Robotics: The Way Forward

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An old saying goes, "To be a surgeon, one needs the wisdom of Aristotle, the courage of a Tiger, the eyes of a hawk, and the hands of a lady." In this day and age, with the advent of several technological advancements, this saying may be looked upon from a fairly new perspective.

Artificial Intelligence has revolutionized the way we deliver healthcare [1]. Targeting genomic sequences and pinpointing mutations in the world of Nanomedicine has ushered a new era in health care [1,2]. Mapping out surgical approaches with pinpoint accuracy in stereotactic 3D reconstructed models and translating the same in practice is indeed something out of a sci-fi thriller [3]. The modern surgeon of today has an array of tools and equipment in his arsenal to better combat the disease burden he is faced with. Along with these advancements, the introduction of multi-disciplinary meetings, and tumor boards have made it easier for surgical decision-making and a better patient-centered approach.

The use of robotics in surgery began with a robot called the Puma 560, in 1985 by Kwoh *et al.* to perform neurosurgical biopsies with greater precision. Three years later, Davies *et al.* performed a transurethral resection of the prostate using the Puma 560 [4]. Robotic surgery offers greater precision, better visualization, and better access inside the body with a significantly smaller incision. It is appropriate for many types of procedures. It's frequently used by urologists, gynecologic surgeons, general surgeons, cardiothoracic surgeons, and colorectal surgeons.

The role of robotics in surgical oncology calls for an interesting debate [5]. Treatment of cancer as we know is not a one-stop solution but requires patience, teamwork, and resilience on the part of those proving care as well as the ones suffering. Oncological care is not individually based but a team effort. With surgeons divided on the issue, it may be something plausible now but a must-go-to technology soon. With FDA approval in 2000, robotics is approved for use in oncological surgery. With the many advantages it offers, from better maneuvering in tight spaces to a wide range of motion due to its 360-degree wrist-like movement and 3D visualization, it calls for better and targeted oncological surgeries. Though the debate is ongoing no one can deny the ease of ergonomics that robotic surgery offers, the issue of cost may be addressed by using the technology frequently and through this, the overall costs will come down [6]. Although the long-term results are still being worked upon, the fact remains that with the increasing technological advancements, Robotic surgery is the future of surgery, and the sooner it is embraced, the better [7].

Similarly, the burden of cases piled up during the COVID pandemic is indeed taking its toll, especially in resource-scarce regions [8]. With the recent floods and displacement, there is a cause for concern to look at the climate change catastrophe. Millions have been rendered homeless and among them, the cancer patients, those undergoing treatment or planned for surgeries have been devastated.

Hope this issue helps in highlighting the latest in the field as well as sets the mode for more to follow. Happy reading and do keep us posted with your valuable input.

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REFERENCES

1. Yu KH, Beam AL, Kohane IS. Artificial intelligence in healthcare. Nat Biomed Eng 2018; 2(10): 719-31.DOI: https://doi.org/10.1038/s41551-018-0305-z
2. Ferrari M. Cancer nanotechnology: opportunities and challenges. Nat Rev Cancer 2005; 5(3): 61-71. DOI: https://doi.org/10.1038/nrc1566
3. Katz MS, Russo GA. Defining a therapeutic ratio for stereotactic ablative radiation therapy in oligometastatic disease-another piece of the puzzle. JAMA Oncol 2022; 8(11): 1650-1. DOI: https://doi.org/10.1001/jamaoncol.2022.4342
4. Lanfranco AR, Castellanos AE, Desai JP, Meyers WC. Robotic surgery: a current perspective. Ann Surg 2004; 239(1): 14-21. DOI: https://doi.org/10.1097/01.sla.0000103020.19595.7d
5. Vijayakumar M, Shetty R. Robotic surgery in oncology. Indian J Surg Oncol 2020; 11(4): 549-51. DOI: https://doi.org/10.1007/s13193-020-01251-y
6. Shen WS, Xi HQ, Chen L, Wei B. A meta-analysis of robotic versus laparoscopic gastrectomy for gastric cancer. Surg Endosc 2014; 28(10): 2795-802. DOI: https://doi.org/10.1007/s00464-014-3547-1
7. Peters BS, Armijo PR, Krause C, Choudhury SA, Oleynikov D. Review of emerging surgical robotic technology. Surg Endosc 2018; 32(4): 1636-55. DOI: https://doi.org/10.1007/s00464-018-6079-2
8. Sarker S, Jamal L, Ahmed SF, Irtisam N. Robotics and artificial intelligence in healthcare during COVID-19 pandemic: A systematic review. Rob Auton Syst 2021; 146: 103902. DOI: https://doi.org/10.1016/j.robot.2021.103902