

Trends and Analysis of the Artificial Intelligence-Powered Spinal Surgery Market by Application, with Forecasts 2029

*The Business Research Company's
Artificial Intelligence-Powered Spinal
Surgery Global Market Report 2025 –
Market Size, Trends, And Forecast 2025-
2034*

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/EINPresswire.com/ -- The integration

of artificial intelligence into spinal surgery is revolutionizing how these complex procedures are performed, offering enhanced precision and improved patient outcomes. This emerging technology is rapidly shaping the healthcare landscape by supporting minimally invasive techniques and enabling surgeons to make more informed decisions throughout the surgical process. Let's explore the current market size, key growth drivers, regional dynamics, and future trends of the AI-powered spinal surgery sector.

Current Market Size and Growth Outlook for the AI-Powered Spinal Surgery Market

The AI-powered spinal surgery market has experienced significant expansion recently, with its value projected to rise from \$0.97 billion in 2024 to \$1.06 billion in 2025, marking a compound annual growth rate (CAGR) of 9.8%. This upward trend is driven by a combination of factors, including the increasing prevalence of spinal disorders, a growing number of spinal surgeries globally, and heightened demand for minimally invasive procedures. Additional contributors include the aging population affected by degenerative spine conditions, greater awareness of spinal health and treatment methods, as well as the development of healthcare infrastructure and surgical facilities.

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Forecasted Expansion and Future Market Drivers in AI-Powered Spinal Surgery

Looking ahead, the market is anticipated to continue its strong growth trajectory, reaching \$1.52 billion by 2029 with a CAGR of 9.4%. This forecasted increase is supported by escalating healthcare spending in both developed and emerging countries, along with wider adoption of

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precision-based surgical techniques. There is a growing emphasis on patient safety and improved surgical results, alongside rising demand for procedures that offer shorter recovery times. Investments in advanced surgical training and the enlargement of hospital networks and specialized spine centers also bolster market growth. Key trends shaping this future phase include innovations in real-time surgical visualization, data-driven surgical planning tools, image-guided robotic navigation, augmented and mixed reality-assisted surgeries, predictive analytics for spinal alignment, and enhanced intraoperative monitoring systems.

Understanding AI-Powered Spinal Surgery and Its Benefits

AI-powered spinal surgery involves the use of artificial intelligence algorithms to assist medical professionals in various aspects of spinal procedures, such as diagnosis, surgical planning, navigation, and predicting outcomes. These AI systems analyze medical images and patient information to enhance surgical accuracy, optimize implant placement, guide intraoperative decisions, and anticipate potential postoperative complications. By integrating AI technologies, spinal surgeries become more precise, safer, and efficient, ultimately leading to better personalized care and improved patient recovery.

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Growing Preference for Minimally Invasive Surgery Driving Market Growth

One of the primary factors boosting the AI-powered spinal surgery market is the increasing demand for minimally invasive surgical (MIS) approaches. These procedures use smaller incisions compared to traditional open surgeries, resulting in faster recovery times and reduced trauma to the body. AI supports this shift by improving surgical precision and minimizing tissue damage, which not only accelerates patient healing but also enhances clinical outcomes. For example, Intuitive Surgical, a leading US biotechnology firm, reported a rise in procedures using its “da Vinci” robotic systems—from 1,532,000 in 2023 to 1,757,000 in 2024—highlighting the growing adoption of AI-enabled MIS technologies.

Regional Market Leadership and Fastest Growing Areas in AI-Powered Spinal Surgery

In 2024, North America accounted for the largest share of the AI-powered spinal surgery market, benefiting from advanced healthcare infrastructure and high technology adoption rates. Meanwhile, the Asia-Pacific region is projected to lead in growth speed during the forecast period, fueled by rising healthcare investments, expanding surgical facilities, and increasing awareness of spinal treatments. The comprehensive market analysis covers key regions including Asia-Pacific, Western Europe, Eastern Europe, North America, South America, the Middle East, and Africa, providing a global perspective on market trends and opportunities.

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