LETTER

Artificial intelligence and robotic surgery in colorectal cancer surgery

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Dear Editor,

Colorectal cancer is a disease that causes serious health problems worldwide and requires early diagnosis and effective treatment. Today the Da Vinci robotic surgery system, is an important innovation in surgical interventions enabling surgeons to perform operations in a more precise and controllable manner (1).

Colorectal surgery constitutes an important challenge for surgeons due to its technical difficulties and risks of complications. Complex anatomical structures, limited visibility during the operation, difficulty in differentiating between tissues and individual anatomical differences of patients are among the main disabilities in this field of surgery. These difficulties can affect the success of surgeries and impact patient outcomes negatively (2).

Artificial intelligence (AI) can offer potential solutions to overcome these challenges in colorectal surgery. AI algorithms can examine anatomical structures in more detail, analysing the images provided by surgeons during the operation and provide important information to surgeons in real time. In this way, surgeons can make better decisions during the operation and reduce the complication risks (3).

Additionally, AI-supported robotic surgical systems (such as the da Vinci system) allow surgeons to perform more precise movements and conduct less invasive operations – reduces the risk of error such as damaging an important structure. The precision of robotic arms and the manipulations made through the surgeon's control panel enable surgeons to perform more complex procedures and inflict less tissue damage in the process (1).

AI can also help surgeons learn from previous surgical experiences through post-operative data analysis and help them achieve better outcomes in future surgeries. Big data analytics can guide surgeons to develop individualised treatment approaches by evaluating patients treatment Outcomes (4).

In the future, it is expected that the integration of artificial intelligence with the da Vinci robotic surgery system will increase the success rates in colorectal cancer treatments and improve the quality of life of patients (5). AI's potential in the field of surgery is continuously being researched and developed, and the integration of these technologies into clinical applications is progressing rapidly.

As a result, the integration of the da Vinci robot and artificial intelligence method in colorectal cancer treatments may be of great importance in the future. The effective use of these technologies will increase the competence of surgeons, improve the treatment processes of patients and provide more sustainable healthcare services in overall.

Contributions

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