SimNow Curriculum on the Robotic Platform May Enhance Resident Learning: A Pilot Study

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Objectives

In the last decade, there has been a rapid growth in the use of robotic surgery, leading to an increasing need for robotic surgical education in resident training programs. However, robotic proficiency is limited by lack of a standardized curriculum, ability for repeated practice, and accessibility to real-time feedback in order to correct mistakes and develop proper technical skills, while dedicated dry lab simulation can be costly and/or limited by hospital and operating room resources. Several companies have now created virtual reality simulators in order enhance and improve technical robotic skills, while allowing for ease of access for continued practice and prevention of skill degradation. Our aim was to create a standardized virtual reality curriculum to increase trainee skills prior to console participation in an OR setting.

SimNow Face Validity by Skill Tested

1 = Strongly Disagree
2 = Disagree
3 = Neither Agree Nor Disagree
4 = Agree
5 = Strongly Agree

Legend: Overall Realism, Camera Motion, Primary Robotic Arms/Third Arm, Energy, Needle Driving, Knot Tying

Methods

Beginning in February 2020, a robotic curriculum using Da Vinci SimNow was initiated for surgical residents at our institution. The curriculum consisted of a pretest, seven required modules consisting of 2-3 exercises each, and a posttest (all requiring benchmark pass rates of 90%), An independent survey was distributed via REDCap to all residents within the departments of General Surgery, Gynecology, and Urology who had access to a SimNow simulator.

Results

Of the 14 residents who completed the survey, the majority had little console experience (0-5 hours) prior to beginning the curriculum (n=8). Most residents agreed or strongly agreed that SimNow was a realistic virtual platform when it came to camera motion (n=10), primary robotic arms and third arm motion (n=11), and use of energy (n=7). Less than half of the residents felt the same about needle driving or knot tying. Nearly 80% of residents reported they were likely to use the SimNow platform even if the curriculum was not mandated. All of the residents who both completed the survey and the curriculum (n=6) felt that SimNow improved their technical skills on the robotic console. Reported barriers to curriculum completion included limited access due to COVID-19, clinical responsibilities, and subspecialty interest that excludes robotic surgery.
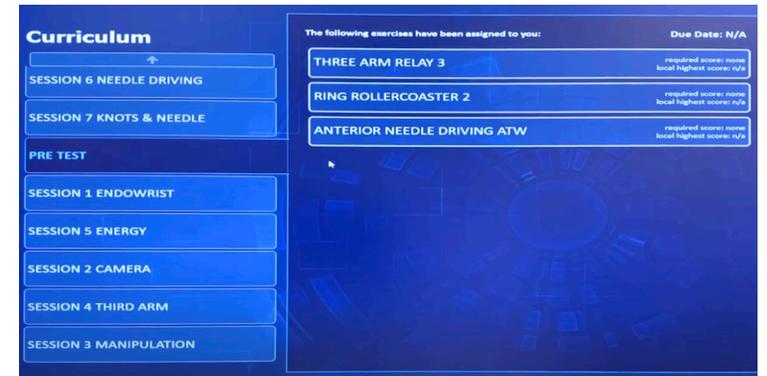
Conclusions

Mandatory robotic simulation training may enhance resident performance in the operating room while shortening learning curves. A larger pool of residents must be studied in the future and efforts should be made to validate such curriculum if further findings show promising results.

References

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