



Original Research

Nonneoplastic Lesions of the Pancreas: A Retrospective Analysis of 20 Cases

Deniz Tunçel,¹ Banu Yılmaz Özgüven,¹ Ahu Gülçin Sarı,¹ Fatih Mert Doğukan,¹ Rabia Doğukan,¹ Muharrem Battal,² Fevziye Kabukcuoğlu¹

¹Department of Pathology, Istanbul Sisli Hamidiye Etfal Application and Research Center, University of Health Sciences, Istanbul, Turkey

²Department of General Surgery, Istanbul Şişli Hamidiye Etfal Application and Research Center, University of Health Sciences, Istanbul, Turkey

Abstract

Objectives: In the pancreatic lesion cases, surgery is often planned based only on imaging results and without a preoperative histological diagnosis, due to the high risk of malignancy in combination with the difficulty of invasive interventions and limited cytopathological evaluation. In this study, the records of 20 patients who had undergone a pancreatectomy procedure and who were diagnosed with nonneoplastic pancreatic lesions were retrospectively evaluated according to the clinical and histopathological findings.

Methods: A total of 122 cases of patients who underwent a pancreatectomy with suspicious lesions between 2004 and 2016 were retrospectively assessed in detail using the clinical and histopathological findings.

Results: Nonneoplastic lesions were observed in 20 (16%) of 122 patients who underwent a pancreatectomy. Histopathological examination revealed 11 cases of chronic pancreatitis, 1 hematoma, 1 instance of hemorrhagic necrosis secondary to trauma, 1 pseudocyst, 1 granulation tissue, 1 retention cyst, 1 bile duct cyst, 1 patient with Castleman disease, and 1 instance of fat necrosis were seen. In 1 patient, no evidence of disease was found. In addition, among the patients with chronic pancreatitis, autoimmune pancreatitis was observed in 1, adenomyoma of the ampulla of Vater was present in 1, and a pseudocyst was found in 1 patient.

Conclusion: A clinical and histopathological analysis of nonneoplastic lesions found in pancreatectomy patients was performed.

Keywords: Nonneoplastic; pancreas; retrospective analysis.

Please cite this article as "Tunçel D, Yılmaz Özgüven B, Sarı AG, Doğukan FM, Doğukan R, Battal M, Kabukcuoğlu F. Nonneoplastic Lesions of the Pancreas: A Retrospective Analysis of 20 Cases. Med Bull Sisli Etfal Hosp 2018;52(1):31–35".

In the pancreas, a variety of conditions may form solid masses that may mimic cancer. Lesions of the pancreas are classified in 2 categories: nonneoplastic and neoplastic lesions.^[1] Nonneoplastic lesions include congenital anomalies (annular pancreas, heterotopic pancreas), pancreatitis, abscess and granulomatous inflammation, pseudocysts, and cysts.^[1] Neoplastic lesions consist of ductal adenocarcinoma, anaplastic carcinoma, cystic pancreatic lesions,

intraductal papillary mucinous neoplasms and pancreatic intraepithelial neoplasia, acinar cell tumors, solid-pseudopapillary tumor, pancreatoblastoma, other epithelial exocrine tumors, lymphoid tumors, mesenchymal tumors, and metastatic tumors.^[1] This study is a clinical and histopathological evaluation of nonneoplastic lesions reported in pancreatectomy cases from a period of 12 years.

Address for correspondence: Deniz Tunçel, MD. Department of Pathology, Istanbul Sisli Hamidiye Etfal Application and Research Center, University of Health Sciences, Istanbul, Turkey

Phone: +90 212 373 50 00 **E-mail:** email@deniztuncel.com

Submitted Date: September 08, 2017 **Accepted Date:** November 23, 2017 **Available Online Date:** March 30, 2018

©Copyright 2018 by The Medical Bulletin of Sisli Etfal Hospital - Available online at www.sislietfaltip.org

This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).



Methods

The clinical findings and histopathological diagnoses of 112 pancreatectomies performed between January 2004 and June 2016 in a single clinic were retrospectively evaluated for nonneoplastic lesions of the pancreas. The data analyzed, including the initial diagnosis, procedure performed, and final histopathological results, are provided in Table 1.

Results

Nonneoplastic lesions of the pancreas were observed in 20 (16%) of 122 pancreatectomy cases. Clinicians were initially concerned about the possibility of a malignancy due to the appearance of a mass lesion. Since invasive interventions are difficult and limited cytopathological evaluation is available, due to inherent characteristics of this region, in addition to the high risk of malignancy, surgery was planned. Histopathological examination revealed the presence of chronic pancreatitis (n=11), hematoma (n=1), hemorrhagic necrosis secondary to trauma (n=1), pseudocyst (n=1), granulation tissue (n=1), retention cyst (n=1), choleductal cyst (n=1), Castleman disease (n=1), and fat necrosis (n=1). No pathology was seen in the final case. Among the cases with chronic pancreatitis, 1 was diagnosed with autoimmune pancreatitis because of increased serum immunoglobulin G levels, histopathologically diffuse lymphoplas-

macytic cell infiltration, and fibrosis. Adenomyoma of the ampulla of Vater was observed in another, and a pseudocyst was found in a third.

Discussion

The term chronic pancreatitis describes various progressive fibroinflammatory diseases that cause glandular damage in the exocrine pancreas.^[1] Although the incidence of chronic pancreatitis is not precisely known, Yadav et al.^[2] determined an incidence and a prevalence of chronic pancreatitis of 4.05/100,000 and 41.76/100,000, respectively. Domínguez-Muñoz et al.^[3] reported an incidence of chronic pancreatitis of 4.66/100,000. Chronic pancreatitis is more frequently detected in men.^[2, 4] In our study, there were 6 male and 5 female patients with chronic pancreatitis.

Alcohol intake is the most important risk factor in chronic pancreatitis.^[1-3, 5] Frulloni et al.^[5] found alcohol as an etiological factor in 43% of 893 cases of chronic pancreatitis. Other important risk factors include genetic factors, ductal obstruction, and smoking.^[1, 4, 6, 7]

Clinically, the most prevalent and characteristic surgical indication for chronic pancreatitis is abdominal pain, which sometimes becomes very severe.^[8, 9] Fully developed pancreatitis can lead to failure of both the exocrine and endocrine functions of pancreas.^[9]

Chronic pancreatitis is characterized by a grossly enlarged

Table 1. Retrospective analysis of nonneoplastic lesions of the pancreas

Age (years)	Gender	Initial diagnosis	Procedure performed	Pathological diagnosis	Right/ex	Survey
45	M	Firearm injury	Wedge resection	Hematoma	Right	11 years
55	M	Insulinoma	Pancreatectomy	Normal	Right	11 years
37	M	Penetrating stab wound	Subtotal pancreatectomy	Necrosis congestion	Right	11 years
50	F	Carcinoma	Pancreaticoduodenectomy	Chronic pancreatitis	Right	10 years
49	M	Pseudocyst	Pancreatectomy	Pseudocyst	Right	10 years
61	M	Carcinoma in fistula tract	Fistula tract excision	Granulation tissue	Right	12 years
75	F	Carcinoma	Biopsy	Chronic pancreatitis	Right	12 years
47	F	Cystadenoma	Excision	Retention cyst	Right	7 years
5	M	Cystadenoma	Whipple procedure	Choledoctal cyst	Right	1 year
53	M	Carcinoma	Whipple procedure	Chronic pancreatitis	Right	1 year
54	F	Lymphoma	Excision	Castleman disease	Right	1 year
50	M	Carcinoma	Subtotal pancreatectomy	Chronic pancreatitis	Right	1 year
45	M	Carcinoma	Whipple procedure	Chronic pancreatitis	Right	4 months
56	F	Periampullary region tumor	Whipple procedure	Chronic pancreatitis	Right	4 months
45	M	Carcinoma	Excision	Chronic pancreatitis	Right	3 months
39	F	Cushing disease	Bilateral adrenalectomy and distal pancreatectomy	Fat necrosis	Right	2 years
50	F	Cyst	Subtotal pancreatectomy	Chronic pancreatitis	Right	2 years
67	M	Carcinoma	Whipple procedure	Adenomyoma	Right	2 years
56	M	Carcinoma	Whipple procedure	Chronic pancreatitis	Right	2 years
54	F	Papilloma	Whipple procedure	Chronic pancreatitis	Right	2 years

or atrophic, nodular, hard, and misshapen pancreas. In some cases, ductal obstruction by a stone or a tumor may be seen. In our study, there was an instance of an obstructive, ampullary-region adenomyoma that led to chronic pancreatitis (Fig. 1). Ampullary-region adenomyoma, which generally causes a biliary system obstruction, is a benign nodular lesion with a proliferation of both epithelial (gland and ductus) and smooth muscle components.^[10, 11]

In chronic pancreatitis, microscopically, the main characteristics are ductal and acinar dilation, squamous metaplasia, intraluminal eosinophilic mucoprotein plugs, acinar atrophy, and sclerosis (Figs. 2, 3). Mononuclear inflammatory cell infiltration accompanied by mast cells around the lobules and ducts is seen (Fig. 4).^[12] Islets of Langerhans may be sclerotic, lost, or may proliferate in an invasive cell pattern in the peripancreatic adipose tissue.

Manifestations of pancreatitis detected in 1 patient in this study, a 45-year-old male, were characterized by diffuse lymphoplasmacytic infiltrate and fibrosis (Fig. 5).

Treatment modalities for chronic pancreatitis include drainage of the pancreatic duct, partial pancreatic resection, and near total pancreatectomy.^[1, 13-18] In our study, of 11 cases with pancreatitis, 6 underwent a Whipple procedure, 2 a pancreaticoduodenectomy, 1 a subtotal pancreatectomy, 1 an excision, and a biopsy was performed in 1 case.

Cystic lesions of the pancreas may be classified in 3 groups: true cysts, pseudocysts, and cystic neoplasias.^[19, 20] Pseudocysts are the most frequently seen cystic lesions of the pancreas. In our study, pseudocysts were detected in a 49-year-old male and a 50-year-old male patient with chronic pancreatitis. Pseudocysts are nonepithelial cystic lesions associated with acute or chronic pancreatitis, trauma, and

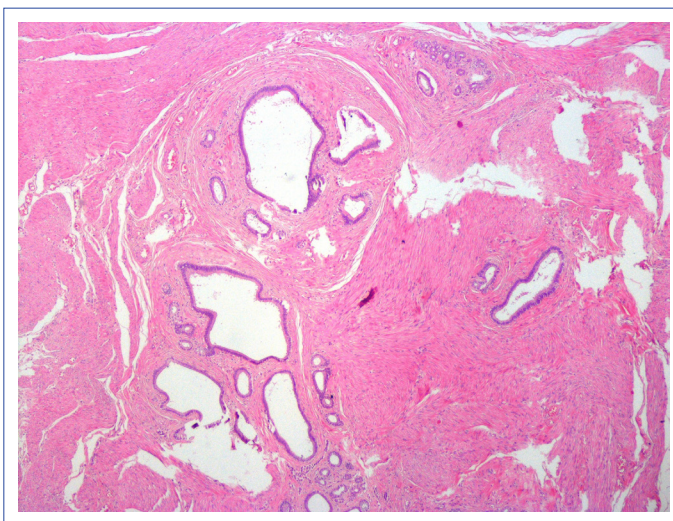


Figure 1. Ampullar adenomyoma (H&Ex100).

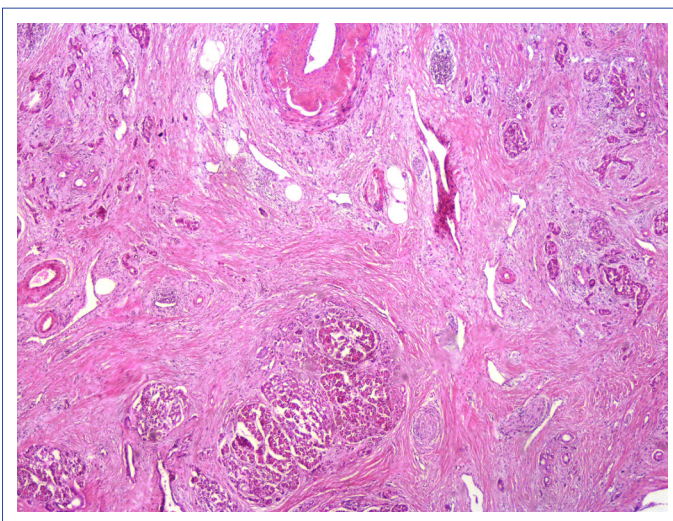


Figure 3. Chronic pancreatitis (H&Ex100).

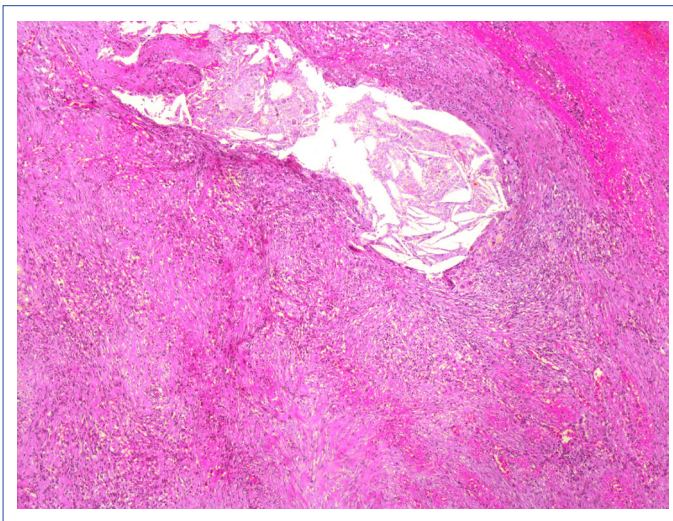


Figure 2. Chronic pancreatitis (H&Ex100).

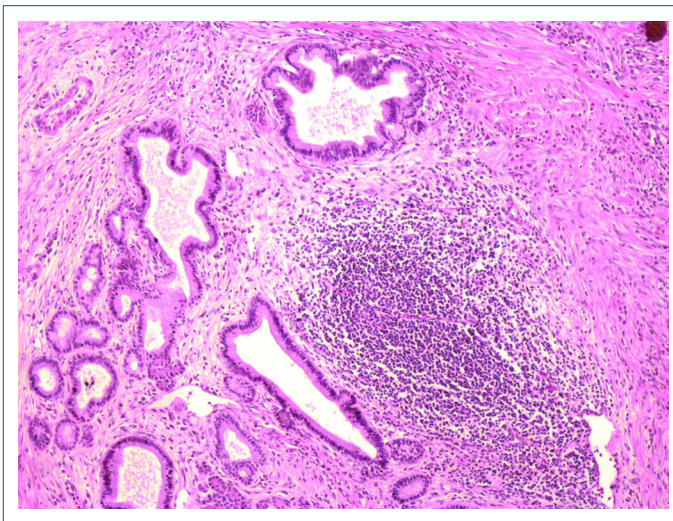


Figure 4. Chronic pancreatitis (H&Ex200).

rarely, neoplastic obstruction of large ducts.^[21, 22] They are more frequently seen in men, with a variable mean age.^[23] Microscopically, the wall of the pseudocyst consists of non-epithelialized granulation or fibrotic tissue (Fig. 6). It usually contains tissue rich in intraluminal amylase and hemorrhagic debris.^[24] In our study, a 47-year-old female patient who underwent excision of a cyst with an initial diagnosis of serous cystadenoma had definitive diagnosis of a retention cyst based on histomorphological findings. Retention cysts are true cysts lined with pancreatic duct epithelium that create cystic dilations of the pancreatic duct due to intraluminal obstruction.^[24]

A 5-year-old male patient underwent a Whipple procedure with the initial clinical diagnosis of serous cystadenoma, but received a histomorphological diagnosis of choleductal cyst. Choleductal cysts are a rarely seen congenital anomaly that involves dilation of the intra- and/or extrahepatic

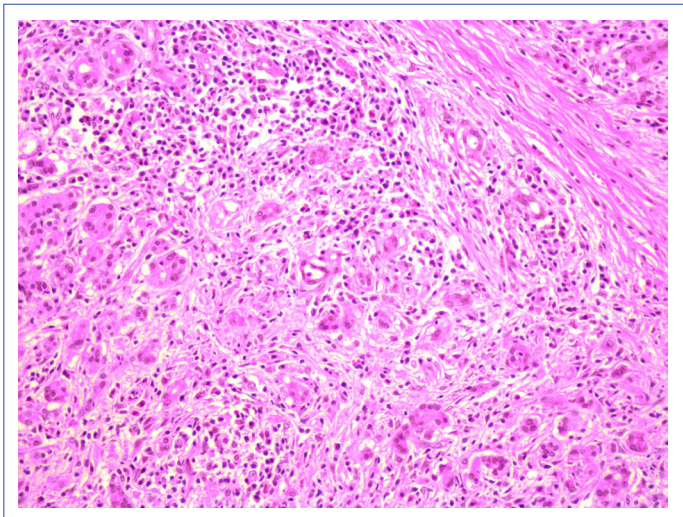


Figure 5. Autoimmune pancreatitis (H&Ex400).

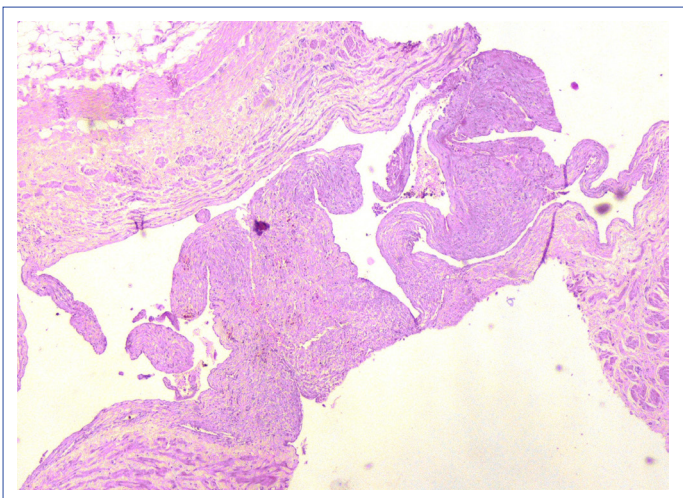


Figure 6. Pseudocyst (H&Ex40).

bile duct.^[25] Microscopically, discrete areas of destruction and inflammation are seen. Forney et al.^[25] reported the notable finding of choleductal cyst fibrosis in 45.5% of the liver biopsies in a retrospective analysis of 30 pediatric cases.

Analysis of a series of excision material sections from a 54-year-old female patient who presented with an initial clinical diagnosis of lymphoma did not reveal findings specific to the pancreas; however, Castleman disease involving the peripancreatic lymph node was noted. Castleman disease is a rarely seen lymphoproliferative disease characterized by an enlarged hyperplastic lymph node.^[26] It is most frequently seen in the mediastinum, followed by the cervical region, and rarely, in the pelvic cavity, axilla, or retroperitoneum.^[26] In our study, it was observed in the unusual location of the retroperitoneal peripancreatic lymph node (Fig. 7).

In the present study, a hematoma was detected in a 45-year-old male patient who underwent a wedge resection following a firearm injury, and necrosis and congestion were observed in a 37-year-old male patient who underwent a subtotal pancreatectomy due to a penetrating stab wound. Histomorphological analysis of the excision material retrieved from a pancreatic fistula tract of a 61-year-old male patient with suspected malignancy revealed granulation tissue. Fat necrosis of a pancreas specimen was seen in a 39-year-old female patient who underwent a bilateral adrenalectomy and distal pancreatectomy with the indication of Cushing disease. No pathology was detected in the pancreatic tissue material of a 55-year-old male patient who underwent a pancreatectomy with the initial clinical diagnosis of insulinoma.

This study was a retrospective analysis of nonneoplastic lesions of the pancreas from the clinical and histopathological perspectives.

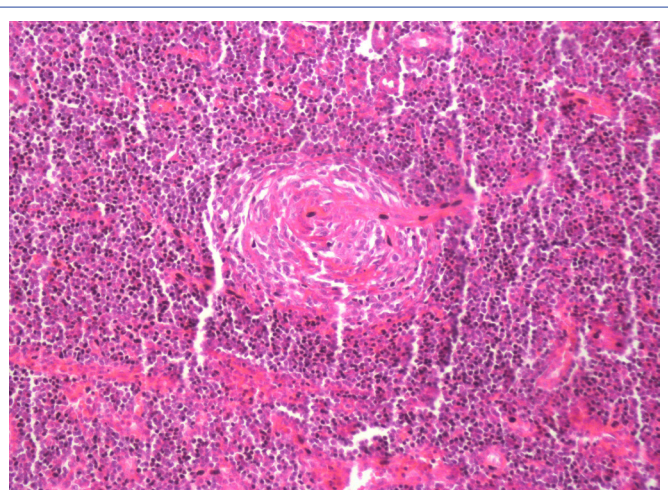


Figure 7. Castleman disease (H&Ex200).

Disclosures

Ethics Committee Approval: The study was approved by the Local Ethics Committee.

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

Authorship contributions: Concept – D.T.; Design – D.T.; Supervision – D.T.; Materials – D.T., B.Y.Ö.; Data collection &/or processing – D.T., B.Y.Ö., M.B.; Analysis and/or interpretation – D.T., B.Y.Ö.; Literature search – A.G.S., F.M.D., R.D.; Writing – D.T., A.G.S.; Critical review – F.K.

References

1. Majumder S, Chari ST. Chronic pancreatitis. *Lancet* 2016;387:1957–66. [CrossRef]
2. Yadav D, Timmons L, Benson JT, Dierkhising RA, Chari ST. Incidence, prevalence, and survival of chronic pancreatitis: a population-based study. *Am J Gastroenterol* 2011;106:2192–9. [CrossRef]
3. Domínguez-Muñoz JE, Lucendo A, Carballo LF, Iglesias-García J, Tenías JM. A Spanish multicenter study to estimate the prevalence and incidence of chronic pancreatitis and its complications. *Rev Esp Enferm Dig* 2014;106:239–45.
4. Coté GA, Yadav D, Slivka A, Hawes RH, Anderson MA, Burton FR, et al.; North American Pancreatitis Study Group. Alcohol and smoking as risk factors in an epidemiology study of patients with chronic pancreatitis. *Clin Gastroenterol Hepatol* 2011;9:266–73.
5. Frulloni L, Gabbrielli A, Pezzilli R, Zerbi A, Cavestro GM, Marotta F, et al.; PanCrolInfAISP Study Group. Chronic pancreatitis: report from a multicenter Italian survey (PanCrolInfAISP) on 893 patients. *Dig Liver Dis* 2009;41:311–7. [CrossRef]
6. Yadav D, Hawes RH, Brand RE, Anderson MA, Money ME, Banks PA, et al.; North American Pancreatic Study Group. Alcohol consumption, cigarette smoking, and the risk of recurrent acute and chronic pancreatitis. *Arch Intern Med* 2009;169:1035–45. [CrossRef]
7. Andriulli A, Botteri E, Almasio PL, Vantini I, Uomo G, Maisonneuve P; ad hoc Committee of the Italian Association for the Study of the Pancreas. Smoking as a cofactor for causation of chronic pancreatitis: a meta-analysis. *Pancreas* 2010;39:1205–10. [CrossRef]
8. Proca DM, Ellison EC, Hibbert D, Frankel WL. Major pancreatic resections for chronic pancreatitis. *Arch Pathol Lab Med* 2001;125:1051–4.
9. Lankisch PG, Löhr-Happe A, Otto J, Creutzfeldt W. Natural course in chronic pancreatitis. Pain, exocrine and endocrine pancreatic insufficiency and prognosis of the disease. *Digestion* 1993;54:148–55. [CrossRef]
10. Kwon TH, Park DH, Shim KY, Cho HD, Park JH, Lee SH, et al. Ampullary adenomyoma presenting as acute recurrent pancreatitis. *World J Gastroenterol* 2007;13:2892–4. [CrossRef]
11. Higashi M, Goto M, Saitou M, Shimizu T, Rousseau K, Batra SK, et al. Immunohistochemical study of mucin expression in periampullary adenomyoma. *J Hepatobiliary Pancreat Sci* 2010;17:275–83.
12. Esposito I, Friess H, Kappeler A, Shrikhande S, Kleeff J, Ramesh H, et al. Mast cell distribution and activation in chronic pancreatitis. *Hum Pathol* 2001;32:1174–83. [CrossRef]
13. Traverso LW, Kozarek RA. The Whipple procedure for severe complications of chronic pancreatitis. *Arch Surg* 1993;128:1047–50.
14. Sherman S, Lehman GA, Hawes RH, Ponich T, Miller LS, Cohen LB, et al. Pancreatic ductal stones: frequency of successful endoscopic removal and improvement in symptoms. *Gastrointest Endosc* 1991;37:511–7. [CrossRef]
15. Rösch T, Daniel S, Scholz M, Huibregtse K, Smits M, Schneider T, et al.; European Society of Gastrointestinal Endoscopy Research Group. Endoscopic treatment of chronic pancreatitis: a multicenter study of 1000 patients with long-term follow-up. *Endoscopy* 2002;34:765–71. [CrossRef]
16. Morrow CE, Cohen JI, Sutherland DE, Najarian JS. Chronic pancreatitis: long-term surgical results of pancreatic duct drainage, pancreatic resection, and near-total pancreatectomy and islet autotransplantation. *Surgery* 1984;96:608–16.
17. Friess H, Berberat PO, Wirtz M, Büchler MW. Surgical treatment and long-term follow-up in chronic pancreatitis. *Eur J Gastroenterol Hepatol* 2002;14:971–7. [CrossRef]
18. Alvarez C, Widdison AL, Reber HA. New perspectives in the surgical management of chronic pancreatitis. *Pancreas* 1991;6 Suppl 1:S76–81. [CrossRef]
19. Ryu DH, Sung RH, Kang MH, Choi JW. Lymphoepithelial cyst of the pancreas mimicking malignant cystic tumor: report of a case. *Korean J Hepatobiliary Pancreat Surg* 2015;19:129–32. [CrossRef]
20. Karim Z, Walker B, Lam E. Lymphoepithelial cysts of the pancreas: the use of endoscopic ultrasound-guided fine-needle aspiration in diagnosis. *Can J Gastroenterol* 2010;24:348–50. [CrossRef]
21. Matsue E, Fujihara Y, Maeda K, Okamoto M, Yanagitani A, Tanaka K, et al. Three cases of mediastinal pancreatic pseudocysts. *Acta Radiol Open* 2016;5:2058460116647213. [CrossRef]
22. Layfield LJ, Jarboe EA. Cytopathology of the pancreas: neoplastic and nonneoplastic entities. *Ann Diagn Pathol* 2010;14:140–51.
23. Parra-Herran CE, Garcia MT, Herrera L, Bejarano PA. Cystic lesions of the pancreas: clinical and pathologic review of cases in a five year period. *JOP* 2010;11:358–64.
24. Molvar C, Kayhan A, Lakadamyali H, Oto A. Nonneoplastic cystic lesions of pancreas: a practical clinical, histologic, and radiologic approach. *Curr Probl Diagn Radiol* 2011;40:141–8. [CrossRef]
25. Forny DN, Ferrante SM, Silveira VG, Siviero I, Chagas VL, Méio IB. Choledochal cyst in childhood: review of 30 cases. *Rev Col Bras Cir* 2014;41:331–5. [CrossRef]
26. Xu J, Zhou BO, Cao HL, Wang BO, Yan S, Zheng SS. Surgical management of isolated retroperitoneal Castleman's disease: A case report. *Oncol Lett* 2016;11:2123–2126. [CrossRef]