ORIGINAL RESEARCH PAPER

General Surgery

A RETROSPECTIVE STUDY OF INDICATIONS AND COMPLICATIONS OF WHIPPLE'S PROCEDURE IN TERTIARY CARE HOSPITAL

KEY WORDS: .

Dr. Chintamani Ashok Associate professor, Upgraded Department of General Surgery, Osmania General Hospital and Osmania Medical College, Hyderabad. - Corresponding Author

Dr. R. Sadgunachary Associate professor, Upgraded Department of General Surgery, Osmania General Hospital and Osmania Medical College, Hyderabad

ABSTRACT

The study is aimed at the indications for Whipple's procedure, prospectively and retrospectively. To study post operative morbidity, mortality and complications following Whipples pancreaticoduodenectomy within 30 days in Osmania General Hospital, Hyderabad.

INTRODUCTION:

Pancreaticoduodenectomy is the standard surgical procedure for various benign and malignant lesions in the periampullary region and head of pancreas. Despite marked progress in the procedure and the various modifications proposed , the mortality rate still is reported to be 2% - 10% . in most high volume centers . In most series , the three leading causes of morbidity after pancreaticoduodenectomy are delayed gastric emptying ,pancreatic anastomotic leak , and wound infection. Leakage from the pancreatic anastomosis remains the single most important cause of morbidity and mortality. The most common indication for pancreatico duodenectomy is carcinoma of the head pancreas. This study evaluated the indications and perioperative outcome of 22 patients who underwent pancretico duodenectomy in a local tertiary referrals center. Osmania General Hospital, Telangana, between September 2014 to October 2016.

MATERIALS AND METHODS

Between September 2014 to October 2016, 22 patients underwent elective pancreatico –duodenectomy at the upgraded department of General Surgery at Osmania Medical College, Hyderabad, Telangana. All patients were operated and managed by a team of surgeons specialized in hepatobiliary and pancreatic surgery. A retrospective and prospective study was performed by reviewing the records of these patients for clinical laboratory, operative and pathological data. Pre operative indications were noted and analyzed. Post operative complications and mortality were documented.

Cases were evaluated by pre-operative estimation of:

1. Liver function tests
2. Serum bilirubin total
3. Serum proteins
4. Prothrombin time to assess coagulation status
5. ALT/AST
6. Alkaline phosphatase
7. CA 19 .9 levels
8. Ultrasound abdomen
9. Pancreatic protocol CT scan
10. Upper GI endoscopy and side – viewing endoscopy
11. Cause of obstructive jaundice was established by ERCP biopsy and or CT scan report
12. MRCP

Operation:

- General Anesthesia and epidural anesthesia was given for all cases
- Chevron;s incision (Bilateral sub costal roof top incision) was taken for all 22 cases
- Classical Whipple's pancreatico- duodenectomy was done in all cases, single loop pancreatico jejunostomy, hepatico jejunostomy and gastro jejunostomy was done in all cases

Post operative complications:

The complications were defined

1. Pancreatic fistula - Drain output of any measurable volume of fluid on or after post-operative day 3 with amylase content greater than three times the serum amylase activity.
2. Biliary Leak - persistence of biliary drainage beyond POD 5 from the drain placed in the right upper quadrant .
3. Delayed Gastric Emptying.
4. Post pancreatectomy hemorrhage - hematemesis or melena and no other source of ongoing blood loss , or the sudden appearance of frank blood either in the NG tube or per rectum , with subsequent fall in hemoglobin of 2gm/dl , and requiring blood transfusion or radiological intervention or endoscopic intervention.
5. Intra abdominal abscess - Collection of fluid > 3cm in diameter demonstrated by ultrasound or CT scan in cases of persistent unexplained fever .
6. Cholangitis - Fever with chills and rigors and absence of pneumonia and wound infection and confirmed by increasing serum bilirubin.
7. Enteric fistula - enteric secretions that persisted beyond POD 5 with demonstration by fistulography of an instantaneous filling of the jejunal loop anastomosed with pancreas after injection of contrast media from drain catheter
8 Hospital stay - the number of days in hospital from the time of initial operation to hospital discharge
9 . Mortality - death during the initial hospitalization or within 30 days of hospital discharge.

STATISTICAL METHODS

- Since the indications and complications are independent variants the results were analyzed by calculating simple percentage
- Operative mortality was defined was death within 30 days of surgery

Analysis were performed to evaluate the impact of parameters on post operative morbidity and mortality .

ANALYSIS OF RESULTS

Duration of study September 2014 to October 2016

No. of patients studied: 22

Age of the patients (11 to 68 year(average 38 yrs)

Age in Years	No. of cases (N=22)	Percentage
10-20 years	2	9.09%
21-30 years	6	27.27%
31-40 years	3	13.63%
41-50 years	4	18.18%
51-60 years	5	22.72%
61-70 years	2	9.09%
Total	22	100%

SEX INCIDENCE

Sex	No. of cases (n=22)	Percentage
Female	13	59.04%
Male	9	40.06%
Total	22	100%

Sex ratio: Male: Female: 2:3

Mean post operative Hospital stay (12 to 27): Average 19.5 days

CLINICAL SYMPTOMS

Clinical Sympotms	No. of cases (n=22)	Percentage
Jaundice	12	54.55%
Pruritus	12	54.55%
Weight loss	15	68.18%
Pain abdomen	7	31.8%
Lump abdomen	5	22.72%
Melena	4	18.18%
Vomitings	4	18.18%
Fever	3	13.63%
Gastric outlet	3	13.63%

Surgery

Anesthesia – General Anesthesia and epidural in all 22 cases (100%)
Incision – Chevron's incision in all 22 cases (bilateral subcostal) (100%)

Findings

	No. of cases (n=22)	Percentage
Carcinoma head of pancreas	4	18.89%
Duodenal adenocarcinoma	3	13.63%
Carcinoma distal CBD	2	9.09%
Ampullary growth	8	37.24%
SPEN	4	18.89%
Neuro Endocrine tumor	1	4.45%
Cystic neoplasm of pancreas	1	4.45%

Operative procedure: Classic Whipple's pancreatico duodenectomy in all 22 cases (100%)
Feeding jejunostomy – 21/22 cases (94.05%)

Mean blood transfusion -4 units (average 3 to 5)

Post operative period

Jejunostomy feeds started 2 to 5 days (average 3.5 days)
Oral feeds 3 to 7 days (average 5days)
Sutures removal 12 to 14 days (average 13 days)
Intra operative complications: Nil

Overall complication Rate

	No. of cases (n=22)	Percentage
With complications	9	31.8%
Without complications	13	68.2%

POST OPERATIVE COMPLICATIONS

	No. of cases (n=22)	Percentage
Pancreatico jejunostomy leak	7	32.82%
Biliary leak	1	4.55%
Delayed gastric emptying	4	18.18%
Death	2	9.09%
PPH	2	9.09%
Intra abdominal collection	1	4.55%
Respiratory failure	1	4.55%
Enteric fistula	0	0

Post operative HPE

	No. of cases	Percentage
Well differentiated adernocarcinoma	7	35.82%
Moderately differentiated adernocarcinoma	5	28.72%%
Poorly differentiated adernocarcinoma	4	18.19%
Positive lymphnode cases	5	28.72%
Solitary pseudopapillary tumor	4	18.19%
Neuroendocrine tumor	1	4.55%
Serous Cystic neoplasm of pancreas	1	4.55%

DISCUSSION

A retrospective study was performed to evaluate the standard of their operation in a tertiary referral center. Osmania General Hospital, Hyderabad. Furthermore with an aim of improving the operative results, we do analyzed the factor that may influence mortality or morbidity after operation. It is not only the operative technique but also the perioperative management that determine patients outcomes.

Mean age in our study patients is 38 years.

Post operative length of stay – average 19.5 days.

Delayed gastric emptying is the most common complication in our present study **4** of **22** patients with incidence of **18.18**%. of which 2 patients developed grade A DGE and 2 patients developed grade B DGE , all the patients were managed conservatively, consisting of nasogastric tube decompression and nutritional support, either with a feeding jejunostomy tube or with total parenteral nutrition (TPN) until symptoms resolve and a regular diet can be tolerated. Metoclopramide is often used instead of, or in addition to erythromycin

Pancreatic fistula was seen in **7** of **22** patients with overall incidence of **31.82%**. out of which 6 patients developed grade A pancreatic fistula were managed conservatively , 3 patients who developed grade B were also managed conservatively but had prolonged stay in the hospital ,none were of grade C fistula.

2 patients out of **22** patients developed Post pancreatectomy hemorrhage , incidence is **9.09%.**

Biliary leak was seen in **1** out of **22** patients with incidence of 4.05%.

There was no re-exploration for any of the 22 patients.

In our study no of patients who undergone Whipple's procedure, 2 patients out of 22 patients expired. Incidence of 9.09%.

CONCLUSIONS

- In our study, average age of patients with periampullary carcinoma is 38 years.
- In our study male to female ratio is 2:3
- Total number of patients who underwent Whipple's procedure are 22
- In Patients who had undergone pancreaticoduodenostomy, 7 patients developed pancreatic anastomotic leak which were managed conservatively.
- In Patients who had undergone pancreaticoduodenectomy, 4 patients developed delayed gastric emptying which improved on conservative management.
- In Patients who had undergone pancreaticoduodenectomy, 2 patients developed Post pancreatectomy hemorrhage.
- In Patients who had undergone pancreaticoduodenectomy, 1 patient developed biliary leak who died because of respiratory failure.
- In Patients who had undergone pancreaticoduodenectomy, 2 patients expired
- **Morbidity – 40.06%**
- **Mortality- 09.09%**
- The study shows that pancreatic duodenectomy can be performed with a low mortality rate in a tertiary referral center, Osmania General Hospital, Hyderabad. When performed by a specialized team of surgeons, the perioperative results were comparable to those reported from well-established Western center, despite a lower case volume (lower prevalence of pancreatic cancer in the local population). The fall in morbidity and mortality is related to better anesthesia techniques,

intensive care unit, lesser operative time and better management of complications.

- Many studies have correlated both individual and institutional operative volume to outcomes in pancreatic surgery and have been a driving force for regionalization of pancreaticoduod enectomy and other complex procedures
- The emergence and recognition of pancreatic surgery as a specialty contributed to this intra institutional concentration, which in turn became a reason for referral of patients, increase in volume, and better outcomes. It is impossible to pinpoint a particular element in operative technique or postoperative care that is responsible for the better outcomes.
- This experience also sheds light on the changes of the indication of the operation. The indications expanded to include benign and pre-malignant cystic lesions. Older patients and patients with comorbidities were also included that in past would not have been considered for surgery considering the high risk. It is interesting to observe the patterns of duration of stay and readmission with pancreaticoduodenectomy. Current mean duration of stay is one third less than what it was 20 years back. We have challenged assumptions of oral intake and drain management from the past, and accelerate pathways of early discharge.
- Preventing complications and improving management of those that occur will of course continue to be the goal. On the other extreme is the emergence of different operative approaches like laparoscopic whipples surgery and robotic assisted pancreatoduodenectomy. Only time will tell if the open procedure remains the standard in years to come.

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