

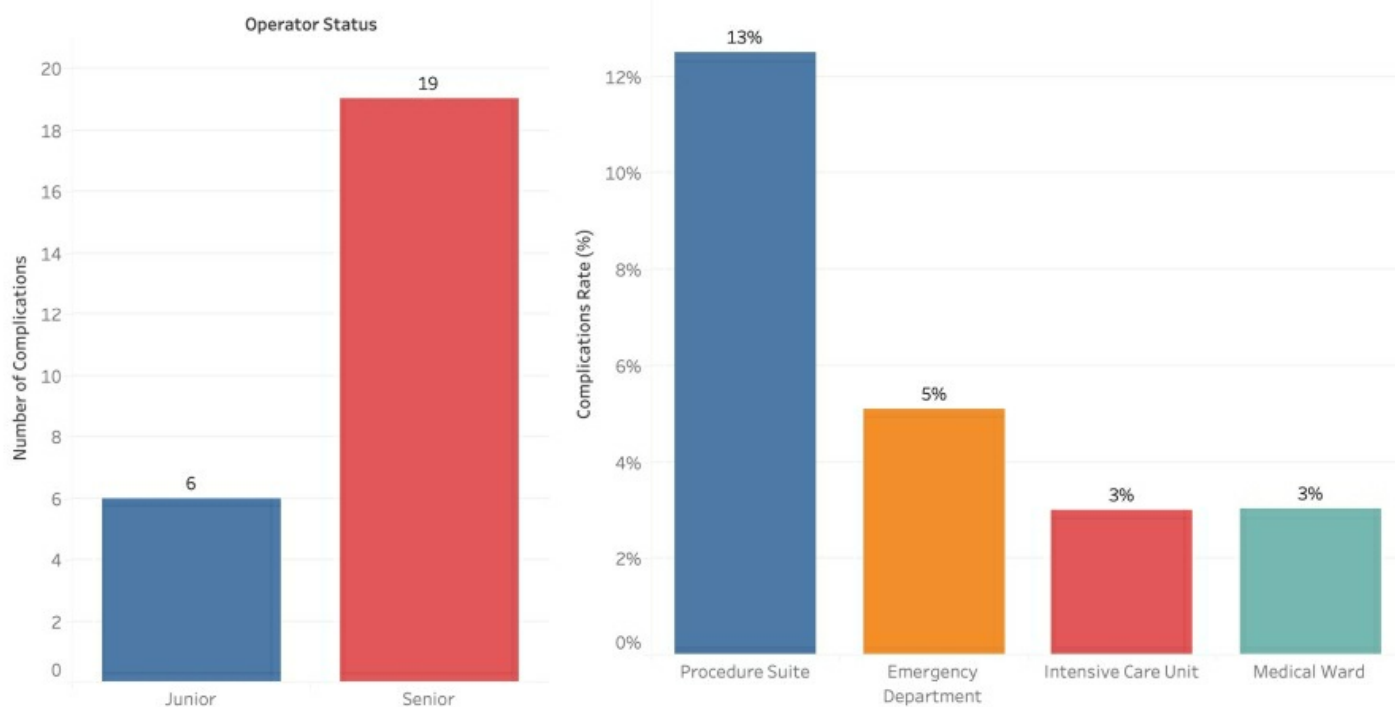
Influence of Experience and Location on Thoracentesis Complication Rates

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RATIONALE Even with excellent technique and procedural competency, complications can still occur during thoracenteses. Possible risks for complications include patient-specific characteristics (unstable hemodynamics, thrombocytopenia, coagulopathies, body habitus, small effusion size) as well as emergent situations. It is less clear, however, if operator-specific characteristics, such as operator status (i.e. year in training), or procedure location play a similar role in predicting complications when performing thoracentesis. In this study, we sought to better analyze the complication rates of thoracenteses performed by Pulmonary and Critical Care Medicine fellows, focusing specifically on year in training and procedure location. **METHODS** Thoracentesis data was retrospectively collected from three New York City hospitals from August 24, 2016 to September 22, 2021. There were a total of 685 thoracenteses included in the study. Variables that were recorded included operator status (junior = first-year fellow, senior = second or third-year fellow), procedure location (procedure suite, emergency department, intensive care unit, or medical ward), and if present, the type of complication (pneumothorax, bleeding, hemothorax, re-expansion pulmonary edema, among others). **RESULTS** In total, there were 28 complications (4.1% overall complication rate), with 19 occurring with senior fellows, 6 occurring with junior fellows, and 3 occurring with either attending physicians or residents. Of the four sites included, the procedure suite had the highest rate of complications (13%), followed by the emergency department (5%). The intensive care unit and medical wards each had a lower complication rate of 3%. This data is summarized in Figure 1. **CONCLUSIONS** It can generally be expected that the more experienced the proceduralist and the more controlled the environment, the less complications that should occur. In this study, however, the inverse was found. It is possible that senior fellows may be performing more challenging thoracenteses (smaller size of effusions, difficult patient anatomy, uncooperative patient), and with more frequency when compared to their junior counterparts. There may also be a false sense of confidence, an element of carelessness, or less direct attending supervision that may be contributing to this increased incidence of complications. Leaders in pulmonary and critical care fellowship programs should use this study as a stepping stone for further analyses to better understand the trends behind thoracentesis complication rates in order to try and minimize these complications and improve patient outcomes.

Number of thoracentesis complications by operator status Thoracentesis complication rates by procedure location



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