

EDITORIAL

Revolutionizing Endovascular Treatment: The Transformative Role of Artificial Intelligence in Healthcare

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Artificial Intelligence (AI) has emerged as a revolutionary force in various industries, transforming processes and enhancing outcomes through its advanced capabilities. In the realm of healthcare, AI is making significant strides, particularly in the field of endovascular treatment, a minimally invasive medical procedure conducted within blood vessels. This editorial explores the multifaceted applications of AI in endovascular treatment, shedding light on its pivotal role in improving patient care and procedural efficiency.

One of the primary applications of AI in endovascular treatment lies in its role in endovascular thrombectomy for acute stroke triage. Through AI-powered large vessel occlusion detection software, medical professionals can rapidly analyse extensive datasets. This accelerates the identification of patients with strokes involving large vessel occlusions, streamlining endovascular thrombectomy treatment times, and enabling early intervention [1].

AI's prowess in image analysis and segmentation is a cornerstone for personalized treatment

strategies. By dissecting data from angiograms, CT scans, and segmenting blood vessels, AI algorithms guide endovascular procedures based on the patient's unique anatomy, ensuring tailored and effective interventions [1].

The integration of robotics and navigation systems, fuelled by AI, marks another milestone in endovascular interventions. These systems not only chart optimal paths for procedures but dynamically adapt to the patient's anatomy in real-time. This adaptability proves indispensable in navigating blood vessels and providing catheter guidance during endovascular procedures, minimizing complications, and maximizing precision [2].

Predictive analytics, a crucial component of AI, plays a pivotal role in risk assessment during endovascular treatment. Analysing patient data, this application enables physicians to predict potential complications early on, facilitating informed decision-making and preventive measures to enhance patient safety and overall treatment efficacy.

Real-time monitoring, empowered by AI, continuously assesses vital signs and hemodynamic parameters during endovascular procedures. This dynamic monitoring triggers alerts and immediate intervention in the face of complications, ensuring timely responses

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and minimizing risks. The application of real-time monitoring also facilitates the tracking of endovascular treatment progress using advanced imaging platforms.

AI-based decision support systems find prominence in determining appropriate treatments by synthesizing patient data, medical literature, and clinical guidelines. Particularly beneficial in the interpretation and analysis of abdominal aortic aneurysm imaging, these systems aid surgeons in preoperative planning and contribute to improved diagnostic accuracy [2].

The synergy of AI in data integration and collaboration emerges as a linchpin in elevating the quality of care in endovascular treatment. By amalgamating data from diverse sources such as electronic health records, imaging

systems, and monitoring devices, AI contributes to better treatment outcomes. This collaborative approach enhances the efficiency of vascular interventions, minimizing delays in acute stroke treatment [3].

In conclusion, AI's applications in endovascular treatment transcend the conventional, reshaping the landscape of patient care [4]. From large vessel occlusion detection to personalized treatment algorithms, predictive analytics, real-time monitoring, and data integration, AI is propelling endovascular procedures into a future defined by precision, efficiency, and improved patient outcomes. The depth and diversity of AI's impact underscore its integral role in revolutionizing endovascular treatment practices globally.

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