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Re: Harnessing Power of Artificial Intelligence in Surgery

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The role of artificial intelligence in surgery is growing with every passing day. In the past, there has been a lack of information regarding the possibilities of its application in the surgical field which was mainly centered on the belief that robots are replacing the human surgeons but their role is more of supplementing the surgeons, instead of replacing them. The change in this mindset has given dawn to several new avenues in the field of robotic and AI supplemented surgeries. Even though it took longer to look into its promising outcomes, the ever-growing research in this field has changed the face of healthcare over the last few years.

The use of robots in minimally invasive surgery is already of major importance as it has significantly reduced the surgical complications due to trauma and enhanced patient recovery, making their hospital stay shorter. The use of AI in storing and studying the reports of the patients and analyzing the reports has also proved to be beneficial to a certain extent.

The conventional robots have supplemented the surgeons by transferring the actions of the surgeon's hands to the surgical target through tremor-filtered movements of the surgical instruments. This has significantly reduced the occurrence of intra-operative trauma to the patient. Further research in this field has shown promising outcomes with elements of Machine Learning like Learning from Demonstration and Reinforcement Learning that has brought forward new opportunities for surgical robots to adapt to the human actions. This major breakthrough is due to the recent advancement in the cloud computing, big data analytics, and artificial intelligence.

AI assisted robots have already been used in several surgical scenarios. Surgical robots that work based on the head movement of the surgeon's head are assisting in laparoscopic surgeries. Similarly, examples of robots that work based on gestured, gaze and face movements are available in literature. AI assisted robots have been used in suturing the blood vessels, in hair transplant surgeries and in cardiac surgery as well.

Clinically feasible surgical robots are likely to be realized by the end of the 21st century. The combination of artificial intelligence with surgical robotics can enable the expansion of surgical capabilities to optimize outcomes and increase access to care. We agree with the authors and look forward to enhancing role of AI in surgery in future.

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