Endoscopic cystogastrostomy during pregnancy

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Pancreatic pseudocysts occur as a consequence of acute and chronic pancreatitis or abdominal and surgical trauma. The poorly localized fluid collections of acute pancreatitis can heal spontaneously but in about 10% of cases a pseudocyst will develop. In these cases, an initial 4- to 6-week period of observation is justified in anticipation of spontaneous resolution or development of a mature wall that will allow safe surgical drainage. After this period, asymptomatic patients with small asymptomatic pseudocysts (<4-6 cm in diameter) can be observed, but symptomatic patients and those with larger lesions should be treated with internal drainage because of an increasing risk of complications. A retrospective study confirmed that a significant proportion of the patients may be managed conservatively.3

The pseudocysts associated with chronic pancreatitis develop mainly as a result of a rupture of a branch of the pancreatic duct, thus spontaneous resolution cannot be expected. In most such cases, the pseudocyst should be drained because the risk of serious, potentially fatal complications increases with time.4 For drainage, there are 3 alternatives: surgical, percutaneous, and endoscopic. Currently available data suggest that early success with percutaneous drainage is less than that of surgical or endoscopic techniques, and the frequency of incomplete recovery or recurrence, and even the morbidity and mortality due to the pancreatic pseudocyst, is higher.5 Although controlled, randomized, prospective studies comparing the surgical and endoscopic techniques are lacking, it is currently accepted that surgical decompression should be reserved for patients in whom endoscopic therapy is unsuccessful.

Pancreatic pseudocysts that arise during pregnancy are a special situation. Pharmacologic treatments, radiologic examinations, and especially operative interventions must be considered with greater caution. Pancreatic pseudocysts during pregnancy are extremely rare, but treatment is difficult because not only the increased risk to the pregnant woman but also that for the fetus has to be considered. This is the report of the use of endoscopic cystogastrostomy with double straight stents to successfully resolve a pancreatic pseudocyst in a pregnant woman before delivery.

CASE REPORT

A 28-year-old woman was referred with a pancreatic pseudocyst diagnosed at the twenty-first week of pregnancy. Her only complaint was intermittent, mild epigastric discomfort. There was no history of acute pancreatitis, gallstone disease, or heavy alcohol abuse, but she had experienced mild epigastric pain for some days half a year earlier. At the end of the first trimester she noticed a palpable epigastric mass. At US performed during the 14th week of pregnancy, an 8.0 × 7.5 × 6.5 cm pseudocyst was revealed posterior to the stomach that was not clearly separated from the body and tail of the pancreas (Fig. 1). US at regular intervals showed no change in size of the pseudocyst until the twenty-first week of pregnancy. On physical examination mild epigastric tenderness, a palpable epigastric mass and findings consistent with the twenty-first week of gestation were noted. There was concern that the pseudocyst might rupture because of the decreasing space within the abdominal cavity because of the growing fetus or later during delivery as has been reported.6 A decision was made to attempt endoscopic pseudocyst drainage. Informed consent was obtained. The uneventful history and the stable size of the pseudocyst made a connection with the pancreatic duct as in chronic pancreatitis unlikely. To limit x-ray exposure, diagnostic ERCP was not performed before cystogastrostomy. Our combined method of endoscopic pseudocyst drainage7 was used as follows: percutaneous US-guided fine needle puncture was performed and the pseudocyst aspirated.
Cytopathological evaluation of the aspirated material revealed necrotic fat and debris, but the amylase level in the fluid was not elevated. The sample was sterile. By means of the aspiration needle, 10 mL of contrast material was injected (Omnipaque, Nycomed, Oslo, Norway) into the pseudocyst cavity. Under fluoroscopy with minimal x-ray exposure and gentle turning of the patient, the anatomic relationship and the distance between the pseudocyst cavity and the stomach was clearly defined, allowing selection of the best location for internal drainage of the cyst, which was not bulging into the lumen of the stomach. A modified needle knife was used to apply blended and cut electrosurgical current with gentle forward pressure against the posterior wall of the body of the stomach. When the pseudocyst cavity was entered the needle was removed leaving the outer sheath of the device in the pseudocyst. By means of the sheath, a guidewire was introduced into the cavity. To facilitate the drainage and stent placement, the cystogastrostomy was dilated with catheters (SBDC 6-10 F, Wilson-Cook, Indianapolis, Ind.). Then a 10F straight Teflon stent (MTW GmbHi, Wiesel, Germany) and a 7F nasocystic drain were inserted into the cavity with double guidewires (Plus-480, AX-21-480, Wilson-Cook, Indianapolis, Ind.). Subsequently, she experienced upper abdominal pain and distension, mild fever (37.3°C) and leucocytosis developed. The symptoms resolved rapidly, and the next day another 10F stent was inserted into the pseudocyst and a nasojejunal feeding tube was placed to accelerate the healing of the pseudocyst.

The pseudocyst collapsed immediately. After 8 days of nasocystic lavage with antibiotics (perflloxacin) and continuous jejunal feeding (1 cal/min), the nasocystic drain and the nasojejunal feeding tube were removed and the patient was discharged.

US at the thirty-third week of pregnancy showed no pseudocyst. The 10F drains, which were almost completely extruded from the pseudocyst, were removed during the thirty-fifth week. At the thirty-sixth week of pregnancy a cesarean section was performed because of a breech presentation, and a healthy baby weighing 3100 g was delivered. After 1 year of regular follow-up, the baby is doing fine, the mother is asymptomatic, and US shows no recurrence of pancreatitis or pseudocyst.

**DISCUSSION**

Endoscopic cystenterostomy is an established technique for management of pancreatic pseudocysts. Endoscopic decompression can be transmural or transpapillary if the cyst communicates with the pancreatic duct. When a large connection and/or ductal hypertension has been documented by ERCP or cystography, transpapillary drainage is recommended with or without pancreatic sphincterotomy.9,10 Pseudocysts adjacent to the stomach or duodenum can be treated by transmural internal drainage via endoscopy. Using the bulge made by the pseudocyst on the wall as a guide, the surgeon punctures the cyst with a diathermy needle, the incision is extended with a sphincterotome or dilator, and the pseudocyst is drained with nasocystic and/or internal drains.11-13 Formerly, patients with pseudocysts that did not produce a bulge were candidates for surgery. Now, however, EUS can demonstrate the exact anatomy and is especially useful in a pregnant woman. Standard echoendoscopes have 2.4 to 2.8 mm diameter accessory working channels that do not admit 10F stents.14,15 A combined technique was developed that consists of percutaneous US-guided fine needle puncture, aspiration of a 10 to 20 mL fluid sample for analysis. The cyst is filled with 10 to 15 mL of contrast medium and punctured endoscopically with a guided electrosurgical needle at the point nearest the pseudocysts. The pseudocyst may be 1 to 3 cm from the gastric or duodenal wall and are drained with a nasocystic drain and/or internal stents (Fig. 2). Our technique allows sampling of pseudocyst content to differentiate between infected or noninfected pseudocysts and cystadenomas and demonstration of any communication with the pancreatic ductal system. In the present case the amylase level was not elevated, but cytological evaluation supported an inflammatory origin (signs of fat necrosis). Our combined contrast-guided fluoroscopic method allowed the performance of the cystogastrostomy at the optimal location in this critical situation in which no bulge was evident endoscopically and the patient was pregnant.

There is a single prior report of endoscopic cysto-
gastrostomy during pregnancy. However, success proved to be temporary in this patient because of spontaneous migration of the drains. The pseudocyst increased in size and a transpapillary pancreatic stent was placed to stabilize the size of the cyst until delivery. Two months after delivery the patient underwent surgery. In another pregnant patient with a choledochal cyst and an acute pancreatic pseudocyst, percutaneous US-guided drainage of the pseudocyst was successful, but resection of the choledochal cyst was necessary to prevent further pancreatitis. In our patient the endoscopic cystogastrostomy proved to be successful because no recurrence was observed even after 1 year of follow-up. This is thus the first report of definitive endoscopic treatment of a pancreatic pseudocyst during pregnancy.

REFERENCES

5. Heider R, Meyer AA, Galanko JA, Behrns KE. Percutaneous drainage of pancreatic pseudocysts is associated with a high-