4. COMPLICATIONS AND HEALTH RELATED QUALITY OF LIFE AFTER LIVING LIVER DONATION: A SINGLE-CENTER ANALYSIS OF 171 DONORS
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Invited Discussant: William Chapman MD, St. Louis, MO

Background: Living liver donation is one of the most selfless and humane acts a person can perform. Several reports from the Far East, and one multicenter report from the United States, have described complications after living donor hepatectomy; however, few single-center reports have been published specifically evaluating quality of life post donation. In this large single-center study, our primary aim was to assess the complications and quality of life postdonation, in order to help prospective donors, transplant candidates, and their families make an informed decision.

Methods: We studied complications and long-term quality of life in 171 living liver donors. At our center, complications are recorded in a prospectively maintained database. To evaluate liver specific donor morbidity, we used a internally designed donor-specific survey (DSS) and for generic health, the 36-item Short Form Health Survey (SF-36). To test potential predictors of a Clavien Grade 2 complication or of a higher complication rate, we used multivariate logistic regression models.

Results: Of our 171 living donors (86 men, 85 women), 136 underwent a right-lobe hepatectomy without middle hepatic vein; 14 Right lobe with middle hepatic vein, 3 left lobe and 18 left lateral segmentectomy. Their mean age was 37 ± 9.5 years; mean body mass index, 25.9 ± 3.7 kg/m2. The median operating time was 7.8 hours; mean blood loss, 443 ± 222 cc. Only 3 (1%) of the donors required an intraoperative blood transfusion. The median length of hospital stay was 7 days. The median follow-up time was 4.8 years. The postoperative complication rate was 43.8% (Clavien classification grade 1, n = 27; grade 2, n = 30; grade 3, n = 8; and grade 4 or 5, n = 0). Complications included bile leaks, n = 5; bleeding requiring a blood transfusion, n = 3; ileus, n = 24; pleural effusion, n = 9; urinary tract infection, n = 4; arrhythmia, n = 3; respiratory failure, n = 1; pancreatitis, n = 1; pneumonia, n = 1; and renal failure, n = 1. We noted a trend toward a lower complication rate in left-lobe (vs. right-lobe) hepatectomy donors. Our multivariate logistic model showed that the era from 2009 on was associated with an increased incidence of Clavien grade 2 complications. The DSS was completed by 110 donors; the SF-36, by 65 donors. Incisional discomfort was the most common postdonation symptom (34%). On the DSS, 91.6% of donors scored their experience on a scale of 1 to 10 (with 10 being the most positive) as higher than 8. Per the SF-36, quality of life in donors was greater than in the normal standard population (P ≤ 0.05). There was no association with lower QoL scores and early post operative complications (P=>0.05).

Conclusion: In our large single-center study, our early complication rates were comparable to those of multicenter series. Majority of complications (87%)were Clavien grade 1 and 2. Over a long follow-up period (4.8 years), our donors continue to have improved quality of life, as compared with the general population.
Background: It is recommended that the revised Tokyo Guidelines (TG13) be used to diagnose, grade severity, and guide management of acute cholecystitis (AC). The aim of our study was to verify the diagnostic criteria, severity assessment, and management-protocols based on TG13. We hypothesized that TG13 diagnostic criteria lacks sensitivity for the diagnosis of AC and patients with moderate to severe AC can be safely managed with early cholecystectomy.

Methods: Our prospectively maintained Emergency General Surgery registry was utilized to review patients who had surgical consultation for RUQ pain (2013-2015). Physician notes, laboratory findings and final pathology reports were extracted from the charts. Diagnosis and severity were graded based on TG13 and compared with pathology report. Our institutional management protocols were compared to TG13. Sensitivity of TG13 in diagnosing AC was calculated.

Results: A total of 952 patients were analyzed, of which 857 had biliary diseases. Mean age was 42±18y and 67% were female. 779 had cholecystectomy, 15 underwent cholecystostomy-tube placement, and 63 patients refused surgery. Only 4% were febrile on presentation and 51% of patients had leukocytosis. The most sensitive finding for AC was RUQ tenderness (92%), followed by murphy’s sign (72%). 45% patients did not have any signs of AC on ultrasonography. TG13 criteria had a sensitivity of 53% for diagnosing AC (definitive: 27%, suspected 26%, undiagnosed: 47%) when compared with the final pathology report. TG13 grading resulted in, 414 grade-I, 400 grade-II, and 43 grade-III patients. 92.5% of patients with grade-I underwent early cholecystectomy, as recommended by the TG13 guidelines. For grade-II and grade-III the TG13 recommends conservative management followed by delayed/elective cholecystectomy. However, 89.3% grade-II and even 50% of grade-III safely underwent cholecystectomy at our institute. There was no difference between the complications (3.7% vs. 4.7%, p=0.81), return to the OR (0.6% vs. 0.7%, p=0.95) and mortality (0.3% vs. 0%, p=0.96) between grade-I and grade-II who underwent early cholecystectomy.

Conclusion: The TG13 diagnostic criterion lacks sensitivity and missed more than half of the patients with AC, as many patients lack clinical signs (fever and leukocytosis). The TG13 recommendations for conservative management and delayed cholecystectomy in grades II and III disease are not warranted and our data suggests that the vast majority can be managed with early cholecystectomy. Revision of the Tokyo guidelines or constructing a better algorithm to improve clinical utility is necessary.
6. WHAT ARE THE MOST SIGNIFICANT COST AND VALUE DRIVERS FOR PANCREATIC RESECTION IN AN INTEGRATED HEALTHCARE SYSTEM?

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Background: Pancreatectomy is associated with high morbidity and expense. Several studies have recommended that pancreatectomy should be performed in high volume centers. As the third largest not-for-profit healthcare system in the United States, we have begun an initiative to improve value based care within the electronically integrated hospitals. The goal of this study is to evaluate specific cost and value drivers comparing low volume pancreas surgeons(<10 pancreaticoduodenectomies (PDs)/year) with high volume surgeons (≥10 PDs/year) and its influence on outcomes.

Methods: The direct costs of surgical equipment, medications, anesthesia, ICU admission, room and board, laboratory tests, blood transfusion, and imaging studies were calculated in all patients undergoing distal pancreatectomy (DP) and pancreaticoduodenectomy (PD) between January 2014 and December 2016. This was then compared with average length of stay (ALOS), 30-day mortality and readmission rate stratified by surgeon volume. This data is presented bimonthly at a hepatobiliary (HPB) clinical performance group via a videoconference.

Results: There were 205 DPs and 431 PDs performed in 14 hospitals spanning five states. Distal pancreatectomies costs were less for high volume surgeons, $16,040 compared to $20,277 (P=0.04). Specific increased costs for low volume surgeons included imaging ($311 vs $141, P=0.006); laboratory exams ($1,369 vs $906, P=0.01); and room and board ($5,789 vs $3,654, P=0.03). ALOS of 7.0 days vs 13.7 days (p=0.005) was less for high volume surgeons for DP. The average overall direct cost of $24,539 per PD was not significantly different for high volume surgeons compared to $26,829 for low volume surgeons (P=0.27). ALOS was lower for high versus low volume surgeons performing PD, 11.6 days vs 14.5 days (P=0.04). Operating time was increased with high volume surgeons for both DP (P<0.001) and PD (P<0.001). There was no difference in readmission or 30-day mortality for either DP or PD when stratified by surgeon volume.

Conclusion: There was a significant cost reduction for DP but not PD when the threshold of 10 PDs was used as a marker for a high volume surgeon, suggesting that the definition of a high and low volume surgeon may need to be defined differently for distal pancreatectomy and pancreaticoduodenectomy. This is the first study to examine the detailed costs and value drivers for individual surgeons performing pancreatic surgery. The sharing of detailed financial data with HPB surgeons on a regular basis provides the opportunity to evaluate practice patterns and thereby reduce direct costs. Further studies are needed to determine whether high volume pancreas cancer centers are more cost effective than individual surgeons performing PD.