Resident Participation in Robotic Acute Care Surgery: A Quantitative Review of Appendectomy and Cholecystectomy Involvement

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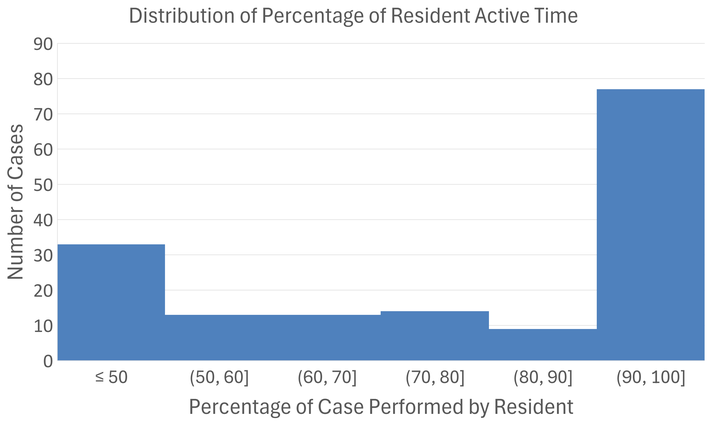
Background

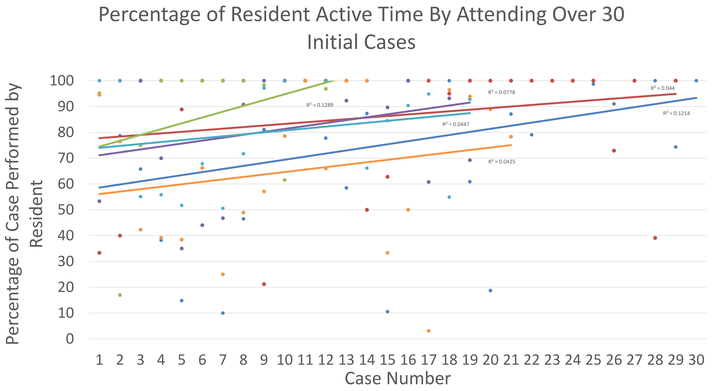
- As robotic-assisted surgery expands into the acute care setting, concern exists from both faculty and trainees regarding the degree of resident involvement in operative cases due to inexperienced faculty, perceived technical complexity, and time constraints.
- The aim of this study is to objectively assess the degree of resident involvement in robotic appendectomy and cholecystectomy cases by analyzing console times for cases performed by an acute care surgery group new to robotic surgery
- Following an onboarding period of 20 non-teaching robotics cases, all attending surgeons incorporated residents into their practice

Methods

- Retrospective review of all robotic acute care surgery cases from January 2024 to August 2025
- Appendectomy and cholecystectomy cases were extracted and evaluated
- All cases were reviewed for teaching involvement console time, and active instrument time (periods during which instruments were actively moving)
- Primary outcome was percentage of resident active time in teaching cases

Results





Discussion

- A total of 159 robotic procedures were included in the analysis
  - All cases had documented resident involvement
- The average total console time across all cases was 49.7 minutes
  - average percentage of resident active console time of 76.5%
  - median percentage of resident active console time of 88.9%.
- Over 80% of cases demonstrated active resident participation for more than 50% of the total console time
- Over 60% of cases demonstrated active resident participation for more than 70% of the total console time
  - Indicating substantial resident engagement during critical portions of the operations
- For all involved attending physicians, the percentage of resident involvement increased with increasing number of cases performed

Conclusion

- Residents are highly involved in robotic acute care surgery cases at our institution
  - After a brief period of non-teaching cases, consistently high rates of active instrument control during appendectomy and cholecystectomy procedures.
- These findings run counter to the notion that robotic surgery limits educational opportunities and instead support the utility of the platform as a valuable training tool
- The high proportion of active console time is reflective of successful integration of trainees into the robotic workflow and offers a support that operative autonomy can be preserved and quantified in the era of developing surgical technology