark not defined.
Positions of Responsibility	13

Personal Details

Name	NARESH KUMAR
Present Address	Department of Orthopaedics, NUHS Tower Block, Level 11, National University Health Systems, National University Hospital, 1E Kent Ridge Road, Singapore 119228
Telephone Number	Home: +65-64049150 Mobile: +65-81982200
Date of Birth & Marital Status:	30 th Jul 1963 Married, 3 children
SMC Registration	MCR No. 12900C; Valid from 01/02/2009 till present Full registration wef: 1st Nov 2012
GMC Registration	Full registration; No. 4152736; wef 15 th , Dec 1994 On Specialist Register wef: 27th Apr 2000
Medical Defence Union Medical Protection Society	No. 327911C No. 202790 (United Kingdom); SIM 11360 (Singapore)

Professional Qualifications

MBBS	Dec 1986 All India Institute of Medical Sciences, New Delhi, India
MS (Orth)	Dec 1989 All India Institute of Medical Sciences, New Delhi, India
DNB (Orth)	Jun 1990 National Academy of Medical Sciences, New Delhi, India
FRCS Ed	Oct 1992 Royal College of Surgeons of Edinburgh
FRCS (Orth & Trauma)	Mar 1997 Intercollegiate Board in Orthopaedics'
DM (Orthopaedics – Spinal Surgery)	Dec 2006 Awarded a DM degree for the thesis on – ' <i>Morphometric and Biomechanical Evaluation of Deer Thoracic and Lumbar Spine</i> ', with a view to develop a model for spinal implant testing. The thesis was a result of work carried out at the biomechanics laboratory of the University of Nottingham, United Kingdom. The thesis was forwarded to the medical devices agency.

Awards & Achievements

June 1978	Recipient of National Talent Search Scholarship during undergraduate and postgraduate training in India – First division in the MBBS Exams.
Apr 2005	Recipient of ' Clinical Excellence Award ' in Apr 2005 for contribution towards the development of Spinal services at New Cross Hospital, Wolverhampton
Jan 2009	Recipient of ' EXSA Silver Award ' in 2009, for excellent service at National University Hospital
Jan 2009	Recipient of ' Best Oral Presentation Award ' by John Kostuik at Combined 22 nd Annual Conference of Associations of Spinal Surgeons of India & SRS meeting, Chennai, India, 23 rd – 25 th Jan 2009 – Title: 'Pars repair technique & rationale of treatment in adults'
Oct 2010	Recipient of ' Young Ambassador Award ' at 16 th Triennial Congress of the Asia Pacific Orthopaedic Association (APOA) 2010 presented by Dr Vinodh Kumar – Title: 'Comparative clinico-radiological study of interlaminar decompression in lumbar canal stenosis with & without Coflex® interspinous spacer'
June 2011	Recipient of ' AY2010/2011 Faculty Teaching Excellence Award ' for contribution to undergraduate & postgraduate teaching; assessment system & curriculum development for Department of Orthopaedic Surgery, NUS Yong Loo Lin School of Medicine.
Aug 2013	Recipient of ' ISASS Kostuik Innovation Award ' 2013 at ISASS13 in Vancouver for presentation of the NMRC grant supported project on cell saver in metastatic spine tumour surgery. Title: 'Eliminating Tumour Cells from the Cell Saver (CS) in Metastatic Spine Tumour Surgery Using a Leucocyte Depletion Filter (LDF): Dispelling an Old Myth'.
Jul 2014	Recipient of ' NCIS Clinical Poster Award ' 2014 for presentation of the NMRC grant supported project on cell saver in metastatic spine tumour surgery. Title: 'Eliminating Tumour Cells from the Cell Saver (CS) in Metastatic Spine Tumour Surgery Using a Leucocyte Depletion Filter (LDF): Dispelling an Old Myth'.
Jan 2015	Recipient of ' Rob Johnston Award ' 2015 at 26 th Annual Scientific Meeting of the Australian Spine Society in Canberra for best paper presented by a surgical trainee or junior research scientist Dr. Kimberly-Anne Tan. Title: 'Evaluation of scoring systems & prognostic factors in patients with spinal metastases from lung cancer'.
Jun 2015	Recipient of ' Best Clinical Poster Presentation Award ' 2015 at 42 nd Annual Meeting of International Society for Study of the Lumbar Spine (ISSLS) in San Francisco, USA, 8 th – 12 th Jun 2015. Title: 'Metastatic spine tumour surgery: A comparative study of minimally invasive approach using percutaneous pedicle screws fixation versus open approach'.
Sep 2015	Recipient of ' Best of Outside-Europe Award ' 2015 at Annual Spinal Congress (EUROSPINE) in Copenhagen, Denmark, 2 nd – 4 th Sep 2015. Title: 'Flowcytometric Evaluation of Intraoperative Salvaged Blood Filtered with Leucocyte Depletion Filter in Metastatic Spine Tumour Surgery'
Nov 2015	Recipient of ' PASMISS 2015 Best Research Poster Award ' at 15 th Pacific and Asian Society for Minimally Invasive Spine Surgery (PASMISS) in Daejeon, Korea, 12 th -14 th Nov 2015.: 'Metastatic Spine Tumour Surgery: Minimally Invasive Vs Open Approach'.
Jan 2016	Recipient of ' Merit Award for E-Posters 2016 ' at 13 th Asia Pacific Medical Education Conference (APMEC), National University of Singapore, Singapore, 13 th -16 th Jan 2016. Title: 'Clinical Orthopaedics Examination Skills (CORES) video: Its impact on students' learning experience and OSCE performance'.
Jul 2016	Recipient of ' AY2014/2015 Faculty Teaching Excellence Award ' for contribution to undergraduate & postgraduate teaching; development of teaching techniques, curriculum & assessment system for Dept of Orthopaedics, NUS YLL School of Medicine
Nov 2018	Recipient of ' P Bala Award 2018 ' for the best Oral Presentation at 43 rd Annual Scientific Meeting, held from 1 st – 3 rd Nov 2018 at Grand Hyatt, Singapore, presented by a resident Dr. Barry Tan Wei Loong. Title: 'Asymptomatic Construct Failure after Metastatic Spine Tumour Surgery: Is it a new entity or continuum to symptomatic failure?'
Jan 2019	Recipient of ' 2nd Runner-Up ' for Oral Presentation at Singapore Spine Society 2 nd Annual Meeting in Grand Copthorne Waterfront Hotel, Singapore, 12 th -13 th Jan 2019, presented by a

	senior resident Dr. Jonathan Tan Jiong Hao. Title: 'Salvaged Autogenic Blood Transfusion Is Safe In Metastatic Spine Tumour Surgery: Early Outcomes of Prospective Clinical Trial'.
Oct 2020	Recipient of ' Fortitude Award '. Award instituted by NUSMed School of Medicine, NUS to recognise teachers and consultants who have contributed towards the development of clinical teaching and examinations for medical students in compliance with COVID-19 guidelines.
Jun 2021	Recipient of ' Best Clinical Research Award ' at the 13 th combined meeting of Asia Pacific Spine Society & Asia Pacific Paediatric Orthopaedic Society (APSS-APPOS) (virtual), 9-12 th June 2021. Title: Deep Learning pipeline for automated detection and classification of central canal, lateral recess and neural foraminal stenosis on lumbar spine MRI.
Aug 2021	Recipient of ' Best oral presentation Award ' at the Singapore congress of Radiology (SGCR), 11-15 th of August 2021. Title: Automated Bilsky grading of epidural spinal cord compression on thoracic Spine MRI using Deep Learning: Initial results. Dr Desmond Lim Shi Wei ¹ , Dr James Hallinan , Dr Andrew Makmur, Dr Zhu Lei, Mr Kaiyuan Yang
Jul 2022	22 nd President of Pacific and Asian Society of Minimally Invasive Spine Surgery, and held one of the most successful, educative & exciting annual conference from 28 th – 31 st July 2022 at Grand Hyatt, Singapore.
Jul 2022	Recipient of ' Best oral presentation award ' at the 22 nd President of Pacific and Asian Society of Minimally Invasive Spine Surgery (PASMIS 2022), 28 – 31 July 2022. Title: A prospective randomized controlled multicentre study of ProDisc-C vs anterior cervical discectomy and fusion for treatment of symptomatic cervical disc disease in Asian population: a 4-year outcome.
Aug 2022	Recipient of ' Best surgical oncology poster presentation ', at the 2022 NCIS annual research meeting (NCAM), 15 th August 2022. Title: Deep learning model for triaging metastatic spinal cord compression on CT. Hallinan JTPD, Zhang W, Kuah T, Yeong, Kumar N, Vellayappan BA, Makmur A.
Aug 2022	Recipient of AO Spine Asia Pacific East Asia Conference 2022, ' Best Basic Science Award '. Title: Automated Bilsky grading Deep Learning Model for Classifying Metastatic Epidural Spinal Cord Compression on MRI. Hallinan JTPD, Zhu L, Zhang W, Lim DSW, Baskar S, Low XZ, Yeong KY, Teo EC, Kumarakulasinghe NB, Yap QV, Chan YH, Lin S, Tan JH, <u>Kumar N</u> , Vellayappan BA, Ooi BC, Makmur A.
Mar 2023	Recipient of Singapore Spine Society (SSS), 6 th Annual Meeting, ' 1st Prize in SSS Best Papers Presentation '. Title: Improved Productivity using Deep Learning assisted Reporting for MRI Lumbar Spine. <u>Naresh Kumar</u> , Lim S.W.D, A. Makmur, Tan J.H.J, J. Hallinan Recipient of Singapore Spine Society (SSS), 6 th Annual Meeting, ' 3rd Prize in SSS Best Papers Presentation '. Title: Outcomes and Complications of Surgery for Symptomatic Spinal Metastases; A Comparison Between Patients Aged ≥ 70 and <70. Tan J.H.J, J. Hallinan, K. Palanichami, <u>Naresh Kumar</u>

Nominations for Awards & Achievements

Jun 1995	Nominated for ' Best Basic Science Podium Presentation Award ' as top best six papers for conference 'Scoliosis in cystic fibrosis.' <u>Naresh Kumar</u> , P.A. Millner, R.A. Dickson. Presented at European Cystic Fibrosis Conference, Brussels, Belgium – 18 th to 21 st Jun 1995.
Mar 1999	Nominated for ' Best Basic Science Poster Presentation Award ' as top best six papers for the conference – 'Morphometric and biomechanical comparison of human and deer spine.' <u>Naresh Kumar</u> , M.A. Ishaque, S. Kukreti, R.C. Mulholland. Presented as 'Special poster presentation' at Britspine 1999, Manchester, UK, 3 rd – 5 th Mar 1999.

May 2012	Nominated for ' Best Podium Presentation Award ' as top best six papers for conference – 'Resistive Straight Leg Raise Test (rSLRT), Resistive Forward Bend Test (rRFBT), Heel Compression Test (HCT) – Novel techniques in identifying secondary gain motives in low back pain cases'. <u>Naresh Kumar</u> , S. Wijerathne, C. Nath, J. Lim, Barry Tan. Presented at Britspine 2012, Newcastle, UK, 2 nd – 4 th May 2012.
Oct 2013	Nominated for ' Young Orthopaedic Investigator Award ' as top four submissions for the conference – 'Eliminating Tumour Cells from the Cell Saver (CS) in Metastatic Spine Tumour Surgery Using a Leucocyte Depletion Filter (LDF): Dispelling an Old Myth'. Chen YS, A Zaw, <u>Naresh Kumar</u> . Presented at 36 th Singapore Orthopaedic Association Meeting, Four Seasons Hotel, Singapore, 8 th –12 th Oct 2013.
Apr 2014	Nominated for ' Best Podium Presentation Award ' as top best six papers for conference – Use of Salvaged Blood in Metastatic Spine Tumour Surgery: Dispelling an Old Myth. <u>Naresh Kumar</u> , Chen Y.S., A.S. Zaw, Q. Ahmed, R. Soong, Wong H.K. Presented at Britspine 2014, Warwick, UK, 2 nd – 4 th Apr 2014.
Oct 2014	Nominated for ' Young Orthopaedic Investigator Award ' as top four submissions for the conference – 'Versatility of Percutaneous Pedicle Screw Fixation in Metastatic Spine Tumour Surgery: A Prospective Analysis'. Wu Pang Hung, <u>Naresh Kumar</u> , AS Zaw, R Malhotra, M Makandura, Liu G, J Thambiah, Wong HK. Presented at the 37 th Singapore Orthopaedic Association Meeting, at Four Seasons Hotel, Singapore, 9 th – 11 th Oct 2014.
Sep 2015	Nominated for ' Best Podium Presentation Award ' as top best six papers for conference – 'Role of Intraoperative Salvaged Blood in Metastatic Spine Tumour Surgery- Evidence through Flow cytometry Analysis'. <u>Naresh Kumar</u> , A.S. Zaw, Q. Ahmed, Wong H.K. Presented at Spine Summit 2015, Asia Pacific Research Colloquium, Hong Kong, 25 th Sep 2015
Jan 2016	Nominated for ' Best Abstract for Poster Presentation Award ' as top best 25 posters submitted for the conference – 'Evolution of a modified OSCE as a formative assessment tool in undergraduate Orthopaedics.' Chee YH, Chong SYZ, <u>Naresh Kumar</u> . Presented at 13 th Asia Pacific Medical Education Conference (APMEC), Singapore, 13 th – 17 th Jan 2016.
Apr 2016	Nominated for ' Best Podium Presentation Award ' as top best six papers for conference – 'Are We Ready For Transfusing Intraoperative Salvaged Blood In Metastatic Spine Tumour Surgery?' <u>Naresh Kumar</u> , A.S. Zaw, Q Ahmed, V Lee. Presented at Britspine 2016, Nottingham, UK, 6 th – 8 th April 2016.
Sep 2016	Nominated for ' Best Paper Session ' 'A comparative study of Minimally Invasive Approach using Percutaneous Pedicle Screw Fixation vs Open Approach in Metastatic spine tumour surgery'. <u>Naresh Kumar</u> , R Malhotra, Karthikeyan Maharajan, AS Zaw. SICOT 37 Orthopaedic World Congress, Rome, 8 th – 10 th Sep 2016.
May 2017	Nominated for ' Best Clinical Poster Presentation Award ' as top best clinical papers for conference – 'Intermediate term outcome using annulo-nucleoplasty (Disc FX) in treatment of degenerative disc disease and/or contained disc herniations'. <u>Naresh Kumar</u> , Nishant Kumar, AS Zaw. Presented at Global Spine Congress 2017, Milan, Italy, 3 rd – 6 th May 2017.
Nov 2017	Nominated for ' Young Orthopaedic Investigator Award ' as top four submissions for the conference – 'Improving the Reliability of Neuromonitoring in Cervical Spine Surgeries – Is There A Surgical Event?' MD Thambiah, HWD Hey, YM Lin, WK Yang, JN Ruiz, JS Thambiah, LL Lau, <u>Naresh Kumar</u> , GKP Liu, HK Wong. Presented at the 40 th Singapore Orthopaedic Association Meeting, at Grand Copthorne Hotel, Singapore, 2 nd – 4 th Nov 2017.
Aug 2018	Nominated for ' Poster Award ' for the conference – 'Asymptomatic Implant/Construct Failure after Metastatic Spine Tumour Surgery: Is it a new entity or continuum to symptomatic failure?' <u>Naresh Kumar</u> , RS Patel, AP Singla, WLB Tan, LW Khin, AC Wadhwa, N Ravikumar, HWD Hey, LL Lau, J Thambiah, G Liu Presented at the <u>5th NCIS Annual Research Meeting (NCAM) 2018</u> , at National University Health System Tower Block Auditorium, Singapore – 3rd Aug 2018.

International/National Recognition

Jul 2015 onwards	Member of Fracture and Tumor Expert Group (FTEG) under AOSpine International – select group of 8 surgeons worldwide to look at future direction for improvement in surgical implants for management of spine tumours & fractures; also encouraging technical & philosophical innovation in managing spine tumours & fractures.
Aug 2015	Member of the T3 Advisory Board for Medtronic – a group of 10 spine surgeons selected worldwide to provide future direction for implants used in managing of spine tumour, trauma & tuberculosis.
Nov 2015 onwards	Member of Knowledge Forum Tumor – World Knowledge Forum ; run under the auspices of AO Spine International – Consisting of 8 steering committee members with another 8 members from all over the world; to create guidelines & to lead the direction for management of spine tumours.
Apr 2018 – Apr 2019	50th President of Singapore Orthopaedic Association (SOA) . Elected to this post of responsibility, which involved: Organising the 43 rd Annual Scientific Meeting, held from 1 st – 3 rd Nov 2018 at Grand Hyatt, Singapore. The theme of the conference was ‘Challenges of the Ageing: Caring for Sufferer and Healer’. This conference was regarded by most, as one of the best-organised meeting in Singapore for the SOA. Involved in day-to-day operations of the organisation and represented the organisation at 15 of the regional orthopaedic association meetings in ASEAN, upholding the prestige of SOA. Represented SOA in the Ministry of Health Orthopaedic Service Re-organisation Drive.
Aug 2018 – Aug 2020	Appointed as the Chairman for the Workgroup for the Development of Guidance Material for the Assessment of Work-Related Low Back Disorders and Chronic Pain Syndrome, under the Ministry of Health (MOH), Singapore .
Apr 2019	Appointed as the Programme Co-chair for the 19th International Society for the Advancement of Spinal Surgery (ISASS) 2019 , held from Apr 3 rd – 6 th , 2019 at Anaheim, USA. It involved reviewing and selecting abstracts, providing a scientific programme with the help of the Programme Committee.
Nov 2019	Appointed as a Founding Member for the ‘ Asian Spine Tumor Society ’. Inaugural meeting held from 29 Nov – 1 Dec 2019 at Seoul, Korea.
Feb 2020	Appointed as the Programme Co-chair for the 20th International Society for the Advancement of Spinal Surgery (ISASS) 2020 , held from 26 Feb – 28 Feb, 2020 at San Juan, Puerto Rico. It involved reviewing and selecting abstracts, providing a scientific programme with the help of the Programme Committee.
Jan 2021 – Dec 2022	Appointed as Consultant for Training & Teaching for Stryker International from 1 Jan 2021 – 31 Dec 2022. It involves the teaching and training of spine surgical skills and concepts for Stryker International organised events on the international stage.
1st Jan 2022 – 31st Dec 2022	President , The 22 nd Pacific and Asian Society for Minimally Invasive Spine Surgery (PASMIS) 2022 held in conjunction with the 5 th Annual Meeting of the Singapore Spine Society (SSS), 28 Jul – 31 Jul 2022, Grand Hyatt Singapore.
Jan 2022 – onwards	Member of the Osteoporotic Spine Instrumentation Group (OSIG) – an elite group of surgeons under AO technical commission (AOTK) to develop appropriate implants & instrumentation system for osteoporosis management.
Feb 2023 – Mar 2025	Thrust Lead for 3D-Bioprinting for Tissue Repair/EXCO member for AM.NUS (Additive Manufacturing, National University of Singapore)

Invitation as a Keynote Speaker at International/Regional Conferences/Courses

Nov 2014	Invited to give ' A.K. Saha Memorial Oration ' at annual conference of the Indian Orthopaedic Association held at Hyderabad – 6 th Nov 2014. The presentation given was: Personalised treatment for metastatic spine disease
Dec 2014	Invited to give keynote address at annual conference of the Pakistan Orthopaedic Association held at Karachi – 17 th Dec 2014. The presentation given was: The evolution of minimally invasive surgery for management of metastatic spine disease
Feb 2015	'How health profession educators produced videos: Three examples' . CY Dong, Naresh Kumar , V Rajaratnam, Y Kowitlawakul. Presented at the 12th Asia Pacific Medical Education Conference (APMEC) , National University of Singapore, Singapore – 4 th to 8 th Feb 2015.
Mar 2015	Invited to give keynote address at annual conference of the Korean Spine Society held at Seoul – 20 th Mar 2015. The presentations were: <ul style="list-style-type: none"> - Evolution in management of blood loss in metastatic spine disease - Personalised treatment for metastatic spine disease
Sept 2015	Invited as instructor of a pre-conference workshop of the European Spine Society held at Copenhagen – 2 nd Sept 2015. The presentation given was: 'Use of salvaged blood in metastatic spine surgery'.
Oct 2015	Invited as instructor of a pre-conference workshop of the Australian Orthopaedic Association held at Brisbane – 12 th Oct 2015. The presentation was: 'Use of salvaged blood in metastatic spine surgery'.
Oct 2015	Invited as a guest speaker at 4th Bologna-Budapest Spine AOSpine Symposium— Complication and Recurrence in Tumor Surgery held at Bologna, Italy –23 rd to 25 th Oct 2015. The presentations were: <ul style="list-style-type: none"> - The role of intraoperative cell salvage in metastatic spine tumour surgery - Use of 'Percutaneous Pedicle Screw Fixation'(PPSF) in management of metastatic spine disease
July 2016	Invited as an expert speaker at the 4 th Deformity Down Under by Australian Spine Society— Surgery for Tumour and Trauma of the Spine held at Sydney, Australia – 4 th to 7 th July 2016. The presentations were: <ul style="list-style-type: none"> - Blood management in Metastatic Spine Disease - MIS fixation for fracture - Role of Preoperative Embolization in Surgery for Spinal Metastases - Evolution of MIS in Metastatic Spine Disease
Oct 2016	Invited as an expert speaker at the Biannual Society Meeting of the Korean Spine Tumour Society — held at Seoul, Korea – 14 th to 16 th Oct 2016. The presentations were: <ul style="list-style-type: none"> - Blood management in Metastatic Spine Disease - Evolution of MIS in Metastatic Spine Disease
Nov 2016	Invited as a guest speaker at the 5th Bologna-Budapest Spine AOSpine Symposium— Advancement in Tumour Surgery held at Bologna, Italy –3 rd to 6 th Nov 2016. The presentations were: <ul style="list-style-type: none"> - Are we ready to transfuse intraoperative salvaged blood in metastatic spine tumour surgery? - Safety of intraoperative salvaged blood transfusion: Myth of Fact?
Jan 2017	Invited as an expert speaker at the Annual Society Meeting of the Association of Spine Society (ASSI) — held at Chennai, India– 26 th to 28 th Jan 2017. The presentations were: <ul style="list-style-type: none"> - Blood management in Metastatic Spine Disease - Moderation for the Tumour session
Nov 2017	Invited as a guest speaker at the 6th Bologna-Budapest-Basel Spine AOSpine Symposium— Advancement in Tumour Surgery held at Budapest, 9 th – 11 th Nov 2017. The presentation was: <ul style="list-style-type: none"> -Smart mx of Metastatic Tumours; Combination of MIS & Biological Treatment.
Feb 2018	Invited as an expert speaker at the Biannual Society Meeting of the Korean Spine Tumour Society — held at Seoul, Korea, 2 nd – 4 th Feb 2018. The presentations were:

	<ul style="list-style-type: none"> - Evolution of MIS in Metastatic Spine Disease - Concepts of Implant Failure in Metastatic Spine Fixations
April 2018	<p>Invited as an expert speaker at the AOSpine Advanced Seminar – held at Jakarta, Indonesia, 20th – 22nd April 2018. The presentations were on:</p> <ul style="list-style-type: none"> - Evidence based outcomes to operations in Spinal Canal Stenosis - Evidence based outcomes to operations in Osteoporosis
May 2018	<p>Invited as an expert speaker at the Global Spine Congress – held at Singapore, 2nd – 5th May 2018. The invitations were from:</p> <ul style="list-style-type: none"> - AOSpine Knowledge Forum Tumour Pre-Course: Spine Tumour Rounds: Evidence based approach to Spine Tumour Cases <ul style="list-style-type: none"> i. Colon Cancer Metastases to Thoracic Spine with Bilsky grade 1c compression. - Symposium by Eurospine: Occipitocervical to Cervicothoracic: Injuries to Cervical Spine <ul style="list-style-type: none"> i. Central Cord Syndromes: Concepts & Management
July 2018	<p>Invited as an expert speaker at the PASSISS 2018 – held at Kaohsiung, Taiwan, 20th – 21st July 2018. The presentation was on:</p> <ul style="list-style-type: none"> - Evolution of implant fixation from ‘Open to MIS’ in management of metastatic spine disease
Aug 2018	<p>Invited as an expert speaker at the Instructional Course in Spine 2018: Tumours & Minimally Invasive Spine Surgery – held at Amritsar, India, 9th – 11th August 2018. The presentations were on:</p> <ul style="list-style-type: none"> - Concepts & Patterns of implant failure in Metastatic Spine Disease (MSD) - Blood Loss & Recent Advancements In Transfusion Considerations In Management Of Metastatic Spine Disease (MSD)
Nov 2018	<p>Invited as an expert speaker at the Instructional Course in ‘Deformity and Tumours of Spine’ – held at the IOACON 2018 - 63rd Annual Conference of Indian Orthopaedic Association, on Nov 28th 2018, at Coimbatore, India. The topic was on:</p> <ul style="list-style-type: none"> - Spinal Instability in Metastatic Spine Disease: Evaluation and Treatment
Nov 2019	<p>Invited as a keynote speaker at the ‘Asian Spine Tumor Society’ inaugural meeting held from 29 Nov – 1 Dec 2019 at Seoul, Korea. The topic was on:</p> <ul style="list-style-type: none"> - Asymptomatic implant failure; it is a new entity or a continuum to symptomatic implant failure
June 2021	<p>Invited as an expert speaker at the 47th annual meeting of Korean Cancer Association (KCA) & 7th International Cancer Conference, Seoul, Korea (virtual), 17-18th June 2021. Topic: Benefit and risk of surgical treatment of spinal metastasis</p>
July 2021	<p>Invited as an expert speaker at 21st Asia Pacific Orthopaedic Association (APOA) Congress 2021 – held at Kuala Lumpur, Malaysia, 29-30 July 2021 (virtual). Topic:</p> <ul style="list-style-type: none"> - Are we ready to transfuse intraoperative salvaged blood in metastatic spine tumour surgery?
Aug 2021	<p>Invited as an expert speaker at 8th International Malaysia Spine Society (MSS) Scientific congress 2021 - held at Kuala Lumpur, Malaysia, 7-8 August 2021 (virtual). Topic:</p> <ul style="list-style-type: none"> - Advances in Surgical Management of Metastatic Spine Disease to Improve Readmission-Free Survival (ReAFS)
Aug 2021	<p>Invited as a distinguished speaker at RadoncAsia Singapore On-Target (SPOT) Contouring Workshop Series 2021, 14-15 August 2021 (virtual). Topic:</p> <ul style="list-style-type: none"> - Metastatic Spine Tumour Surgery: MISsion separation surgery
Sep 2021	<p>Invited as a keynote speaker at 3rd International Conference on Additive Manufacturing Meets Medicine (AMMM) 2021, 8-10 September 2021 (virtual). Topic:</p> <ul style="list-style-type: none"> - 3D Printing in Spine Surgery: Current and Emerging Applications
Sep 2021	<p>Invited as an expert speaker at 19th Annual Conference of the Women’s Cancer Initiative - Tata Memorial Hospital, Mumbai, 24-25 September 2021 (virtual). Topic:</p> <ul style="list-style-type: none"> - Surgical Management of Spinal Metastases
May 2022	<p>Invited as an expert speaker at 2022 The Korean Society of 3D Printing in Medicine Spring Congress, 20 May 2022 (virtual). Topic:</p>

	- Medical 3D printing technology, commercialization, regulation of clinical application in Asia.
Aug 2022	Invited as a keynote speaker at AO Spine Asia Pacific East Asia Conference, Singapore, Aug 20 - 21, 2022. Topic: - Recent advancement in management of metastatic spine fracture
Sep 2022	Invited as a keynote speaker at 42nd SICOT Orthopaedic World Congress, Kuala Lumpur, 28-30 September 2022. Topic: - Primary spine tumours; Key Opinion Leaders - Minimal invasive surgery in metastatic spine disease; Tumour and Infection Symposium in Spine
Mar 2023	Invited as an expert speaker at 6th Annual Singapore Spine Society Meeting, Singapore, 18-19 March 2023. Topic: Latest Advances in the Treatment of Spinal Tumour and Metastases - MIS Techniques in the Treatment of Spinal Metastases – Advantages of using Carbon/PEEK Implants
June 2021	Invited as an expert speaker at the 47th annual meeting of Korean Cancer Association (KCA) & 7th International Cancer Conference, Seoul, Korea (virtual), 17-18th June 2021. Topic: Benefit and risk of surgical treatment of spinal metastasis

Most Impactful Papers, Which Have the Ability to Change Healthcare Practices

1	'Paper' Use of intraoperative cell-salvage for autologous blood transfusions in metastatic spine tumour surgery: a systematic review. <u>Naresh Kumar</u> , Chen Y.S., A.S. Zaw, D. Nayak, Q. Ahmed, R Soong, Wong H.K. <i>Lancet Oncology, 2014; 15: e33-41.</i> PMID: 24384492 DOI: 10.1016/S1470-2045(13)70245-6.
2	'Paper' Evolution in Treatment Strategy for Metastatic Spine Disease: Presently Evolving Modalities. <u>Naresh Kumar</u> , R. Malhotra, A.S. Zaw, K. Maharajan, A. Kumar. <i>European Journal of Surgical Oncology 2017, 43(9), Sept 2017, 1784-1801</i> PMID:28579359 DOI: 10.1016/j.ejso.2017.05.006.
3	'Paper' Asymptomatic Construct Failure after Metastatic Spine Tumour Surgery: A new entity or a continuum with symptomatic failure? <u>Naresh Kumar</u> , R Patel, BWL Tan, JH Tan, N Pandita, D Sonawane, K Lopez, HWD Hey, G Liu. <i>Asian Spine J.</i> E-Pub Ahead of Print. 2020 Oct 29. PMID: 33108848 DOI: 10.31616/asj.2020.0167.
4	'Paper' Basic Concepts In Metal Work Failure After Metastatic Spine Tumour Surgery. <u>Naresh Kumar</u> , RS Patel, AC Wadhwa, A Kumar, H M Miavec, D Sonawane, G Singh, LM Benneker. <i>European Spine Journal.</i> 2018; 27(4):806-814. PMID: 29204734 DOI: 10.1007/s00586-017-5405-z
5	'Paper' The "Spinal Metastasis Invasiveness Index": A Novel Scoring System to Assess Surgical Invasiveness. <u>Naresh Kumar</u> , MRD Ramos, R Patel, BWL Tan, Keith Gerard Lopez, CP Nolan, A Kumar, DS Kumar, G Liu, LM Benneker. <i>Spine.</i> E-Pub Ahead of Print. DOI:10.1097/BRS.0000000000003823
6	'Paper' Readmission-free survival analysis in metastatic spine tumour surgical patients: A novel concept. <u>Naresh Kumar</u> , A Thomas, M Ramos, S Madhu, JYH Tan, L Shen, K Lopez, A Villanueva, J Tan, B Vellayappan. <i>Annals of Surgical Oncology.</i> E-Pub Ahead of Print. DOI:https://doi.org/10.1245/s10434-020-09404-7
7	'Paper' Are We Ready for Use of Salvaged Blood in Metastatic Spine Tumour Surgery? <u>Naresh Kumar</u> , A.S. Zaw, Q. Ahmed, V. Lee, R. Goy, Wong H.K. <i>EurSpine J.</i> 2016. Dec;25(12):3997-4007. PMID: 26188770 DOI: 10.1007/s00586-015-4112-x.
8	'Paper' Vascular injuries in total knee arthroplasty. A review of the problem with special reference to the possible effects of the tourniquet. <u>Naresh Kumar</u> , JA Chapman, I Rawlins. <i>The Journal of arthroplasty.</i> 1998 Feb;13(2):211-6. PMID: 9526217 DOI:10.1016/s0883-5403(98)90102-4

9	'Paper' Design and 3D Printing of Novel Titanium Spine Rods with Lower Flexural Modulus & Stiffness Profile with Optimised Imaging Compatibility. Naresh Kumar , AR Sridharan, KG Lopez, Niyou Wang, B Vellayappan, J Hallinan, J Fuh & A Senthil Kumar. <i>EurSpine J.</i> 2023 Apr 13. PMID: 37052651. DOI: 10.1007/s00586-023-07674-9.
10	'Paper' Novel 3D Printable PEEK-HA-Mg ₂ O ₄ Si Composite Material for spine implants: Biocompatibility & Imaging Compatibility Assessments. Naresh Kumar , AR Sridharan, KG Lopez, Niyou Wang, B Vellayappan, J Hallinan, J Fuh & A Senthil Kumar. <i>EurSpine J.</i> 2023 May 13. PMID: 37179256 DOI: 10.1007/s00586-023-07734-0

Innovative Ideas and Research Causing A Paradigm Shift in Spinal Surgery, Orthopaedic Surgery & Orthopaedic Education

1	<p>New Concepts of Implant Failure: First ever academic surgeon to recognise and describe asymptomatic construct failure as a separate entity to conventional symptomatic construct failure. This thought process can be clearly understood through the two publications namely:</p> <ul style="list-style-type: none"> i) Asymptomatic Construct Failure after Metastatic Spine Tumour Surgery: A new entity or a continuum with symptomatic failure? Naresh Kumar et al. <i>Asian Spine J.</i> E-Pub Ahead of Print. 2020 Oct 29. PMID: 33108848 DOI: 10.31616/asj.2020.0167. ii) Basic Concepts In Metal Work Failure After Metastatic Spine Tumour Surgery. Naresh Kumar et al. <i>European Spine Journal.</i> 2018; 27(4):806-814. PMID: 29204734 <p>This led to novel material development used for making implants for stabilising patients with metastatic spine tumour surgery;</p> <ul style="list-style-type: none"> a) "Modified, Bioactive PEEK" - Material used for making pedicle screws which would better incorporate and fuse with osteoporotic bone. In addition, material is radiolucent and causes non-interference with common imaging modalities, suitable for metastatic spine tumour surgery. b) "Modified, Low Modulus, 3D Printed Titanium Rod" – to be used in conjunction with above mentioned pedicle screws, providing stability and longevity for constructs in metastatic spine tumour surgery.
2	<p>Conceptualisation to Bedside Implementation of Salvaged Blood in Tumour Surgery: First ever academic surgeon to conceptualise the use of salvaged blood in metastatic spine tumour surgery and validate its safe use in metastatic spine tumour surgery through well-structured experimental procedures. The evolution of this thought process can be clearly understood through the two publications namely:</p> <ul style="list-style-type: none"> i) Use of intraoperative cell-salvage for autologous blood transfusions in metastatic spine tumour surgery: a systematic review. Naresh Kumar et al. <i>Lancet Oncology</i>, 2014; 15: e33-41. PMID: 24384492 DOI: 10.1016/S1470-2045(13)70245-6.
3	<p>Conceptualisation of a Novel Integrated Clinical and Quality Outcome Measure in Patients Undergoing Metastatic Spine Tumour Surgery "Readmission-free survival" (ReAFS) or survival free from unplanned hospital readmissions is a novel integrated clinical and quality outcome measure that is influenced by all the key patient, multidisciplinary treatment and disease-related factors. This outcome measure would help identify patients who may benefit from surgical intervention and increased surveillance post index-discharge after metastatic spine tumour surgery. This thought process can be understood in the publication below, namely:</p> <ul style="list-style-type: none"> i) Readmission-free survival: A novel clinical and quality outcome measure in metastatic spine tumour surgical patients. Naresh Kumar. <i>Annals of Surgical Oncology</i> (Author Reflections). Accepted for Publication. ii) Readmission-free survival analysis in metastatic spine tumour surgical patients: A novel concept. Naresh Kumar, A Thomas, M Ramos, S Madhu, JYH Tan, L Shen, K Lopez, A Villanueva, J Tan, B Vellayappan. <i>Annals of Surgical Oncology.</i> E-Pub Ahead of Print. DOI:https://doi.org/10.1245/s10434-020-09404-7

4	<p>Conceptualisation of a Scoring System to Assess the Severity of an Operation on a Patient Undergoing Metastatic Spine Tumour Surgery: This scoring system would help classify the severity of invasiveness of the operation and help in resource planning. This thought process can be understood in the publication below, namely:</p> <ul style="list-style-type: none"> i) The “Spinal Metastasis Invasiveness Index”: A Novel Scoring System to Assess Surgical Invasiveness. <u>Naresh Kumar</u> et al. Spine. E-Pub Ahead of Print. DOI:10.1097/BRS.0000000000003823.
5	<p>New Clinical Signs in Assessment of Spine Patients: First ever academic surgeon to recognise a set of common clinical signs in patients with secondary gain through evaluation of such patients through my career in India, United Kingdom and Singapore. This led to an award-winning conceptual paper namely:</p> <ul style="list-style-type: none"> i) Resistive straight leg raise test, resistive forward bend test and heel compression test: novel techniques in identifying secondary gain motives in low back pain cases. <u>Naresh Kumar</u>. Eur Spine J (2014) 23 (Suppl 5): S497–S526
6	<p>Innovative Concept of Bending the Diagnostic Spinal Needle to Enter the L5-S1 Disc Space: As an academic, innovative surgeon, I thought about this concept during my spine fellowship in 1997 and published the idea without patenting it. This idea now is used rampantly in minimally invasive procedures to access L5-S1 disc space i.e. endoscopy. The concept is highlighted in the paper:</p> <ul style="list-style-type: none"> i) The curved needle technique for accessing the L5/S1 disc space. <u>Naresh Kumar</u> et al. Agorastides. Br J Radiol. 2000 Jun;73(870):655-7. PMID: 10911790 DOI: 10.1259/bjr.73.870.10911790.
7	<p>Conceptualisation of Methods to Reduce Blood Loss & Vascular Injuries in TKR First academic surgeon to study and scientifically qualify vascular injury patterns during TKR and methods to reduce blood loss. This thought process can be clearly understood through the two publications namely:</p> <ul style="list-style-type: none"> i) Vascular injuries in total knee arthroplasty. A review of the problem with special reference to the possible effects of the tourniquet. <u>Naresh Kumar</u> et al. The Journal of arthroplasty. 1998 Feb;13(2):211-6. PMID: 9526217 DOI:10.1016/s0883-5403(98)90102-4 ii) Plugging the intramedullary canal of the femur in total knee arthroplasty: reduction in postoperative blood loss. Naresh Kumar, S. Javed, E. Gardiner, V.G. Devadoss, F. Howell. J Arthroplasty. 2000 Oct;15(7):947-9. PMID: 11061459 DOI:10.1054/arth.2000.8592
8	<p>Innovative Technique of Teaching Psychomotor Skills for Orthopaedic Assessment Developed an innovative technique of teaching clinical examination skills in Orthopaedics to medical students and residents. Paper and teaching tool mentioned below highlight the aforementioned innovation.</p> <ul style="list-style-type: none"> i) How health profession educators produced videos: Three examples. Dong C.Y., Naresh Kumar, V. Rajaratnam, Y. Kowitlawakul. Med.Sci.Educ. (2015) 25: 383-386. DOI:10.1007/s40670-015-0170-2 ii) Developed ‘Clinical Orthopaedics Examination Skills’ (CORES) comprehensive videos for clinical examination techniques of musculoskeletal systems & joints, with the help of 16 other consultants and trainers from all the other hospitals in Singapore.
9	<p>Conceptualisation and description of a technique of cervical nerve root block Described the technique of cervical nerve root block which was different from what was practised at that time by the pain anaesthetists. In this approach I placed the patient in the lateral position to be able to watch the patients face during the procedure. The details can be clearly understood in the publication: Cervical foraminal selective nerve root block: a ‘two-needle technique’ with results. <u>Naresh Kumar</u>, V. Gowda. <i>European Spine Journal</i>, 2008 Apr;17(4):576-84.. Epub 2008 Jan 18. PMCID: PMC2295277. PMID: 18204941 DOI:10.1007/s00586-008-0600-6</p>

Brief Synopsis of Research

Articles Published in International-Peer Reviewed Journals	120 Published. 3 Submissions Under Review.
Case Reports & Technical Notes	16 Published.
Textbook Chapters Written	10 Written.
Research Grants Awarded:	16 Awarded.

Brief Synopsis of Teaching

Undergraduate & Postgraduate Examiner	47 Examinations Involved.
M Med Thesis Guided/Evaluated	9 Evaluated. 5 Guided.
Member & Training Committees (Past/Present)	15 Committees.
Invitation as Surgical Tutor at International Meetings/Courses	76 Invitations.
Invitation as Surgical Tutor at Local Meetings/Courses	6 Invitations
Undergraduate Director for Yong Loo Lin School of Medicine	2013 - Present

Positions of Responsibility

2012-2014	Treasurer – SOA (Singapore Orthopaedic Association)
2014-2015	Honorary Secretary - SOA (Singapore Orthopaedic Association)
2015-2016	Editor - SOA (Singapore Orthopaedic Association)
2016-2017	Honorary Secretary - SOA (Singapore Orthopaedic Association)
2017-2018	Vice President - SOA (Singapore Orthopaedic Association)
2018-2019	President - SOA (Singapore Orthopaedic Association)
2019-2021	Ex-Officio President - SOA (Singapore Orthopaedic Association)
2022-2023	President – PASMISS (Pacific and Asia Society of Minimally Invasive Spine Surgery)