TEACHING LANDSCAPE OF ROBOTIC ANATOMIC LUNG RESECTION: AN ANALYSIS OF DUAL CONSOLE USE IN THE US

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Introduction

The dual console (DC) allows for active participation of a surgical trainee, but it is unknown how frequently this setup is utilized for teaching robotic lung surgery. We sought to characterize the current utilization of the DC teaching setup on a national level in the US.

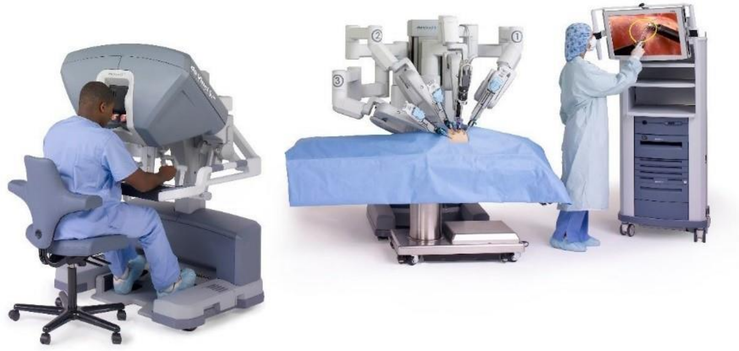


Figure 1. Da Vinci Si Surgical System

Methods

Intuitive da Vinci robotic system data for **38,552 lobectomy and 4,955 segmentectomy** procedures performed by 868 individual surgeons between 2021 and 2022 was reviewed. Surgeons preforming less than 10 cases per year were excluded. **DC utilization was categorized as never, low, medium or high for surgeons performing 0, < 50%, 50< 90% or >90% of resections with DC activation, respectively.** Surgeons and procedure factors associated with DC use was analyzed using binary logistic regression.

Results

A total of **555 surgeons (63.9%) performed anatomic lung resections** using the DC, whereas 313 (36.1%) never used the DC. Amongst DC users, 176 (31.7%) classified as low, 216 (38.9%) as medium and 163 (29.3%) as high utilizers **(Figure A).** The vast majority (74.8%) of surgeons who never use the DC performed < 50 anatomic lung resections during the study period, while a larger subset DC users performed >50 cases (low 45.5% vs. medium 44.4% vs. high 38.7%, p< 0.001). DC use varied significantly between surgeons based on experience (p=0.018). **The greatest proportion of high utilizers were surgeons with < 5 years of experience** using the robot **(Figure B)**. Overall, the **DC was used for 42.9% of anatomic lung resection**. DC use was higher for segmentectomy than for lobectomy procedures (54.9% vs. 41.4%; p< 0.001) and for Xi-system cases (43% vs. non-X, 26.1%; p< 0.001). The median console time was 18 minutes longer with the DC setup (123.9 vs. 105.1 min, p< 0.001). Other factors associated with DC use were hospital type (academic 76.0% vs. VA/DOD 87.3% vs. community 24.6%; p< 0.001) and region (Northeast 58.1%% vs. rest 37.8%). On multivariable analysis, stapler use and Academic or VA/DOD hospital setting were associated with the highest DC activation.

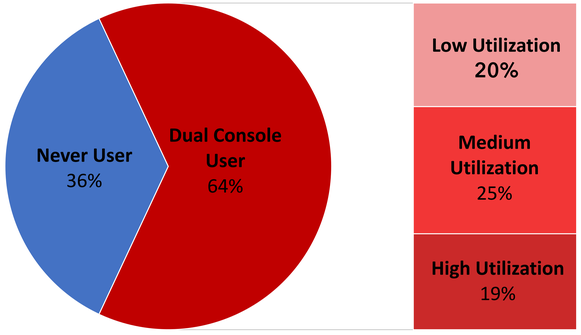


Figure A. Dual Console Utilization Amongst Robotic Surgeons performing Anatomic Lung Resections in the US between 2021-22.

Results

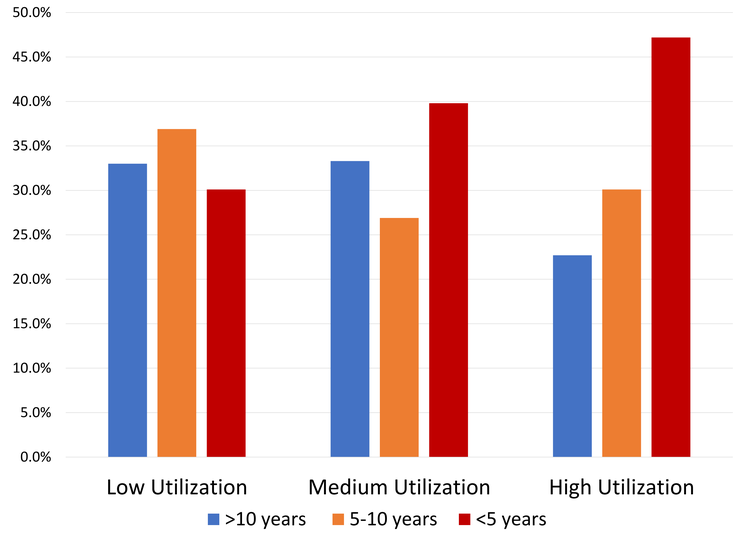


Figure B. Dual Console Utilization Amongst Robotic Surgeons performing Anatomic Lung Resections in the US between 2021-22.

Conclusions

The dual console teaching setup is being used by almost two thirds of thoracic surgeons in the US but there is significant variation across procedures and practice settings. Dual console cases took longer, and surgeons with less operative volume leveraged the dual console less frequently. Further research is needed on robotic trainee involvement and pathways to autonomy for the next generation of thoracic surgeons.