Orthopedics This Month

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SPRING 2024

2023 Orthopedics This Week
Spine technology Awards

BEST NEW
SPINE
TECHNOLOGIES

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Best New Spine Technologies *for 2023*

Here are the best new spine surgery technologies for 2023.

Every year, *Orthopedics This Week* convenes a panel of top surgeons to review dozens of new technology submissions from around the world.

This award was inaugurated more than a decade ago to recognize the remarkable inventors, engineering teams, surgeons and their companies who have created the most innovative, enduring, and practical products to treat back care.

To win the *Orthopedics This Week* Best New Technology Award for spine care, a new technology must meet the following criteria:

1. Be creative and innovative.

2. Bring long term significance to treating spine pathologies. Does this technology have staying power?

3. Solve a current clinical problem.

4. Improve standard of care

5. Is cost effective?

6. Members of the judges panel would consider personally using it.

We received a record number of submissions for 2023.

Here are the judges for this year's awards.

ARTICLE BY
ROBIN YOUNG

THE JUGES
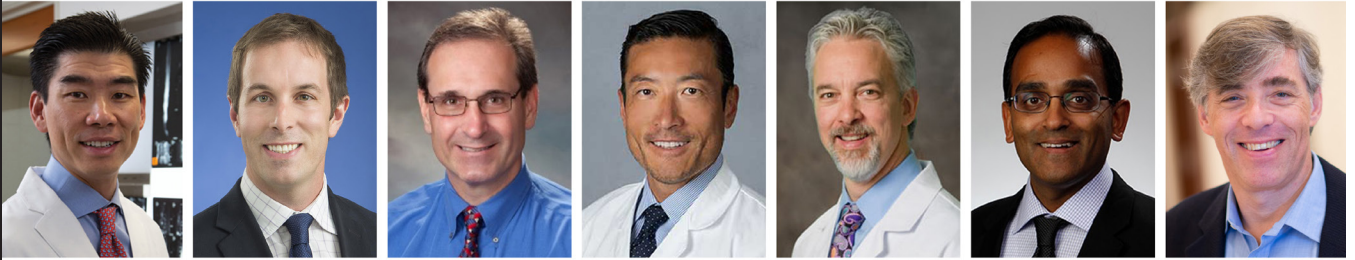
[**L TO R:** *HYUN W. BAE, M.D.; MATTHEW W. COLMAN, M.D.; DOMAGOJ CORIC, M.D.; HAN JO KIM, M.D.; PIERCE NUNLEY, M.D.; ALPESH A. PATEL, M.D., M.B.A.; AND MIKE SHERMAN, M.S. BIOMEDICAL ENGINEERING*]

Hyun W. Bae, M.D. — Dr. Bae is a professor of surgery and director of spine education at Cedars-Sinai Spine Center in Los Angeles. He is the author of hundreds of published scientific papers and is a frequent podium presenter at spine surgeon meetings around the world.

Dr. Bae received his bachelor's degree in biomechanics from the Columbia University School of Engineering and Applied Sciences. After graduating cum laude from Yale University School of Medicine, he completed his surgical internship at North Shore University Hospital, his orthopedic surgical residency at the Hospital for Special Surgery in New York, and his spine fellowship at Case Western Hospital in Cleveland. *LEARN MORE.*

Matthew W. Colman, M.D. — Dr. Matthew Colman is a board certified surgeon specializing spine surgery and musculoskeletal oncology. He graduated cum laude with honors from Dartmouth College, earned his medical degree with honors from the University of Chicago Pritzker School of Medicine, Chicago and went on to complete his residency in orthopedic surgery at the University of Pittsburgh Medical Center, Pittsburgh.

He has been fellowship trained in pediatric and adult musculoskeletal oncology at Harvard University and orthopedic and neurosurgical spine surgery at the University of Utah. *LEARN MORE.*

Domagoj Coric, M.D. — Dr. Dom Coric spent 25 years as a neurosurgical spine surgeon at Carolina Neurosurgery and Spine Associates (CNSA) in Charlotte, North Carolina, serving 13 years as Chief, Department of Neurosurgery at Carolinas Medical Center. He's served as Executive Medical Director of SpineFirst and Director of the Carolina Center for Specialty Surgery. Finally, Dr. Coric is the Jerry and Audrey Petty Endowed Professor of Spine Surgery at Atrium Health/Wake Forest University and is currently the Atrium/Advocate Health Director of the Southeast Spine Center of Excellence.

Dr. Coric is past-President or past-Chair of the following societies: the International Society for the Advancement of Spine Surgery (ISASS), the AANS/CNS Joint Section on Spine and Peripheral Nerves/Spine Summit, the Southern Neurosurgical Society, and the North Carolina Spine Society. He currently serves on the Board of Directors of the American Association of Neurological Surgeons (AANS). *LEARN MORE.*

Han Jo Kim, M.D. — Dr. Han Jo Kim is an Attending Spine Surgeon, Professor of Orthopedic Surgery at Weill Cornell Medical College, David B Levine MD Endowed Chair and Director of the Spine Fellowship and Chair of the Fellowship Committee at the Hospital for Special Surgery in New York.

Dr. Kim has authored more than 300 peer-reviewed scientific articles and more than 55 book chapters and over 50 visiting lectureships. He was selected for the prestigious Edgar G. Dawson Fellowship in 2013 and subsequently was selected for the Scoliosis Research Society Traveling Fellowship in 2017 and served as the IMAST Chair in 2020. He is an active member of the Cervical Spine Research Society. *LEARN MORE.*

Pierce Nunley, M.D. — Dr. Pierce Nunley is a board-certified surgeon, clinical researcher and thought leader behind many key innovations in spine surgery. Dr. Nunley has been Principal Investigator (PI), in more than 30 studies, author of dozens of peer reviewed clinical studies.

Dr. Nunley is the chairman of the American Board of Spine Surgery, and member Cervical Spine Research Society (CSRS), Scoliosis Research Society (SRS), Society for Minimally Invasive Spine Surgery (SMISS), North American Spine Society (NASS), American Academy of Orthopaedic Surgeons (AAOS), and International Society for the Advancement of Spine Surgery (ISASS).

He is also associate editor for *The Spine Journal,* and reviewer for *Global Spine Journal* and *British Medical Jour-*

nal. Dr. Nunley is Founder and Medical Director of the Spine Institute of Louisiana and is a Clinical Instructor of Orthopedic Surgery at Louisiana State University Health Sciences Center.

Dr. Nunley is also an accomplished musician performing and composing music for voice, guitar, violin and piano. *LEARN MORE.*

Alpesh A. Patel, M.D., M.B.A. — Dr. Patel is the Co-Director of the Northwestern Center for Spine Health and is fellowship trained in both orthopedic spine surgery and neurosurgery. Dr. Patel specializes in cervical spine surgery and minimally invasive spine surgery. He is known for his clinical research on patient outcomes, quality and value in healthcare, and predictive analytics. Also, dedicated to creating value through strategy and innovation in healthcare. *LEARN MORE.*

Mike Sherman, M.S. Biomedical Engineering — Mike Sherman is the dean of spinal implant and instrument engineering. Sherman's career is, in effect, the history of Modern Spine Surgery and he, above anyone else, has been part of the foundational spinal implant and instrument developments and continues to work with surgeons and companies, large and small, to advance and transform patient's lives.

His background includes 9 years with MB Venture Partners and 16 years at Medtronic Spine (formerly Sofamor Danek). Prior to Sofamor Danek, Mike held positions at Synthes and Richards Medical. Over the course of his career, Mike has amassed over 100 issued U.S. patents on various inventions. Mike received his Bachelor of Science in Biomedical Engineering from Rensselaer Polytechnic Institute and a Master of Science in Biomedical Engineering from the University of Texas, Southwestern Graduate School. He has served on dozens of boards of directors. Mike currently owns and operates MB Innovations, Inc. *LEARN MORE.*

VUZE Medical Ltd.

Technology Name: The VUZE System, Ver. 2.0 ("VUZE 2.0")

Manufacturer: VUZE Medical Ltd.

Inventors and Engineers: (in alphabetical order): Ran Cohen; Sigi Elazar; Rivay Mor; Asaf Omer; Levona Schriger; Yoav Stein; Sasha Steinberg; Neta Stern; David Tolkowsky; Koby Zakaeim

This winning technology embodies a novel approach to surgical navigation, one which uses just software on an off-the-shelf PC to create a tool-independent guidance and verification navigation system for minimally invasive spine surgery.

Brand-named VUZE, the system uses proprietary real-time image processing to overlay unmodified surgical tools as seen in live 2D X-Rays onto vertebral cross-sections from a standard pre-operative CT or a prior in-OR 3D scan.

Indeed, AP X-Rays are entirely sufficient, and no lateral images are required. The OR display is updated instantly for each new X-Ray.

There are no cameras, markers, references, tool modifications, mandatory lines of sight, lengthy preparations, dependence on a specific tool or imaging vendor, etc., with VUZE.

THE VUZE SYSTEM, VER. 2.0 ("VUZE 2.0")

VUZE has been employed in more than 30 minimally invasive thoracolumbar fixations and augmentations. In each of these cases, VUZE has demonstrated extremely high accuracy. Similarly, VUZE has been demonstrated extensively in cadaveric workshops with hundreds of tool insertions by a dozen surgeons. Which is impressive given the simplicity, affordability, and tool neutrality of VUZE. VUZE 2.0 is currently pending FDA clearance.

(L to R): Rivay Mor, David Tolkowsky, Robin Young, Ran Cohen, Yoav Stein

Importantly, VUZE is not susceptible to errors due to reference shifts (there are no references), segment shifts (focus is in the treated area) or tool bending (focus is directly on the tools' distal portions).

The enduring prevalence of X-Ray guidance is due to its simplicity, affordability, and tool neutrality. But X-Rays provides only top (AP) and side (lateral) 2D projection views. The views needed most during tool insertion, namely vertebral cross-sections, are unavailable.

The VUZE System adds those missing axial and sagittal views within the existing X-Ray guided workflow. VUZE provides the online images that surgeons need most and currently do not have. No capital investment required. It's just software.