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PANCREATICODUODENECTOMY : CLINICAL EXPERIENCE IN A TERTIARY CARE CENTRE

KEYWORDS: whipple's surgery, pancreaticoduodenectomy, periampullary cancer.

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ABSTRACT

Aim: The aim of the study is to evaluate the clinical features, intra-operative parameters, pathology, complication and outcomes of 42 patients undergoing pancreaticoduodenectomy at a tertiary care center.

Material and methods: This was a retrospective study of 42 patients who undergone pancreaticoduodenectomy. Those patients, whose tumor had invaded the superior mesenteric artery, had portal vein involvement, or distant metastasis were excluded. Outcomes were analyzed in detail.

Results: Analysis have shown the mean age of 56 years. The percentage of alcohol consumers was 42.85%, and 47.61% of patients were smokers. 11.90% of cases had benign lesions, but the main indication for pancreaticoduodenectomy was malignancy (88.10%). The mean operation time was 282 min, and intra-operative/post-operative blood transfusion was approximately 1.76 pack cells each operation. The mean admission length was 12 days and the most common complication after surgery was wound infection.

Conclusion: Pancreaticoduodenectomy is one of the most complex surgery and better outcomes can only be met with proper patient selection, high volume centres for the surgery, surgeons experience, favourable pathology, intraoperative and postoperative care.

Introduction:

A pancreaticoduodenectomy, Whipple procedure, or Kausch-Whipple procedure, is an extensive surgical operation involving the excision of the duodenum including the duodenal papilla or ampulla of vater, head of the pancreas and the distal (lower) common bile duct. This operation is performed to treat malignant tumors of head of the pancreas, lower common bile duct, duodenum or periampullary region or as a part of multi-organ resection of other tumors of GI tract.

Dr. William Stewart Halsted in 1898, was the first surgeon to do a successful local resection of a periampullary tumor [1]. Halsted excised a segment of the portion of the duodenum, including the tumor, and anastomosed the duodenum end to end. He then reimplanted the bile and pancreatic ducts. More than twenty years after this, in the year 1909, German surgeon from Berlin, Kausch, performed the first successful regional resection for a periampullary tumor and reported it in 1912 [2]. Much needed evolution came in the year 1935, when Whipple's paper got published and popularized the regional operative procedure for head of pancreas [3].

Pancreaticoduodenectomy has been used more and more in recent years as a safe and felicitous surgical option in selected patients with malignant and benign disorders of the pancreas and periampullary region. The operative mortality rate after pancreaticoduodenectomy is now <5% in most of high volume centers [4,5]. With increasing experience with the surgical technique a low mortality rate has been achieved in many centres, but the postoperative morbidity can still be around 50%. Common post operative complications seen with the patient of pancreaticoduodenectomy are delayed gastric emptying, anastomotic failure, biliary fistula, pancreatic fistula, hemorrhage and wound infection [6,7].

Pancreatic cancer is one of the most important causes of death in eastern countries and the fourth cause of death from cancer in the western hemisphere. Only small percentage of patients can survive from this condition for more than 5 years. Most patients present with an advance stage of the disease, and only in 10% to 20% of them the mass is resectable. Pancreatic cancer is a tumor entity which is generally characterized by a poor prognosis. The only hope for cure lies in the radical resection of circumscribed tumors, or even better in the resection of precursor lesions, such as not-yet malignant intraductal papillary mucinous neoplasms [8].

Methods

Inclusion criteria: All patients who underwent pancreaticodu odenectomy in between October 2012 and May 2016 in our unit were included in the study. The parameters studied were patient demographic data, presenting symptoms, physical signs, past medical history, intra-operative parameters, post-operative complications, histopathology and causes of post-operative death.

Exclusion criteria: Those patients, whose tumor had invaded the superior mesenteric artery, had portal vein involvement, or distant metastasis were considered as unresectable.

This is a retrospective study analyzing the 42 patients who underwent pancreaticoduodenectomy.

Results

During study period, 42 procedures of pancreato-duodenectomy were performed from October 2012 to May 2016 in our unit. Analysis have shown the mean age of 56 years, with 61.9% male. The youngest patient was 28; the oldest patient being 75 years old.

In this case series, the percentage of alcohol consumers was 42.85%, and 47.61% of patients were smokers. About 7.14% of them had a positive family history of pancreatic cancer. The most common presenting symptom was jaundice 85.71%. Other symptoms in order of frequency were weight loss, anorexia, pain in abdomen and nausea & vomiting.

Table no 1 (Symptoms of the patient who required pancreati coduodenectomy)

Symptoms	No of patients	%
Jaundice	36	85.71
Weight loss	24	57.14
Anorexia	20	47.61
Pain in abdomen	07	16.66
Nausea and vomiting	05	11.90

Pathology: 11.90% of cases had benign lesions, but the main

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indication for pancreaticoduodenectomy was malignancy (88.10%). Most common was the cancer of head of pancreas(59.5%). In this study, the most common varient was adenocarcinoma; 75.6% of them were well differentiated. The lymph nodes were involved in 43.24% of cases.

Table no 2(showing distribution of the tumor in relation to the site)

Head of Pancreas	25
Ampullary	8
Distal bile duct	2
Duodenum	2
Benign	5

Operation course: The common technique for reconstruction in our study was duct to mucosa pancreaticojejunostomy and dunking type of pancreaticojejunosotomy. Majority of the patients underwent pylorus-preserving pancreaticoduodenectomy. One patient had positive resection margin. The mean operation time was 282 min, and intra-operative/post-operative blood transfusion was approximately 1.76 pack cells each operation. The mean admission length was 12 days.

Complications: As with all complex surgery, a good outcome after whipple's surgery depends on the meticulous perioperative care. The most common complication after surgery was wound infection (11.9%). In this case series morbidities of the patients consisted of delayed gastric emptying (9.5%), anastomotic leakage (9.5%), respiratory, pancreatic fistula and biliary fistula.

Table no 3(Table showing the complications occurring post operatively)

Complications	Number of patients	Percentage
Wound infection	5	11.9
Delayed emptying	4	9.5
Anastomotic leakage	4	9.5
Respiratory	2	4.7
Hemorrhage	2	4.7
Pancreatic fistula	2	4.7
Biliary fistula	2	4.7
Intra abdominal abscess	1	2.3
Renal failure	0	0

Post-operative course: In the early post-operative period, three cases were re-explored within 7 days because of anastomotic leak in two patients and hemorrhage in one patient. One of the patient was re explored twice within 12 days as he had multiple anastomotic failure. Total mortality in the series was 4(9.5%) patients, one of the patient died intraoperatively, two patients died within 48 hours and 1 died after 48 hours. Most common cause of the mortality being septic shock(3 patients).

Discussion

Pancreatic cancer is the fourth leading cause of cancer related death and has short-term survival time, regardless of its stage. The main etiology of pancreatic cancer is unknown, though the incidence of pancreatic cancer is 2.5 to 3.6 times more in smokers. There also exists some evidence that alcohol, coffee, and aspirin consumption can lead to pancreatic cancer. The presenting symptoms of pancreatic cancer depend on the location, size, and stage of the tumor[9]. Pancreatic cancer is mostly seen in the elderly, and the overall 5-year survival rate is below 5% [10,11].

Several recent reports have documented that various factors serve as important predictors of prognosis for patients with resected periampullary adenocarcinoma [12]. In most analyses, the prognostic factors include size of the primary tumor, degree of tumor differentiation, status of resected lymph nodes, and status of resection margins.

Allen Oldfather Whipple modified the pancreaticoduodenectomy procedure in 1935. Surgical biliary and gastric bypass was superior to endoscopic intervention in terms of quality of life improvement and decreasing rate of re-hospitalization and re-intervention [13]. Nowadays, Whipple is an acceptable operation that is performed in various malignant and benign diseases of pancreas and periampullary area.

During the past 3 [1/2] years of our experience, we noticed gradual improvement in our own results in terms of lesser time of operation, less intra- operative bleeding, less pancreatic anastomosis failure, and decrease in hospital staying days. Pancreatic anastomosis was performed in two layers with delayed absorbable suture material and in an end-to-end and invagination technique. In some cases, omentum was used as a barrier between the site of pancreatic anastomosis and superior mesenteric vein.

Out of 42 pts in our series, 62% were male pts and 38% were female patients. Mean age at presentation is 56 years. In a study conducted by C J Yeo et al [14] in 242 patients, 55% were males and 45% were females and mean age at presentation was 64 years. In another study by Devi Prasad Patra et al [15] conducted over 44 patients showed the mean age of patients at presentation was 52 years.

In our series, prevalence of diabetes mellitus before surgery was found to be 11.90% and after surgery there was 26.19% of patients who had new onset diabetes mellitus. In a study by Saraee et al [16], prevalence of diabetes before surgery was 13.5% and 27% of patients had new onset diabetes mellitus In this case series, the percentage of alcohol consumers was 42.85%, and 61.90% of patients were smokers. About 7.14% of them had a positive family history of pancreatic cancer. A study by Manal M. Hassan et al [17] has concluded that cigarette smoking, family history of pancreatic cancer, heavy alcohol consumption (>60 mL ethanol/day), diabetes mellitus, and history of pancreatitis were significant risk factors for pancreatic cancer.

The number of this procedure has increased in our center during the recent years due to developing an advanced gastrointestinal department and a referring system from that ward. Although complications of this surgery are still observed in our hospital, its decreased rate could be attributed to better surgical techniques, better post-operation intensive care, and improved surgical staff expertise and more accurate patient selection.

The complication and death rates of surgery depend on many variables, including the presence of malignancy, the severity of jaundice, nutritional status, infection, and impaired renal function. The mortality rate in our series remained 9.5% which was high when compared to other high volume centres having mortality of 0-5% [18]. Birkmeyer et al. have reported a marked difference in mortality rates of Whipple procedure in very low-volume (zero or one patient per year) and low-volume (one or two per year) hospitals compared with higher-volume hospitals (less than five per year) [19]. On the other hand, mortality rates at very low and low-volume hospitals were significantly higher than those at high-volume hospitals.

Conclusion

Though pancreaticoduodenectomy is the treatment of choice in the patients with periampullary carcinoma and in spite of its introduction to the medicine 80 years ago, it still has significant mortality and morbidity even in high volume centers.

It is true that hospital setting, socioeconomic level of the patients including their compliance, and the expertise of the surgeons and surgical staff can have influence over the result of this operation; it seems that the magnitude of the surgical stress of this technique and the compromised functional reserve of these patient population can be a notable factor influencing the outcome.

Pancreaticoduodenectomy is one of the most complex surgery and

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better outcomes can only be met with proper patient selection, high volume centres for the surgery, surgeons experience, favourable pathology, intraoperative and postoperative care.

References:

1. Halsted WS. Contributions to the surgery of the bile passages, especially of the common bile duct. Boston Med Surg J. 1899;141: 645– 654.
2. Kausch W. Das carcinoma der papilla duodeni und seine radikale entfeinung. Beitr Z Clin Chir. 1912;78:439–486.
3. Whipple A, Parsons WB, Mullins CR. Treatment of carcinoma of the ampulla of Vater. Ann Surg. 1935;102:763–779.
4. Fernandez-del CastilloC, Rattner DW, Warshaw AL. Standards for pancreatic resection in the 1990s. Arch Surg 1995; 130:295-300.
5. Cameron JL, Pit HA, Yeo CJ, et al. One hundred and forty five consecutive pancreaticoduodenectomies without mortality. Ann Surg 1993; 217:430-438.
6. Cullen J, Sarr MG, Ilstrup DM. Pancreatic anastomotic leak after pancreaticodu odenectomy: incidence, significance and management. Am J Surg1994;168:295-298.
7. Yeo CJ. Management of complications following pancreaticoduodenectomy.Surg Clin North Am 1995;75:913-924.
8. Hartwig W, Hackert T, Hinz U, Gluth A, Bergmann F, Strobel O, Buchler MW, Werner J (2011) Pancreatic cancer surgery in the new millennium: better prediction of outcome. Ann Surg 254:311–319
9. Manuel Hidalgo MD. Pancreatic cancer. N Engl J Med. 2010;362:1605–17.
10. Jemal A, Siegel R, Ward E, Hao Y, Xu J, Murray T, et al. Cancer statistics 2008. CA Cancer J Clin. 2008;58:71–96.
11. Shi C, Hruban RH, Klein AP. Familial pancreatic cancer. Arch Pathol Lab Med. 2009;133:365–74.
12. Delcore R, Rodriquez FJ, Forster J, et al. Significance of lymph node metastases in patients with pancreatic cancer undergoing curative resection. Am J Surg 1996; 172:463–469.
13. Walter J. Palliative partial pancreaticoduodenectomy impairs quality of life compared to bypass surgery in patients with advanced adenocarcinoma of the pancreatic head. EJSO. 2011;37:798–804.
14. Charles J Yeo et al, Periampullary Adenocarcinoma Analysis of 5-Year Survivors; ANNALS OF SURGERY Vol. 227, No. 6, 821-831
15. Devi Prasad Patra, Pancreaticoduodenectomy in a Government Medical College—Should We Proceed Indian J Surg (September–October 2010) 72(5):381–385.
16. Saraee et al, Whipple procedure: a review of a 7-year clinical experience in a referral center for hepatobiliary and pancreas diseases; World Journal of Surgical Oncology (2015) 13:98
17. Manal M. Hassan, Risk Factors for Pancreatic Cancer: Case-Control Study; Am J Gastroenterol. 2007 December ; 102(12): 2696–2707.
18. Trede M, Schwall G, Saeger HD. Survival after pancreatoduodenectomy. 118 consecutive resections without an operative mortality. Ann Surg 1990; 216: 447–458.
19. Birkmeyer JD. Hospital volume and surgical mortality in the United States. N Engl J Med. 2002;346(15):1128–37.