Long-Term Survival Is Superior After Resection for Cancer in High-Volume Centers

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Background: A number of studies have demonstrated that surgical resection at high-volume centers is associated with improved short-term perioperative outcome. Whether long-term results after resection of visceral malignancies are superior at high-volume centers is largely unknown.

Methods: All patients who were subjected to pancreatectomy or hepatectomy for cancer in the years 1995 and 1996 were identified in the National Medicare database. Data extracted and examined include demographics, comorbidities, and long-term survival. All survival was confirmed through 2001, providing actual 5-year survival. Long-term survival was examined as related to hospital volume.

Results: In the study period, there were 2592 pancreatectomies and 3734 hepatectomies performed at 1101 and 1284 institutions, respectively. High-volume center was defined as >25 cases/y. By this definition, there were 10 high-volume centers for pancreatectomy and 12 centers for hepatectomy performing 11% (n = 291) of the pancreatectomies and 12% (n = 474) of the hepatectomies in this study period. Comparison by log-rank demonstrated superior survival for patients resected at high-volume centers (pancreatectomy: P = 0.001; hepatectomy: P = 0.02). This was confirmed by multivariate analysis. All analyses included an adjustment for within-center correlation.

Conclusion: Superior long-term survival is associated with complex visceral resections for cancer at high-volume centers.

The last 3 decades have seen remarkable advances in hepatic and pancreatic surgery. Major liver and pancreatic operations are no longer unusual procedures, but are now commonly performed at many hospitals worldwide. These procedures have proven to be effective therapy for many benign and malignant diseases, and have prolonged and improved the lives of many patients. These procedures that once were thought to carry prohibitive morbidity and mortality are now accepted as safe and effective therapy, and the only curative therapy for malignancies involving the liver or pancreas.

In recent years, data is also accumulating suggesting that the perioperative results of pancreaticoduodenectomy or hepatic resections are related to the volume of such procedures performed at a particular hospital. These are part of a growing literature suggesting that certain operative procedures should be regionalized, with the goal of concentrating such procedures at high-volume centers to improve perioperative outcome. In relation to major procedures for cancer, it is largely unknown whether long-term survival after these operations may be altered by such regionalization. The aim of the current study is to examine the relationship between hospital volume with long-term survival in patients with cancer subjected to pancreatectomy or hepatectomy using a national database.

METHODS

To evaluate the effect of hospital volume on long-term survival of patients subjected to complex surgical procedures for cancer, all patients who were subjected to pancreatectomy or hepatectomy in the years 1995 and 1996 were identified in the National Medicare database. Only pancreatic resections for adenocarcinomas and liver resections for cancer were included in this study. In the study period, there were 2592 pancreatectomies and 3734 hepatectomies performed at 1101 and 1284 institutions, respectively. In this period, 1062 liver resections (28%) were performed for primary malignancies of the liver and biliary tree, whereas 2672 resections (72%) were performed for metastatic disease to the liver.

Definition of High-Volume Center

High-volume center was defined as >25 cases. The cases taken into account for consideration of institutional volume included surgery for benign disease, although the data analyzed for outcome in this paper included only cancers. By this definition, there were 10 high-volume centers for pancreatectomy and 12 centers for hepatectomy performing 11% (n = 291) of the pancreatectomies and 12% (n = 474) of the hepatectomies in this study period.

Definition of Comorbidities

Data extracted and examined include demographics, comorbidities, and long-term survival. In the analysis for comorbidities, the following International Classification of