Angiology
2022, Vol. 0(0) 1–2

DOI: 10.1177/00033197221121192
journals.sagepub.com/home/ang
SAGE

Artificial Intelligence Is the Future of Surgical Departments … Are We Ready?

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Keywords
artificial intelligence, machine learning, big data, surgical department

Dear Editor,

We read with great interest the editorial concerning the impact of Artificial Intelligence (AI) and Big Data on vascular surgery by Lareyre et al.[1] We would like to share some thoughts. We agree that AI-based technology is influencing healthcare; vascular surgery is no exception. Machine Learning (ML) has been applied to several aspects of medical research, proving effective in risk stratification and outcome prediction,[2,3] thus helping physicians in tailoring care and precision medicine. We cannot avoid mentioning the use of AI tools in the operating room organization. ML models can accurately predict surgical cases duration and identify surgeries with high risk of cancellation, therefore improving surgical plan efficiency and resource optimization.[4] AI systems require high-quantity and high-quality data to minimize the bias of results, thus avoiding "Garbage In–Garbage Out."[5] Further, AI technologies are poorly "user-friendly." Clinicians should not be left to face the AI challenge alone; as suggested by Lareyre et al,[1] building a team of experts, educating clinicians with adequate training and certification courses, is critical.[6] Many governments have set up dedicated AI Departments, corroborating the importance of AI.[7] Likewise, AI Departments should be established in healthcare, allowing to address this innovation with a multidisciplinary approach.[7] Healthcare professionals, engineers, and data scientists should integrate skills to offer a precise and personalized solution for patients in clinical, research, and organization field (Figure 1). Indeed, collaboration between medical doctors and AI designers are required to align algorithms with medical expertise, bioethics, and medical ethics.[8]

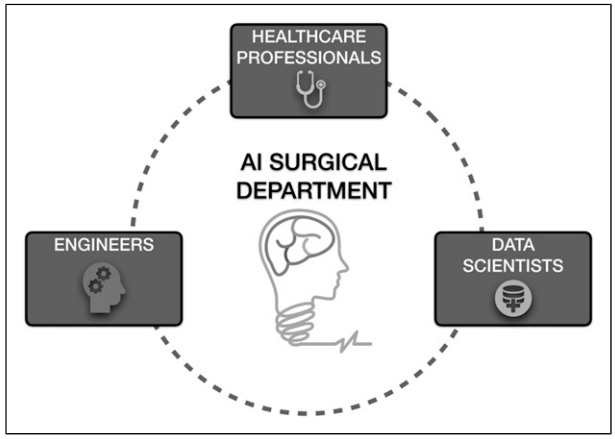

Figure 1. Artificial intelligence and surgical departments.

All those involved in AI in healthcare should always operate with utmost responsibility. Medical decisions should be guided by the principles of medical ethics: patient autonomy, justice, beneficence, and non-maleficence.[9] Every step of an AI healthcare tool should follow these principles. Supporting this requirement, the World Health Organization has produced a guidance document defining the rules for the ethical use of AI in medicine,[10] and the concept of "embedded ethics" approach has recently been proposed.[11] It refers to the ongoing practice of integrating ethics into the entire process of developing medical AI to anticipate, identify, and address ethical issues arising during the process. Concluding, we agree with the authors[1] about the usefulness of a multidisciplinary approach in the application of AI, promoting the intelligent revolution in surgical departments.

Author Contribution

All authors have made substantial contributions to the conception and design of the work and have approved the submitted version of the manuscript.

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Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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