

Use of a Secure Web-Based Data Management Platform to Track Resident Operative Performance and Program Educational Quality Over Time

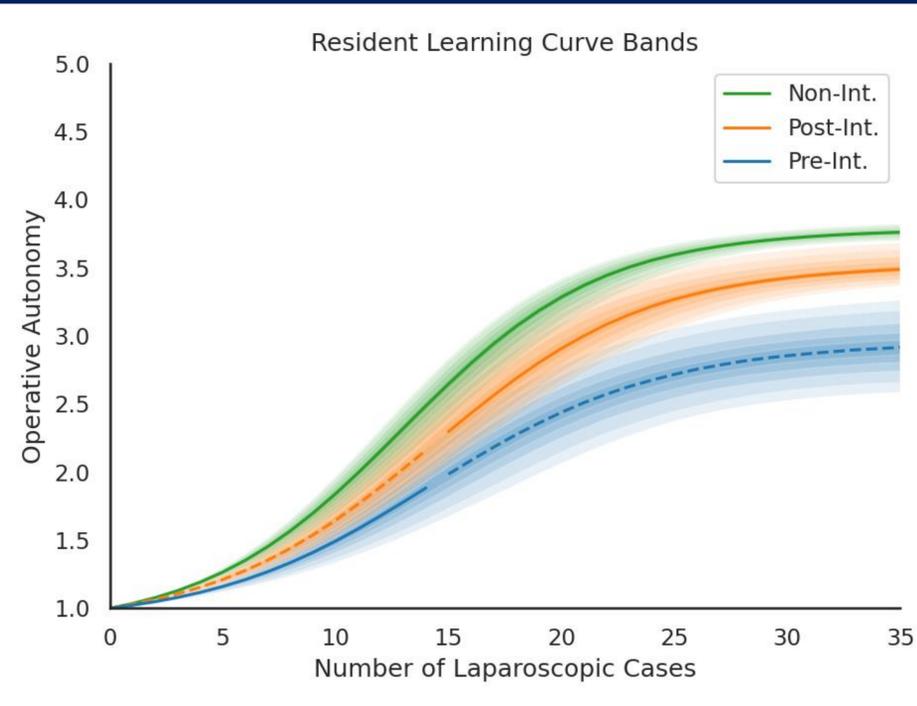
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Objectives:

In surgery residency programs, ACGME mandated performance assessment can include assessment in the operating room to demonstrate that necessary quality and autonomy goals are achieved by the conclusion of training. For the past three years, our institution has used The Ottawa Surgical Competency Operating Room Evaluation (O-SCORE) instrument to assess and track operative skills. Evaluation is accomplished in near real-time using a secure web-based platform for data management and analytics (Firefly). Simultaneous to access of the platform's case logging function, the O-SCORE instrument is delivered to faculty members for rapid completion, facilitating quality and timeliness of feedback. We sought to demonstrate the platform's utility in detecting operative performance changes over time in response to focused educational interventions based on stored case log and O-SCORE data.

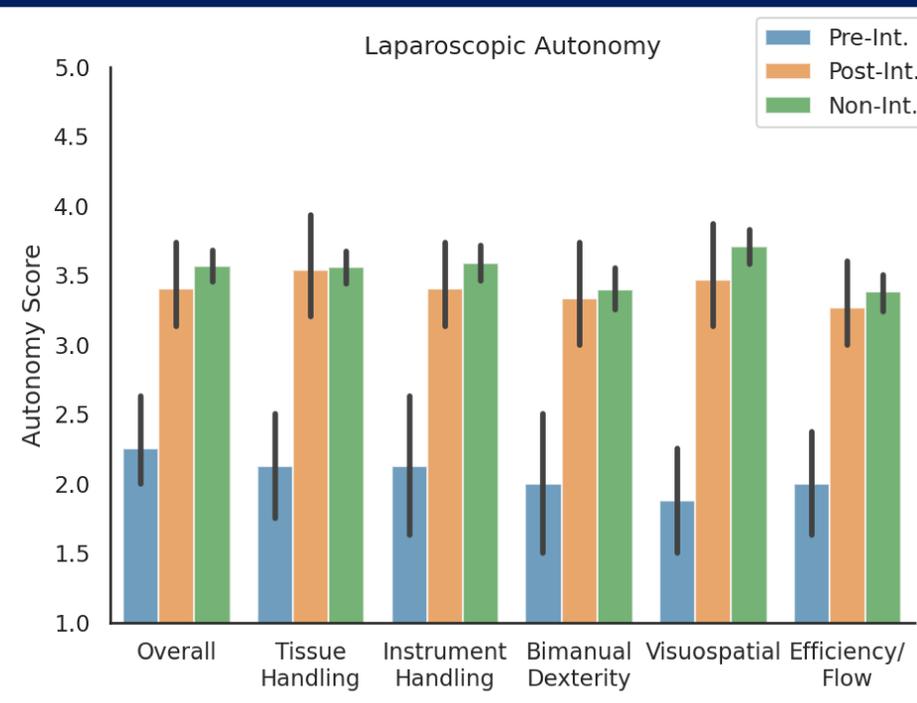
Methods:

Resident performance for the most frequently performed laparoscopic procedures (cholecystectomy, appendectomy, inguinal hernia repair, ventral hernia repair) were examined over three successive academic years (2016-2019). During this time, 4 of 36 residents received program-assigned supplemental simulation training to improve laparoscopic skills. O-SCORE data for these residents were extracted from peer data, which were used for comparisons. Assigned training consisted of a range of videoscopic and virtual reality skills drills with performance objectives. O-SCORE response items were converted to integers and overall autonomy scores were compared before and after educational interventions (Student's t-tests). These scores were also compared to aggregate scores in the non-intervention group. Individual learning curves were used to characterize patterns of improvement over time.



Results:

During the period of review, 3325 resident cases were identified meeting the case type criteria. As expected, overall autonomy increased with the number of cases performed. The four residents who had been assigned supplemental training (6-18 months) had pre-intervention score averages that were lower than that of the non-intervention group (2.25 ± 0.43 vs 3.57 ± 1.02 ; $p < 0.0001$). During the respective intervention periods, all four residents improved autonomy scores (increase to 3.40 ± 0.61 ; $p < 0.0001$). Similar improvements were observed for tissue handling, instrument handling, bimanual dexterity, visuospatial skill, and operative efficiency component skills. Post-intervention scores were not significantly different compared to scores for the non-intervention group.



Conclusion:

The Firefly platform proved to be very effective in tracking responses to supplemental training deemed important to close defined skills gaps in laparoscopic surgery. This could be seen both in individual and in aggregated data. We were gratified that at the conclusion of the supplemental training, O-SCORE results for the intervention group were not different than those seen in the non-intervention group.