ARTIFICIAL INTELLIGENCE AND LIDAR BASED TIME EFFICIENT PORT ENTRY FOR ROBOTIC AND LAPAROSCOPIC PROCEDURES

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The Objective of Technology or Device: To map the patients' abdominal wall to decide on the exact position of the camera port and the working ports and also to reduce the docking time of robotic arms onto the patients' abdominal wall and achieve the most ideal and ergonomic position to perform the specific procedure of interest using artificial intelligence, Lidar, and Laser technology by tracking and recording the distance between the fulcrum of the port site and the target organ while performing the procedure. Various data points from different operating surgeons for different types of procedures, both specific and non-specific, can be collected and formulated into the software.

Description of the technology and method of its use or application: Once all the necessary data is collected and formulated, the Artificial Intelligence software containing all the vital information can be incorporated into the lighting systems placed above the patient within the operation theatre. The Laser and Lidar technology will map the abdominal wall of the patient using constant and fixed landmarks on the abdomen, like the junction of the Midclavicular line and the 9th costal cartilage, ASIS, the Umbilicus, Midline, Transtubercular plane, etc. and divide them into various triangles. Also, based on the preoperative CT images and the proposed procedure on the specific organ of interest that needs to be operated upon, the AI system will automatically direct the surgeon to the specific geographical region of the abdomen to introduce the ports for various functional procedures and scenarios.

Preliminary Results: It is a novel idea and funding is required for conducting this research to validate this idea

Future Directions / Conclusions: With the emergence of various robotic systems like the Hugo and completely mobile individual robotic arms in the market and an omnipresent lighting system within the operation rooms, this AI software will solve the hassles of unnecessary ports and reduce the time taken for the primary port insertions. It will also foretell any and all possible clashes between the robotic arms using the preloaded AI software. With this software in place, it may be possible to even automatically introduce the ports even before the surgeon comes to the OR. This will be a dream come true for all robotic surgeons in the OR who can save crucial time in establishing the correct ergnomic position before beginning to operate and will result in overall reduced patient time exposure to General anaesthesia.