PAR Perioperative Anesthesia Reports

EDITORIAL

Will AI change our current practice of anesthesia?

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How to cite: Oliveira HP. Will AI change our current practice of anesthesia? Periop. Anesth. Rep. 2025;3:eED022025. https://doi.org/10.61724/par.eED022025

> *Think of sight. You have eyes, yet cannot see without light. If you are on the floor of a valley, you cannot see beyond the valley. (...) The vision of time is broad, but when you pass through it, time becomes a narrow door.*
> *– Frank Herbert, Dune (1965)*

Every significant technological leap inevitably brings a period of intense questioning about the future. While some envision a golden age of technological progress, others anticipate potential failures and malfunctions that new and unknown advancements might introduce. The popularization of computers serves as a prime example of this historical pattern: at the dawn of their era, discussions surrounding their future use, undiscovered capabilities, and fears of misconduct were openly debated within medicine and anesthesiology[1,2].

While early technological developments in anesthesiology primarily focused on data acquisition, new technologies, such as Artificial Intelligence (AI), are driven by data analysis[3,4]. Since the 1980s, our operating rooms have been overcrowded by new devices for patient monitoring, connected to software envisioned to store large datasets, and introducing intriguing new parameters that could be manually measured and interpreted in real-time during each surgical procedure[5,6]. What took us decades of ongoing progress on data acquisition to reach perioperative data-driven clinical decision-making, AI fast-forwarded us to predictive models based on automated data analysis in a few months.

In our current practice in anesthesiology, the possibilities of major AI incorporation are already significant. This includes the development of intelligent monitoring alarms that can cross-analyze all monitoring data and provide a situation diagnosis faster than a human could, significantly enhancing patient safety. Furthermore, image identification algorithms are anticipated to guide ultrasound operators towards better imaging of desired structures, assist in performing diagnostic calculations, and ultimately save time while increasing safety for most procedures. On this issue of Perioperative Anesthesia Reports, Queiroz et al.[7] bring us an insightful review on the current roles AI has in anesthesiology and explain interesting details of its *modus operandi* as well as some concise predictions for the near future.

What is particularly interesting, however, is that these are predictions based solely on our current technology and understanding the common path of progress as it happened to other technologies. If the same question regarding the evolution of computers had been asked decades ago to technology experts, they would hardly have predicted the emergence of "social media"[8]. This illustrates the profound challenges in predicting the distant future and challenges us to move towards the adventurous endeavor that lies in such an attempt.

While the precise long-term impact remains difficult to fully predict, what we can definitively imagine is that there will be changes, both good and bad. Just as gadgets have, at times, seemed to interrupt anesthesia performance in the past[9], a direct prediction is that the phenomenon of "hallucination" in AI[10] could possibly be a negative aspect of the future of anesthesia care in a highly AI-driven scenario. Nevertheless, we anticipate a plethora of different new technologies emerging in the near future that will inevitably affect the anesthesiologist. It is most likely that these advancements will contribute in a positive way that will make our work even safer than it is today.

Finally, regarding our initial question as to "Will AI Change Our Current Practice of Anesthesia?", AI itself seems to already have the answer: **"**Artificial intelligence (AI) is

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rapidly reshaping the landscape of medical practice, and its influence on anesthesiology is particularly profound. AI has long served as a foundational tool in anesthesia, silently powering essential devices such as infusion pumps, monitoring systems, and advanced diagnostic equipment through rule-based algorithms". This conscious self-assessment from Google Gemini 2.5 Pro points towards AI's role and its continuing evolution within healthcare.

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Submitted on: July 21st, 2025
Accepted on: August 7th, 2025

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