

Cystogastrostomy Guided by Endoscopic Ultrasound in the Treatment of Pancreatic Pseudocysts

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ABSTRACT

INTRODUCTION: The management of pancreatic pseudocysts has recently benefited from less invasive techniques, the latest being the interventional echoendoscopy. The objective of this study was to assess the effectiveness and safety of the cystogastrostomy guided by the endoscopy ultrasound (US) in the management of pancreatic pseudocysts.

PATIENTS AND METHODS: This was a retrospective study carried out from September 2010 to August 2015 in the gastroenterology department II of the military hospital of Rabat. All patients who underwent an endoscopic drainage for symptomatic and bulging pseudocyst into the digestive lumen were included. Selected patients had cystogastrostomy guided by the echoendoscopy using a linear echoendoscope with large operating channel and a cystotome. Two double pigtail prostheses were then inserted. We monitored systematically, both clinically and ultrasound wise, all patients 48 to 72 hours after the procedure, then monthly until the complete resolution of the pancreatic fluid collection. The removing of prostheses was made under endoscopy guidance after a complete disappearance of the radiological image. Then, patients were evaluated both clinically and via US every 3 months for one year, and every 6 months for another one year.

RESULTS: In total 23 patients with a mean age of 59 ± 12 years old had a cystogastrostomy guided by endoscopic US. The male to female ratio of 0.64. Acute pseudocysts as complications of acute pancreatitis were noted in 20 patients, surgery of the pancreas in 1 patient and a trauma in 2 patients. Two double pigtail prostheses were inserted in all patients. The immediate technical success rate was 95.65% ($n = 22$), the immediate complications rate was 4.5% ($n = 1$). The therapeutic success was 90.9% ($n = 21$). Recurrences, due to a secondary infection, were noted in two patients and were managed by surgery. The rate of lethality was 4.35% ($n = 1$).

CONCLUSION: The cystogastrostomy guided by echoendoscopy seems to be an effective and safe approach in the first line management of pancreatic pseudocysts.

Key words: Endoendoscopy; Cystogastrostomy; Pancreatic Pseudocysts

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INTRODUCTION

Pancreatic pseudocysts are defined by the Atlanta consensus conference as pancreatic fluid collections surrounded by a wall of granular fibrous tissue devoid of epithelium^[1]. There are two types of pseudocysts: either secondary to an acute pancreatitis or secondary to a chronic pancreatitis^[1].

Several management options are available and include surgery, percutaneous radiologic (by drainage) and endoscopic. Echoendoscopy is recommended before the endoscopic drainage procedure because it makes it safer by escaping the nearby vessels and by choosing the closest puncture site to the wall. By using the therapeutic echoendoscopes, it is possible to do the operation in a single time (without exchanging the echoendoscope by a therapeutic duodenoscope)^[2].

Currently endoscopic treatment has become an alternative to surgery. It is recommended as first line option by the European Society of Gastroenterology and Endoscopy^[3]. The aim of this study was to evaluate the efficacy and the safety of echoendoscopic guided cystogastrostomy in the management of pancreatic pseudocysts.

MATERIALS AND METHODS

This was a retrospective and descriptive study, conducted between September 2010 and August 2015. Data (clinical, radiological and US) were collected from the registries of the gastroenterology department of the Mohamed V military hospital of Rabat in Morocco. The study population was composed of patients with a pancreatic pseudocysts. We included patients who had echo-guided drainage by endoscopy for symptomatic pseudocyst (which size was greater than 5 cm that persisted for more than 4 weeks) and bulging lesions into the gastric lumen. Patients with pseudocysts having intracystic necrosis and vascular interposition were excluded. The sample size was 23 patients.

Before surgery, all patients underwent abdominal CT scan with injection of contrast media. Antibiothylaxis (IV amoxicillin + clavulanic acid 1g 12 hourly) before and after the procedure was administered in all patients. Endoscopic drainage was performed under general anesthesia with intubation (to avoid the risk of inhalation after pseudocysts' puncture). The echoendoscopic guidance was performed by a linear echo-endoscope (Olympus GF-UCT 240) with a wide operating channel (3.7 mm). The puncture of fluid collections was carried out using an Echotip® 19G puncture needle. To make a cystogastrostomy path, we used a cystotome TM (Wilson Cook) composed of a 10 Fr external catheter equipped at its distal end with a diathermic ring and an internal catheter containing a metal wire which terminates at its distal end by a needle knife. The search for the optimal site of puncture and the measurement of the thickness of the junction between cysts and gastric lumen (less than 10 mm) were carried out using the linear function of the echo-endoscope. The verification of the absence of interposition of vessels on the path of the puncture was assessed with Doppler. All fluid collections were punctured using the Echotip® needle with specimens for biochemical, cytobacteriological and tumor marker assay. A guided-wire (Metro® 0.035 inch) inserted into the sheath of the Echotip® was wound in the cyst under radiological control.

The external catheter of the cystotome was then slid on the guide-wire, after removing its internal catheter, allowing the creation of the cystogastrostomy path due to its diathermic ring using a pure section current. A second guide-wire was then introduced into the cyst through the external catheter of the cystotome. Two prostheses in double pigtail 7.5 or 8 Fr were successively slid on a guide-wire

under endoscopic and radiological control. Clinical and ultrasound control was systematically carried out in all patients 48 to 72 hours after the procedure and then every month until complete resolution of the pancreatic collection. The removing of the prostheses was carried out under endoscopy guidance after complete disappearance of the radiological image. Then the follow-up was clinical and US every 3 months during one year and then every 6 months during the next year.

Studied variables were epidemiological, clinical, morphological and therapeutic.

Typing of data was performed using Excel starter 2010 software.

RESULTS

During our study, pancreatic pseudocysts were predominantly found in males, 14 (60.87%) than in females, 9 (39.13%). The mean age of patients was 52.69 ± 12.85 years old with extremes of 17 and 76 years old. The main clinical findings were abdominal pain ($n = 18$), epigastric mass ($n = 15$) and vomiting ($n = 9$). Etiologies were dominated by acute pancreatitis in 20 cases (16 cases of acute biliary pancreatitis and 4 cases of undetermined causes), followed by pancreatic trauma (2 cases) and pancreatic surgery (1 case). The mean size of collections was 11.95 ± 3.24 cm with extremes of 7 and 21 cm. Pancreatic pseudocysts were localised in the corporeal-caudal side in 86.95% of cases, in the cephalic part in 4.34% of cases and in the caudal part in 8.69% of cases.

The immediate rate of success was 95.65% ($n = 22$), one patient presented haemorrhage at the puncture' site. The mean time of disappearance of the radiological image was 2.7 ± 0.45 months with extremes of 2 and 3 months. During a mean follow-up period of 8.7 ± 5.26 months with extremes ranging from 1 to 18 months concerning 22 patients, the rate of therapeutic success was 90.9%. In our series, two patients had clinical recurrence due to a superinfection of the pancreatic collection respectively at 10 and 16 weeks, managed surgically. One patient died 3 days after drainage.

DISCUSSION

In our series, drainage of pancreatic pseudocysts was realized using an endoscope in one stage. This technique allowed us to obtain a rate of technical success of 95.65% and a rate of therapeutic success of 90.9%. Indeed, data from literature report the global success rate greater than 90% and the rate of recurrence less than 10% when using this technique^[4]. Putting in place a second prosthesis allowed us to assure the drainage between prostheses in case of their obstruction. A cystotome was used to create a path between the pancreatic collection and the gastric lumen. The advantage of this accessory is to create and expand with safety an initial orifice due to its 10 Fr external catheter. It is easier to move accessories such as guided wires and dilator catheter to the puncture site. Nevertheless, some authors have recently reported that the insertion of two prostheses in the same pseudocyst increased the rate of complications (40% vs 13%)^[5]. However, randomized controlled trials with a greater number of patients using different types and number of prostheses are needed to set the ideal management option of pancreatic fluid collections.

According to several authors, complications are rare when performing cystogastrostomy in a single time^[6,7]. In our study, one patient presented a hemorrhagic complication (4.5%) related to the procedure and two patients (9.09%) presented a symptomatic recurrence due to a superinfection of the collection that was managed by surgery. Although, large size of cysts is often required for invasive treatments due to persistent symptoms or complications, mortality,

morbidity, and hospital stay were not influenced by the size of the pseudocysts, the same notice was made by Soliani *et al*^[8].

By comparing the echoendoscopic drainage with blind endoscopic drainage, Varadarajulu and Park in 2008 and 2009, in a randomized controlled study, showed that echoendoscopic drainage was superior to blind endoscopic drainage in terms of efficacy and safety^[9,10]. Comparing echoendoscopic drainage with surgical treatment, a recent randomized study published in 2013 by Varadarajulu *et al*^[11], showed no recurrence of pancreatic pseudocyst during the follow-up period in one group, and did not demonstrate that surgical cystogastrostomy was superior to endoscopic echo-guided drainage. Echo-guided endoscopic drainage is not superior to surgical treatment in terms of efficacy, but has the advantage of being associated with reduced hospital stay, reduced costs, better physical and mental health of patients.

CONCLUSION

Interventional endoscopy is an effective therapeutic in the management of pancreatic pseudocysts. Echoendoscopy increases the efficacy and reduces morbidity. The one-step technique using an endoscope with a large operating channel and a cystotom seems to improve the technical and therapeutic success rates and is linked to a low morbidity and mortality.

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