

PANCREATICOJEJUNOSTOMY OR PANCREATICOGASTROSTOMY TO PREVENT PANCREATIC FISTULA FORMATION AFTER PANCREATICOUDUODENECTOMY

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ABSTRACT

Objective: To compare the results of pancreaticogastrostomy (PJ) with pancreaticojejunostomy (PG) in preventing fistula formation after pancreaticoduodenectomy (PD).

Study design: Quasi-experimental study.

Place and Duration of Study: The study was carried out in Military and Combined Military Hospital Rawalpindi from August 2008 to March 2015

Material and methods: Patients of both gender aged 45-70 years with confirmed or suspected neoplasms of head of pancreas, periampullary or duodenal tumours were included. After pancreaticoduodenectomy the pancreatic reconstruction was carried out either by pancreaticojejunostomy (duct to mucosa type, dunken in type) or double layer pancreaticogastrostomy. The fistula rate was recorded after both the procedures using the definition of International Study Group on Pancreatic Fistula.

Results: During this study period, 30 patients underwent pancreaticoduodenectomy. In 21 (71.4%) patients pancreaticojejunostomy was done, (18 duct to mucosa type and three dunken type anastomosis) and in 9 (28.5%) patients pancreaticogastrostomy was carried out. Five (20%) patients (3 in duct to mucosa type and two in dunken type) in the pancreaticojejunostomy group developed pancreatic fistula (grade A=2, grade B=2 and grade C=1) and one patient (11.1%) in the pancreaticogastrostomy group developed postoperative pancreatic fistula (OR= 9.9, 95% CI: 1.06-92.7 $p= 0.044$)

Conclusion: In patients undergoing PD for pancreatic head, periampullary or duodenal tumours, PG is more effective than PJ in reducing the frequency of post-operative pancreatic fistula

Keywords: Pancreaticogastrostomy, Pancreaticojejunostomy, Pancreatic fistula.

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INTRODUCTION

Pancreaticoduodenectomy (PD) is the standard surgical procedure for various malignant and benign conditions of the pancreas and periampullary region and duodenum¹. With the advances in operative techniques, availability of newer instruments, better anaesthesia and post operative care, the mortality of PD has decreased to below 5%¹, but the morbidity still remains high (up to 40%) even in the best centres^{2,3}. The most common complications after PD are pancreatic fistula, delayed gastric emptying, haemorrhage and infection^{4,5}. Pancreaticojejunal anastomosis (duct to mucosa, end to end, end to side, and telescoping/invagination) is the most widely

used method of reconstruction after PD, The main concern remains pancreatic leak after this procedure (2-20%)⁶ which often leads to, intra abdominal haemorrhage and sepsis resulting in prolonged hospitalization reoperation, increased cost and mortality⁷. Several technique modifications of pancreaticojejunal anastomosis such as placement of the stent, reinforcement of anastomosis with fibrin glue, pancreatic duct occlusion are used in order to decrease pancreatic fistula rate⁸. The aim of this study was to analyze the results of pancreaticojejunostomy (PJ) and pancreaticogastrostomy (PG) in terms of pancreatic fistula formation.

MATERIAL AND METHODS

This quasi-experimental study was conducted at Military and Combined Military Hospital (MH & CMH) Rawalpindi from August 2008 to March 2013. Patients of both gender, aged 45 to 70 years with confirmed or suspected neoplasm of head of pancreas,

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Received: 23 Oct 2014; revised received: 6 Apr 2015; accepted: 07 Apr 2015

periampullary or duodenal tumours were included. One case of PD due to trauma was excluded from the study. Thirty patients were included in the study through non probability convenience sampling. Twenty one patients underwent PJ, 18 duct to mucosa type and 3 cases telescoping of pancreas into jejunum was done. In 9 cases double layered invagination type PG was carried out on the posterior wall of the stomach using PDS sutures. These were the cases where pancreatic duct was either not visible or the size was less than 2 mm. Two drains were placed in both type of anastomoses one close to pancreatic anastomosis other in the subhepatic place. These procedures were carried out by two surgeons. The fistula rate was recorded using ISPGF description.

which was grade A type and resolved spontaneously. Frequency of PF was significantly higher in PJ group as compared to PG group ($p= 0.044$ OR= 9.9 CI 1.06-92.7)

DISCUSSION

In Pakistan pancreatic surgery has remained a nightmare for quiet sometime because of associated increased morbidity, mortality and lack of trained surgeons in this field. Now a days it is increasingly being performed in many centers in Pakistan with good results. With the advances in imaging facilities, operative techniques, availability of newer instruments, increasing experience better anaesthesia and post operative care, the mortality of PD has decreased to below 5%¹, but the morbidity still remains high (up to 40%)

Table-1: Percentage of pancreatic fistula in both groups.

Fistula type	PJ (n =21)	PG (n=11)
Grade A	5 (23.8%)	1 (11.1%)
Grade B	5 (23.8%)	nil
Grade B	1 (4.7 %)	nil

Data was analyzed using SPSS version 17. Descriptive statistics were used to describe the results¹. Mean and standard deviation (SD) for quantitative variables with frequency along with percentages for qualitative variables. Chi-square test was applied to compare frequency of fistula between the two groups. A p - value, 0.05 was considered as significant.

RESULTS

Thirty patients were included in the study, 21 patients received PJ and 9 underwent PG. In the PJ group all were males with a mean age 58.3 ± 7.49 years. In PG group 7 were males and 2 females with a mean age of 56.5 ± 8.15 years. Both groups were comparable with respect to age ($p= 0.561$) and gender ($p= 0.120$) pancreatic fistula (table 1) occurred in 11(52.4%) patients in PJ group. In 5 patients (23.8 %) it was grade A fistula and resolved spontaneously. Five patients (23.8) had grade B fistula and resolved after percutaneous drainage, while in one patients grade C fistula occurred where laparotomy and drainage was carried out as it was large and septate collection. The patient lived for two years after this. In PG group one patient (11.1%) developed pancreatic fistula

even in the best centres^{2,3}. The major concern remains pancreatic leak after PD which often leads to prolonged hospitalization, reoperation, increased cost and mortality⁷.

The best reconstruction of pancreaticogastrointestinal anastomosis remains a challenge for pancreatic surgeons. Pancreaticojejunal anastomosis, duct to mucosa and telescoping of pancreatic remnant in to jejunum are most widely used methods of reconstruction after pancreaticoduodenectomy. Several technique modifications such as placement of the stents, reinforcement of anastomosis with fibrin glue, application of carbollic acid, pancreatic duct occlusion⁹ and sandostatin are used in order to decrease pancreatic fistula rate but none of these modifications could eliminate the fistula formation. The PG is usually performed in patients with smaller duct size and soft pancreas and has shown better results in term of fistula formation in several retrospective studies and randomized control trial.^{7,10,11,17}

On the other hand three RCTs and a meta analysis did not show any difference in terms of fistula formation¹⁸⁻²⁰. The successful

management of pancreatic anastomosis may depend more on meticulous surgical technique and surgical volume rather than the type of technique²¹. We also feel that these two factors are more important as our results are getting better with increasing experience.

The present study although small has also shown that PG is better than PJ in terms of fistula rate and these results are in line with many recently published series. Softness of pancreas and duct diameter are considered important in determining the fistula formation²².

In our study those cases in which the duct was either not visible or it was less than 3 mm in diameter the PG was used independent of softness of pancreas. Number of other factors like age, sex, degree of pre op jaundice, operation time, blood loss, type of anastomosis, stenting and other comorbidities, can contribute to fistula formation²². As this was a small study the exact effects of these factors could not be studied. This study and many other studies show better results with PG in terms of fistula formation.

CONCLUSION

In patients undergoing PD for pancreatic head, periampullary or duodenal tumours, PG is more effective than PJ in reducing the frequency of post operative pancreatic fistula

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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