Reducing Robotic Hernia Surgery Costs

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Introduction

Robotic surgery is now a frequently used tool to assist with inguinal and ventral hernia repairs. The utilization of the DaVinci Robot for robotic assisted laparoscopic hernia repairs has been increasing over the last decades. There are multiple advantages using the DaVinci Robot system over the conventional laparoscopic tools. Disadvantages include operating room availability, maintenance and specialty staff, bulky size, lack of tactile feedback, 8 mm port sites larger than 5 mm laparoscopic port sites, and cost. The two main factors driving the cost different is the cost of the medical devices and increased operating times. The purpose of this quality improvement project is to decrease the cost of robotic inguinal and ventral hernia repairs without increasing operative difficulty or without decreasing the quality of hernia repairs.

Design and Methods

Part of the increased cost of robotic surgery is due to the setup, drapes, instrumentation, and use of the robot. Unfortunately, we cannot change the cost of the instruments or the DaVinci Robot, but we can change how we drape the robotic arms to decrease the cost of use. We propose only draping three of the robotic arms with the DaVinci robotic arm drapes instead of four drapes to decrease the cost of each case. Our proposed method includes draping the 4th robotic arm with a reusable or disposable sterile gown, followed by folding the 4th arm on itself as demonstrated in Figure 1 and 2. By folding the robotic arm on itself, it removes the arm from the sterile operating field while still maintaining sterile technique if further adjustments are needed. This method of draping will decrease the use of one robotic arm drape per case.

Design and Methods Cont.



Figure 1. 4th robotic arm draped with gown



Figure 2. 4th robotic arm folded inward

Results

At our local community hospital system, we provided a total of 405 robotic hernia repairs in a three year period (Table 1). Each DaVinci Robotic arm drape costs $52 per arm drape at our hospital. If we were to use one less robotic arm drape for each case, this would have saved $21,060 over the last 3 years or an average of $7,020 per year.

Results cont.

Year	Inguinal	Ventral	Total Cases
2019	139	2	141
2020	107	18	125
2021	105	34	139

Table 1. Number of robotic hernia repairs in three year period

Conclusion

Given the results at our community hospital, we recommend changing the draping methods of DaVinci robotic arms in the robotic assisted laparoscopic inguinal and ventral hernia repairs. This change does not affect the time or difficulty of surgery, decrease the quality of the repair, or decrease patient outcomes. This is strictly a method to decrease the cost of the robotic assisted surgery given that increased cost is one of the most frequently noted disadvantages. We believed this method could be applied to other hospitals as well and may even result in more significant savings if they perform more robotic assisted surgeries.