SAS Journal of Surgery
Abbreviated Key Title: SAS J Surg
ISSN 2454-5104
Journal homepage: https://saspjournals.com/sasjs/

OPEN ACCESS

Comparision of Laprascopic Versus Open Whipple's (Pancreaticoduodenectomy) Surgery in a Tertiary Care Hospital

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DOI: 10.21276/sasjs.2019.5.8.3 | **Received:** 30.07.2019 | **Accepted:** 06.08.2019 | **Published:** 19.08.2019

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Abstract **Original Research Article**

Surgical procedures such as minimal access surgeries have evolved to include complex surgical procedures. Surgeries such as laproscopic pancreaticoduodenectomy are a complex operation and surgeons have been slow to adopt. This study reviews our experience with patients undergoing laprascopic pancreaticoduodenectomy and compares its outcome with patients undergoing open pancreaticoduodenectomy. ***Results:*** A sample size of 20 patients were taken including laprascopic and open pancreaticoduodenectomy group and results were calculated with Students "t" test, Fisher"s Exact test, and the chi-square test, a P value of <0.001 was considered significant. This study is done to compare the results of laparoscopic and open pancreaticoduodenectomy in term of age, sex, Mean duration of surgery, Intraoperative blood loss, pancreatic fistula, pancreatic duct size, Lymphovascular invasion. Pathological classification of tumors, Stage of disease. Postoperative ICU stay, Postoperative hospital stay, 1 year follow up. In the study, while comparing the laparoscopic and open pancreaticoduodenectomy groups it was seen that patients who underwent Laparoscopic repair experienced less blood loss, reduced mean duration of hospital stay and ICU stay and postoperative hospital Stay. However, the mean duration of surgery was high in laparoscopic group compared to open group patients.

Keywords: Comparision, Laprascopy, Pancreatic malignancies.

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INTRODUCTION

Periampullary carcinoma is becoming more rampant in the past few years. Open surgeries such as open pancreaticoduodenectomy have been well established over the past few years. Open pancreaticoduodenectomies {OPD} are in itself considered to be a complex procedure associated with many post op complications.

Pancreatoduodenectomy is among the most complex of all surgical procedures and involves both a difficult resection close to major vessels and a complex reconstruction. Laparoscopic pancreatoduodenectomy requires advanced skills in both pancreatic and laparoscopic surgery and there have been concerns as to the safety of its implementation[1].

The first successful pancreatoduodenectomies were performed by Walter Kausch in 1912 and Allan Whipple in 1934. The first laparoscopic pancreatoduodenectomy was described in1994 [2].

Laparoscopic pancreatic surgery uses a relatively new approach. In the past, the minimally invasive techniques were only used for diagnostic laparoscopy to evaluate periampullary malignancies, staging of pancreatic cancer, and palliative procedures for unresectable pancreatic cancer [2].

In a study conducted by Horacio J Asbun *et al*. they said that Laparoscopic PD is a challenging operation for multiple reasons, including but not limited to the following: difficult access and exposure of the pancreas, which is situated in the retroperitoneum; hemorrhage control from major vasculature; a technically demanding reconstruction of the biliary and pancreatic remnants; maintaining oncologic surgical principles; and surgeon fatigue from a long operation requiring intense concentration. Limitations of the laparoscopic approach include the inability to palpate the lesion or surrounding vascular structures. An excellent understanding of the anatomy and proficient

use of intraoperative ultrasound are necessary. The appeal of a minimally invasive approach to an operation associated with substantial recovery time and morbidity would usually be a shorter healing time with possibly fewer associated wound complications. However, thefew number of days that the minimally invasive approach reduces hospital stay might not be sufficient to justify its use, given the complexity of the procedure, the long learning curve, and the increased operative times. As experience is gained, however, the ultimate goal of performing LPD should be to actually perform a better operation. The difficulty lies in proving the performance of a better operation in a scientific manner[3].

In another study conducted by Jony van hilst *et al*. was a multicentre randomised trial comparing laparoscopic with open pancreatoduodenectomy and was terminated ptrematurely because of safety concerns related to higher 90-day complication-related mortality in the laparoscopic group. Analysis of the data from the 99 patients who underwent surgery (out of a projected 136 patients) showed that laparoscopic pancreatoduodenectomy did not reduce time to functional recovery and that postoperative complications, costs, and quality of life were comparable. The safety concerns were unexpected and worrisome, especially in the setting of trained surgeons working in centres performing 20 or more pancreatoduodenectomies annually. The trial was underpowered due to premature termination. And also there was no difference in postoperative complications—eg, pancreatic fistulas—were seen that could explain the observed difference in mortality. In addition to the lack of difference in primary outcome between the two groups, there were no benefits for laparoscopic pancreatoduodenectomy in terms of the secondary outcomes[4].

Yet another study conducted by Raffaele Pugliese *et al*. showed that the complexity of operation required a hard learning curve and the steps consisted in planning video-assisted resections before performing intracorporeal LPD. In detail, 7 patients had a video-assisted procedure with reconstruction through a midline minilaparotomy, 6 patients needed conversion and in 6 patients LPD was successfully completed by intracorporeal technique[5].

Currently, it is feasible to perform some sophisticated procedures such as the Whipple procedure, one of the most sophisticated applications of minimally invasive surgery

Objectives of the study

To compare age wise distribution, sex, pre-op biopsy, pre-op TNM staging, pre op pancreatic duct size,pre-op biliary drainage, sequential dialatation, pancreatic stenting, histopathology, operative time, post-operative pancreatic duct size, hospital and ICU stay, post-op complication-sepsis, retroperitoneal margin, lymphovascular invasion,mortality,recurrence-1 year between patients undergoing laproscopic pancreaticoduodenectomy vs patients undergoing open pancreaticoduodenectomy.

MATERIALS AND METHODS

All eligible patients with biopsy proven periampullary carcinoma willing to participate in the study, Source of data: Patients admitted in surgical gastroenterology dept of Father Muller medical college hospital, Mangalore.

Study type: Prospective Descriptive study

Study period: 2 years, august 2017 to august 2019

INCLUSION CRITERIA

- Diagnosed to have periampullary carcinoma (resectable disease) above the age of 20 years
- Patients with the above condition willing to give written informed consent for the proposed procedure (Annexure I).

EXCLUSION CRITERIA

- Patients with periampullary carcinoma(unresectable disease)
- Patients who underwent non-resectable palliative procedures

ASSESSMENT TOOL

- Computerized Data entry form
- **Sample Size: 20** patients with periampullary carcinoma
- $\frac{n= 2(Z\alpha + Z\beta)\ sigma\ 2}{(\propto - x2)2}$
- z_{α} **=1.96 at 95% CI**
- z_{β} **= 0.841 at 80% power**
- **=1.281 at 90% power**
- **n = 6 per group at 80% power**
- **n= 11 per group at 90% power**

Preoperative evaluation

All the patients were evaluated with routine blood investigations like Complete Blood. Picture, Renal Profile, Echocardiogram, Chest Xray and 2D ECHO in a patient who had previous Ischaemic Heart Disease.

Cect abdomen and pelvis- was done for all patients to know the extent of the tumour and metastatic status. UGI scopy and biopsy was done in all patients

Preoperative Preparation

All the patients received intravenous antibiotic prophylaxis at the time of skin incision and all the patients are kept nil per oral 8 hours before surgery

Anaesthesia

For All the patients General anastheia was used. During postoperative period all the patients were encouraged to start orally on post op day 3 in laproscopic group and post op day 5 in open group (after bowel sounds were heard on auscultation or after patient passing flatus).

In patients with persistent ileus, they were kept NPO and whenever required a nasogastric tube was passed only to be removed once the resolution of the ileus.

For all the patients only one dose of preoperative antibiotic prophylaxis was given and full course of postoperative antibiotics was given.

All the patients have given analgesics intravenous paracetamol 1 gram infusion every 8th hourly until orally started. All the patients were mobilized after 12 hours after surgery with abdominal binder.

All the patients surgical wounds were inspected on post operative day 2 and seroma if any found was drained. Postoperatively patients were discharged after patients tolerating orally adequately and mobilizing normally

DATA AND STATISTICAL ANALYSIS

Data were analyzed using the Students "t" test, Fisher"s Exact test, and the chi-square test, a P value of <0.001 was considered significant. Data will be presented in the form of mean, S.D., frequencies, percentages, and diagrams. SPSS version 24.0 for windows was employed for statistical analysis

STATISTICAL ANALYSIS

The results obtained by comparing laparoscopic with open pancreaticoduodenectomy conducted in 20 patients in Father Muller Medical College are as follows –

Table-1: Age Group – Mean Age and Standard Deviation –

Group	N	Mean age	Standard deviation
laproscopy	9	54.3	9.53
open	11	57	9.125

Mean Age and Standard Deviation P value – 0.951(not significant) in our study conducted on 20 patients mean age for laparoscopic pancreaticoduodenectomy was 54.3 and in open pancreaticoduodenectomy was 57 p value is 0.951 which was not significant.

The age wise distribution of patient in the two groups is charted below

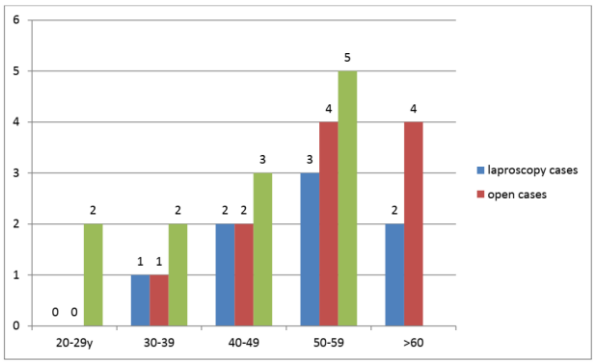

Fig-1: The age wise distribution of patient in the two groups is charted below

Table-2: Sex distribution in study group

SEX		Group Laproscopy	open	TOTAL
MALE	COUNT % WITHIN THE GROUP	4 44.4%	4 36.3%	8 40%
FEMALE	COUNT % WITHIN THE GROUP	5 55.5%	7 63.6%	12 60%
TOTAL	COUNT %WITHIN THE GROUP	9 100.0%	11 100.0%	20 100.0%

Cross table of sex distribution

There are 4(44.4%) male and 5(55.5%) female patients each in the laproscopy group and 4(36.3%) male and 7(63.6%) female patients in the open group.

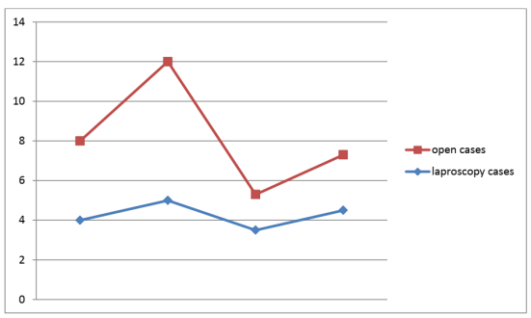

Fig-2: line diagram of sex distribution of two groups

Table-3: Pre-op stage of the disease

STAGE	LAPROSCOPY (%)	OPEN (%)	TOTAL (%)
1A	3(33.3%)	0(0.0%)	3(15%)
1B	2(22.2%)	0(0.0%)	2(10%)
2A	2(22.2%)	7(63.6%)	9(45%)
2B	1(11,1%)	3(27.2%)	4(20%)
3	0(0.0%)	1(9.09%)	1(5%)
4	0(0.0%)	0(0.0%)	0(0.0%)
TOTAL (%)	9(100%)	11(100%)	20 (100%)

P VALUE-0.049 (significant)

Out of the total 9 patients who underwent laparoscopic surgery,3(33.3%) had stage

1Adisease,2(22.2%) had stage 1B disease.2(22.2%) had stage 2A disease.1(11.1%) had stage 2B disease.0(0.0%) had stage 3 disease.0(0.0%) had stage 4 disease and 0(0.0%).

Out of the total 11 patients who underwent open surgery 0(0.0%) had stage 1A disease,0(0.0%) had stage 1B disease.7(63.6%) had stage 2A disease.3(27.2%) had stage 2B disease.1(9.09%) had stage 3 disease and 0(0.0%) had stage 4 disease

Table-4: Pre-op biopsy

PRE-OP BIOPSY	Laproscopy (%)	Open (%)	Total (%)
Yes	9 100%	7 63.6%	16 80%
No	0 0.0%	4 36.3%	4 20%
Total	9 100%	11 100%	20 100%

P value=0.049 significant

Out of the total 9 patients who underwent laparoscopic surgery all 9(100%) patients had pre op biopsy done. Out of the total 11 patients who underwent open surgery 4 (36.3%) didn't have pre-op biopsy done.

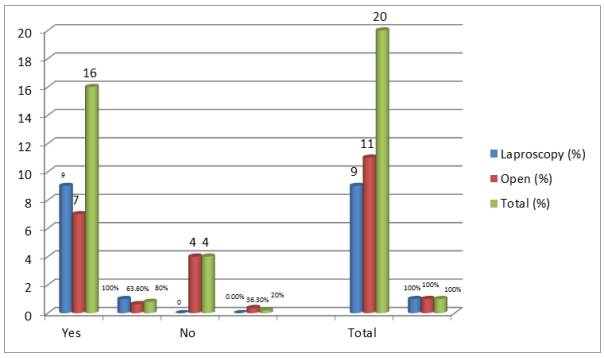

Fig-3: Bar Chart of Pre-Op Biopsy Taken in Patients

Table-5: Pre-op pancreatic duct size

Pre-op pancreatic duct size	Laproscopy (%)	Open (%)	Total (%)
0-2mm	2 22.2%	6 54.5%	8 40%
3-4mm	3 33.3%	3 27.2%	6 30%
>5mm	4 44.4%	2 18.18%	6 30%
Total	9 100%	11 100%	20 100%

P value= 0.135 (not significant)

Out of the total 9 patients who underwent laparoscopic surgery 2 (22.2%) had pre-op 0-2mm duct size,3(33.3%) had 3-4 mm duct size and 4 (44.4%) had >5mm duct size.

Out of the total 11 patients who underwent open surgery 6(54.5%) had pre-op 0-2mm duct size,3(27.2%) had 3-4 mm duct size and 2 (18.18%) had >5mm duct size.

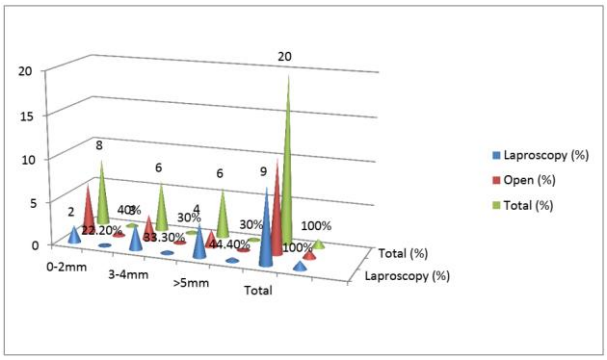

Fig-4: Pre-Op Pacreatic Duct Size Chart

Table-6: Pre-op biliary drainage

PRE-OP BILIARY DRAINAGE	Laproscopy (%)	Open (%)	Total (%)
Yes	1 11.1%	1 9.09%	2 10%
No	8 88.8%	10 90.9%	18 90%
Total	9 100%	11 100%	20 100%

P value=0.881 not- significant

Out of the total 9 patients who underwent laparoscopic surgery only 1(11.1%) had pre-op biliary drainage done. Out of the total 11 patients who underwent open surgery only 1(9.09%) had pre-op biliary drainage done.

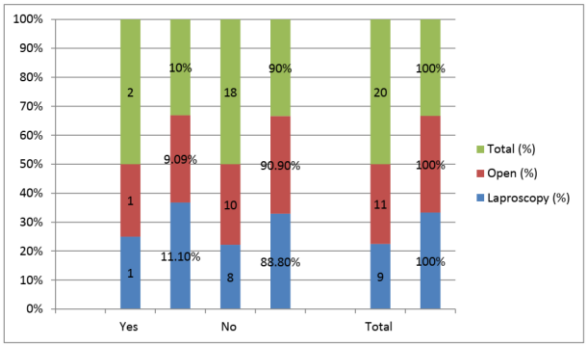

Fig-5: Showing Pre-Op Biliary Drainage done for Patients

Table-7: Pancreatic stenting done

Pancreatic stenting done	Laproscopy (%)	Open (%)	Total (%)
Yes	9 100%	10 90.9%	19 95%
No	0 0.0%	1 9.09%	1 5%
Total	9 100%	11 100%	20 100%

P value=0.375 not- significant

Out of the total 9 patients who underwent laparoscopic surgery all patients had pre-op pancreatic stenting done. Out of the total 11 patients who

underwent open surgery only 10(90.9%) had pre-op pancreatic stenting done.

Table-8: Pathological classification of tumours

Pathological classification	Laproscopy	Open	Total
Well differentiated	7 77.7%	9 81.8%	16 80%
Moderately differentiated	1 11.1%	2 18.1%	3 15%
Poorly differentiated	1 11.1%	0 0.0%	1 5%
Total	9 100%	11 100%	20 100%

P VALUE=0.481 (Not significant)

In the laparoscopic group, there are 9 patients. Of the 9 patients, 7(77.7%) had well differentiated tumour, 1(11.1%) had moderately differentiated tumour, 1(11.1%) had poorly differentiated tumour.

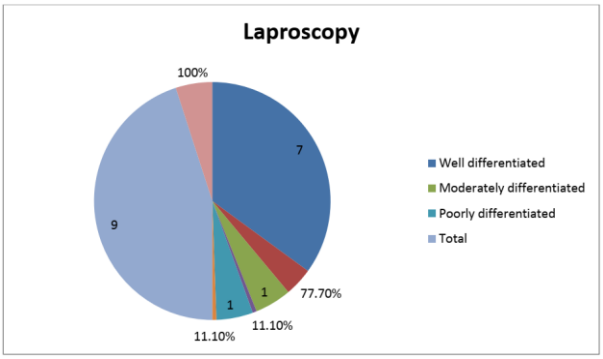

Fig-6: Pie Chart of Laproscopy Group with Classification of Tumour

In the Open group, there are 11 patients. Of the 11 patients, 9(81.8%) had well differentiated tumour, 2(18.8%) had moderately differentiated tumour, 0(0.0%) had poorly differentiated tumour.

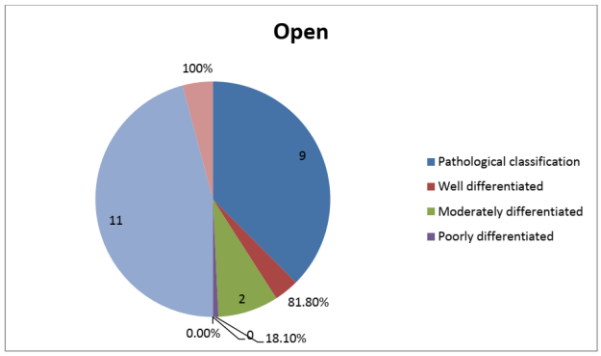

Fig-7: Pie Chart of Open Group with Classification of Tumors

Table-9: Intraoperative blood loss

Intraoperative blood loss	Laproscopy (%)	Open (%)	Total (%)
0-100ml	0 0.0%	0 0.0%	0 0.0%
110-500ml	7 77.7%	5 45.4%	12 60%
>600ml	2 22.2%	6 54.5%	8 40%
Total	9 100%	11 100%	20 100%

P value=0.0142 (significant)

Out of the total 9 patients who underwent laparoscopic surgery, 7(77.7%) had 110-500ml blood loss, 2(22.2%) had greater than 600ml blood loss.

Out of the total 25 patients who underwent open surgery 5(45.4%) had 110-500ml blood loss, 6(54.5%) had greater than 600ml blood loss.

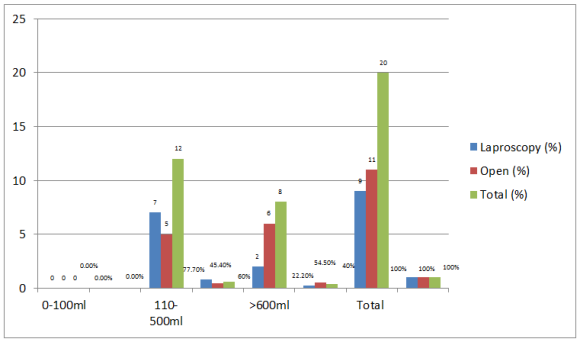

Fig-8: Bar Graph Showing Intraoperative Blood Loss between two Groups

Table-10: Mean hospital duration

Group	N	Mean	Standard deviation
Laproscopy	9	7.8	2.26
Open	11	10.69	3.34

P value=0.00 (highly significant)

Out of the 9 patients who underwent laparoscopic surgery, mean duration of hospital stay is 7.8 days. Out of the 11 patients who underwent open surgery, mean duration of hospital stay is 10.69 days

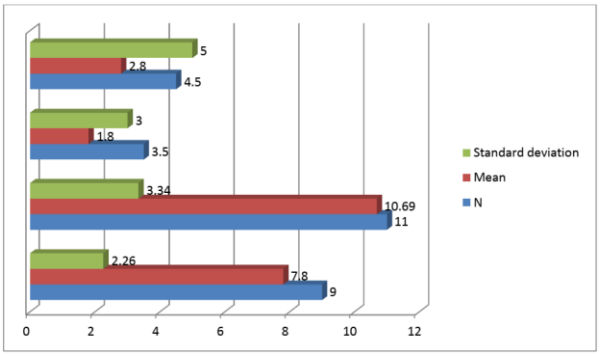

Fig-9: Mean Hospital Stay in Chart

Table-11: Mean icu stay

Group	N	Mean	Standard deviation
Laproscopy	9	1.46	0.745
Open	11	2.958	1.681

P value=0.004 (highly significant)

Out of the 9 patients who underwent laparoscopic surgery, mean duration of ICU stay was 1.46 days. Out of the 11 patients who underwent open surgery, mean duration of ICU stay was 2.95 days.

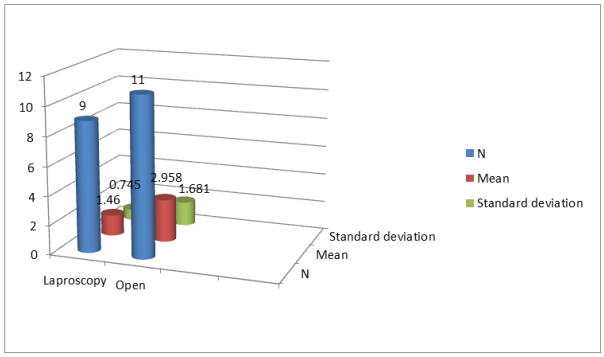

Fig-10: Mean Icu Stay in Both Groups

Table-12: Post-operative complications

Post-operative complications	Laproscopy (%)	Open (%)	Total (%)
Yes	0 0.0%	3 27.2%	3 15%
No	9 100%	8 72.7%	17 85%
Total	9 100%	11 100%	20 100%

P value=0.105(not significant)

Out of the total 9 patients who underwent laparoscopic surgery, 0.0% had no post-operative complication. Out of the total 11 patients who underwent open surgery 3(27.2%) had post-operative complication-sepsis

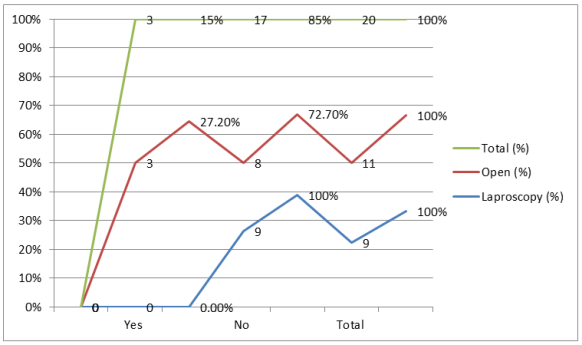

Fig-11: Post-Operative Complications In Both Groups

Table-13: Mean operative time

Group	N	Mean	Standard deviation
Laprascopy	9	5.16	1.16
Open	11	4.66	0.861

P VALUE =0.03 (highly significant)

Out of the 9 patients who underwent laparoscopic surgery, mean duration of surgery was 5.16 hours. Out of the 11 patients who underwent open surgery, mean duration of surgery was 4.66 hours

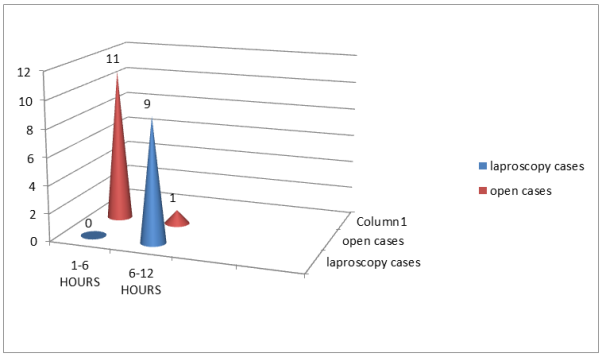

Fig-12: Mean Operative Time in Both Groups

Table-14: Retroperitoneal margin

Retroperitoneal margin	Laproscopy (%)	Open (%)	Total (%)
POSITIVE	1 11,1%	0 0.0%	1 5%
NEGATIVE	8 88.8%	11 100%	19 95%
Total	9 100%	11 100%	20 100%

p value=0.237 (not significant)

Out of the total 9 patients who underwent laparoscopic surgery, 1(11.1%) had positive retroperitoneal margin Out of the total 11 patients who underwent open surgery nil had positive retroperitoneal margin

Table-15: Lymphovascular invasion

Lymphovascular invasion present	Laproscopy (%)	Open (%)	Total (%)
Yes	2 22.2%	4 36.3%	6 30%
No	7 77.7%	7 63.6%	14 70%
Total	9 100%	11 100%	20 100%

P value=0.577 (not significant)

Out of the total 9 patients who underwent laparoscopic surgery,2 (22.2%) had lymphovascular invasion. Out of the total 11 patients who underwent open surgery 4(36.3%) had lymphovascular invasion.

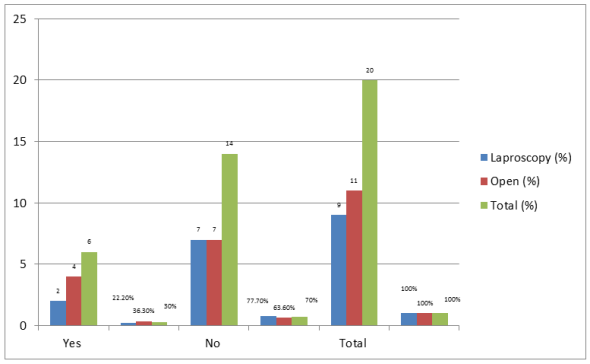

Fig-13: Showing Lymphovascular Invasion

Table-16: Post-op pancreatic duct size

Post-op pancreatic duct size	Laproscopy (%)	Open (%)	Total (%)
0-2mm	2 22.2%	7 63.6%	9 45%
3-4mm	6 66.6%	4 36.3%	10 50%
>5mm	1 11.1%	0 0.0%	1 5%
Total	9 100%	11 100%	20 100%

P value= 0.173 (not significant)

Out of the total 9 patients who underwent laparoscopic surgery 2 (22.2%) had post-op 0-2mm duct size, 6(66.6%) had 3-4 mm duct size and 1 (11.1%) had >5mm duct size.

Out of the total 11 patients who underwent open surgery 7(63.6%) had post-op 0-2mm duct size,4(36.3%) had 3-4 mm duct size and 0(0.0%) had >5mm duct size.

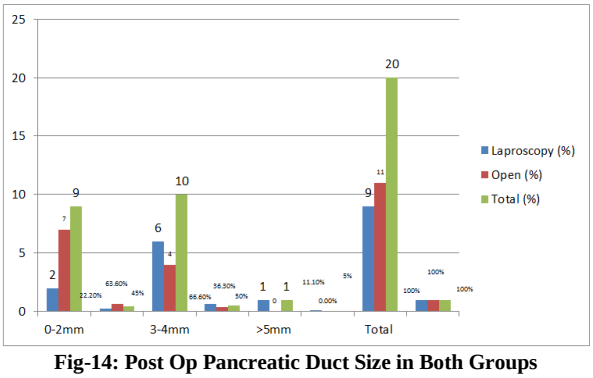

Fig-14: Post Op Pancreatic Duct Size in Both Groups

Table-17: Pancreatic fistula

Pancreatic fistula	Laproscopy (%)	Open (%)	Total (%)
Yes	2 22.2%	1 9.90%	3 15%
No	7 77.7%	10 90.9%	17 85%
Total	9 100%	11 100%	20 100%

P value=0.368 (not significant)

Out of the total 9 patients who underwent laparoscopic surgery,2 (22.2%) had developed pancreatic fistula. Out of the total 11 patients who underwent open surgery 1(9.90%) had developed pancreatic fistula.

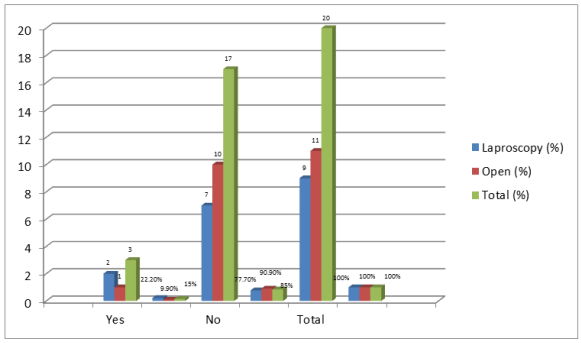

Fig-15: Pancreatic Fistula Formation in Both Groups

Table-18: Mortality

Mortality	Laproscopy (%)	Open (%)	Total (%)
Yes	0 0.0%	0 0.0%	0 0.0%
No	9 100%	11 100%	20 100%
Total	9 100%	11 100%	20 100%

p value- not significant

Out of the total 9 patients who underwent laparoscopic surgery, nil had mortality. Out of the total 11 patients who underwent open surgery, nil had mortality

Table-19: Follow up-1 year recurrence

Follow up-1 year recurrence	Laproscopy (%)	Open (%)	Total (%)
Yes	0 0.0%	0 0.0%	0 0.0%
No	9 100%	11 100%	20 100%
Total	9 100%	11 100%	20 100%

p value-not significant

Out of the total 9 patients who underwent laparoscopic surgery, one year follow up showed no recurrence. Out of the total 11 patients who underwent open surgery, one year follow up showed no recurrence.

DISCUSSION

In the past 2 decades laproscopy has been gaining wide acceptance especially in clinical surgical practices, this new approach has important advantages when compared with open surgery that is reduced intraoperative loss of blood, reduced postoperative pain and early recovery, accelerated return to normal bowel function with resumption of oral intake, early and faster discharge from the hospital. Different surgeons had different opinions regarding the most optimal treatment for pancreatic cancers.

Laproscopy has attained great acceptance due to the many benefits. The present study is a prospective study done in Father Muller Medical College comparing the results of laparoscopic pacreaticoduodenectomy to open pancreaticoduodenectomy.

As the number of studies showed laparoscopic procedure is superior to open approach, it has been worldwide accepted as the alternative to open surgery. There are numerous studies comparing laparoscopic to open pancreaticoduodenectomy.

Age

In the present study, conducted on 20 patients mean age for laparoscopic pancreaticoduodenectomy was 54.3 and in open pancreaticoduodenectomy was 57.In the study conducted by S Chalikonda *et al*. which was done in March 2009, Mean patient age was 62.6 (51–78) years in the LPD group and 61.1 (49–80) years in the OPD group[6].

Sex

In the present study, there are more female patients compared to male patients. There are 4(44.4%) male and 5(55.5%) female patients each in the laprascopy group and 4(36.3%) male and 7(63.6%) female patients in the open group. But, male patients are more than female patients in the other study conducted. The proportion of male patients was 55.17% in the LPD group and 58.62% in the OPD group (P=0.708)[7].

Pre-op biopsy

In the present study pre-op biopsy was done for all patients in the laproscopy group but only for 7 patients in the open group. In a similar study all patients was evaluated with pre-op biopsy both groups[8].

Pre-op -staging

In our study the majority of patients were in stage 1 of the disease in laproscopic group and stage 2A in open group. Similar study done by Pravin Bhingare *et al.* majority of patients in both the groups were in Stage 1 of the disease[9].

Pre-op and Post op pancreatic duct size

In the present study pre op pancreatic duct size was found to be between 3-5mm in both the groups which reduced to 2mm more in the open group. Similar studies have shown similar results[10].

Mean operative duration

In the present study, in laparoscopic whipples procedure, mean duration of surgery was 5.16 hours and open gastrectomy, mean duration of surgery was 4.66 hours p value was significant.

In another study, Mean operative time for patients undergoing TLPD (465± 86 min) was not significantly different from patients in the OPD group (465±98) p>0.99[11].

Pathological classification of tumour

In the present study, laparoscopic group and open group had more well differentiated tumors that were operated. Similarly In another study laproscopic group had more well differentiated tumours that were operated compared to open group[5].

Intraoperative blood loss

In the present study, in the laproscopic group more number of patients had less than had less than 100ml blood loss whereas blood loss was more in the open group.Similarly in another study blood loss was more in the open group. LP patients had lower average blood loss (357 vs. 588 mL, P 0.01)[8].

Mean duration of hospital stay and Mean ICU stay. In the present study the mean duration of ICU and total hospital stay was shorter in laprascopic patients compared to open surgery patients. p value was highly significant in both cases. Similarly other study also had shorter hospital stay in laproscopic group compared to the open group, median hospital stay, 6 (4–118) versus 9 (6–73)days, respectively (p=0.006)[11].

Post operative complications

In the present study there was no significant postoperative complications seen in either of the groups. However in a study conducted by Marc G Meslah *et al*. Morbidity rates were equal at 31 % for the two groups[12]. There were 2 pancreatic fistulas in the laproscopic group similar to another study[13].

Lymphovascular invasion

In the present study,open group had lesser lymphovascular invasion compared to laproscopic group.Similar to other studies[5].

Post-operative mortality

In the present study there was nil mortality in both the groups,p value was not significant. Similarly in another study In-hospital mortality or 30-day mortality was not statistically different between the laparoscopic

and open groups, 3.2 and 3.4 %, respectively (p=0.96)[11].

Recurrence- 1 year follow

In the present study there was no recurrence seen in either of the groups with 1 year follow up. However another study conducted by Kris P Croome *et al*. Median follow-up was 15.2 months in the TLPD group and 14.8 months in the OPD group. When an intention-to-treat analysis was performed in patients with a diagnosis of adenocarcinoma, there was no significant difference in overall survival between the two groups (p=0.14[11].

CONCLUSION

The present study is a comparative study of laparoscopic with open pacreaticoduodenectomy done in Father Muller Medical College.

This study is done to compare the results of laparoscopic and open pancreaticoduodenectomy in term of age, sex, Mean duration of surgery, Intraoperative blood loss, pancreatic fistula, pancreatic duct size, Lymphovascular invasion. Pathological classification of tumors, Stage of disease. Postoperative ICU stay, Postoperative hospital stay, 1 year follow up

In the study, while comparing the laparoscopic and open pancreaticoduodenectomy groups it was seen that patients who underwent Laparoscopic repair experienced less blood loss, reduced mean duration of hospital stay and ICU stay and postoperative hospital stay. However, the mean duration of surgery was high in laparoscopic group compared to open group patients. The main drawback of the present study is assessment of time period for recurrence is short

Summary

The present study a comparative study of laparoscopic with open pancreaticoduodenectomy, is a prospective study done in Father Muller Medical College.

The study compared 2 groups, laparoscopic group, and open group each group having 9 and 11 patients. In our study conducted on 20 patients mean age for laparoscopic pancreaticoduodenectomy was 54.3 and in open pancreaticoduodenectomy were 57.

p value is 0.951 which was not significant

There are 4(44.4%) male and 5(55.5%) female patients each in the laproscopy group and 4(36.3%) male and 7(63.6%) female patients in the open group. Out of the total 9 patients who underwent laparoscopic surgery,3(33.3%) had stage 1Adisease, 2(22.2%) had stage 1B disease.2(22.2%) had stage 2A disease.1(11.1%) had stage 2B disease.0(0.0%) had stage 3 disease.0(0.0%) had stage 4 disease and 0(0.0%).

Out of the total 11 patients who underwent open surgery 0(0.0%) had stage 1A disease,0(0.0%) had stage 1B disease.7(63.6%) had stage 2A disease.3(27.2%) had stage 2B disease.1(9.09%) had stage 3 disease and 0(0.0%) had stage 4 disease. p value was significant.

Out of the total 9 patients who underwent laparoscopic surgery all 9(100%) patients had pre op biopsy done. Out of the total 11 patients who underwent open surgery 4 (36.3%) didn't have pre-op biopsy done P value=0.049 significant.

Out of the total 9 patients who underwent laparoscopic surgery 2 (22.2%) had pre-op 0-2mm duct size, 3(33.3%) had 3-4 mm duct size and 4 (44.4%) had >5mm duct size. Out of the total 11 patients who underwent open surgery 6(54.5%) had pre-op 0-2mm duct size, 3(27.2%) had 3-4 mm duct size and 2 (18.18%) had >5mm duct size. P value= 0.135 (not significant)

Out of the total 9 patients who underwent laparoscopic surgery only 1(11.1%) had pre-op biliary drainage done. Out of the total 11 patients who underwent open surgery only 1(9.09%) had pre-op biliary drainage done. P value=0.881 not- significant.

Out of the total 9 patients who underwent laparoscopic surgery all patients had pre-op pancreatic stenting done. Out of the total 11 patients who underwent open surgery only 10(90.9%) had pre-op pancreatic stenting done. P value=0.375 not-significant.

In the laparoscopic group, there are 9 patients. Of the 9 patients, 7(77.7%) had well differentiated tumour, 1(11.1%) had moderately differentiated tumour, 1(11.1%) had poorly differentiated tumour. In the Open group, there are 11 patients. Of the 11 patients, 9(81.8%) had well differentiated tumour, 2(18.8%) had moderately differentiated tumour, 0(0.0%) had poorly differentiated tumour. P VALUE=0.481 (Not significant).

Out of the total 9 patients who underwent laparoscopic surgery, 7(77.7%) had 110-500ml blood loss, 2(22.2%) had greater than 600ml blood loss. Out of the total 25 patients who underwent open surgery 5(45.4%) had 110-500ml blood loss, 6(54.5%) had greater than 600ml blood loss. P value=0.0142 (significant).

Out of the 9 patients who underwent laparoscopic surgery, mean duration of hospital stay is 7.8 days. Out of the 11 patients who underwent open surgery, mean duration of hospital stay is 10.69 days P value=0.00 (highly significant)

Out of the 9 patients who underwent laparoscopic surgery, mean duration of ICU stay was 1.46 days. Out of the 11 patients who underwent open surgery, mean duration of ICU stay was 2.95 days P value=0.004 (highly significant)

Out of the total 9 patients who underwent laparoscopic surgery, 0.0% had no post-operative complication. Out of the total 11 patients who underwent open surgery 3(27.2%) had post-operative complication-sepsis. P value=0.105(not significant).

Out of the 9 patients who underwent laparoscopic surgery, mean durationof surgery was 5.16 hours. Out of the 11 patients who underwent open surgery, mean duration of surgery was 4.66 hours. P VALUE =0.03 (highly significant).

Out of the total 9 patients who underwent laparoscopic surgery, 1(11.1%) had positive retroperitoneal margin.Out of the total 11 patients who underwent open surgery nil had positive retroperitoneal margin. p value=0.237 (not significant).

Out of the total 9 patients who underwent laparoscopic surgery, 2 (22.2%) had lymphovascular invasion. Out of the total 11 patients who underwent open surgery 4(36.3%) had lymphovascular invasion. P value=0.577 (not significant).

Out of the total 9 patients who underwent laparoscopic surgery 2 (22.2%) had post-op 0-2mm duct size, 6(66.6%) had 3-4 mm duct size and 1 (11.1%) had >5mm duct size. Out of the total 11 patients who underwent open surgery 7(63.6%) had post-op 0-2mm duct size, 4(36.3%) had 3-4 mm duct size and 0(0.0%) had >5mm duct size.p value not significant.

Out of the total 9 patients who underwent laparoscopic surgery,2 (22.2%) had developed pancreatic fistula. Out of the total 11 patients who underwent open surgery 1(9.90%) had developed pancreatic fistula. P value=0.368 (not significant).

Out of the total 9 patients who underwent laparoscopic surgery, nil had mortality. Out of the total 11 patients who underwent open surgery, nil had mortality. p value- not significant.

Out of the total 9 patients who underwent laparoscopic surgery, one year follow up showed no recurrence. Out of the total 11 patients who underwent open surgery, one year follow up showed no recurrence. p value-not significant

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