Empirical Validation of the Operative Entrustability Assessment Using Resident Performance in Autologous Breast Reconstruction and Hand Surgery

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BACKGROUND

Evaluating resident skill acquisition is challenging, particularly for surgical specialties. Changes in documentation mandated by the ACGME's Next Accreditation System shifted the burden of documentation to individual training programs.[1] In 2013, we developed the Operative Entrustability Assessment (OEA) to facilitate compliance with ACGME-mandated changes and to document resident operative performance at point-of-care. This web-based tool provides real-time, transparent feedback to residents on operative performance. The output from an OEA evaluation includes a Self-Assessment Score and an Evaluator Score, both based on a 5-point Likert scale ranging from 1 (novice) to 5 (expert) using behavioral anchors.[2] As a global rating scale, the OEA may have higher response rates than conventional multi-item operative performance rating tools.[3] However, the validity of the OEA to assess surgical trainee operative competence has yet to be established. This study evaluated the construct validity of the OEA as reflected by association with operative time in autologous breast reconstruction and hand surgery.

METHODS

We extracted operative time data on selected autologous breast reconstruction (CPT codes: 19364, 19361, 19367, 19368, and 19369) and hand surgery procedures (CPT codes: 29848, 64721, 64718, 26055, and 26160) performed since implementation of the OEA. We examined associations between Self-Assessment and Evaluator Scores from the OEA and operative time using simple and multiple linear regression, adjusting for confounding variables selected according to clinical relevance. We then compared the predictive ability of OEA scores for operative time with that of postgraduate year (PGY) using multiple linear regression models. The Johns Hopkins Institutional Review Board acknowledged this study as exempt from review.

RESULTS

From September 2013 to July 2015, OEAs were completed for 2,866 cases, of which 278 corresponded to our CPT codes of interest. These included 93 autologous breast reconstructions, 90 endoscopic and 6 open carpal tunnel releases, 51 cubital tunnel releases, and 38 trigger finger releases. After adjusting for confounding, increasing Self-Assessment Score was associated with shorter operative time in autologous breast reconstructions (36.9 minutes shorter per unit increase in OEA score; $P = 0.008$) and hand surgery (5.5 minutes shorter per unit increase in OEA score; $P = 0.036$). Adjusted Evaluator Score was associated with shorter operative time in autologous breast reconstruction (29.6 minutes shorter per unit increase in OEA score; $P = 0.018$) but not in hand surgery (2.8 minutes shorter per unit increase in OEA score; $P = 0.377$). Adjusted analysis showed no significant association between PGY and operative time in autologous breast reconstruction ($P = 0.270$) or hand surgery ($P = 0.812$).

CONCLUSIONS

The OEA demonstrates construct validity, as increasing OEA score is associated with shorter operative time in autologous breast reconstruction and hand surgery. Furthermore, OEA scores are a better predictor of operative time than PGY. These data demonstrate that the score provided by this quick assessment tool is an accurate measure of performance. If similar validity can be demonstrated across multiple institutions and other performance measures, it may be possible in the future for performance for

Disclosure: *The authors have no financial interest to declare in relation to the content of this article. The Article Processing Charge for this abstract was paid for by the American Council of Academic Plastic Surgeons.*

ACAPS: *PRS Global Open* proudly publishes the abstracts and proceedings from the American Council of Academic Plastic Surgeons Winter Retreat that was held on February 6–7, 2016, in Chicago, Ill.

core procedures to be benchmarked against a set score to demonstrate competence before graduation.

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