

Title: Trends in South Carolina Gynecological Resident Robotic Surgical Training

Background: Robotic surgery has been increasingly prevalent in many surgical fields since its introduction into medicine. Several studies have shown advantages of robotic surgery compared to other surgical methods, specifically reduced surgical complications and hospital length of stay, especially in obese patients. Additionally, studies have shown that less than sixty percent of graduating obstetric and gynecological residents graduate feeling prepared to perform a robotic hysterectomy, which is much lower compared to alternative surgical approaches, revealing a need for increased training and exposure to robotic training for residents to match the surgical trends in the field that are occurring. This study focuses on South Carolina specifically as a model for the Southeastern states, where obesity rates are the highest and the potential benefit from minimally invasive surgery could be the highest. The Southeast region has the highest prevalence of obesity in the United States regions. Robotic surgery can help reduce surgical complications and hospital length of stay, specifically for patients with obesity undergoing hysterectomy. Robotic surgery represents a potential option to better care for the patients in this region who are more likely to undergo hysterectomy and have obesity. Therefore, it is crucial to incorporate robotic training into resident education.

Objectives: This study examines the trend in gynecologic robotic surgical training among South Carolina OBGYN residents over the past five years.

Methods: This study is a retrospective chart review using Da Vinci Robotic Surgical Data. Da Vinci Surgical provided Da Vinci surgical data directly on South Carolina consoles. Four main data points were analyzed yearly from 2018 to 2023 at academic Obstetric and Gynecological residencies. Academic Obstetric and Gynecological residencies included were: Prisma Health Midlands, Prisma Health Upstate, and Medical University of South Carolina. The assessed data points include the number of gynecologic surgeons performing robotic cases, the total number of gynecologic cases performed, the number of robotic consoles, and the number of robotic simulators or backpacks. Year-to-year percentage changes were calculated to quantify annual fluctuations in the number of cases. Linear regression analysis was conducted to evaluate the significance and slope of the trend.

Results: The number of gynecologic surgeons operating on Da Vinci systems increased at a statistically significant rate ($p = 0.003$). Similarly, the number of gynecological cases performed increased at a statistically significant rate ($p = 0.007$), and the number of dual-console gynecologic surgeries increased at a statistically significant rate ($p = 0.004$).

Conclusion: This study shows that dual console cases have increased over the last five years. Dual console cases are likely the best proxy for measuring resident robotic experience, as both the learner and attending can be at a console during a case. We observed a similar trend in both the number of gynecological surgeons performing robotic surgery and the number of gynecological robotic cases. An increasing number of surgeons, dual-console cases, and all cases, while not directly representative of resident operating experience, represent growing opportunities for resident participation at these teaching institutions. While we did see an increase in opportunities for residents to train on the robotic platform, the number of current graduates utilizing robotic surgery did not increase. The number of graduates with active Intuitive accounts in SC varied from year to year and did not exhibit a consistent trend of increase or decrease over the five years. Confounders include residents leaving the state and the small sample size.