



Western Surgical Association 2020 Annual Meeting

Monday, November 9, 2020
4:00pm – 6:15pm Pacific Time
– Virtual Meeting --

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16. IS THE IMPROVED SURVIVAL IN EARLY-STAGE PANCREATIC CANCER WORTH THE EXTRA COST AT HIGH-VOLUME CENTERS?

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Background: An important factor associated with improved survival for early-stage pancreatic cancer is the receipt of surgical care at high- versus low-volume surgery centers. When considering the improved survival at high-volume centers, it is also important to understand the additional healthcare costs compared to low-volume centers. The cost-effectiveness analysis of high- versus low-volume centers performing pancreatic cancer surgery has not yet been studied. We hypothesized that the improved survival at high-volume centers was economically attractive (i.e., the value of the extra survival outweighs the extra costs).

Methods: This retrospective cohort study used data from the California Cancer Registry linked to the Office of Statewide Health Planning and Development database from January 1, 2004 through December 31, 2012. The dataset included patients presenting with stages I to II pancreatic cancer and who underwent resection across 157 licensed hospitals in California. Multivariable linear regression analyses estimated overall survival and 30-day costs for patients receiving care at high versus low-volume pancreatic surgery centers, while controlling for demographic and clinicopathologic differences. The incremental cost-effectiveness ratio (ICER) was then estimated from the results. Lastly, net benefit regression was used to produce estimates of the incremental net benefit and characterize the statistical uncertainty in the cost-effectiveness analysis.

Results: Of 2,786 patients, 1,297 (46.5%) were treated at high-volume centers and 1,489 (53.5%) at low-volume centers. Among 157 hospitals, 73 (46.6%) performed 20 or more pancreatic cancer surgeries per year and were considered high-volume, and 84 (53.4%) were considered low-volume. The mean 30-day costs of pancreatic cancer surgery at high- and low-volume centers were \$62,561 and \$59,525, respectively. The mean overall survival times at high- and low-volume centers were 2.49 and 2.15 years, respectively. When adjusting for potential confounders, multivariable regression analyses showed a 0.38-year (4.62 months) survival benefit (95% CI 0.19-0.58, $p < 0.0001$) and a \$6,176 extra cost associated with receiving surgery at a high-volume center (95% CI \$1206-\$11,146, $p < 0.0001$). The ICER was \$16,048 for an additional year of survival (95% CI \$785-45,502). This result and the 95% CI were confirmed using an incremental net benefit versus willingness to pay plot including both the incremental net benefit estimate and the upper and lower 95% CIs.



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Conclusion: Although healthcare costs were greater at high-volume centers (\$6,176 more), patients undergoing pancreatic surgery at high-volume centers experienced a greater survival benefit (4.62 additional months). Consequently, the ICER was \$16,048 per additional year, implying a fairly minimal additional cost expended at high-volume centers treating pancreatic cancer for improved survival. This is economically attractive by many oncology standards; for example, screening mammography has an ICER of approximately \$75,000. Understanding the value of additional clinical benefits can inform population health decisions made by both clinicians and policymakers about cancer care including regionalization of highly specialized surgical procedures to achieve optimal outcomes.