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Pancreaticogastrostomy Versus Binding Pancreaticojejunostomy After Pancreaticoduodenectomy- A Comparitive Study

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Abstract
Background And Objectives: *The method of pancreatic reconstruction after pancreaticoduodenectomy (PD) is closely associated with postoperative morbidity, mortality, and patient's quality of life. The objective of this study is to evaluate which anastomosis approach – pancreaticogastrostomy (PG) or Binding pancreaticojejunostomy (PJ), is a better option of choice in terms of postoperative complications.*
Materials and Methods: *Patients subjected to this study were taken from General surgical & Surgical gastroenterology wards of Government Rajaji Hospital, Madurai over a period of 18 months years from January 2015 to July 2016.*
Patients who undergo Pancreaticoduodenectomy at GRH Madurai are recruited in this study.
Results: *Out of 24 patients who had under gone pancreaticogastrostomy, 4 patients (16.6%) developed Post operative Pancreatic Fistula (POPF); while out of 21 patients who had under gone Binding Pancreaticojejunostomy 3 patients (14.2%) developed POPF. 6 out of 24 patients* ***(25%)*** *developed from* ***PG*** *group, while in* ***Binding PJ*** *Group, 5 out of 21 patients* ***(23.8%)*** *developed delayed gastric emptying. Only one patient* ***(4.1%)*** *from PG group developed GE Anastomosis leakage, While None developed leakage from Binding PJ Group. One patient from PG Group (4.1%) developed biliary leakage; while none from Binding PJ group. One from Binding PJ (4.7%) group Developed Pancreatitis. 2 out of 24 patients in PG group developed Haemorrhage*
1 out of 21 patients in Binding PJ group developed Haemorrhage. 6 out of 24 patients in PG group developed fluid collection.
7 out of 21 patients in binding PJ group developed fluid collection. One Patient from Binding PJ group developed abscess. None developed from PG group.
7 Patients out of 24 patients from PG group developed wound infection; while from Binding PJ group 7 developed, out of 21 patients. 2 Patients from PG group developed dehiscence; while from Binding PJ group one patient developed dehiscence.
Conclusion: *There was no statistically significant difference (p Value not significant) between two groups in terms of Post operative pancreatic fistula (POPF) which is primary end point of this study. Perhaps personal preference, experience and familiarity of the surgeon with reconstruction technique is more important than the reconstruction method per se as there is no significant difference in mortality n morbidity in both groups.*
Keywords: *Pancreaticogastrostomy, binding pancreaticojejunostomy pancreaticoduodenectomy, anastamosis, leakage.*

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I. Introduction

"Pancreaticoduodenectomy (PD) has become increasingly accepted as a safe and appropriate surgical technique for patients with either malignant or benign diseases of the pancreas and periampullary region. In high-volume centers, Perioperative mortality rate is currently reported to be below 5% for PD. However, the rate of post-PD complications is still as high as 40–50%, Post operative pancreatic fistula (POPF) rate is nowadays about 14%-25%."Pancreatic Fistula remains the single most important cause of morbidity. Many factors have been associated with pancreatic fistula formation after PD, in that type of pancreatic anastomosis & Operating Surgeon plays an important role. Many types of reconstruction have been described, either it is

Pancreaticogastrostomy(PG) or pancreaticojejunostomy(PJ). The best technique in pancreatic anastomosis is still debated. Retrospective studies suggest superiority of PG over PJ in terms of reduced POPF and other complications. Conflicting results have been reported from 8 prospective RCTs. "A recent multicenter prospective randomized controlled trial comparing PG with PJ was conducted in Germany high-volume academic centres for pancreatic surgery. The rate of pancreatic fistula after PG versus PJ was not significantly different."

II. Aim & objectve of the study:

"The method of pancreatic reconstruction after pancreaticoduodenectomy (PD) is closely associated with postoperative morbidity, mortality, and patient's quality of life. The objective of this study is to evaluate which anastomosis approach – pancreaticogastrostomy (PG) or Binding pancreaticojejunostomy (PJ), is a better option of choice in terms of postoperative complications."

III. Materials And Methods

Patients subjected to this study were taken from General surgical & Surgical gastroenterology wards of Government Rajaji Hospital, Madurai over a period of 18 months years from January 2015 to July 2016.
Patients who undergo Pancreaticoduodenectomy at GRH Madurai are recruited in this study.

Eligibility criteria:
Inclusion criteria:
Patients underwent PD for Malignant /benign Pancreatic tumours Chronic Pancreatitis
Extra pancreatic tumours (Periampullary,biliary,duodenal)

Exclusion criteria:
Tumours extending into the body of the pancreas Tumours with metastasis.
Invasion of major vessels Invasion of transverse mesocolon Liver & Peritoneal Metastasis
Pt who didn't give consent for study
Following consent, a questionnaire will be filled to record the patient's demographic data, duration of disease; method of surgery pt had undergone, and post operative course & complications.

IV. Observation And Discussion Of The Study

The total number of cases studied is 45 which included 25 female and 20 male patients. Patients were admitted & operated in General surgical & Surgical Gastroenterology wards in Government Rajaji Hospital, Madurai. Among 45 cases, pancreaticogastrostomy was done in 24 patients; binding pancreaticojejunostomy was done in 21 patients. Among 45 cases, one patient was aged below 25 yrs, 26 patients were in age group 26-50 yrs, while 18 patients were from 51-75 yrs age group. Out of 24 pts from PG group, 10 were males & 14 were females.
From Binding PJ group, out of 21, 10 were males & 11 were females.

V. Results

Table – 1 Age Distribution

Age in years	Group PG	Group PJ
< 25	1	0
26 – 50	13	13
51 – 75	10	8
Total	24	21
Mean	49.29	50.62
SD	12.08	9.23
P value	0.684 Not significant	

Table – 2 Gender Distribution

Gender	Group PG	Group PJ
Male	10	10
Female	14	11
Total	24	21
P value	0.983 Not significant	

Table – 3 Type of surgery

Method	No.of cases
Pancreaticogastrostomy	24
Pancreaticojejunostomy	21
Total	45

Table – 4: Post Operative Pancreatic Fistula (POPF)

Group	Post operative Pancreatic Fistula (POPF)	
	No.of cases	%
Pancreaticogastrostomy (24)	4	16.6
Pancreaticojejunostomy (21)	3	14.2

Out of 24 patients who had under gone pancreaticogastrostomy, 4 patients (16.6%) developed Post operative Pancreatic Fistula (POPF); while out of 21 patients who had under gone Binding Pancreaticojejunostomy 3 patients (14.2%) developed POPF

Table – 5: Delayed gastric emptying (DGE)

Group	**Delayed gastric emptying (DGE)**	
	No.of cases	%
Pancreaticogastrostomy (24)	6	25
Pancreaticojejunostomy (21)	5	23.8

6 out of 24 patients **(25%)** developed from **PG** group, while in **Binding PJ** Group, 5 out of 21 patients **(23.8%)** developed DGE.

Table – 6: Gastro-enteric anastomosis leakage

Group	**Gastro-enteric anastomosis leakage**	
	No.of cases	%
Pancreaticogastrostomy (24)	1	4.1
Pancreaticojejunostomy (21)	0	0

Gastro-enteric anastomosis leakage:

Only one patient **(4.1%)** from PG group developed GE Anastomosis leakage, While None developed leakage from Binding PJ Group.

Biliary Leakage:

One patient from PG Group (4.1%) developed biliary leakage; while none from Binding PJ group.

Acute Pancreatitis: One from Binding PJ (4.7%) group Developed Pancreatitis

Table – 7: Intra Peritoneal Haemorrhage:

Group	**Intra Peritoneal Haemorrhage**	
	No.of cases	%
Pancreaticogastrostomy (24)	2	8.2
Pancreaticojejunostomy (21)	1	4.7

2 out of 24 patients in PG group developed Haemorrhage

1 out of 21 patients in Binding PJ group developed Haemorrhage.

Table – 8: Intra peritoneal Fluid collection:

Group	**Intra peritoneal Fluid collection**	
	No.of cases	%
Pancreaticogastrostomy (24)	6	25
Pancreaticojejunostomy (21)	7	33

6 out of 24 patients in PG group developed fluid collection.

7 out of 21 patients in binding PJ group developed fluid collection.

Table – 9: Intra peritoneal Abscess

Group	**Intra peritoneal Abscess:**	
	No.of cases	%
Pancreaticogastrostomy (24)	0	0
Pancreaticojejunostomy (21)	1	4.7

One Patient from Binding PJ group developed abscess. None developed from PG group

Table – 10: Wound infection

Group	**Wound infection**	
	No.of cases	%
Pancreaticogastrostomy (24)	7	29.1
Pancreaticojejunostomy (21)	7	33

Wound infection:
7 Patients out of 24 patients from PG group developed wound infection; while from Binding PJ group 7 developed, out of 21 patients.

Table – 11: Wound Dehiscence

Group	Wound Dehiscence	
	No.of cases	%
Pancreaticogastrostomy (24)	2	8.2
Pancreaticojejunostomy (21)	1	4.7

Wound Dehiscence:
2 Patients from PG group developed dehiscence; while from Binding PJ group one patient developed dehiscence.

Table – 12: Pulmonary infection

Group	Pulmonary infection	
	No.of cases	%
Pancreaticogastrostomy (24)	6	25.0
Pancreaticojejunostomy (21)	4	18.8

Pulmonary infection
6 Patients from PG Group developed pulmonary infection; while 4 patients from Binding PJ group developed pulmonary infection.

Pulmonary effusion:
One patient from each group developed effusion.

Table – 13: Mortality

Group	Mortality	
	No.of cases	%
Pancreaticogastrostomy (24)	1	4.1
Pancreaticojejunostomy (21)	1	4.7

While that of mortality rate from the present study is 4.1% in PG Group; while from Binding PJ group it is 4.7%.In binding PJ group, patient expired due to Post operative secondary haemorrhage, secondary to Pancreatic Fistula. In PG group, patient expired on 6th post operative day due to acute pulmonary embolism.

VI. Conclusion

There was no statistically significant difference (p Value not significant) between two groups in terms of Post operative pancreatic fistula (POPF) which is primary end point of this study. The PF rate was 16.6% in PG group; while in Binding PJ Group it is 14.2%. Other post operative complications rates were almost equal in both groups. Mortality occurred in both groups(<5%), mortality in PG group was due to acute pulmonary embolism; while in Binding PJ group it was due to Post operative secondary haemorrhage, secondary to Pancreatic Fistula. Over all morbidity in PG group was 14.5% & in Binding PJ group was 12.5%.

Perhaps personal preference, experience and familiarity of the surgeon with reconstruction technique is more important than the reconstruction method per se as there is no significant difference in mortality n morbidity in both groups.

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