A Single Institution's Experience with the Learning Curve for Robotic Assisted Transabdominal Preperitoneal Inguinal Hernia Repairs

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Introduction

Within the past decade the prevalence of robot-assisted laparoscopic surgeries has vastly grown across numerous specialties. For surgeons who want to adopt and master this operative technique, a learning period is required. In this study we analyzed the learning curve of robot-assisted laparoscopic transabdominal preperitoneal (TAPP) inguinal hernia repairs.

Methods

Among three surgeons (A, B, and C) at our institution, 140 primary, unilateral, and uncomplicated robot-assisted laparoscopic TAPP inguinal hernia repairs were collated, starting from when each surgeon adopted the robotic approach. To visualize the learning curves, we calculated the moving average of each surgeon's operative times, which are shown in Figures 1, 2, and 3. In each of these analyses the operation was considered "learned" once each the operative times were consistently at or below their average operation time. Cases that involved a difficult dissection, extensive lysis of adhesions, incarcerated hernias, recurrence, bilateral repairs, and umbilical repairs were excluded.

Results

The learning periods for surgeons A, B, and C ended at **cases 19, 16, and 23**, respectively. The surgeon with the most operative experience (surgeon B) had the shortest learning period and average operation time in comparison to the other two surgeons. More specifically, the average operation times of **surgeons A, B, and C** were **67.45 minutes, 45.57 minutes, and 67.10 minutes**, respectively (Figures 1, 2, 3).

Figure 1. Learning Curve for Surgeon A

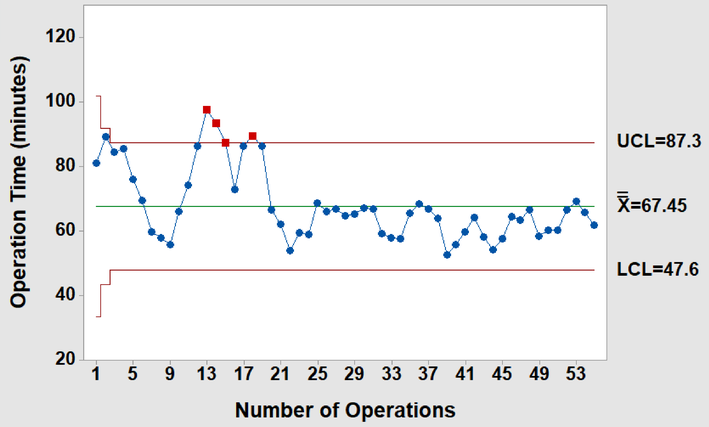


Figure 2. Learning Curve for Surgeon B

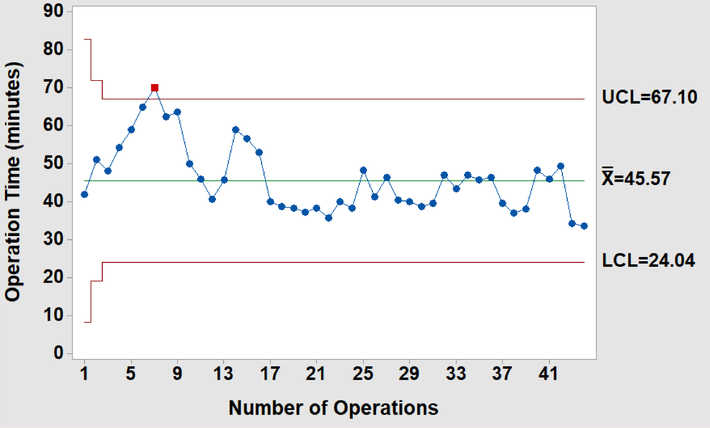
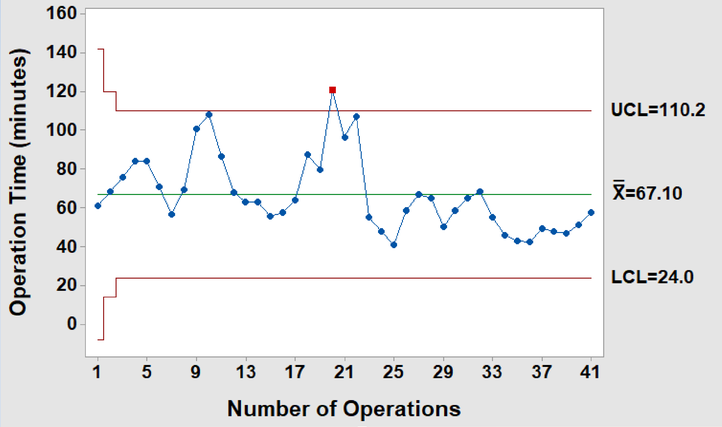


Figure 3. Learning Curve for Surgeon C



UCL= Upper Control Limit; LCL= Lower Control Limit; X = Mean

Additionally, it is critical to acknowledge that each surgeon underwent two phases of learning, which is illustrated by the two peaks in each graph. After the second peak, each surgeon's operation time started to become very consistent with being at or below their average.

Conclusion

The learning period for robot-assisted laparoscopic TAPP inguinal hernia repairs ends between a surgeon's 16th and 23rd operation at our institution. As we are already in the era of minimally invasive surgery, we believe that surgeons who have more extensive experience in laparoscopic TAPP inguinal hernia repairs may have shorter learning curves for robotic operations.