

CASE REPORT

Duodenal perforation after endoscopic retrograde cholangiopancreatography in a patient with pancreatic head tumor

Perforación duodenal postcolangiopancreatografía endoscópica retrógrada en paciente con tumor de cabeza de páncreas

Perfuração duodenal após colangiopancreatografia retrógrada endoscópica em paciente com tumor na cabeça do pâncreas

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ABSTRACT

Endoscopic retrograde cholangiopancreatography is an essential examination for the study and treatment of biliary and pancreatic conditions. Duodenal perforation is a rare complication whose treatment is debated. The objective of this work is to present a case with a diagnosis of pancreatic head tumor, which during the intraoperative period for performing pancreaticoduodenectomy was diagnosed with duodenal perforation after endoscopic retrograde cholangiopancreatography. The latter was performed 7 days prior to the surgical procedure, which constituted a late diagnosis of said complication. Inadvertent duodenal perforation is a rare complication. Although it should always be suspected in patients in whom the endoscopic procedure is unsuccessful despite several attempts or difficult from a technical point of view. Treatment includes conservative, endoscopic and surgical measures.

Keywords: ERCP; endoscopic retrograde cholangiopancreatography; duodenal perforation; retroperitoneum

RESUMEN

La colangiopancreatografía retrógrada endoscópica es un examen indispensable para el estudio y tratamiento de afecciones biliares y pancreáticas. La perforación duodenal es una complicación poco frecuente cuyo tratamiento es discutido. El objetivo de este trabajo es presentar un caso con diagnóstico de tumor de cabeza de páncreas, que durante el transoperatorio para la realización de duodenopancreatectomía se le diagnosticó perforación duodenal postcolangiopancreatografía retrógrada endoscópica. Esta última fue realizada 7 días previos al acto quirúrgico, lo cual constituyó un diagnóstico tardío de dicha complicación. La perforación duodenal inadvertida es una complicación poco común. Aunque siempre se debe sospechar en pacientes en los cuales el proceder endoscópico resulta infructuoso a pesar de varios intentos o difícil desde el punto de vista técnico. El tratamiento abarca medidas conservadoras, endoscópicas y quirúrgicas.

Palabras clave: CPRE; colangiopancreatografía retrógrada endoscópica; perforación duodenal; retroperitoneo



RESUMO

A colangiopancreatografía retrógrada endoscópica é um exame essencial para o estudo e tratamento de doenças biliares e pancreáticas. A perfuração duodenal é uma complicação rara cujo tratamento é debatido. O objetivo deste trabalho é apresentar um caso com diagnóstico de tumor de cabeça pancreática, que durante o intraoperatório para realização de pancreaticoduodenal resection foi diagnosticado com perfuração duodenal após colangiopancreatografía retrógrada endoscópica. Esta última foi realizada 7 dias antes do procedimento cirúrgico, o que constituiu

diagnóstico tardio da referida complicação. A perfuração duodenal inadvertida é uma complicação rara. Embora deva sempre ser suspeitado em pacientes nos quais o procedimento endoscópico não tem sucesso, apesar de várias tentativas ou é difícil do ponto de vista técnico. O tratamento inclui medidas conservadoras, endoscópicas e cirúrgicas.

Palavras-chave: CPRE; colangiopancreatografía retrógrada endoscópica; perfuração duodenal; retropneumoperitônio

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INTRODUCTION

Endoscopic retrograde cholangiopancreatography (ERCP) is a diagnostic/therapeutic procedure used in diseases of the biliopancreatic confluence. Thanks to the performance of sphincterotomy through this test, its benefits extend to procedures such as removal of lithiasis, drainage of the biliary tree, stent placement and biopsy.

In 1974 the first ERCP with sphincterotomy was reported by Kawai in Japan and Demling in Germany, and it was introduced in Cuba in 1978 in the capital by William Haedo Quiñones and, subsequently, to the rest of the hospitals in the country.^(1,2)

Complications related to this procedure have an incidence of up to 10%, the most frequent being pancreatitis, bleeding, cholangitis and perforation. The latter is reported in up to 0.6% of cases. However, when it is not diagnosed in a timely manner, it is related to an increase in mortality up to 23%. In case of duodenal perforation, patients generally present a clinical picture characterized by abdominal pain and vomiting, which suggests an episode of pancreatic involvement after ERCP.^(3,4)

Although duodenal perforation ranks last in the frequency of complications related to ERCP, the deleterious consequences for the patient's life that derive from this type of complication, makes it necessary to pay vital attention when it occurs or is suspected.⁽⁵⁾



For a better understanding of the severity of this type of complication Stapfer, et al.^(6,7) classify them as follows:

- Type I: duodenal perforation caused by the endoscope, away from the ampulla.
- Type II: periampullary lesion of the medial wall of the duodenum, due to sphincterotomy or papillotomy.
- Type III: perforation of the bile duct, caused by guidance or instrumentation with the Dormia basket.
- Type IV: due to compression of the air used to maintain intraluminal visualization. Not clinically significant.

Multiple causes increase the likelihood of complications during ERCP. They can be classified as follows:

a) Anatomical factors:

1. Difficulty in achieving cannulation of the bile duct (difficult biliary cannulation)
2. Presence of tumors (mass effect).
3. Deformity of the normal anatomy.
4. Bile duct stenosis.
5. Dysfunction of the sphincter of Oddi.
6. Billroth II and Roux-en-Y gastrectomy

b) Technical factors related to ERCP:

1. Sphincterotomy length.
2. Sphincterotome handling.

c) Non-modifiable factors:

1. Sex (higher frequency in female).
2. Age (under 60 years of age).

All this has a negative influence on the development of complications such as pancreatitis and post-ERCP perforation. The aim of the present work is to present a case with a diagnosis of pancreatic head tumor, which during the trans-operative period for duodenopancreatectomy was diagnosed with post-endoscopic retrograde endoscopic duodenal perforation.

PRESENTATION OF THE CASE

A 57-year-old female patient with a history of right breast cancer (ductal carcinoma operated 13 years ago). She was admitted to the gastroenterology department for suspected obstructive ileus secondary to pancreatic head tumor. ERCP was performed, which was unsuccessful, as it was not possible to cannulate the main biliary tract despite multiple attempts. At that time a duodenal lesion occurred, not diagnosed at the time of evaluation and official report of the radiological study (Figure 1).





Fig.1.A: Attempt to cannulate the main biliary tract. **B:** Retroperneumoperitoneum to the right of the spine.

The patient remained in the hospital with no obvious warning signs or symptoms of peritoneal irritation. The case was discussed collectively with the GJanral Surgery Department and it was decided to plan for cephalic pancreatoduodJanctomy. She underwent surgery 7 days later for duodenopancreatectomy. Transoperative fibrin was observed towards the retroperitoneum. A large retroperitoneal abscess and small perforation of the second duodenal portion were identified, which contraindicated the planned surgery (Figure 2).

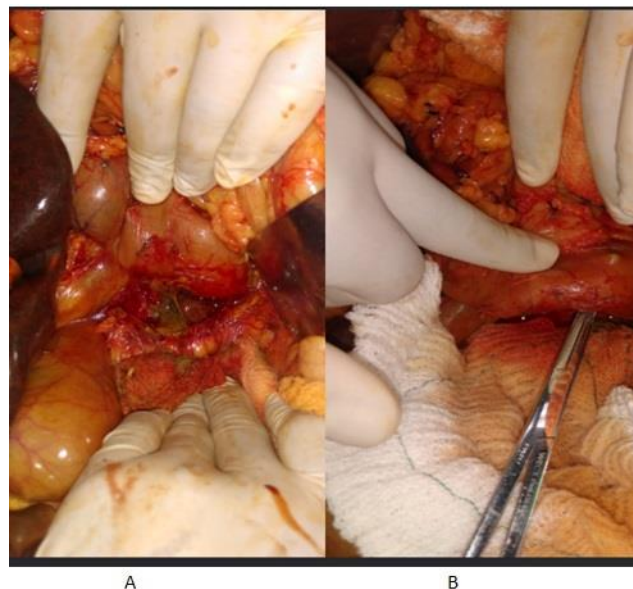


Fig.2.A: Retroperitoneal collection site. **B:** Perforation of the second portion of the duodenum.



Duodenal raffia, cholecystectomy, choledochotomy with placement of a Kher T-tube, pyloric exclusion, laterolateral gastrojejunostomy and jejunostomy for feeding and toilette of the abscess area were performed. A trucut biopsy of the tumor was taken, which revealed well-differentiated adenocarcinoma of the pancreatic ducts, drains were left in the vesicular bed and retroperitoneum.

The patient was transferred to the intensive care unit (ICU) for postoperative recovery. During this period she evolved with infection of the superficial planes of the surgical wound, which was treated with daily dressings and parenteral antibiotics. After discussing his case in the GJanral Surgery Department, a contrasted study of the upper gastrointestinal tract and cholangiography through the T-tube was performed 10 days after the surgery, and the correct functioning of the digestive and biliary shunts was evidenced (Figure 3).

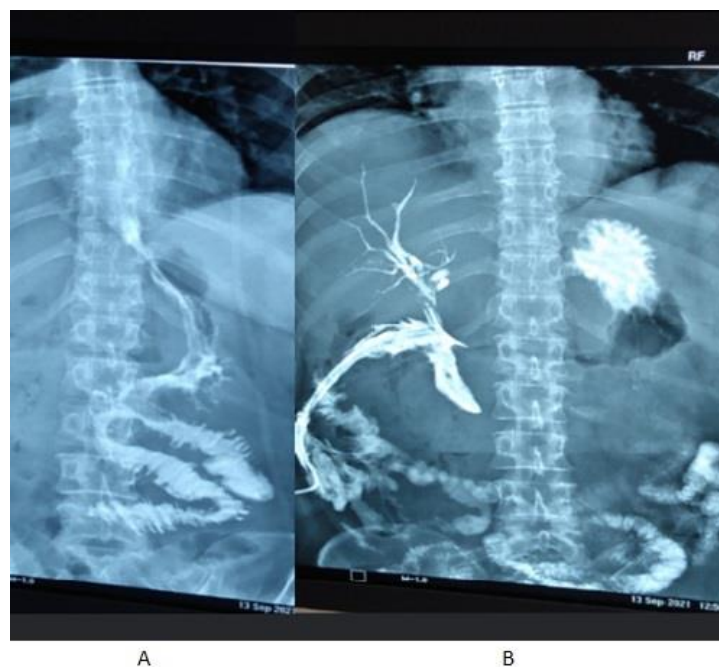


Fig.3.A: Functional gastrojejunostomy. **B:** Functional biliary bypass (Kher T-tube).

She was transferred to the gJanral surgery ward 12 days after surgery. A collective consensus was reached that once the patient's physical and humoral condition allowed it; the surgery initially proposed for curative purposes would be attempted. However, the patient and family members did not agree and rejected the surgical therapeutic option. It was then decided that she would be evaluated and followed up by the clinical oncology service.



DISCUSSION OF THE CASE

Duodenal lesions constitute a challenge for the surgeon; treatment is based on procedures for repairing the lesion, bypassing biliary secretions, control of duodenal and pancreatic secretions, as well as drainage of existing collections.⁽⁸⁾

For the classification of duodenal injury, the American Association for the Surgery of Trauma - Organ Injury Scale (AAST-OIS)⁽⁹⁾ is currently used, as follows:

Table 1 Classification of duodenal injury

Grade	Injury	Description
I	Tear	Only affects a portion of the duodenum
	Hematoma	Partial thickness, no perforation
II	Tear	Affects more than one portion
	Hematoma	<50% of circumference
III	Tear	50-75% of the circumference of the second portion of the duodenum 50-100% of the circumference of the first, third, and fourth duodenal portions
IV	Tear	>75% of the circumference of the second duodenal portion. Involves the ampulla or distal common bile duct.
V	Vascular tear	Massive destruction of the duodenal pancreatic complex. Duodenal devascularization

Taken from: American Association for the Surgery of Trauma - Organ Injury Scale (AAST-OIS)⁽⁹⁾

Conservative treatment can be considered in cases with small duodenal lesion diagnosed or suspected during ERCP, with imaging and endoscopic studies that fail to identify the site of perforation. All this is supported by the absence of peritoneal irritation and adequate general condition of the patient. In this case, conservative therapy can be attempted with suspension of the oral route, nasogastric tube, total parenteral nutrition, intravenous antibiotics, analgesics, somatostatin analogues and percutaneous drainage of any collections that may exist. The endoscopic therapeutic arsenal includes the use of endoscopic clips, endoloops and biological tails.⁽¹⁰⁾

In the case of patients with symptomatic post-ERCP duodenal perforation, diagnosis and treatment should be as soon as possible, otherwise complications such as sepsis, multiorgan failure and death are reported in up to 20% of cases. In the event that the injury is suspected during the procedure, computed tomography provides a 90% specificity for a positive diagnosis.⁽¹¹⁾



In the case presented, the duodenal perforation was related to the multiple attempts to cannulate the biliary tract. There was no clinical manifestation of the injury such as abdominal pain with peritoneal reaction, tachycardia, arterial hypotension, fever and general condition, which allowed an asymptomatic evolution for seven days. All this was inferred because it was small in size and limited to the retroperitoneal duodenum. However, the case presented had a type II lesion according to Stapfer's classification.

Castaño Milla, et al.⁽¹²⁾ report that the treatment of this type of injury is surgical, as long as the necessary conditions for endoscopic therapy do not exist. After the surgical procedure, the imaging studies performed during ERCP were reevaluated where retroperitoneum was not diagnosed in the procedure was observed. It was assumed that the absence of alarm signs after ERCP could be due to several factors: small size of the perforation, retroperitoneal location and the clinical condition of the patient (patient with oncologic disease).

FINAL CONSIDERATIONS

There are different treatments described for duodenal repair after duodenal injury. However, the best therapeutic measure to carry out will be subordinated to the clinical and humoral status of the patient, site and degree of injury. The clinical instability of the patient indicates that the main objective is to control bleeding and preserve physiological functions. However, when there are no clinical manifestations that warn about a deviation from the normal evolution of the patient after ERCP, the outcome is far from being close to the expected result. Therefore, timely detection of this type of injury is of utmost importance.

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Conflicts of interest:

The authors declare that there are no conflicts of interest.

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