

Robotic Surgery

Justin Pelletier, *Biomedical Engineering, University of Rhode Island*
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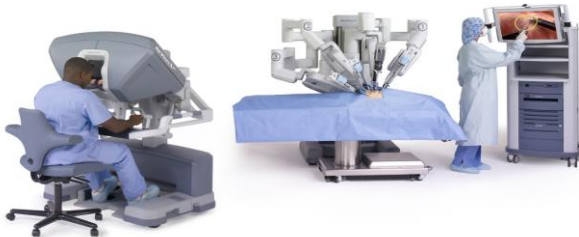
Abstract— This paper is about robotic surgery, what it is, why it was introduced in medicine, and how this new type of surgery has altered the medical field.

I. INTRODUCTION

ROBOTIC SURGERY is the combination of traditional surgical methods and robotic technology and has been around since 1987. The combination still requires a surgeon and at least 2 medical professionals but also includes a robotic system. Robotic surgery was introduced in laparoscopic surgery and in medicine to allow for more precise surgery with more benefits than traditional surgery. The da Vinci surgical system is an FDA approved robotic surgery system used worldwide. This system can be used for various different surgical procedures as treatment of certain diseases. Robotic surgery has altered the process of surgery and been an innovator of the surgical aspect of the medical world.

II. METHODS

The da Vinci surgery system is comprised of two components, a patient cart and a surgeon console.



The patient cart contains four robotic arms that are controlled by the surgeon. These robotic arms hold the surgical instruments that are used in the surgery along with a camera for the surgeon to view the area the procedure is being performed on. The surgeon console contains a 3D viewing screen to view the patient and the surgical area, a seat for the surgeon, and forceps for the surgeon to control the robotic arms and perform the surgery. The surgery is laparoscopic, meaning minimally invasive leaving smaller scars than general surgery. This surgery system can be used on various procedures ranging from general surgeries to cardiac and gynecology surgeries. The da Vinci surgery system has become more popular and is developing even more systems to keep innovating laparoscopic surgery and allow more surgeries to be performed with their robotic systems.

III. RESULTS

Throughout the da Vinci system's use in the medical field for surgery thousands of procedures have been done. These surgeries have shown some of the benefits of this robotic system. This trend of general benefits include less blood loss, a shorter hospital stay, a quicker recovery, less scarring, and less risk of infection. Although these benefits do occur they are not guaranteed by the company and the risks that come with any surgery are not eliminated. The overall trend of the da Vinci system's surgeries show improvement for patients compared to traditional surgery but this claim has not fully been proven yet[1]. The safety of this system is approved by the FDA and the system performs self-safety checks to maintain the safety but regardless of if the surgery is robotic or traditional there are still various risks within the surgery.

IV. DISCUSSION

The da Vinci robotic surgery system has showed multiple benefits as seen in the results section of this paper. Even with the results risks still come with the surgery like blood loss and complications. Overall this system has some disadvantages for the hospitals though, it is not cost effective because the cost of the machine is very high while the surgery cost does not increase or does by little causing the hospital to not gain back the money spent. Also the system has less degrees of motion, is more touch sensitive, and does not allow the surgeon to have the hands on feel. There are advantages and disadvantages for the patient also as stated. Although da Vinci system innovated surgery, there are many advantages and disadvantages that can cause an argument on whether the system belongs in the surgical field.

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