The experience of the minimally invasive (MI) fellowship−trained (FT) hepatic−pancreatic and biliary (HPB) surgeon: could the outcome of MI pancreatoduodenectomy for peri−ampullary tumors be better

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Introduction

IUnlike the pioneers, MI-HPB fellowship-trained (FT) surgeons had the benefit of learning from the trial and errors of the experts themselves. As opposed to their predecessors, this new generation of HPB surgeons may have a different approach to surgery of the pancreas. As opposed to their predecessors, they may feel equally or potentially more comfortable with MI approaches to the pancreas. As a result, we herein analyze and compare the overall results of both MI and OPD performed by a FT surgeon. The primary endpoint was to assess postoperative mortality and morbidity. Secondary endpoints included operative parameters, length of hospital stay, and survival analysis. Furthermore, we address any practice pattern changes for a HPB surgeon straight out of training with no previous experience of independent surgery.

Methods

We retrospectively reviewed a MI-HPB-FT surgeon's 10-year experience with PD. A sub-analysis of malignant PT was also done (MIPD-PT vs. OPD-PT). The primary endpoint was to assess postoperative mortality and morbidity. Secondary endpoints included operative parameters, length of hospital stay, and survival analysis. Moreover, we addressed practice pattern changes for a surgeon straight out of training with no previous experience of independent surgery. PTs were defined as pancreatic ductal cancer (PDCs), distal cholangiocarcinomas (DCCs), ampullary cancers (ACs) and duodenal cancers (DCs). Patients with Klatskin's tumors, pancreatic endocrine cancers or with distant metastatic disease were excluded. All procedures were done with the assistance of a robotically controlled laparoscope holder. However, patients with large tumors (> 5.5 cm) or deemed preoperatively to have a high likelihood of requiring vascular reconstruction were not approached minimally invasively. Previous upper abdominal surgery, obesity, and history of pancreatitis were not considered contraindications to the MI approach. However, patients who requested an open approach or with cancer who underwent double bypass followed by successful neoadjuvant treatments were considered for open resection.

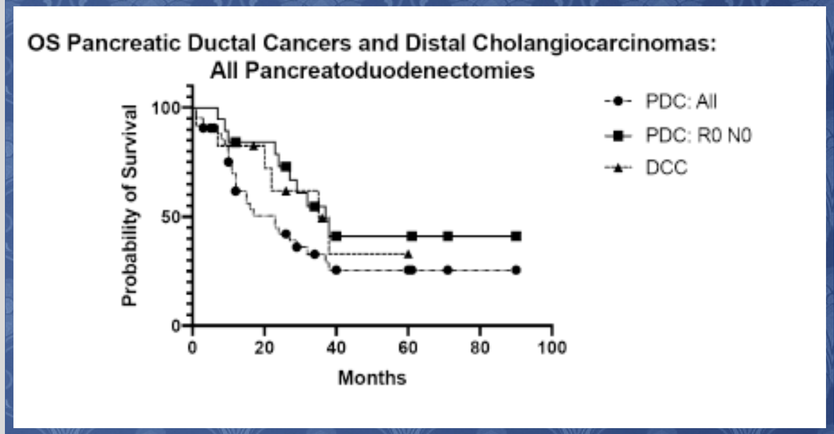
Results

From December 2007-February 2018, one MI-HPB-FT performed a total of 100 PDs, including 57 MIPDs and 43 open PDs (OPDs). In both groups, over 70% of PDs were undertaken for malignancy. Eight patients with borderline resectable pancreatic ductal cancer (PDC) were in the OPD-PT group (as compared to only 2 in the MIPD-PT group) ($p = 0.07$). Estimated mean blood loss and length of stay were less in the MIPD-PT group (345 mL and 12 days) as compared to the OPD-PT group (971 mL and 16 days), $p < 0.001$ and $p = 0.007$, respectively. However, the mean operative time was longer for the MIPD-PT (456 min) as compared to the OPD-PT (371 min), $p < 0.001$. Thirty and 90-day mortality was 2.6%/5.1% after MIPD-PT compared to 0%/3.2% after OPD-PT, respectively, $p = 1$. Overall 30-/90-day morbidity rates were similar at 41.0%/43.6% after MIPD-PT and 35.5%/41.9% after OPD-PT, respectively, $p = 0.8$ and 1. Complete resection (R0) rates were not statistically different, 97.4% after MIPD-PT compared to 87.0% after OPD-PT ($p = 0.2$). After MIPD and OPD for malignant PT, overall 1, 3 and 5-year survival rates, and median survival were 82.5%, 59.6% and 46.3% and 38 months as compared to 52.5%, 15.7% and 10.5% and 13 months, respectively ($p = 0.01$). In the MIDP-PT group, recurrence free survival (RFS) at 1, 3 and 5 years and median RFS were 69.1%, 41.9% and 33.5% and 26 months as compared to 50.4%, 6.3% and 6.3% and 13 months, in the OPD-PT group, respectively ($p = 0.03$).

Conclusion

FT HPB Surgeons who begin their practice with the ability to do both MI and OPD may preferentially approach resectable peri-ampullary tumors minimally invasively. This may result in decreased blood loss decreased length of hospital stays. Despite longer operative time, the improved visualization of MI techniques may enable superior R0 rates when compared to historical open controls. Moreover, combined

Figure 1



Legend

Figure 1:Overall survival (OS) of all pancreatoduodenectomies (minimally invasive + open), PDC pancreatic ductal cancers, R0 N0 negative margins and lymph node negative, DCC distal cholangiocarcinoma

Fig. 2 Overall survival (OS) for PT = peri-ampullary tumors (pancreatic ductal cancer, distal cholangiocarcinoma, ampullary cancer and duodenal cancer): MIPD minimally invasive pancreatoduodenectomy, OPD open pancreatoduodenectomy

Fig. 3 Recurrence Free Survival (OS) for PT = peri-ampullary tumors (pancreatic ductal cancer, distal cholangiocarcinoma, ampullary cancer and duodenal cancer): MIPD minimally invasive pancreatoduodenectomy, OPD open pancreatoduodenectomy

Figure 2

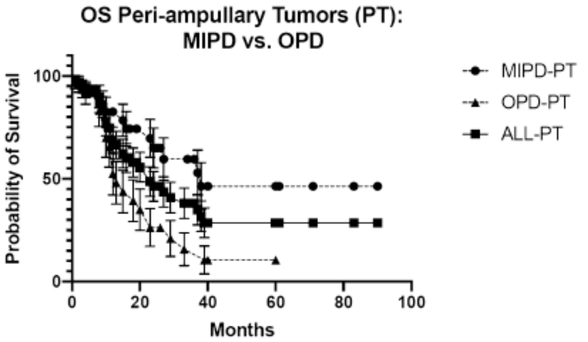


Figure 3

