Surgical experience and the practice of pancreatoduodenectomy

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Background. Experienced surgeons demonstrate improved pancreatoduodenectomy outcomes, but little is known about what distinguishes their practice. Furthermore, the concept of experience has been variably interpreted in the surgical literature. We investigated how 4 interpretations of experience influence pancreatoduodenectomy management decisions.

Methods. A survey assessing pancreatoduodenectomy practice patterns was distributed by 6 surgical societies. Regression analysis identified behaviors associated with 4 forms of experience: years in practice, surpassing the learning curve (≥ 50 pancreatoduodenectomies), high annual volume (≥ 25 pancreatoduodenectomy/year), and high career volume (≥ 200 pancreatoduodenectomy).

Results. In the study, 861 surgeons responded, representing 6 continents. Senior surgeons were more likely to use pancreatogastrostomy, dunking/invagination, and external stents (all P < .05). Sixty-five percent of respondents surpassed the learning curve, and these surgeons were more likely to use a 2-layer pancreatic enteric anastomosis, stents, and the Fistula Risk Score (all P < .05). High annual volume surgeons were more likely to use the same reconstruction on every case and autologous tissue patches but less likely to use the Roux limb technique and multiple drains (all P < .05). High career volume surgeons mirrored the behaviors of those surpassing the learning curve except for using the Fistula Risk Score.

Conclusion. Experience encompasses several components, each of which seems to influence decision making in different ways. (Surgery 2017; ■ ■ ■.)
there also exist compelling data indicating that mortality, survival, and overall life expectancy are improved at centers performing a high annual volume of PD. Within high volume centers, a strong volume-outcome relationship at the level of individual surgeons has been repeatedly demonstrated. Furthermore, increased surgeon career PD volume has been associated with improved outcomes, and a learning curve for PD has been described in multiple studies. In the present study, we sought to identify how each of these concepts of experience—total years in practice, attainment of the learning curve, annual practice productivity, or total career procedure volume—influence operative techniques and management decisions for PD.

METHODS

This study was approved by the Institutional Review Board at the University of Pennsylvania. A Web-based survey (Supplementary File 1) was designed and administered to surgeons who perform pancreatic operation through 22 international gastrointestinal surgical societies. The survey was initially targeted globally through the International Hepato-Pancreato-Biliary Association, the Society for Surgery of the Alimentary Tract, and the Pancreas Club. Subsequently, regional support was engendered from the Americas Hepato-Pancreato-Biliary Association, the Asian-Pacific Hepato-Pancreato-Biliary Association, the European/African/Middle Eastern Hepato-Pancreato-Biliary Association, and their corresponding national chapters. To facilitate its global catchment, the survey was made available in 8 different languages: English, French, German, Italian, Japanese, Mandarin Chinese, Portuguese, and Spanish. Using membership estimates from the participating surgical societies, it is estimated that the survey was distributed to approximately 1,500 to 2,000 surgeons. This survey’s responses have previously been used to associate practice patterns for PD with regional variation across the globe.

Descriptive statistics are presented as frequencies for categorical variables, and as the mean ± standard deviation (SD) and median [interquartile range (IQR)] for continuous variables. Pearson χ² test or Fisher exact test, and independent Student t tests or analysis of variance testing were used to analyze categorical and continuous variables, respectively. Nonparametric comparisons of continuous variables were assessed by Wilcoxon rank-sum tests or Kruskal-Wallis one-way analysis of variance. In univariable testing, specific practice patterns were associated with the following surgeon experience-related parameters: years of experience (≤10 years, 11–20 years, >20 years), surpassing the PD learning curve (≥50 PDs), high annual volume (upper quartile, ≥25 PDs/year), and high career volume (upper quartile, ≥200 career PDs). Next, a multivariable, stepwise logistic regression analysis (P ≤ .05 for entry; P > .10 for exit) was used to identify practice behaviors that are associated with surpassing the learning curve for PD. A second logistic regression model was used to identify behaviors associated with high annual PD volume. All tests were 2-sided. Statistical computations were performed utilizing SPSS version 23.0 (IBM Corp., Armonk, NY) statistical software.

RESULTS

Demographics and various forms of operative experience. Surveys were completed by 861 practicing surgeons, representing 6 continents and 8
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