

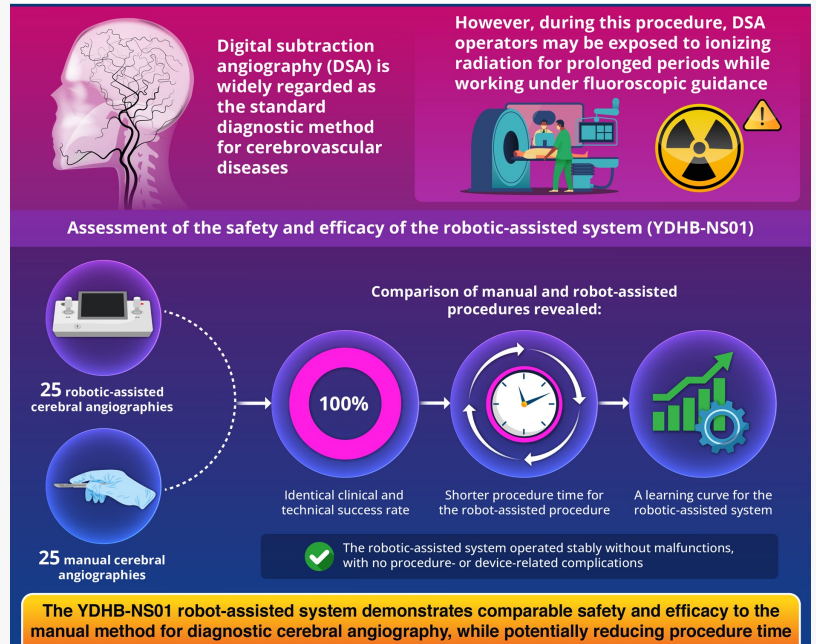
# Chinese Neurosurgical Journal Reports Faster Robot-Assisted Brain Angiography

*First real-world validation of China's YDHB-NS01 shows 100% success, shorter procedures than manual angiography, and no added radiation or complications*

CHINA, March 13, 2026

/EINPresswire.com/ -- A new study from Peking Union Medical College Hospital finds that robot-assisted cerebral angiography using China's YDHB-NS01 system achieved a 100% success rate and significantly shorter procedure times than manual methods, without increasing radiation exposure, contrast use, or complications. This prospective study provides real-world clinical validation and highlights the potential of robotic systems to reduce occupational radiation risks in neurointerventional surgery.

## Clinical Validation of a Robotic-Assisted System for Cerebral Angiography



Clinical validation and literature review of robot-assisted cerebral angiography  
Liu et al. (2026) | Chinese Neurosurgical Journal | DOI: 10.1186/s41016-026-00426-w



## Clinical Validation of the YDHB-NS01 Robot-Assisted System for Cerebral Angiography

Digital subtraction angiography remains the gold standard for diagnosing cerebrovascular diseases, including intracranial aneurysms, arteriovenous malformations, and arterial stenosis. However, the procedure requires operators to work under fluoroscopic guidance, resulting in prolonged exposure to ionizing radiation. To address this issue, vascular interventional robotic systems have been developed to allow operators to perform procedures remotely from the radiation zone.

In a study published in Volume 12 on January 30, 2026, [in the Chinese Neurosurgical Journal](#), Dr. Yuanli Zhao, from Peking Union Medical College Hospital in Beijing, China, and his team evaluated the clinical safety and efficacy of a domestically produced robot-assisted system (YDHB-NS01) for cerebral angiography. The study also included a review of the current status, advantages, and challenges of robot-assisted technology in cerebrovascular interventions.

“The preliminary clinical application demonstrates that the YDHB-NS01 robot-assisted system is feasible for diagnostic cerebral angiography and shows early indications of safety and comparable procedural performance to those of conventional manual methods,” quotes Dr. Zhao.

From May to August 2025, the team prospectively enrolled 25 consecutive patients who underwent robot-assisted cerebral angiography and 25 consecutive patients who underwent manual cerebral angiography at the same center. All procedures were performed by a single neurosurgeon. The primary endpoints were technical success rate and clinical success rate. Secondary endpoints included procedure time, fluoroscopy time, patient radiation dose, contrast agent volume, total angiography room time, device performance evaluation, and complication rate.

All 50 procedures were successfully completed, resulting in a 100% technical and clinical success rate in both the robotic-assisted and manual groups. All target vessels were clearly visualized and met diagnostic requirements.

The median procedure time was significantly shorter in the robotic-assisted group than in the manual group: 27 minutes versus 38 minutes ( $p = 0.005$ ). There were no statistically significant differences between the two groups in fluoroscopy time, patient radiation dose, contrast agent volume, or total angiography room time (all  $p > 0.05$ ).

“There were no differences between the two groups in fluoroscopy time, patient radiation dose, contrast agent dose, or total angiography room time,” Dr. Zhao reported.

The robotic system operated stably throughout the procedure without mechanical or system failures. Operator evaluations reported smooth catheter and guidewire delivery, stable manipulator fixation, responsive control handles, and good force feedback.

No complications occurred in any of the 50 patients. There were no puncture-related complications and operation-related complications, such as vessel spasm, injury, perforation, or thromboembolism. No neurological complications, including transient ischemic attack or ischemic stroke, and no contrast-related adverse reactions. A learning curve was observed in the robotic-assisted group. The first two cases required longer procedure times and higher radiation doses, and the subsequent 23 cases showed more stable procedural parameters.

Dr. Zhao describes this investigation as a single-center post-marketing case series: “Given the small, single-center cohort and the exploratory nature of this study, larger multicenter controlled trials are required to confirm these findings.”

In addition to the clinical data, the article includes a literature review summarizing the development and clinical application of various robotic systems in neurointervention, including their reported technical success rates, procedural outcomes, and limitations. The authors note

ongoing challenges, including improving force feedback, optimizing imaging integration, and enhancing compatibility with commercial devices.

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#### Reference

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#### About the University

Founded in 1921, Peking Union Medical College Hospital (PUMCH) is widely regarded as one of China's most respected and trusted hospitals. Located in the heart of Beijing, it has built a reputation for combining compassionate patient care with rigorous scientific research and medical innovation. Generations of physicians trained at PUMCH have gone on to become leaders in Chinese medicine. The hospital is known not only for treating complex and rare conditions, but also for setting national standards in clinical practice, education, and research. Its teams continue to play a central role in advancing modern medicine in China.

Website: [https://www.pumch.cn/en/edu\\_overview.html](https://www.pumch.cn/en/edu_overview.html)

#### About Dr. Yuanli Zhao from Peking Union Medical College Hospital

Dr. Yuanli Zhao, M.D., is a chief physician, doctoral supervisor, and leading cerebrovascular surgeon who pioneered neuronavigation-guided minimally invasive surgery for brain tumors and complex vascular diseases in China. Since 2005, he has led the Department of Cerebrovascular Surgery and Geriatric Oncology at Peking Union Medical College Hospital and has served as part-time Head of Neurosurgery at Peking University International Hospital since 2015. A key contributor to national research on giant intracranial aneurysms and arteriovenous malformations, he has received three second-prize National Scientific and Technological Progress Awards and published over 80 high-impact papers.

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