

Case Series

Giant pseudocyst of the pancreas: A report of three cases

P.O. Igwe^{a,*}, E. Ray-Offor^a, E.N. Karibi^b, U.F. Okeke^c, O.C. Ugwa^d, N.J. Jebbin^a^a Colorectal and Minimal Access, General Surgery Unit, Department of Surgery, University of Port Harcourt Teaching Hospital (UPTH), Port Harcourt, Rivers State, Nigeria^b Paediatric Surgery Unit, Department of Surgery, University of Port Harcourt Teaching Hospital, Port Harcourt, Rivers State, Nigeria^c Gastroenterology Unit, Department of Internal Medicine University of Port Harcourt Teaching Hospital, Port Harcourt, Rivers State, Nigeria^d Anatomical Pathology Department, University of Port Harcourt Teaching Hospital, Port Harcourt, Rivers State, Nigeria

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ABSTRACT

BACKGROUND: A Pancreatic pseudocyst is usually a complication of pancreatitis but may follow abdominal trauma in children. Giant pseudocysts are rare and usually complicate chronic pancreatitis.**AIM:** To report 3 cases of giant pseudocysts of the pancreas managed in our Centre within a three-month-period.**CASE REPORTS:** Two female patients aged 22 years and 65 years respectively, and an 11-year-old boy presented with giant pancreatic pseudocysts (>10 cm in diameter each) to our unit and were successfully managed.

They all underwent exploratory laparotomy and cysto-gastrostomy with good outcome.

CONCLUSION: Giant pseudocysts of pancreas may not be as rare as they were thought to be. They can be effectively managed by cysto-gastrostomy© 2020 The Author(s). Published by Elsevier Ltd on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

Pseudocysts are encapsulated fluid collection, without the presence of solid debris that develop within a minimum period of 4 weeks from the initial injury [1,2].

Pancreatic pseudocysts are rather common complication of pancreatitis. However, few cases of giant pancreatic pseudocysts, which measure 10 cm or more in widest diameter, have been reported in the literature [3–11]. The synonyms of huge or large are used in the scientific reports of giant pseudocysts [12–14]. A high index of suspicion is needed to improve diagnosis. The aim was to review this condition in our Centre and highlight the fact that they may not be as rare as previously thought. This work has been reported in line with the SCARE criteria [15].

The three cases were termed giant pseudocyst because their sizes were greater than 10 cm in diameter. This research work has been reported in line with the PROCESS criteria [16].

This research was registered at researchregistry.com with a registration unique identifying number or registration ID: UIN is Researchregistry6006 [17].

2. Case reports

2.1. First case

A 22-year-old female undergraduate presented to the surgical outpatient department with a left sided abdominal swelling of 2 years and abdominal pain of 1 year duration, respectively. The abdominal pain was insidious in onset, dull in character, severe, intermittent, non-radiating and occasionally relieved by both lying on the right side of the body and analgesics. There was a positive history of trauma (fell into a deep gutter about 5 years prior to onset of symptoms) but not of alcohol consumption. She had weight loss of about 6 months, anorexia, constipation and early satiety but there was no vomiting.

Physical examination revealed a young lady with no pallor or jaundice. Her vital signs were: Pulse – 74bpm, BP – 110/70 mmHg, RR – 20cpm, T – 37 °C. Abdominal examination revealed a cystic non-tender oval shaped mass (about 20 × 18 cm) located in the left half of the abdomen with a smooth surface. Digital rectal examination was not remarkable.

A provisional diagnosis of pancreatic pseudocyst was made. Abdominopelvic ultrasound showed a huge retroperitoneal mass of uncertain origin. Abdominopelvic CT scan also revealed a retroperitoneal mass (Fig. 1). Magnetic resonance imaging was reported as a huge intraperitoneal mucinous mesenteric cyst with a differential of pancreatic pseudocyst (Fig. 2).

* Corresponding author at: Department of Surgery UPHT, Nigeria.
E-mail address: igwe_patrick@yahoo.com (P.O. Igwe).

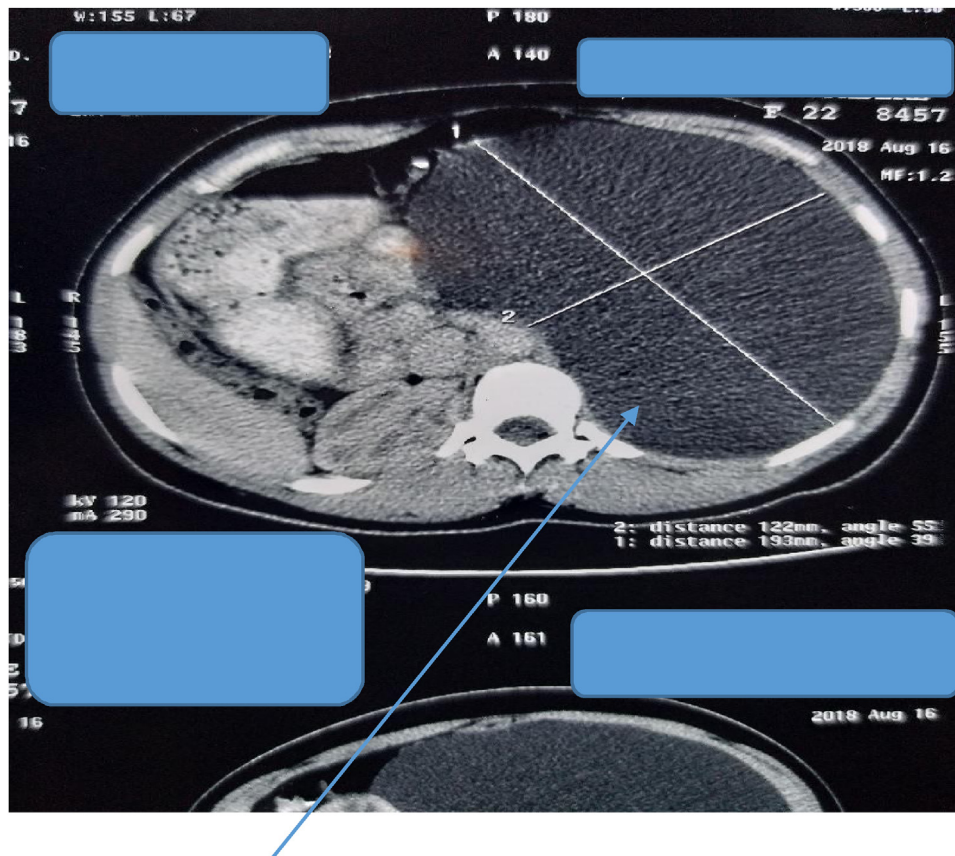


Fig. 1. CT scan of the abdomen showing the cyst.

She was worked up for an elective exploratory laparotomy. The intra-operative finding was a huge cystic swelling occupying the left half of the abdomen with 4800 mL of serous fluid which was drained and cysto-gastrostomy performed (Figs. 3–6). Her post-operative care was uneventful and she was discharged on the 8th post-operative day. She has been seen twice in good condition during her outpatient follow-up. Fig. 7 is the photomicrograph of the pseudocyst showing fragmented fibrocollagenous wall devoid of epithelial lining.

2.2. Second case

A 65-year-old female hypertensive presented at the Surgery outpatient clinic with complaints of abdominal swelling of 3 years duration and early satiety, having been referred by a gastroenterologist. On examination at presentation, she was pale, anicteric, and with a blood pressure of 150/90 mmHg.

Her complete blood count results were as follows; Hb-9 g/dl, PCV-27%, Platelet count-382,000 cells/microliter. Abdominopelvic CT scan revealed a ring-enhancing mass, anteriorly placed on the left hemi-abdomen suggestive of pancreatic pseudocyst. The left kidney was noted in the pelvis (Figs. 8, 9). Intravenous Urogram revealed a non-functional left kidney (Fig. 10).

Electrocardiograph revealed a left anterior fascicular block. She was optimized and offered exploratory laparotomy. Intraoperative findings included a huge cystic mass extending from the epigastric region to the pelvis with the left kidney displaced inferiorly.

There was 3 L of turbid cystic fluid, and 1.2 L of spongy effluent with debris material drained from the cyst and a cysto-gastrostomy performed. A drain was left in situ. Estimated Blood loss was 150 mls. A tissue specimen of the cystic wall was sent to the histopathology laboratory, and the fluid sent for cytology, biochem-

istry and microscopy culture and sensitivity (Figs. 11–15). Fig. 16 is a photomicrograph of the pseudocyst showing no epithelial lining and a fibrocollagenous wall.

She had an uneventful postoperative care and was discharged after 10 days. Her outpatient follow-up was uneventful until 3 months after surgery when she presented with anaemia which was managed conservatively. She had oesophagogastroduodenoscopy for assessment of the cyst gastrostomy six months after surgery. The gastroscopy revealed non absorbable sutures used for operation and purulent effluent at the anastomotic site. The effluent was successfully drained (suctioned). She has been stable since then.

2.3. Third case

An 11-year-old boy who presented with abdominal pain and vomiting of one-week duration and abdominal swelling which he could not exactly date. The swelling was noticed following trauma to the abdomen. He subsequently had abdominal ultrasonography done which noted a 12 cm by 10 cm mass in the epigastric region. Fig. 16. Fig. 17 Showed ultrasound scan of the Cyst.

An exploratory laparotomy identified the pseudocyst. A cysto-gastrostomy was performed. The patient did well post-operatively and has remained stable.

3. Discussion

Pancreatic secretions accumulate in the retroperitoneum or peri-pancreatic tissues especially when the major pancreatic duct or one of the ductal branches becomes disrupted. The bulk of these accumulations undergoes spontaneous resolution. However, in some cases, the fluid accumulation persists, and inflammatory process in tissue forms a fibrous wall around the fluid. This wall

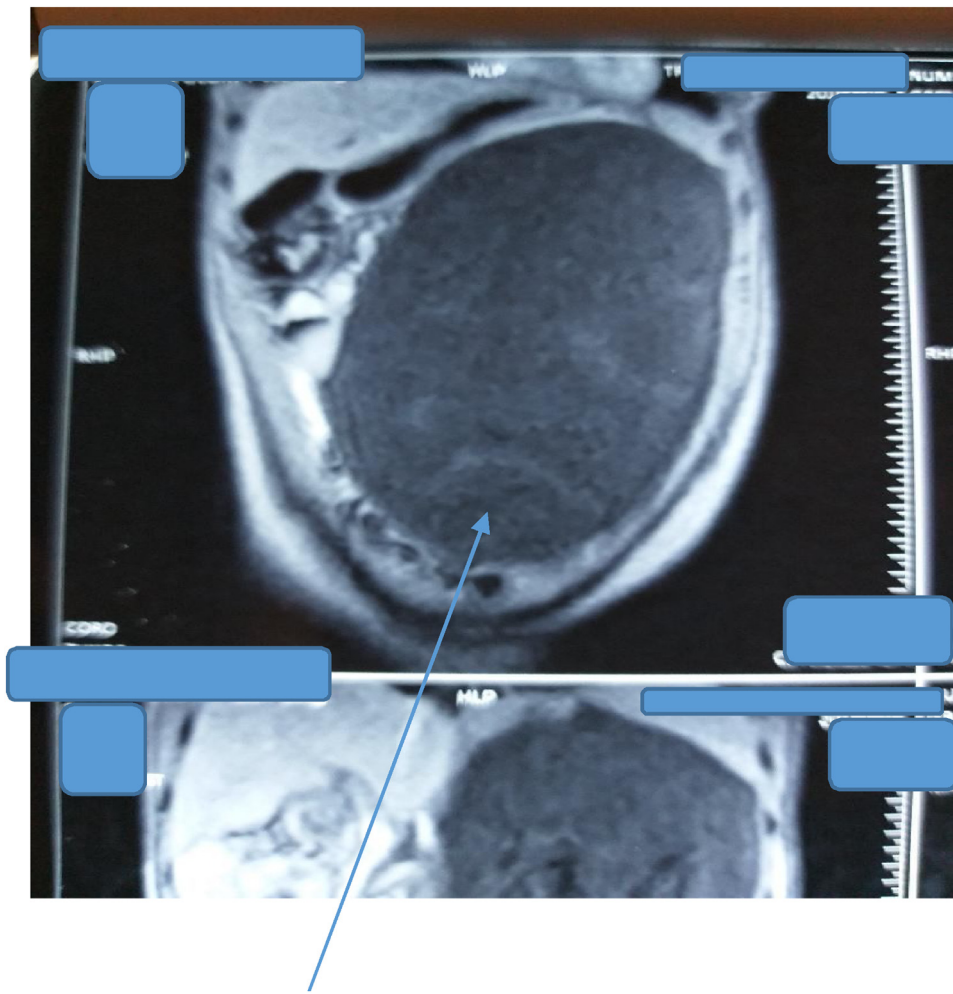


Fig. 2. Magnetic resonance imaging showing the cyst.

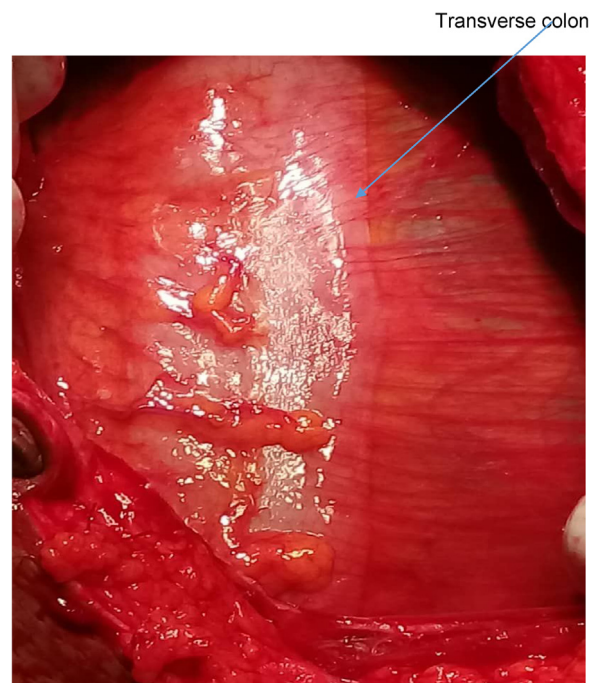


Fig. 3. Transverse colon lying superficial to the mass (cyst).

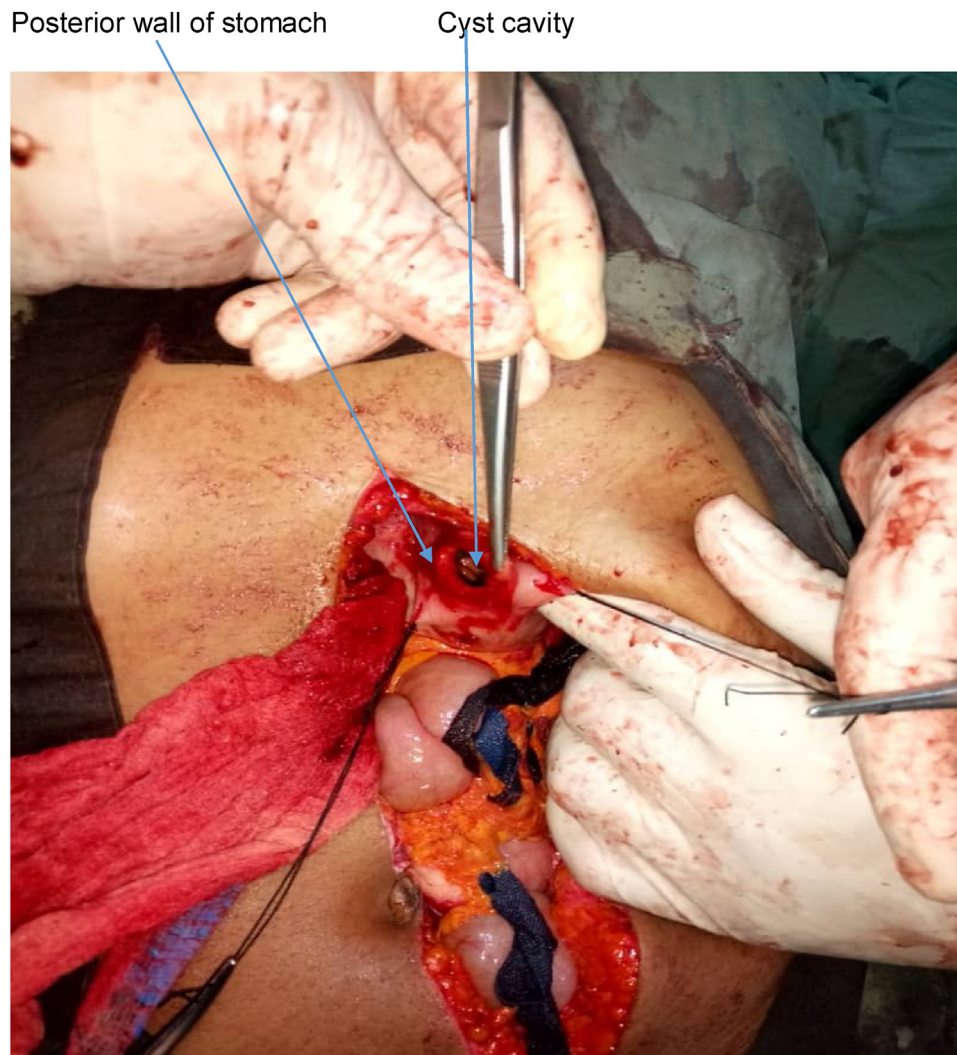


Fig. 4. Gastrotomy done, posterior wall of stomach and cyst cavity.

lacks normal epithelialization in its lining, hence is called a pseudocyst. The wall instead is lined by granulation tissue (Figs. 7 and 16).

The incidence of pancreatic pseudocysts reported in literature is low at 0.5–1/100 000 adults per year [18]. The incidence increases considerably among patients with pancreatitis or history of trauma as noted in all our cases. In patients with acute pancreatitis, it is estimated that the incidence of pancreatic pseudocysts varies from 5% to 16%, while in cases of chronic pancreatitis, it is higher, between 20% and 40% [19]. A very high incidence of pancreatic pseudocysts has been reported in patients with chronic pancreatitis from alcohol abuse. In a retrospective study of 97 patients, alcohol consumption was the most significant aetiological factor in 64% of patients with chronic pancreatitis and 26% of patients with acute pancreatitis [20]. Trauma was the identifiable aetiological factor in our cases.

Clinically, pancreatic pseudocysts presents in varying ways. Some could be completely asymptomatic while others may present with features of pancreatic and common bile duct obstruction. The most common clinical manifestations are abdominal swelling, pain, nausea and vomiting. Others include early satiety and weight loss. This was the case in the reported three cases. Obstructive jaundice may also occur. The location of the pancreatic pseudocyst is a good guide to both presentation and management [21,22].

Diagnostic modalities are mainly imaging (Ultrasound, CT scan and magnetic resonance imaging), these were done in our first and

second cases, only ultrasound scan was done in the third case. Confirmation is by finding cystic wall devoid of epithelial lining on pathologic specimen.

An Endoscopic retrograde cholangiopancreatography is advisable as pancreatic duct disruption is associated with a decreased rate of pseudocyst resolution following drainage [23]. This service was however not available in the study centre. Earlier reports noted that pancreatic pseudocysts larger than 6 cm in diameter and persisting more than 6 weeks (from the day of diagnosis) were unlikely to resolve spontaneously [24] However, Later reports stated that almost half of acute pseudocysts remain asymptomatic, despite the size or duration [25,26].

The two major modalities of treatment are observation and intervention [27]. The size, location and maturation of the cyst are key points to consider before offering treatment [28].

Most surgeons adhere to the 'Rule of 6' for the management of pancreatic pseudocysts (that is cysts >6 cm or duration >6 weeks). This was based on the expectations that 6 weeks is sufficient time for (1) the pseudocyst to resolve spontaneously and (2) the pseudocyst wall to mature to be tough enough to hold sutures [29,30].

Surgical treatment can be of two approaches closed (percutaneous drainage or laparoscopic approach); and open with internal or external drainage. Internal drainage by open surgery can be done through surgical decompression (into the stomach or small intestine such as jejunum or duodenum). An endoscopic ultrasound

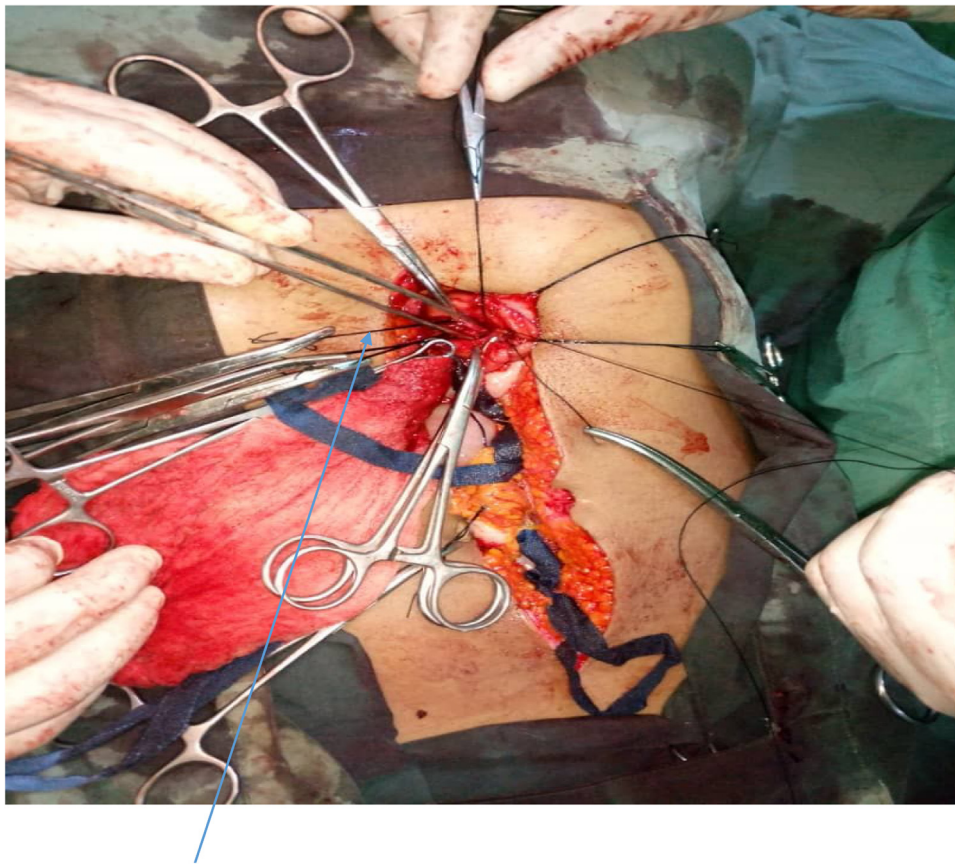


Fig. 5. Stay sutures (silk sutures) anchoring posterior wall of stomach and cyst wall.

guided transmural drainage is the gold standard modality of treatment [27]. The cost of endoscopic equipment and non-availability of needed endoscopy accessories for this service mitigated against this option. Surgery was the preferred choice in the limited resource setting of the study centre. A retrospective study comparing national outcomes from 1997 to 2001 for surgical versus percutaneous drainage of pancreatic pseudocysts revealed that surgical drainage was superior to percutaneous drainage. Even after correction for confounders such as disease severity and comorbidities, surgical approaches were associated with decreased mortality, shorter length of stay and fewer complications [31,32]. In patients with infected pancreatic pseudocysts or patients who are major operative risks, percutaneous drainage remains a better option. However endo-luminal ultrasonography (EUS) is both diagnostic and therapeutic.

Surgical drainage is achieved via one of the following three options: cystoduodenostomy, cystojejunostomy or cystogastrostomy. The main consideration driving the surgical approach are the location and nature of the pseudocyst and the surgeon's preference [32]. The three reported patient had open with Cysto-gastrostomy based on proximity of the pseudocyst to the posterior wall of stomach and surgeon's preference.

Cystoduodenostomy is chosen when the pseudocyst is located in the head of the pancreas and adheres to the duodenum. This procedure is not feasible if a thick rim of pancreatic parenchyma is between the pseudocyst and duodenal wall [31,32]. This procedure has also been considered the most technically demanding of the three options, with higher morbidity and mortality rates [33].

Cysto-gastrostomy is chosen when the pseudocyst is located in the epigastric region and adheres to the stomach. This was the case with our three patients. Cysto-gastrostomy is beneficial since it allows for postoperative drainage using a nasogastric tube;

although, an increased risk of infection exists due to the tendency for gastric and pancreatic secretions to pool in the dependent part of the pseudocyst, leading to abscess formation and/or a higher likelihood of sepsis [33]. We encountered recurrent anaemia and abscess in second case and this was drained via gastroscopy. Cysto-gastrostomy is also associated with a higher risk of postoperative haemorrhage compared with cystojejunostomy. Only one of our patients had post-operative vomiting which resolved with conservative treatment. The cyst wall was biopsied and the histopathology confirmed pancreatic pseudocyst. There was no evidence of malignancy.

Cystojejunostomy is the option of choice when the pseudocyst is very large and extends beyond the epigastric region to the umbilical, hypochondriac and lumbar region [33]. This procedure allows for dependent drainage, and is the anastomosis of choice for giant pseudocysts [34,35]. We however found cysto-gastrostomy better in all our three giant cases especially for easy anastomosis, post-operative residual drainage via nasogastric tube and a follow-up gastroscopy which can easily be done for monitoring. All our patients did very well, having followed them up for more than one year.

Recent modalities of treatment such as EUS-guided drainage of pancreatic pseudocysts with viscous solid debris-laden fluid via a nasocystic drain alongside transmural stents were said to have resulted in a lower stent occlusion rate and better clinical outcomes when compared with drainage via transmural stents alone. The authors hypothesized that the presence of solid debris within a pseudocyst may require early saline solution irrigation via a nasocystic tube to achieve adequate drainage and prevent stent occlusion. They recommended a prospective multi-center study to confirm these findings [36–39].

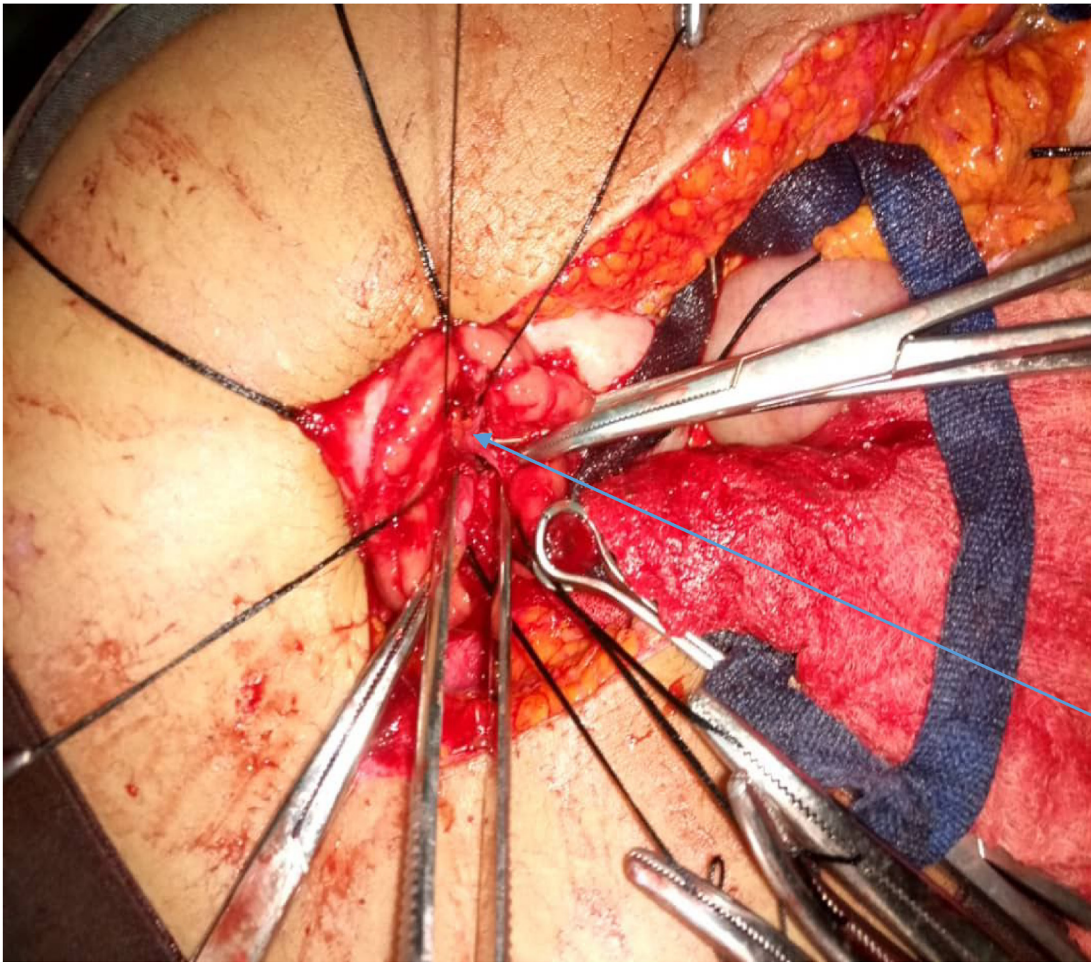
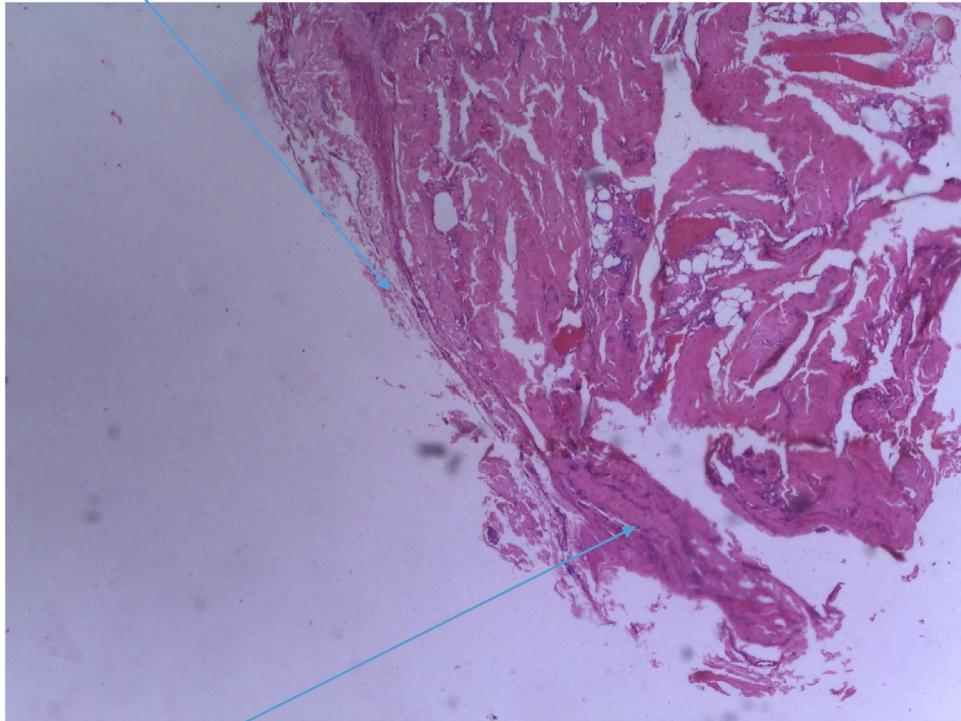


Fig. 6. Anatomosis of posterior wall of stomach and cyst wall.

No epithelial cell lining is seen



Fibrocollagenous wall of the pseudocyst

Fig. 7. Photomicrograph of the pseudocyst showing fragmented fibrocollagenous wall devoid of epithelial lining.

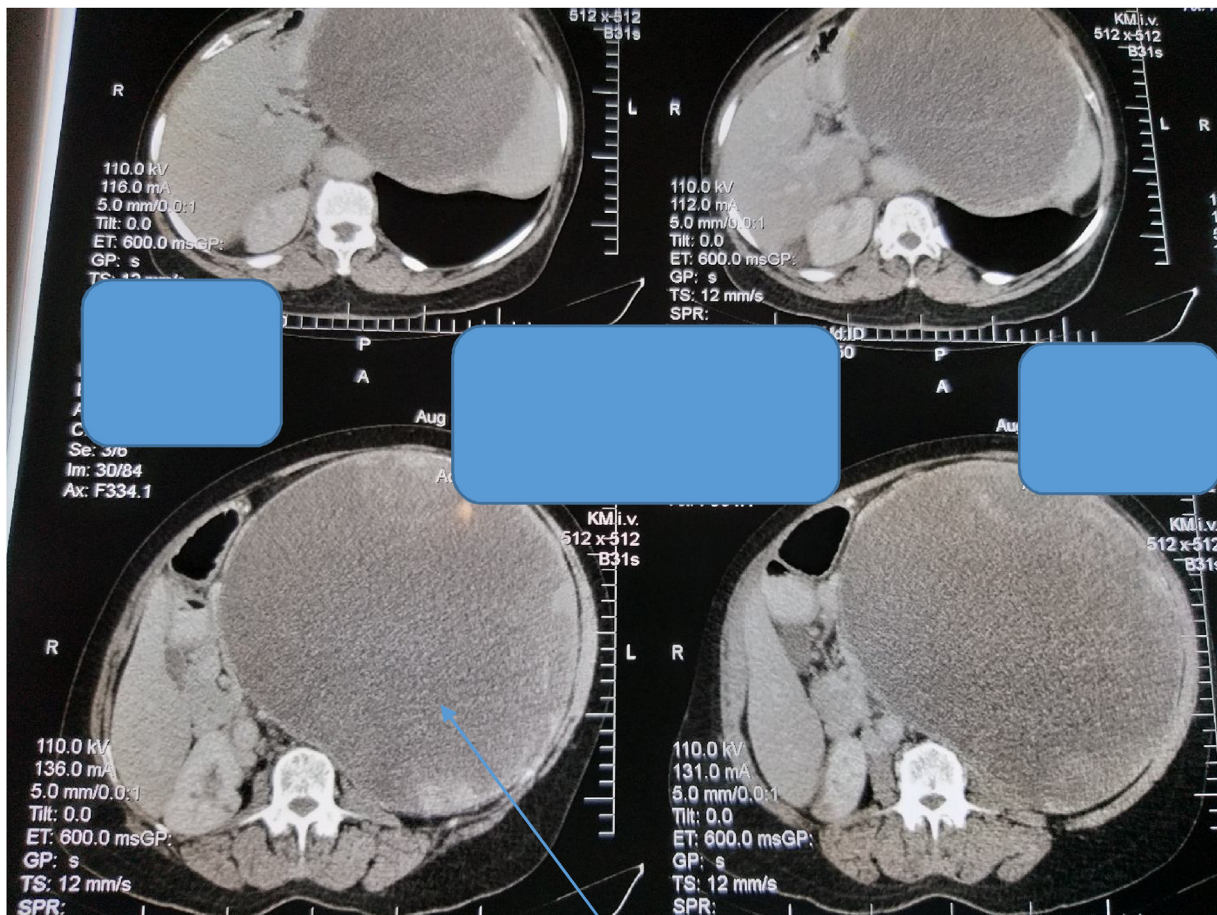


Fig. 8. Pre-operative CT scan showing cyst.

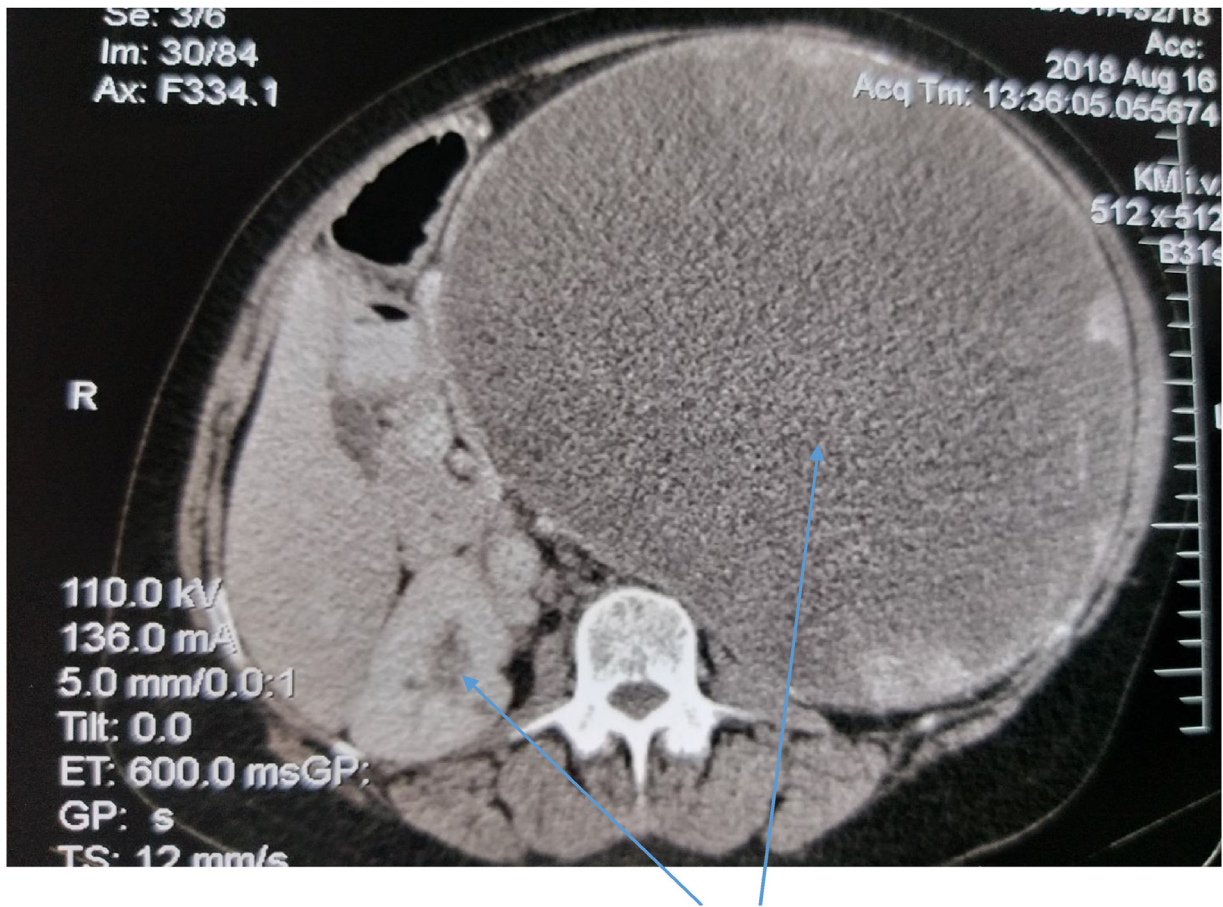


Fig. 9. Pre-operative CT scan showing cyst displacing left kidney to the pelvis.

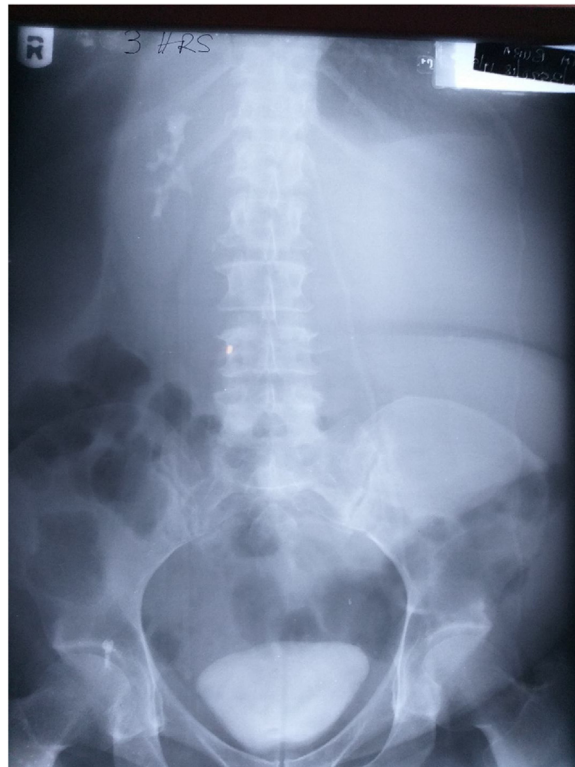


Fig. 10. Pre-operative Intravenous urography.

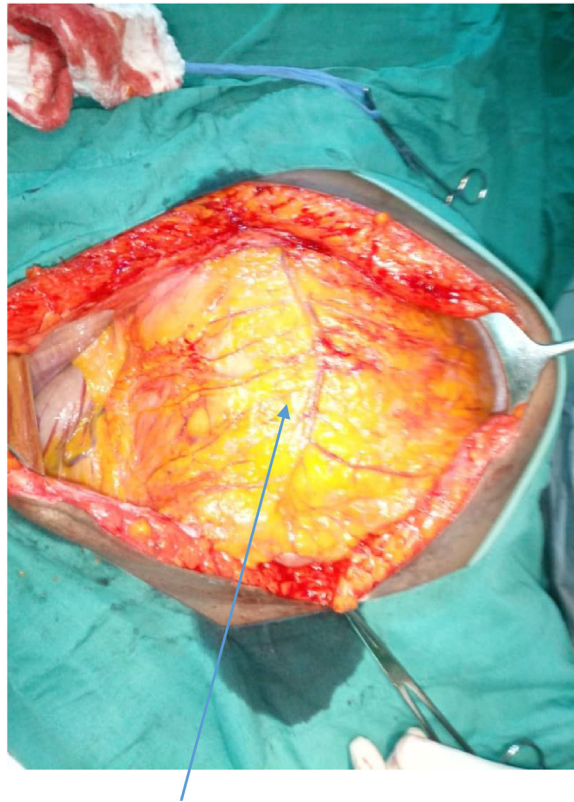


Fig. 11. Cyst covered by Omentum and transverse colon.



Fig. 12. Cyst covered by Omentum and transverse colon. Colon was lifted off the cyst.

Cyst cavity through anterior and posterior wall of stomach.

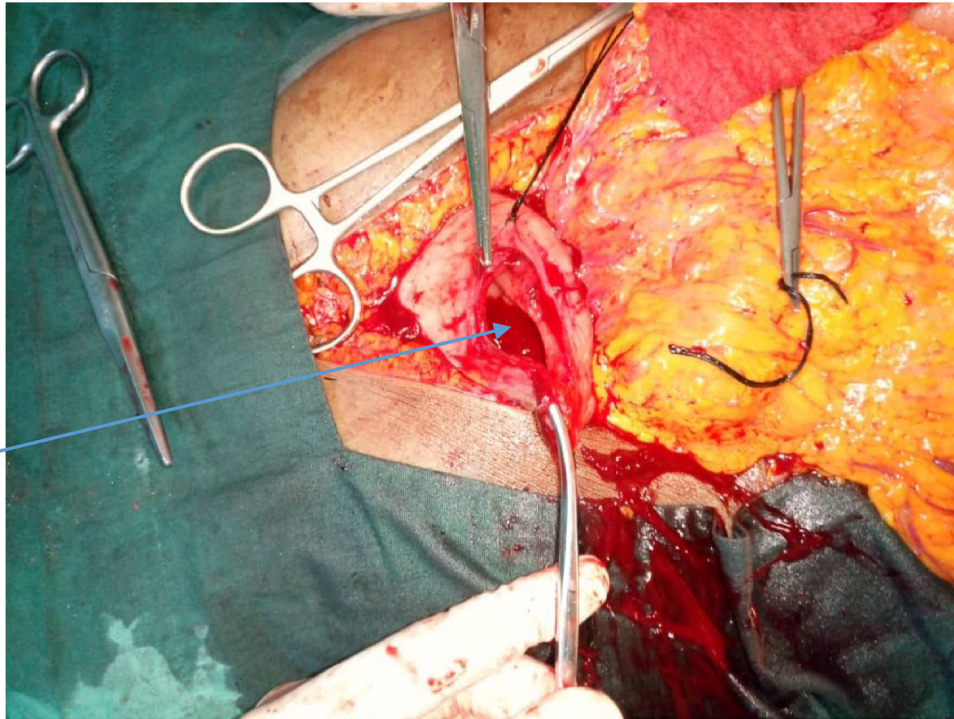


Fig. 13. Cyst cavity and anterior and posterior wall of stomach.

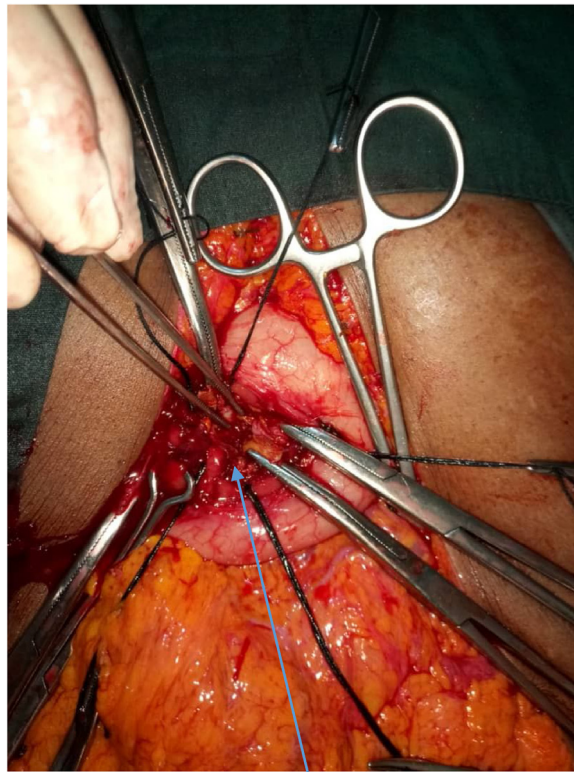


Fig. 14. Cyst wall and posterior wall of stomach anchored with stay sutures.

Cyst cavity.

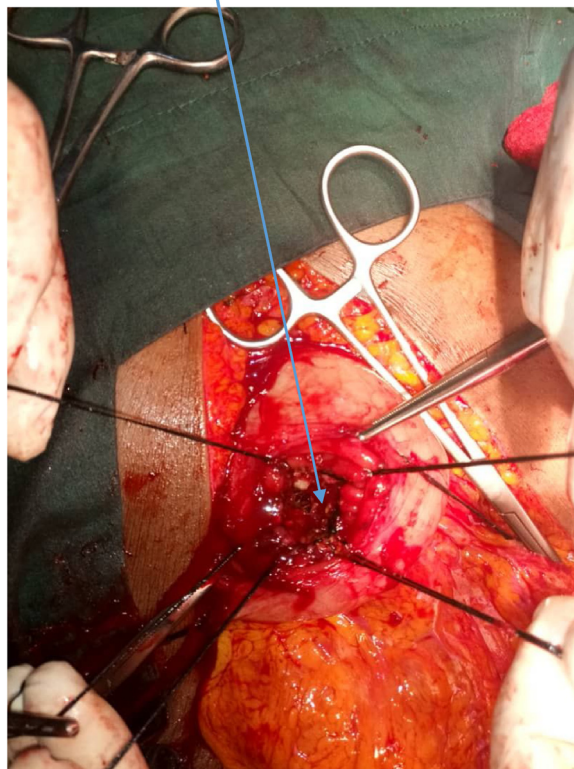
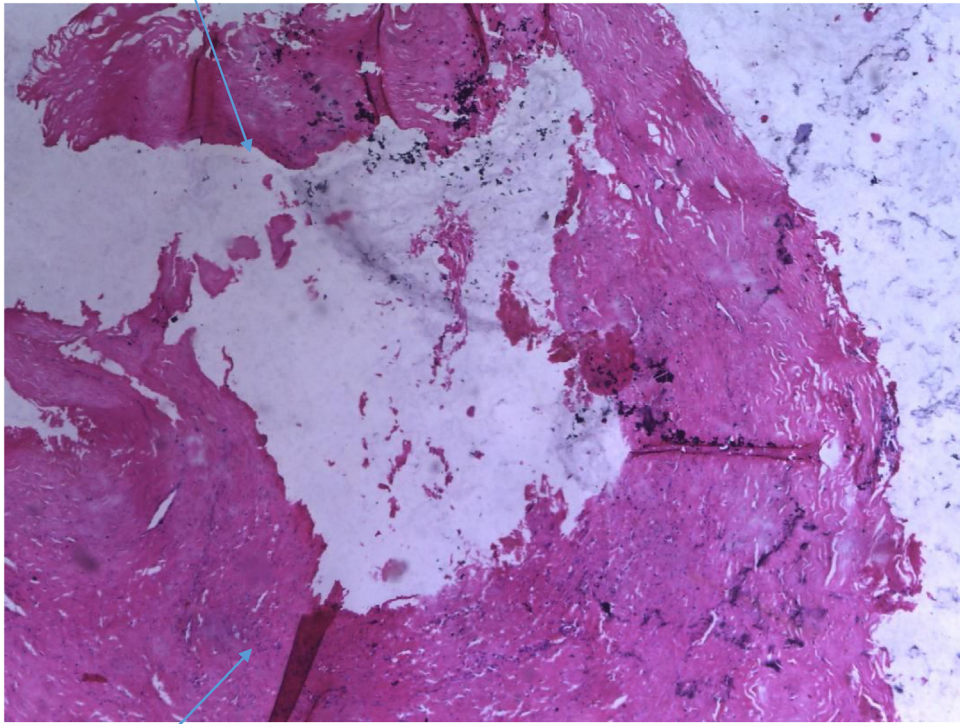


Fig. 15. Cyst posterior wall of stomach anastomosed.

No epithelial lining is present



Fibrocollagenous wall of the pseudocyst

Fig. 16. Photomicrograph of the pseudocyst showing no epithelial lining and a fibrocollagenous wall.

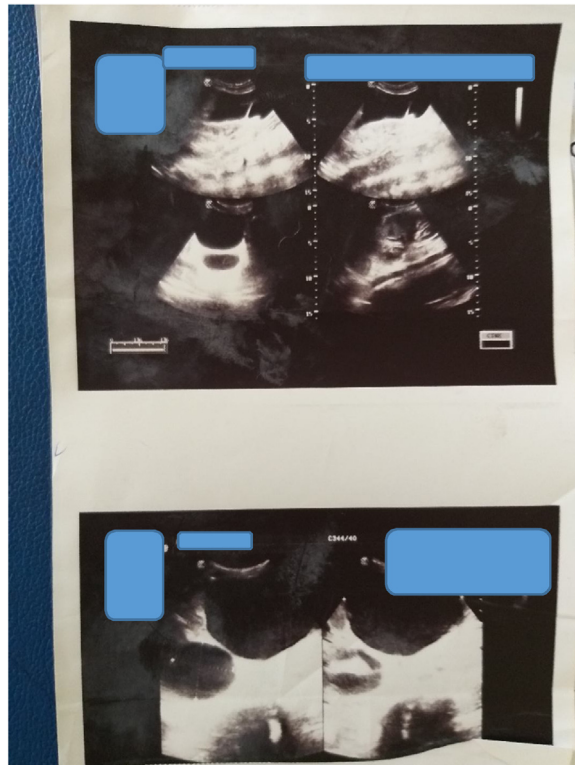


Fig. 17. Ultrasound showing the Cyst.

Laparoscopic method is already a well-established method of treatment especially in developed economy. In some African setting, laparoscopy for pancreatic pseudocyst has been performed successfully [40,41].

4. Conclusion

Giant pseudocysts of pancreas may not be as rare as they were thought to be. They can be effectively managed by cystogastrostomy. Pre-operative diagnosis could be challenging even with modern diagnostic facilities. Cysto-gastrostomy is beneficial in giant cases.

Funding

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Ethical approval

Exemption of Ethical approval was given because no identifiable patient's parts were seen

Consent

Written and signed consent to publish as case report was obtained from the patients.

Author contribution

POI – performed the first and second cases, conception, drafting of the manuscript and design and have given final approval of the version to be published and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

ER – Assisted the second case, drafting of the manuscript and also agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

ENK – performed the third case. Drafted the manuscript and also agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

UFO – Referred the second case. Drafted the manuscript and also agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

OCU – Conducted the histopathological analysis. Drafted the manuscript and also agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

NJJ – Drafted the manuscript and revising it critically for important intellectual content.

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Provenance and peer review

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Declaration of Competing Interest

The authors report no declarations of interest.

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