(International Print/Online Journal)

SJIF IMPACT FACTOR: 5.565
PUBMED-National Library of Medicine ID-101739732

ISSN (Print): 2209-2870
ISSN (Online): 2209-2862

International Journal of Medical Science and Current Research (IJMSCR)
Available online at: www.ijmscr.com
Volume 6, Issue 6 , Page No: 250-259
November-December 2023

IJMSCR

A Descriptive Study Cystic Neoplasms Of The Pancreas

Dr. S. Selvakumar
Assistant Professor, Department of General Surgery,
Government Medical College, Chengalpattu, Tamil Nadu, India

***Corresponding Author:**
Dr. S. Selvakumar
Assistant Professor, Department of General Surgery,
Government Medical College, Chengalpattu, Tamil Nadu, India

Type of Publication: Original Research Paper
Conflicts of Interest: Nil

Abstract

Background : CPNs typically develop in the body or tail of the pancreas and enlarge slowly over time. Unlike intraductal papillary mucinous neoplasms, CPNs rarely communicate with the pancreatic duct. While the development and growth of CPNs are possibly related to hormonal stimulation, what instigates and promotes their growth is unclear.Typical of pancreatic body and tail lesions, MCPNs are often asymptomatic until they are quite large. The presenting symptoms of CPNs are often due to compression of surrounding structures such as the pancreatic duct, duodenum, or stomach. Occasionally, CPNs can induce pancreatic ductal obstruction secondary to extrinsic compression and precipitate acute pancreatitis. When located in the pancreatic head,CPNs may cause obstructive jaundice.

Aim Of The Study: To review the epidemiology, etiology, pathophysiology, histologic characteristics, clinical presentation, evaluation, and management of patients with CPNs and highlight the role of the interprofessional team caring for patients with these pancreatic lesions.

Methods : A retrospective review of the medical records of patients who underwent operative therapy for cystic neoplasms of the pancreas at the Department of General Surgery, Government Medical College, Chengalpattu, Tamil Nadu, India in the year 2021 were included in the study.. Medical records were examined for presenting signs and symptoms, diagnostic modalities, laboratory values, surgical procedure, pathologic features, and postoperative complications. Data was entered into a standard proforma and analyzed**.**

Results : Patients ranged from 17 years of age to 62 years. The average age was 35 years. Two-thirds of the patients were below 40 years of age. Mucinous cystadenoma and solid pseudopapillary tumor were the predominant subtypes in our series The duration of symptoms ranged from 2 months to 5 years. The average duration of symptoms was 19 months. The neoplasm was incidentally detected on ultrasound in 8% of patients. Eighty percent of patients had abdominal pain as the presenting symptom. Abdominal lump and vomiting were seen in a minority of patients. None of the patients had a previous history of pancreatitis. Ultrasound was done in 6 (22%) patients. It was useful in differentiating a cystic neoplasm from a pseudocyst. CT scan of the abdomen was done in 23 out of 27 patients. The cyst size on CT scan was less than 3 cm in only 2 patients (8%). Location of cyst: Almost two-thirds of the lesions were found in the tail of pancreas. The characteristic features of macrocysts and rim calcifications were seen only in one patient. Cystic neoplasms were mistakenly diagnosed as pseudocysts in 4 out of 23 patients (17%). Accurate sub-typing of the cystic neoplasms was possible only in 5 out of 23 patients (21%). Splenic vein thrombosis was an incidental finding in 3 patients. Two patients were wrongly diagnosed to have duodenal GIST (gastro intestinal stromal tumor) on imaging.

Conclusion : Cystic neoplasms of pancreas are relatively rare tumors, predominantly seen in the female population in the 4^{th} to 5^{th} decades of life.Clinical presentation is non-specific and CT scan abdomen is the

imaging modality of choice to diagnose these lesions.Given the relatively late presentation of our subset of patients, non- operative management is usually not an option.The extent of resection depends on the histological subtype of the lesions, but recurrence is rare and the prognosis is uniformly good.

Keywords: Pancreatectomy, Pancreatic cystic neoplasms, Mucinous cyst, Serous cyst

Introduction

The widespread use of high–spatial-resolution cross-sectional imaging has led to increased rates of detecting pancreatic cystic lesions. The spectrum of these lesions ranges from benign entities (pseudocyst, inflammatory cyst) to potentially malignant neoplasms (mucinous neoplasm [MCN], intraductal papillary mucinous neoplasm [IPMN]) and frankly malignant tumors (solid pseudopapillary neoplasm [SPN], pancreatic neuroendocrine tumor [PNET], and ductal adenocarcinoma) [1] . Most cystic lesions of the pancreas are benign and incidentally detected with imaging in approximately 10% of the population and in up to 30% of individuals older than 70 years [2] The assessment of pancreatic cystic lesions should include careful assessment of imaging features (cyst morphology, presence of duct communication) and clinical findings including cystic fluid analysis, when available, to improve diagnostic accuracy. [3] Identification of certain key imaging findings that confidently suggest one lesion rather than the other, and more important, of features that are more often associated with malignancy, is crucial, as these features are used to determine proper management. The biologic behavior and risk of malignant transformation in select pancreatic cysts vary according to the histologic subtype. [4]A relevant possibility associated with pancreatic cystic lesions, specifically IPMNs, is the risk of a field defect—that is, the development of a pancreatic adenocarcinoma at a location within the pancreas that is different from the site of the cystic lesion. [5] The adenocarcinoma can occur concomitantly with the identification of the cystic lesion (synchronously) or later (metachronously). Many societies have developed expert but nonuniform consensus clinical guidelines, which are continuously evolving according to accumulating medical evidence, to facilitate decisions regarding management and surveillance of these lesions.[6]

Methods : A retrospective review of the medical records of patients who underwent operative therapy for cystic neoplasms of the pancreas at the Department of General Surgery, Government Medical College, Chengalpattu, Tamil Nadu, India in the year 2021 were included in the study.. Medical records were examined for presenting signs and symptoms, diagnostic modalities, laboratory values, surgical procedure, pathologic features, and postoperative complications. Exclusion criteria: Pancreatic pseudocyst,,Solid tumors of the pancreas.High-quality cross-sectional abdominal imaging is the backbone of diagnosis. Triple-phase pancreas-protocol CT with arterial, venous, and portal venous phases or magnetic resonance imaging (MRI) with contrast provides excellent visualization of the retroperitoneal space. Radiological findings suggestive of an MCPN include a single, multiloculated lesion in the pancreatic body or tail, often with areas of calcification and without communication with the pancreatic duct (85%). An MRI is useful in distinguishing an MCPN from an intraductal papillary mucinous neoplasm by discerning cyst communication with the pancreatic duct. Imaging findings that are suggestive of malignant transformation include dense calcifications, the presence of mural nodules, infiltration of the capsule, and lymphadenopathy.Endoscopic ultrasound with cyst wall biopsy and cyst fluid cytology may be employed and is especially useful in cases where high-risk radiological features are seen; a preoperative diagnosis of malignant transformation guides the timing and type of surgical intervention. Current American Gastroenterological Association (AGA) guidelines for the management of cystic pancreatic neoplasms recommend an endoscopic ultrasound with fine needle aspiration and potential cyst wall biopsy for lesions with a minimum of 2 high-risk

Volume 6, Issue 6; November-December 2023; Page No 250-259

features, such as a mural nodule, lesional size greater than 3 cm, or a dilated pancreatic duct.

Results

TABLE :1 AGE-WISE DISTRIBUTION OF EACH SUB-TYPE OF TUMOR

Age(yr)/Subtype	SCA	MCN	SPT	IPMN	Others
10-20	-	-	2	-	1
20-30	-	1	6	-	2
30-40	-	2	3	-	-
40-50	-	5	-	-	1
>50	1	1	-	1	1

Table :1 A total of 27 patients were identified who underwent operative therapy for pancreatic cystic neoplasms. Most were female (93%).Patients ranged from 17 years of age to 62 years. The average age was 35 years. Two-thirds of the patients were below 40 years of age.

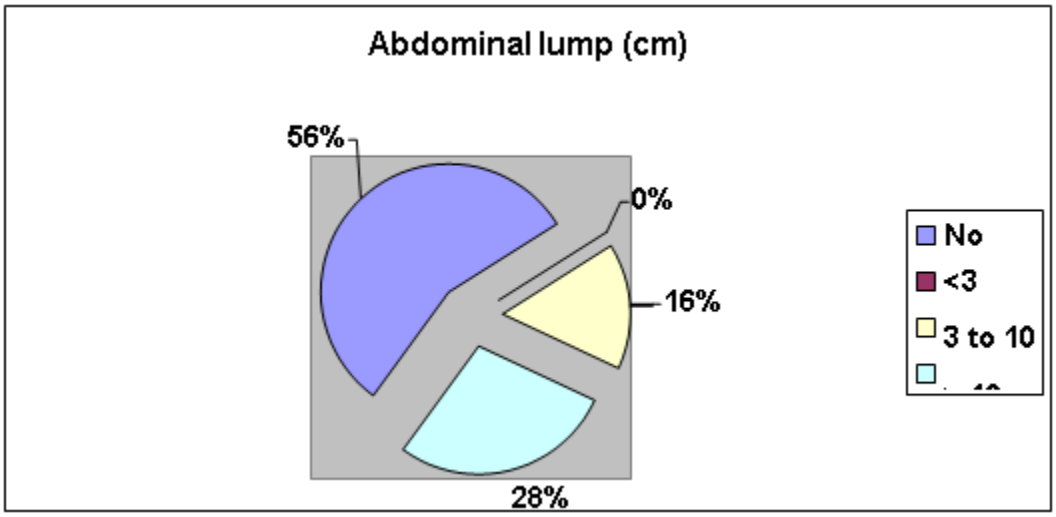
TABLE :2 CLINICAL FEATURES

Symptom	Number of patients (%)
Abdominal pain	22 (81)
Abdominal lump	4 (15)
Nausea and vomiting	4 (15)
Jaundice	2 (7.5)
Acute abdomen	1 (3.7)
Pancreatic exocrine deficiency	1 (3.7)
Asymptomatic	2 (7.5)

Table :2 The duration of symptoms ranged from 2 months to 5 years. The average duration of symptoms was 19 months.The neoplasm was incidentally detected on ultrasound in 8% of patients. Eighty percent of patients had abdominal pain as the presenting symptom. Abdominal lump and vomiting were seen in a minority of patients. None of the patients had a previous history of pancreatitis.

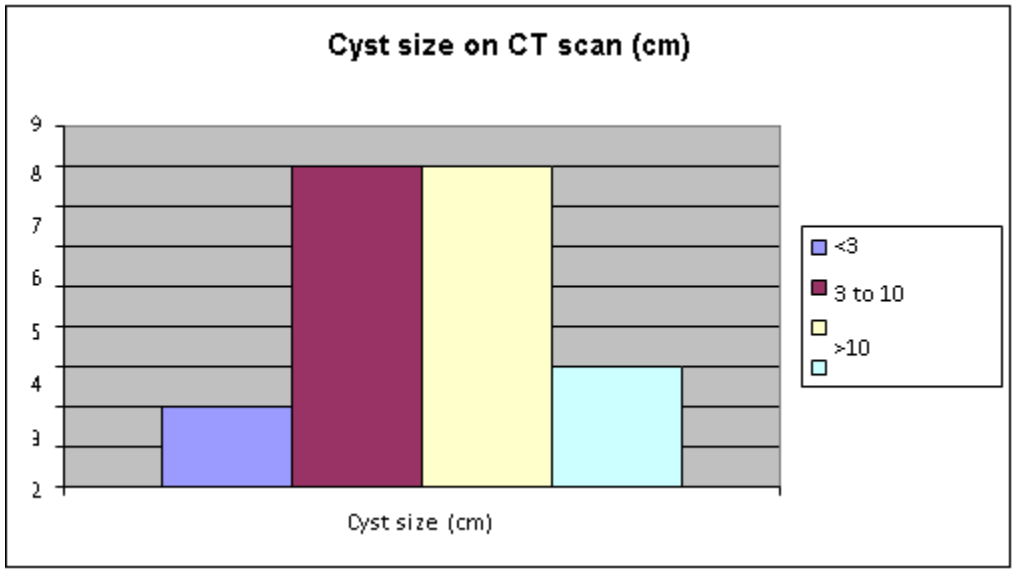
Volume 6, Issue 6; November-December 2023; Page No 250-259

Graph :1 Abdominal Lump



Graph :1 Abdominal Lump In about half the patients an abdominal lump was palpable. Two patients had splenomegaly.

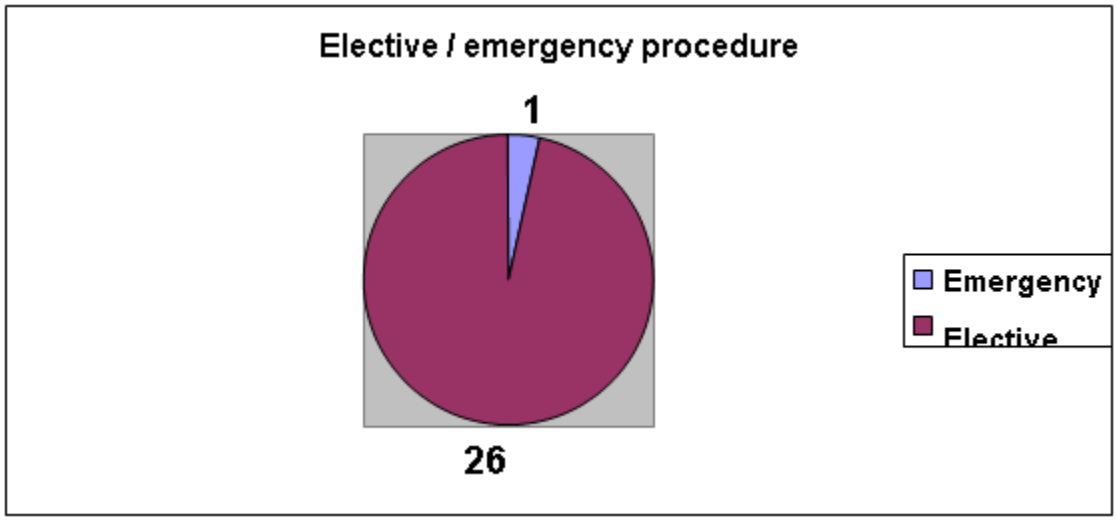
Graph :2 Imaging



Ultrasound was done in 6 (22%) patients. It was useful in differentiating a cystic neoplasm from a pseudocyst. CT scan of the abdomen was done in 23 out of 27 patients. The cyst size on CT scan was less than 3 cm in only 2 patients (8%). Location of cyst: Almost two-thirds of the lesions were found in the tail of pancreas.The characteristic features of macrocysts and rim calcifications were seen only in one patient. Cystic neoplasms were mistakenly diagnosed as pseudocysts in 4 out of 23 patients (17%). Accurate sub-typing of the cystic neoplasms was possible only in 5 out of 23 patients (21%). Splenic vein thrombosis was an incidental finding in 3 patients. Two patients were wrongly diagnosed to have duodenal GIST (gastro intestinal stromal tumor) on imaging.

Volume 6, Issue 6; November-December 2023; Page No 250-259

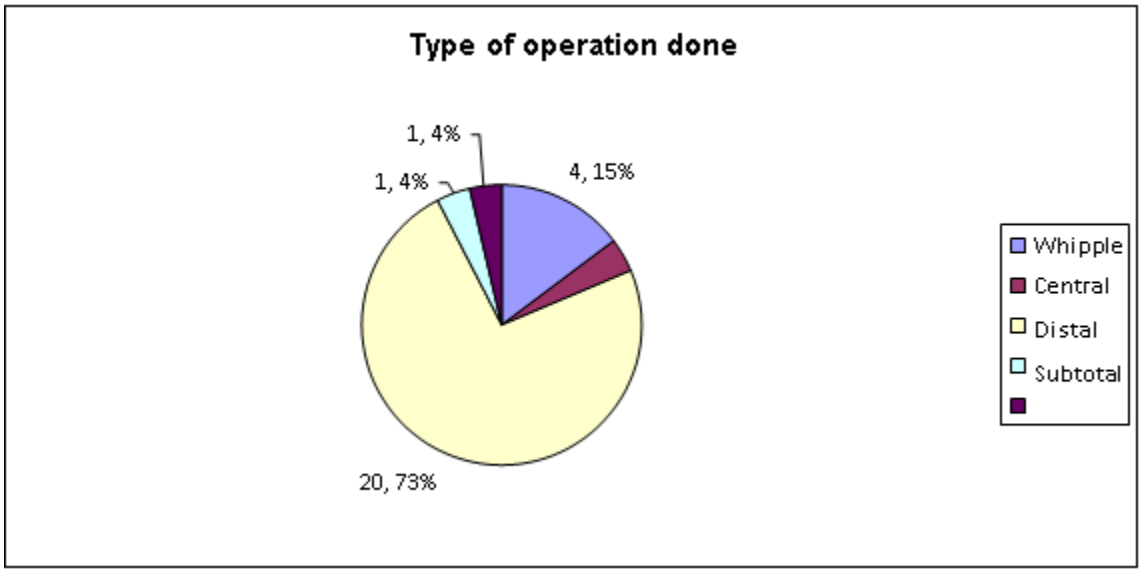
Graph :3 Endoscopy



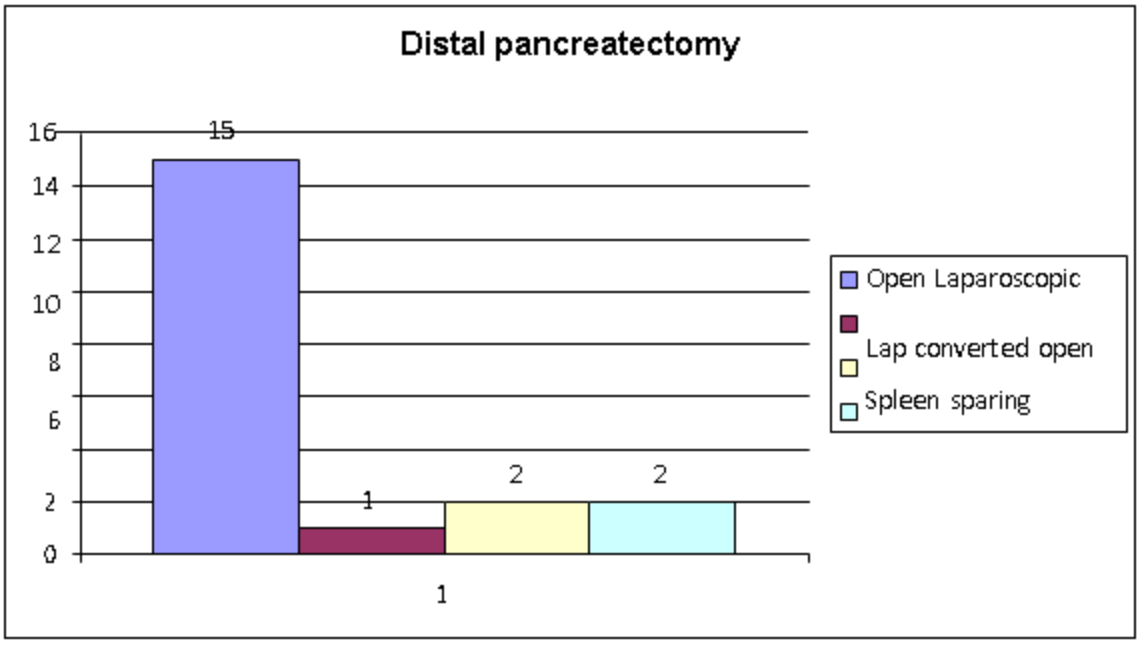
Only 4 patients underwent upper gastrointestinal scopy as a part of evaluation; these were normal. The patient with IPMN had side viewing scopy which showed a gaping major papilla with mucin. EUS was done in 3 patients, and a correct diagnosis was made in 1 patient. Cyst fluid was aspirated for analysis in only 1 patient, showing scanty atypical cells.

Only one out of the twenty seven patients underwent an emergency procedure for ruptured cyst

Graph :4 Type of operation

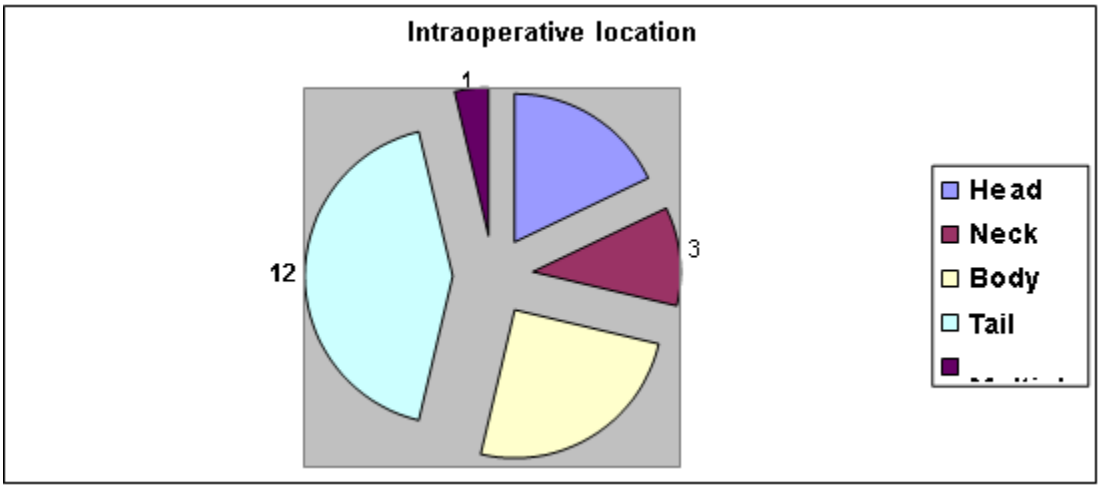


Volume 6, Issue 6; November-December 2023; Page No 250-259



The operation done for these tumors depended on the location. The majority of patients underwent distal pancreatectomy (80%). The patient who had subtotal pancreatectomy required portal vein reconstruction (infiltration by tumor).

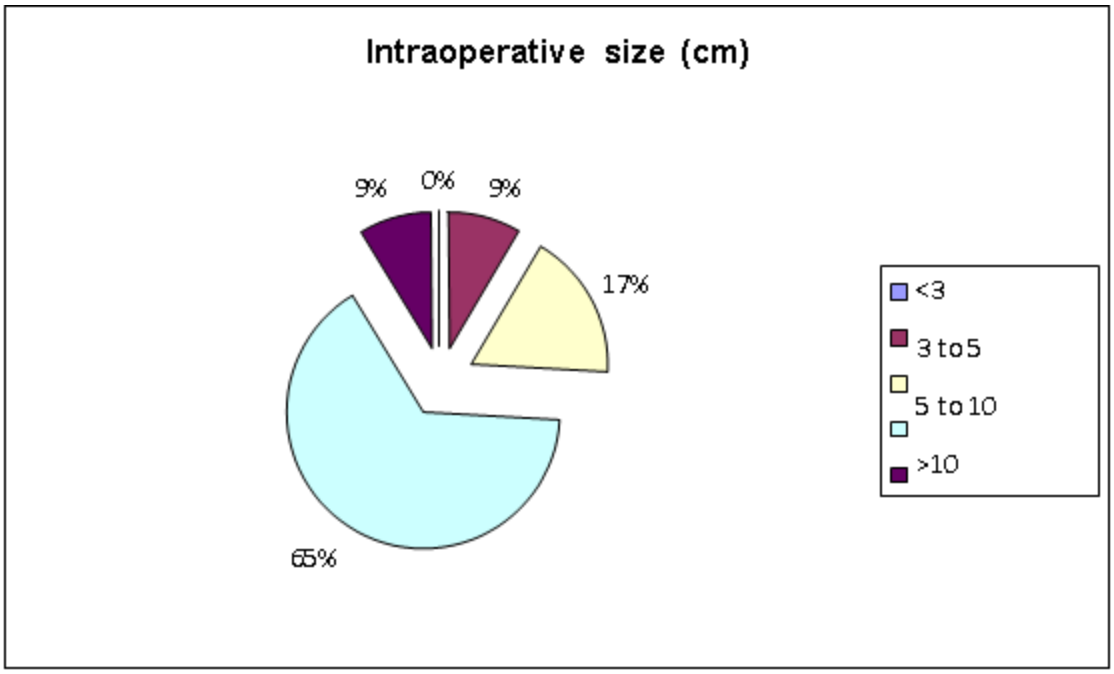
Graph :5 Operative findings



The tumors were predominantly located in the tail of the pancreas

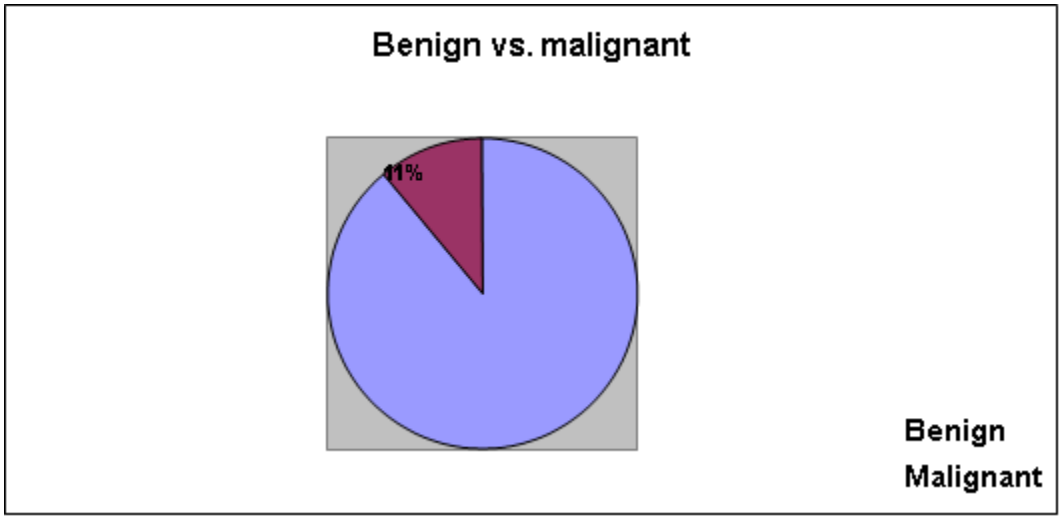
The size of the tumor was measured at the time of the operation. Sixty five percent of tumors were more than 10 cm in size. There were no tumors less than 3 cm in size

Volume 6, Issue 6; November-December 2023; Page No 250-259



There was no evidence of metastases in any of the patients; none of the tumors were inoperable.

Graph :6Histopathology



There were 3 malignant neoplasms in the series, accounting for 11% of patients.

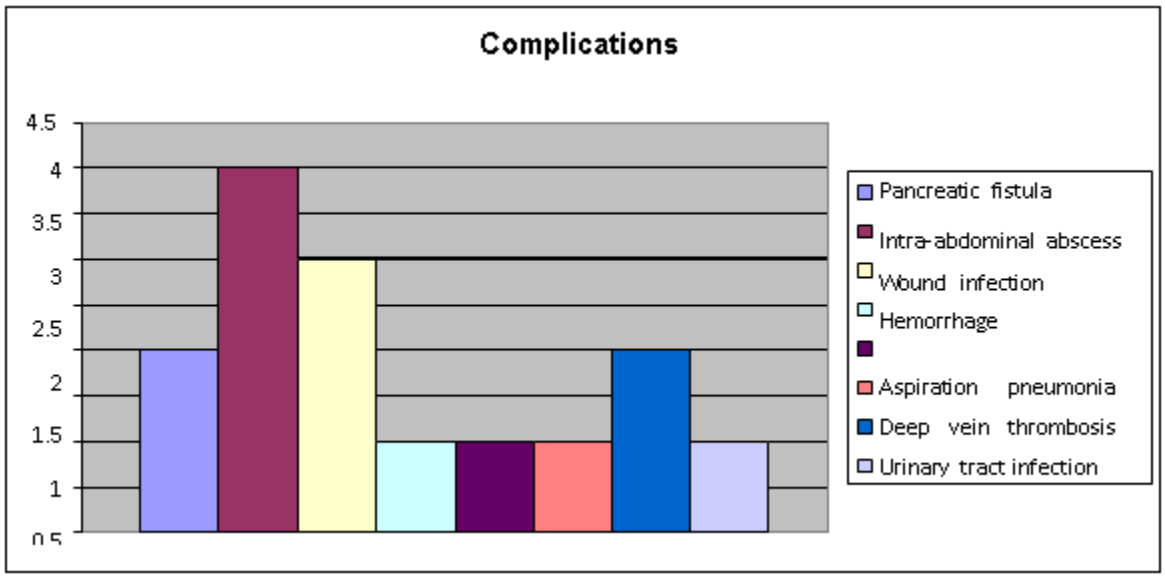
On microscopic examination, the predominant subtype was solid pseudopapillary tumor

Subtype	**N**
Mucinous cystadenoma	7
Mucinous cystadenoma borderline	1
Mucinous cystadenocarcinoma	1
Serous cystadenoma	1

Volume 6, Issue 6; November-December 2023; Page No 250-259

IPMN	1
Solid pseudopapillary tumor	11
Acinar cell carcinoma	1
Teratoma	1
Others	3

Graph :7Complications



Graph :7 Intra-operative One patient had an iatrogenic diaphragmatic rent intra-operatively, which was managed with closure and intercostal chest drainage.Post-operative There was no mortality.Follow up was available in 21 patients. The mean duration of follow up was 12.1 months. (Range: 0.5 to 43 months). One patient with mucinous cystadenoma had suspected recurrence at 13 months, and underwent re-excision.

Discussion

The patients were predominantly female, as expected. Unlike most other series, 40% of patients had solid pseudopapillary tumors, which are usually rare. Most other series report serous or mucinous cystadenomas as the commonest subtypes .[7]As these tumors are found in the 2nd and 3rd decades of life, the average age of the patients in our series was also less than expected. With the increasing use of diagnostic abdominal imaging, we would have expected a larger proportion of these lesions to be picked up incidentally. [8]Current evidence indicates that 40-75% of these tumors are detected as an incidental finding on radiographic images This trend was not found in our series, with only 2 patients diagnosed on routine imaging.[9] The most common abdominal symptoms were abdominal pain and abdominal lump; in accordance with most case series in Western literature . [10]Half the patients did not have a palpable abdominal lump at presentation.Routine hemogram and liver function tests did not contribute significantly towards a diagnosis. Serum amylase and lipase in all patients were not markedly elevated, making a diagnosis of pseudocyst unlikely. Tumor markers were not helpful in differentiating among the various subtypes.As most of our patients are referred from another centre, ultrasound imaging was not performed routinely. CT scan was accurate in diagnosing a neoplasm in 83% of cases, but sub-typing was possible in only 21% of patients.[11] This may be due to the unfamiliarity of the junior

Volume 6, Issue 6; November-December 2023; Page No 250-259

radiologists with pathognomonic signs and recent terminology associated with cystic neoplasms of the pancreas. [12]Only 10% of tumors were less than 3 cm in size, hence amenable for a trial of non-operative management. Most tumors <3 cm are detected incidentally. Hence with the increasing use of abdominal imaging, the proportion of cystic neoplasms for which conservative management is an option will increase in future.[13]The use of endoscopy and endoscopic ultrasound has only recently been added to the diagnostic armamentarium with regards to these cystic tumors. Only 3 patients underwent EUS in this series, but these were the more recent cases. EUS is a useful and necessary mode of investigation and will see more widespread use in future.[14] All the recent reviews advocate the routine use of EUS in the management algorithm for indeterminate cystic lesions of the pancreas .EUS along with cyst fluid analysis for amylase, CEA and viscosity is able to differentiate the various subtypes of cytic neoplasms.[15]All patients in our series were those selected for operative management. As the majority of lesions were located in the tail of the pancreas, distal pancreatectomy was the most frequent operation performed. Intra-abdominal collection and wound infection were the most common post-operative complications. There was no perioperative mortality. [16]As mentioned earlier, one patient had suspicion of recurrence of mucinous cystadenoma on radiological imaging, but the operative specimen showed no features of recurrence on microscopy.[17,18,19,20]

Conculsion : There are no known modifiable risk factors for the development of MCPNs.

Patients with suspected MCPN and high-risk features should be evaluated for definitive surgical treatment, as lesions larger than 3 cm and those with high-risk features are at increased risk for malignant pathology.

The prognosis for most MCPNs is excellent, and management at a center of excellence for pancreatic surgery is essential for accurate diagnosis and optimum management

References

1. Salvia, R., et al., Pancreatic cystic tumors. Minerva Chir, 2004. 59(2): p.185-207.
2. Warshaw, A.L. and P.L. Rutledge, Cystic tumors mistaken for pancreatic pseudocysts. Ann Surg, 1987. 205(4): p. 393-8.
3. Adsay, V., Cystic lesions of the pancreas. Modern Pathology, 2007. 20: p. S71-S93.
4. Hamilton SR, A.L., World Health Organization classification of tumours.Tumours of the digestive system. 2000: p. 234-240.
5. Gasslander, T., et al., Cystic tumors of the pancreas. Dig Dis, 2001. 19(1): p. 57-62.
6. Spinelli, K.S., et al., Cystic pancreatic neoplasms: observe or operate. Ann Surg, 2004. 239(5): p. 651-7; discussion 657-9.
7. Sarr, M.G., et al., Cystic neoplasms of the pancreas: benign to malignant epithelial neoplasms. Surg Clin North Am, 2001. 81(3): p. 497-509.
8. Brugge, W.R., et al., Cystic neoplasms of the pancreas. N Engl J Med, 2004. 351(12): p. 1218-26.
9. Sakorafas, G.H. and M.G. Sarr, Cystic neoplasms of the pancreas; what a clinician should know. Cancer Treat Rev, 2005. 31(7): p. 507-35.
10. Sarr, M.G., et al., Primary cystic neoplasms of the pancreas. Neoplastic disorders of emerging importance-current state-of-the-art and unanswered questions. J Gastrointest Surg, 2003. 7(3): p. 417-28.
11. Grieshop, N.A., et al., Cystic neoplasms of the pancreas. Am Surg, 1994. 60(7): p. 509-14; discussion 514-5.
12. Lim, S.J., et al., Preoperative evaluation of pancreatic cystic lesions: cost- benefit analysis and proposed management algorithm. Surgery, 2005. 138(4): p. 672-9; discussion 679-80.
13. Kiely, J.M., et al., Cystic pancreatic neoplasms: enucleate or resect? J Gastrointest Surg, 2003. 7(7): p. 890-7.
14. Barreto, G., et al., Cystic tumours of the pancreas. HPB (Oxford), 2007. 9(4): p. 259-66.
15. Yamaguchi, K., et al., Mucin-hypersecreting tumors of the pancreas: assessing the grade of malignancy preoperatively. Am J Surg, 1996. 171(4): p. 427-31.
16. Yamaguchi, T., et al., Huge pseudocyst of the pancreas caused by poorly differentiated invasive ductal adenocarcinoma with osteoclast-like giant cells: report of a case.

Volume 6, Issue 6; November-December 2023; Page No 250-259

Hepatogastroenterology, 2007. 54(74): p. 599-601.
17. Oehler, U., et al., Osteoclast-like giant cell tumour of the pancreas presenting as a pseudocyst-like lesion. Virchows Arch, 1997. 431(3): p. 215-8.
18. Myung, S.J., et al., Adenosquamous carcinoma of the pancreas: differentiation from pancreatic pseudocyst. Gastrointest Endosc, 1998. 47(5): p. 410-3.
19. Siriwadena, A., Contemporary management of pseudocysts.Pancreatology, 2005. 5: p. 507–509.
20. Aljarabah, M. and B.J. Ammori, Laparoscopic and endoscopic approaches for drainage of pancreatic pseudocysts: a systematic review of published series. Surg Endosc, 2007. 21(11): p. 1936-44.

Volume 6, Issue 6; November-December 2023; Page No 250-259