ORIGINAL RESEARCH PAPER

General Surgery

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

KEY WORDS: Whipples, Pancreas, Complications of whipples, Pancreaticoduodenectomy.

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ABSTRACT

To study indications for Whipple's procedure, post-operative morbidity and mortality following Whipples pancreaticoduodenectomy within 30 days in Osmania General Hospital, 22 procedures of whipples surgery during the study period from September 2014 to October 2016 were retrospectively studied. This 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 analyze the factor that may influence mortality or morbidity after operation. It is not only the operative technique but also the perioperative management that determine patient's outcomes. In Our study **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.

INTRODUCTION:

Whipple *et al* [1] first described the procedure in1935. At that time, the mortality rate was reported to be >30%. 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 pancreatico duodenectomy are delayed gastric emptying, pancreatic anastomotic leak, and wound infection [2-4]. They often contribute significantly to prolonged hospitalization and mortality. Leakage from the pancreatic anastomosis remains the single most important cause of morbidity and mortality [5]. The incidence of pancreatic fistula ranges between 2-30% in most series. Thus, prevention of a pancreatic leak is of paramount importance and many modifications have been proposed on the management of the pancreatic remnant. these include technique, the pancreaticogastrostomy anastomosis, external drainage of the pancreatic duct, stented anastomosis, reinforcement of anastomosis[6], etc. 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 pancreaticoduodenectomy in a local tertiary referrals center. Osmania General Hospital, Hyderabad during 2 years period.

MATERIALS AND METHODS:

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.

- 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 was performed to evaluate the impact of parameters on post-operative morbidity and mortality.

ANALYSIS OF RESULTS: Age of the patients 11 to 68 year (average 38 years).

Distribution of age:

	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.

Surgery

Anesthesia – General Anesthesia and epidural in all 22 cases (100%)

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

Findings

Distribution of indications of surgery

	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	40.06%
Without complications	13	59.04%

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

OBSERVATION AND 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 pancreatic oduodenectomy, 7 patients developed pancreatic anastomotic leak which were managed conservatively.
- In Patients who had undergone pancreatico duodenectomy, 4 patients developed delayed gastric emptying which improved on conservative management.
- In Patients who had undergone pancreatico duodenectomy, 2 patients developed Post pancreatectomy hemorrhage.
- In Patients who had undergone pancreatico duodenectomy, 1 patient developed biliary leak who died because of respiratory failure.
- In Patients who had undergone pancreatic oduodenectomy, 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 pancreaticoduodenectomy 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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