EARLY VS ELECTIVE PANCREATICODUODENECTOMY
IN THE MANAGEMENT OF PANCREATIC CANCER
AZHAR SHABBIR¹, JAMES SCHNEIDER¹, MOMIN MALIK³, BASSAM ALKARI³, IRFAN AHMED³

ABSTRACT

OBJECTIVE: To compare morbidity and mortality of pancreatico-duodenectomy in patients undergoing early surgery versus on the routine elective waiting lists.

STUDY DESIGN: Retrospective interventional study.

PLACE AND DURATION: The study was conducted in Department of Hepato-pancreatico-biliary Surgery, Aberdeen Royal Infirmary, UK from 1st June 2009 to 31st December 2011.

METHODOLOGY: All patients who underwent a pancreatic oduodenectomy were included. Data was collected to identify patients who had undergone pancreaticoduodenectomy within 14 days of decision to operate and those afterwards. Further data collected included age at surgery, pathology and node involvement, serum bilirubin prior to surgery, peri-operative blood loss, duration of surgery, post-operative re-operations, drainage of collections and minor procedures, recurrence rate within 1 year and 18 month and % survival with after 18 months of the surgery for patients with malignant disease.

RESULTS: The emergency population comprised of 47% patients and the elective population included 53% patients. The average ages at surgery were 65.0 years versus 70.0 years old respectively. There were 3 re-operations in the emergency population and 2 re-operations in the elective population. 50.0% patients in the emergency population were lymph node positive (N1-N3) versus 58.8% elective patients. 8 patients in the emergency population and 10 elective pancreatic cancer patients had confirmed recurrence. The average number of days between diagnosis and death for the emergency group was 354 days versus 398 days for the elective population. The mortality rate within 18 months was 29.4% within 18 months for emergency group, compared to 57.9% for the elective population.

CONCLUSIONS: Expeditious pancreatico-duodenectomy is associated with greater immediate post-operative morbidity and increased rate of reoperation but overall survival in 18 months have been noted to be better but not statistically different as compared to routine elective pancreaticoduodenectomy. However considering this a relatively small sample size, further studies with larger numbers is needed to confirm this finding.

KEY WORDS: Pancreatico-Duodenectomy, Pancreatic Cancer, Waiting Times, Survival, Management.
RESULTS

The emergency population comprised of 47% (n=17) patients and the elective population included 53% (n=19) patients, giving a total of 36 patients over the 30-month period. No loss to follow up was noted in the study population. The average ages at surgery were marginally different, 65.0 years for the emergency population and 70.0 years for the elective population.

The serum pre-operative bilirubin for the emergency population was significantly higher than for the elective population. The emergency procedures resulted in shorter durations of surgery (average 4 Hours 55 Minutes) versus the elective procedures (6 Hours 2 Minutes) the reason for which could either be due early surgery being technically less complicated or due to to younger age group in this group, however peri-operative blood loss varied to a lesser degree between the two groups. There were 7 radiologically confirmed post-operative collections in the emergency population and 4 in the elective group (Table - I).

Post-PPPD, 9 patients belonging to the emergency population received a total of 10 minor procedures and 8 patients of the elective population received 10 procedures (Table - II). 2 patients received a total of 3 re-operations in the emergency population within 1 month following the PPPD operation, which was a higher quantity than the 2 re-operations in the elective population for 1 patient. (Table - III).

All 17 patients of the emergency population had confirmed adenocarcinoma; however, the elective population had more varied histological diagnoses (Table - IV). Investigation into lymph node involvement established that 50.0% patients in the emergency population were node positive (N1-N3) and 58.8% patients for the elective population were node positive. 8 out of 17 patients in the emergency population had confirmed recurrence following a 1-year period following surgery. This was lower than the calculated rate for the elective population with 10 out of 19 pancreatic cancer patients with confirmed recurrence.

Regarding mortality, the average number of days between diagnosis and death for the emergency group was 354 days versus the elective population with 398 days. The mortality rate within 18 months was however significantly less for the emergency population as 5 out of 17 patients were dead within 18 months, compared to a higher value for the elective population at 11% out of 19%.

METHODOLOGY

It is a retrospective interventional study in which relationship of timing of intervention (Pancreatotoxic-duodenectomy) with morbidity and mortality is studied. The study population included all patients undergoing Pylorus Preserving Pancreatotoxic-duodenectomy for malignant disease between 1st June 2009 and 31st December 2011 (30 months) in the Hepato Pancreatotoxicbiliary Surgery Centre of a tertiary care hospital (Aberdeen Royal Infirmary) in the North of Scotland. A retrospective review of medical records was performed. Patients were identified and demographics and timing data were extracted from a prospectively maintained multiple databases (SCI Store, OpNote, Labs and PACS) located on the Hospital’s Private Network. Patients with diagnosis – to – surgery duration of = 14 Days were defined as Emergency Cases and those with a duration > 14 Days were defined as Elective. Although it had been the practice to try get all pancreatic cancer patients done with in two weeks however the patients who ultimately ended up on emergency lists were the ones whom had the chance availability of emergency/urgent theatre sessions and which depended mainly on hospital resources mostly beyond clinicians control. Exclusion criteria from the study was all patients who were not deemed fit for surgical resection after discussion in multi disciplinary team meeting or who did not undergo resectional surgery in the hospital for any other reason.

For each patient, data was collected pertaining to age at surgery, pathology and node involvement, serum bilirubin prior to surgery, peri-operative blood loss, duration of surgery, post-operative re-operations, drainage of collections and minor procedures and finally the recurrence rate within 1 year and 18 month survival for patients with malignant disease by looking going through patients follow up notes maintained at the institutions.

Statistical analysis: Data input was performed using Microsoft Excel 2011 (Microsoft, Redmond, Washington, USA) and statistical analysis with SPSS version 22 (IBM, Armonk, New York, USA). Survival data was analyzed Log-rank test with 95%confidence interval. P values were used for significance and the significance level was accepted at P <0·05.
of jaundice is a poor predictor of post-operative morbidity and mortality however there is lack of evidence to support the claim that pre-operative biliary drainage improves surgical outcomes. Therefore there is a case for proceeding directly to definitive surgical treatment where feasible. On our surgical unit, every effort is made to expedite surgery, even in severely jaundiced patients, but is largely dependent on the availability of operating theatre space. With appropriate administrative support, we have demonstrated the feasibility of achieving an average waiting time of 17 days in 50% of our patients.

**DISCUSSION**

Early Diagnosis and surgery is an important consideration in any cancer treatment and early operation is typically proven to improve survival outcome in pancreatic cancer. Cancer diagnosis causes lots of anxiety in itself and waiting for surgery has further worsening impact on this anxiety. There are various factors influencing the timings for surgery and in pancreatic cancer factors like theatre availability or biliary obstruction are leading to delay in operation. Although severity of jaundice is a poor predictor of post-operative morbidity and mortality however there is lack of evidence to support the claim that pre-operative biliary drainage improves surgical outcomes. Therefore there is a case for proceeding directly to definitive surgical treatment where feasible. On our surgical unit, every effort is made to expedite surgery, even in severely jaundiced patients, but is largely dependent on the availability of operating theatre space. With appropriate administrative support, we have demonstrated the feasibility of achieving an average waiting time of 17 days in 50% of our patients.
pancreaticoduodenectomy patients, which is an improvement on our general average waiting time of 38 days and falls well within the government directive of 62 days. This study has helped us in understanding the impact of reducing waiting time for surgery.

We have noted a higher percentage of the urgent patients to have post-operative collections but there is not a great difference in the number of patients in the two groups requiring minor post operative procedures e.g. nasoenteric tubes, percutaneous drainage of collections etc. There may be a correlation with the higher average pre-operative serum bilirubin in urgent group, suggesting greater degree of coagulopathy and slower healing of anastomoses explaining leaks but as discussed earlier, various trials have not proven any real term benefit of biliary drainage preoperatively. There were a two-fold percentage of urgent patients undergoing repeat operations as compared to elective patients. However, we have provided details of each procedure in Table -II as the raw percentage is inconclusive due to very small total numbers.

Another interesting observation was the correlation of recurrence rates of malignant disease within the 1st post-operative year with the percentage of lymph nodes positive status. This correlation has already been published in literature. Combined survival figures for both groups were low, in keeping with the generally accepted high mortality associated with pancreatic cancer. 18 months survival in our experience was better however statistically not significant(P<0.18) in the urgent group as compared to the elective group. These may be suggesting better long term outcomes in spite of higher pre-operative bilirubin and greater early post-operative morbidity. There are however quite a few limitations to this study. The study population in this series is too small to yield statistically significant conclusions and data was collected retrospectively with high chance of bias. Formal power analysis was not done and patients were not randomized with likelihood for relatively fit patients to undergo expedited surgery. However, we intend to continue prospective data collection to monitor outcomes in a larger patient group.

CONCLUSION

Expeditious pancreatico-duodenectomy is associated with greater immediate post-operative morbidity but early surgery may improve overall survival but we need more number to prove this to be of statistical significance. However, it does seem to obviate the need for drainage procedures (ERCP, PTBD etc). Regardless of the timing of surgery, pancreatic malignancy has very poor long-term survival and more studies are needed to prove an optimal timing for the surgery after diagnosis.

REFERENCES