



Hybrid laparoscopic-endoscopic transgastric cystogastrostomy for pancreatic pseudocyst: a case report

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Cistogastrostomía transgástrica híbrida laparoscópica-endoscópica para pseudoquiste pancreático: presentación de un caso

REVISTA MEXICANA DE CIRUGÍA DEL APARATO DIGESTIVO / Vol. 15 Núm. 3 / Julio-Septiembre, 2026 / p. 116-120

RESUMEN

El pseudoquiste pancreático es una complicación reconocida de la pancreatitis aguda grave y puede generar morbilidad significativa cuando se asocia con colecciones voluminosas, síntomas compresivos o infección. Los abordajes mínimamente invasivos han ampliado las opciones terapéuticas, particularmente en casos anatómicamente complejos.

Se presenta el caso de una mujer de 42 años con antecedente de pancreatitis aguda grave con desarrollo progresivo a intolerancia a la vía oral, vómito biliar recurrente y dolor epigástrico intenso aproximadamente cuatro semanas después del episodio inicial. La tomografía computarizada abdominal contrastada revela un pseudoquiste pancreático gigante de 2,040 cc con marcada compresión gástrica. Los estudios de laboratorio son consistentes con la fase posinflamatoria tardía, con niveles normales de enzimas pancreáticas.

Se realiza una cistogastrostomía transgástrica híbrida laparoscópica-endoscópica. Bajo visualización combinada, se avanza un trocar de 12 mm a través de la pared gástrica anterior hacia el pseudoquiste, y se obtiene líquido purulento con lo que se confirma infección. Se drenan aproximadamente 1,700 cc y la gastrotomía se cierra con una engrapadora lineal. El posoperatorio es favorable, se indica nutrición parenteral temporal, y la paciente es dada de alta en condiciones estables. La imagen de control a los tres meses muestra resolución completa del pseudoquiste sin recurrencia.

ABSTRACT

Pancreatic pseudocyst is a recognized complication of severe acute pancreatitis and may lead to significant morbidity when associated with large collections, compressive symptoms, or infection. Minimally invasive approaches have expanded therapeutic options, particularly in anatomically complex cases.

We report the case of a 42 year-old woman with a history of severe acute pancreatitis that developed progressive intolerance to oral intake, recurrent bilious vomiting, and severe epigastric pain approximately four weeks after the initial episode. Contrast-enhanced abdominal computed tomography revealed a giant pancreatic pseudocyst measuring 2,040 cc with marked gastric compression. Laboratory findings were consistent with the late post-inflammatory phase, with normal pancreatic enzyme levels. A multidisciplinary hybrid laparoscopic-endoscopic transgastric cystogastrostomy was performed. Under combined visualization, a 12-mm trocar was advanced through the anterior gastric wall into the pseudocyst, yielding purulent fluid and confirming infection. Approximately 1,700 cc were drained, and the gastrotomy was closed with a linear stapler. The postoperative course was favorable, requiring temporary parenteral nutrition, and the patient was discharged in stable condition. Follow-up imaging at three months demonstrated complete resolution of the pseudocyst without recurrence. This case illustrates the effectiveness of endoscopy-assisted laparoscopic transgastric cystogastrostomy as

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Este caso ilustra la efectividad de la cistogastrostomía transgástrica laparoscópica asistida por endoscopia como una opción mínimamente invasiva segura para pseudoquistes pancreáticos gigantes sintomáticos. El manejo individualizado con base en las características anatómicas y clínicas sigue siendo esencial para optimizar los resultados.

Palabras clave. Pseudoquiste pancreático, laparoscopia, endoscopia gastrointestinal, anastomosis transgástrica, pancreatitis.

a safe minimally invasive option for giant symptomatic pancreatic pseudocysts. Individualized management based on anatomical and clinical characteristics remains essential to optimize outcomes.

Keywords. Pancreatic pseudocyst, laparoscopy, gastrointestinal endoscopy, transgastric anastomosis, pancreatitis.

INTRODUCTION

Pancreatic pseudocyst is a local complication of acute pancreatitis, occurring in 10-26% of cases, and of chronic pancreatitis, where it develops in 20-40% of patients.¹ It is defined as an encapsulated fluid collection with a well-defined wall containing minimal or no necrotic tissue.² These lesions arise from the accumulation of digestive enzymes, blood, necrotic debris, and granulation tissue.³

Conservative management remains acceptable as long as the pseudocyst is asymptomatic. Recent studies report spontaneous resolution in approximately 86% of patients at one-year follow-up, with complication rates ranging from 3 to 9%.⁴ Surgical intervention is reserved for cases with infection or hemorrhage secondary to erosion of adjacent pancreatic arteries.³ Relative indications for drainage include pseudocysts measuring 6-8 cm, as well as persistent symptoms that interfere with daily activities, such as abdominal pain, nausea, or vomiting.³

Current therapeutic options include open surgical approaches (cystogastrostomy, cystojejunostomy, cystoduodenostomy, or external drainage), laparoscopic techniques, and endoscopic procedures such as ultrasound-guided drainage or endoscopic cystogastrostomy.³ A hybrid technique has also been described, in which endoscopic guidance facilitates transgastric trocar placement.⁵

In this report, we present a case managed with this hybrid approach in a tertiary-care hospital in Mexico City, describing the endoscopy-assisted surgical technique and its potential benefits as a minimally invasive option.

CASE PRESENTATION

Patient information

A 42 year-old woman presented with colicky abdominal pain localized to the epigastrium and left upper quadrant, accompanied by nausea and vomiting. She had previously

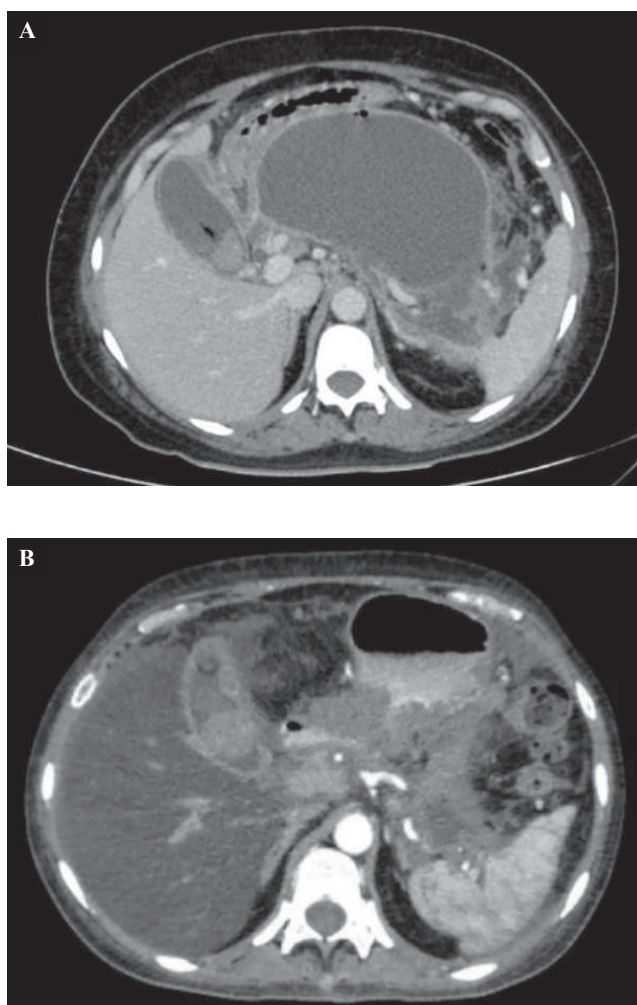


Figure 1. Series of contrast enhanced abdominal computerized tomography scans. **A.** Contrast enhanced abdominal computerized tomography demonstrating a giant pancreatic pseudocyst causing extrinsic gastric compression prior to surgical intervention. **B.** Postoperative contrast enhanced abdominal computed tomography showing complete resolution of the pseudocyst following hybrid laparoscopic-endoscopic transgastric cystogastrostomy.

been diagnosed with severe acute pancreatitis at an outside medical facility, requiring admission to the Intensive Care Unit and a three-week hospitalization. Approximately four weeks after discharge, she developed progressive constitutional symptoms and marked intolerance to oral intake, with multiple episodes of bilious emesis and severe colicky epigastric pain radiating to the left upper quadrant, rated 10/10 on the visual analogue scale. She sought medical attention at an external institution, where a contrast-enhanced

abdominal CT scan demonstrated a pancreatic pseudocyst, prompting referral to our center.

Clinical findings

On admission to the General Surgery Service, physical examination revealed visible epigastric fullness with significant tenderness in the epigastrium, left upper quadrant, and mesogastrium. No peritoneal signs were present.

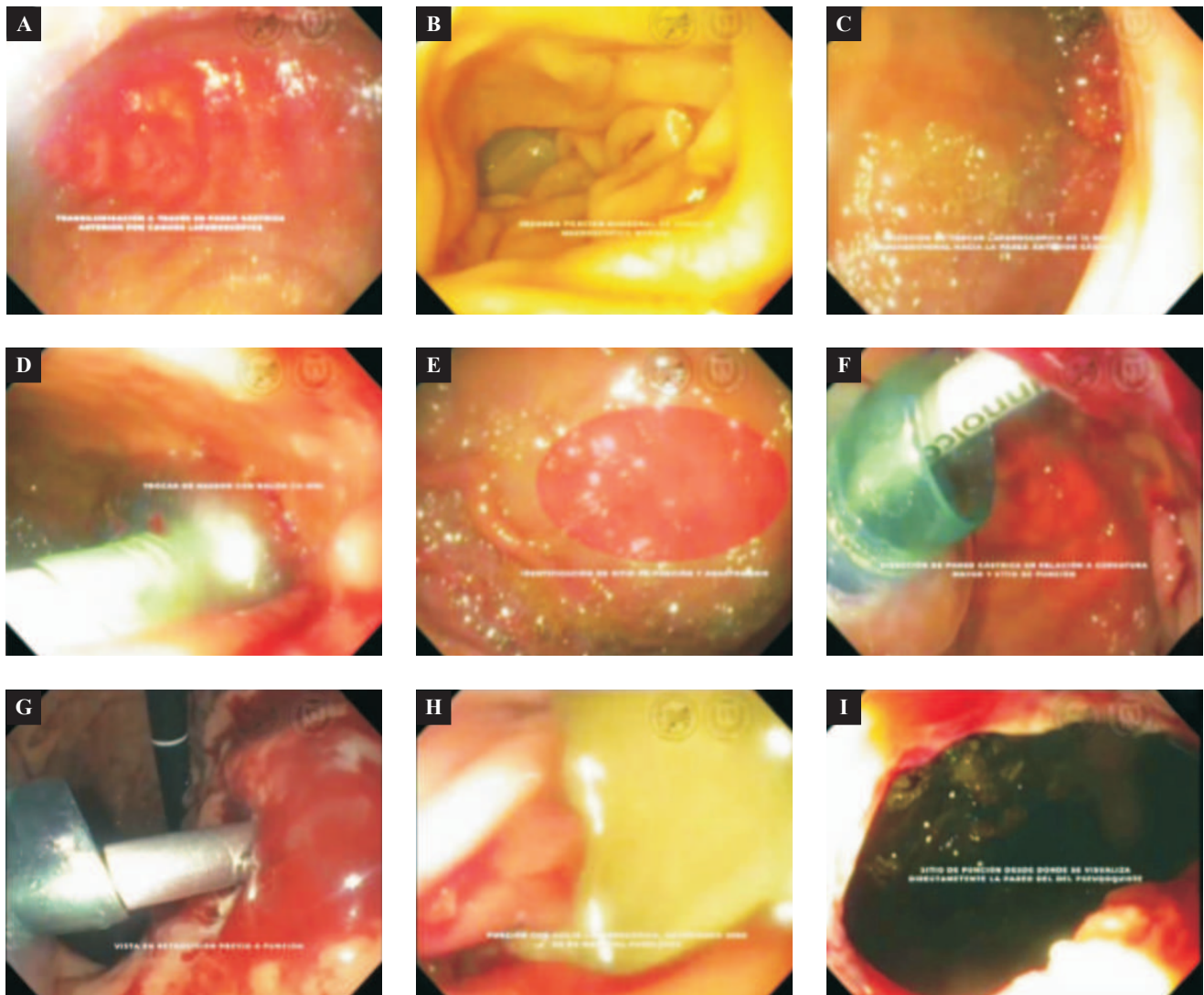


Figure 2. Endoscopy assisted laparoscopic intervention. **A.** Transillumination through the anterior gastric wall visualized with the laparoscopic camera. **B.** Second portion of the duodenum with normal macroscopic appearance. **C.** Transabdominal insertion of a 12 mm laparoscopic trocar toward the anterior gastric wall. **D.** Introduction of a 12 mm balloon type Hasson trocar. **E.** Identification of the puncture site and planned anastomosis. **F.** Dissection of the gastric wall along the greater curvature at the selected puncture site. **G.** Retroflexed endoscopic view prior to puncture. **H.** Puncture with a laparoscopic needle, yielding approximately 2,000 cc of purulent fluid. **I)** Puncture site providing direct visualization of the pseudocyst wall.

Diagnostic assesment

A contrast-enhanced abdominal CT performed in our emergency department confirmed a large pancreatic pseudocyst with an estimated volume of 2,040 cc (*Figure 1*), producing marked extrinsic compression of the stomach. Laboratory evaluation demonstrated a pattern consistent with the late phase of severe acute pancreatitis. Pancreatic enzymes were within normal limits (amylase 74 U/L, lipase 28 U/L), reflecting resolution of the acute inflammatory phase. Hemoglobin was 11.3 g/dL with a hematocrit of 33.7%, indicating mild anemia, while platelets were elevated at 577,000/ μ L, compatible with reactive thrombocytosis frequently observed during post-inflammatory recovery. Leukocytes measured 6,080/ μ L, without evidence of systemic leukocytosis. Liver function tests showed normalization of bilirubin levels compared with prior values, and renal function remained preserved. Given her persistent intolerance to oral intake and recurrent bilious emesis, a central venous catheter was placed and parenteral nutrition was initiated to ensure adequate metabolic support while definitive management was planned.

Therapeutic intervention

The patient underwent a hybrid laparoscopic–endoscopic transgastric cystogastrostomy (*Figure 2*). A 12-mm supraumbilical trocar was inserted, followed by a 5-mm trocar in the right flank and a 12-mm trocar in the left flank under direct visualization. The Endoscopy Service initiated the intraluminal phase, identifying a distorted and poorly distensible stomach due to extrinsic compression at the proximal body. Under combined laparoscopic and endoscopic guidance, a 12-mm trocar was advanced through the anterior gastric wall toward the area of maximal compression. Puncture of the pseudocyst yielded purulent fluid, confirming infection within the cavity, and approximately 1,700 cc of its contents were drained. The anterior gastrotomy was closed using a 65-mm linear stapler. A Penrose drain was placed through the right flank port and positioned adjacent to the mechanical closure; it was removed six days after surgery.

RESULTS

The patient had an uncomplicated postoperative course, requiring temporary parenteral nutrition due to persistent intolerance to oral intake, classifying her postoperative evolution as Clavien–Dindo II. She was discharged home in stable condition after removal of the Penrose drain. At outpatient follow-up, she demonstrated progressive clinical improvement with adequate tolerance to oral intake and no recurrent symptoms. A contrast-enhanced abdominal CT performed

three months after surgery showed complete resolution of the pancreatic pseudocyst without evidence of recurrence.

DISCUSSION

Pancreatic pseudocyst is one of the most frequent local complications of severe acute pancreatitis, particularly in the presence of extensive pancreatic necrosis. Its management has evolved toward a dynamic, time-based assessment that considers the stage of evolution, the degree of wall maturation, and the clinical impact on the patient.²

The patient described in this report developed severe acute pancreatitis and subsequently presented obstructive symptoms approximately four weeks after the initial event. This interval corresponds to the period during which the pseudocyst wall becomes organized, a prerequisite for performing safe drainage.⁴ The estimated volume of 2,040 cc is consistent with a giant pseudocyst. Although spontaneous resolution has been documented in a significant proportion of cases, large pseudocysts associated with symptoms secondary to gastric compression rarely show favorable outcomes with expectant management and typically require intervention.⁴

From a biochemical standpoint, the patient exhibited normal amylase and lipase levels, which is expected because these enzymes do not correlate with pseudocyst activity once the acute phase of pancreatitis has resolved. Therefore, therapeutic decisions must rely primarily on clinical presentation and imaging findings rather than enzyme levels.

Endoscopic drainage is considered the first-line approach in centers with the necessary expertise; however, laparoscopic, endoscopy-assisted drainage is preferred in cases of giant pseudocysts, infection, or significant anatomic distortion.³ Furthermore, the creation of a wide anastomosis using a mechanical stapler facilitates continuous drainage of the cavity and reduces the risk of premature tract closure, a factor recognized as important for definitive pseudocyst resolution.^{1,5}

The patient's favorable postoperative course, without major complications, aligns with published outcomes for minimally invasive internal drainage techniques, which are associated with effective symptom resolution and low morbidity.

CONCLUSION

Symptomatic pancreatic pseudocyst following severe acute pancreatitis continues to represent a therapeutic challenge, particularly in large collections with compressive effects or associated infection. Laparoscopic transgastric cystogastrostomy assisted by endoscopy offers a safe and effective minimally invasive alternative for selected patients, allowing adequate drainage of the cavity, resolution

of obstructive symptoms, and low postoperative morbidity. The present case supports the usefulness of this approach in giant pancreatic pseudocysts and underscores the importance of individualizing treatment according to the anatomical and clinical characteristics of each patient.

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