

Case Report

Endoscopic Ultrasound-Guided Choledochoduodenostomy and Enteral Palliative Stenting in Inoperable Periapillary Carcinoma

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ABSTRACT Inoperable periampullary carcinoma with failed Endoscopic Retrograde Cholangiopancreatography (ERCP) could result in both biliary and duodenal obstruction. We report a case of inoperable periampullary carcinoma with duodenal obstruction and failed ERCP. She underwent successful simultaneous EUS-CDS for biliary obstruction and enteral stent for duodenal stenosis.

KEYWORDS: *Choledochoduodenostomy, endoscopic ultrasound, enteral stenting*

INTRODUCTION

Obstruction of biliary system is usually managed by transpapillary biliary drainage during endoscopic retrograde cholangiopancreatography (ERCP). However access to major papilla may not be feasible in lesions obstructing duodenal lumen and at times biliary cannulation may fail during ERCP. Endoscopic ultrasound guided choledochoduodenostomy (EUS-CDS) is emerging as a safe and effective alternative to percutaneous biliary drainage in patients with failed biliary access through major papilla.^[1] We report a case of inoperable periampullary carcinoma with duodenal obstruction who underwent EUS-CDS and enteral stent placement.

CASE REPORT

A 68-year-old lady came to our hospital with features of obstructive jaundice. She had been symptomatic for past 1 month and had also lost about 10 kg of weight. There was no history of drug intake and there were no signs and symptoms suggestive of decompensated liver disease. She was a known diabetic and hypertensive for past 8 years.

Blood investigations revealed a hemoglobin of 9 g/dL, total bilirubin of 13 mg/dL (normal: 0–2 mg/dL) with direct of 11 mg/dL (normal: 0–0.3 mg/dL), aspartate transaminase (AST) of 97 U/L (normal: 5–34 U/L), alanine transaminase (ALT) of 260 U/L (normal: 0–55 U/L), alkaline phosphatase and gamma glutamyl

transferase (GGT) of 573 U/L (normal: 50–136 U/L) and 1146 U/L (normal: 0–55 U/L) respectively. Viral markers (hepatitis B and C, human immunodeficiency virus) were negative. Carbohydrate antigen 19–9 was 4912 U/mL (normal: 0–37 U/mL). Ultrasonography of abdomen revealed bilobar intrahepatic biliary radicle dilation and dilatation of common bile duct (CBD) dilated to about 14 mm upto the head of pancreas. Upper gastrointestinal endoscopy was done which revealed growth at the junction of first and second part of duodenum with luminal compromise. Endoscope could not be negotiated distally. Multiple biopsies were taken from the lesion and sent for histopathological examination. Contrast enhanced computed tomography was done which showed periampullary mass with liver metastasis [Figure 1]. After the histopathology report [Figure 2], a diagnosis of well differentiated periampullary adenocarcinoma with liver metastasis was made. The case was discussed in tumour board and the plan was made for EUS-CDS to relieve biliary obstruction and enteral stenting to relieve duodenal luminal obstruction.

After taking informed consent, under conscious sedation (midazolam, fentanyl and propofol) and

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prophylactic antibiotic cover (levofloxacin), EUS-CDS was done. EUS was performed using a Pentax linear echoendoscope-EG-3870 UTK connected to a Hitachi Avis Estiva ultrasound machine (2012). EUS showed dilated CBD with distal obstruction. The CBD was punctured transduodenally from first part of duodenum using a 19-G needle (Wilson-Cook Corporation, Winston-Salem, North Carolina, USA) under EUS and Doppler guidance [Figures 3 and 4], to avoid injuring any intervening vessels. Bile was aspirated and cholangiogram was obtained. It showed dilated CBD and intrahepatic biliary radicles. A 0.035 inch guide wire (Boston Scientific, Natick, Massachusetts, USA) was then introduced through the needle into the CBD and advanced up to the intrahepatic biliary tree. The needle was then exchanged with a diathermic dilator (10 Fr Cystotome Set; Wilson Cook Corporation, Winston Salem, North Carolina, USA) and dilated coaxially with the guidewire.

A 8 cm long fully covered self-expanding metallic stent (SEMS) (Evolution-Wilson Cook) was placed over the guidewire with the proximal end just below the hilum and the distal end in the first part of duodenum [Figures 5 and 6]. Plan was made for enteral stent placement after 2 weeks to allow some time for EUS-CDS to mature and was discharged after 48 h.

Readmission was done for abdominal pain and fever for 1 day on day 10 after EUS-CDS with suspicion of blockage of stent. There was adequate relief of biliary obstruction and 10 days after the procedure her total bilirubin was 2.2 mg/dL with direct of 1.4 mg/dL., AST, ALT was 37 and 49 IU/L respectively and SAP and GGT was 152 and 114 IU/L respectively. Fever settled with injection piperacillin-tazobactam and plan was made for enteral SEMS placement. There was migration of earlier placed SEMS into the stomach with bile draining from the EUS-CDS site. Using duodenoscope (Olympus



Figure 1: Contrast-enhanced computed tomography image showing mass in the second part of duodenum causing biliary and duodenal obstruction

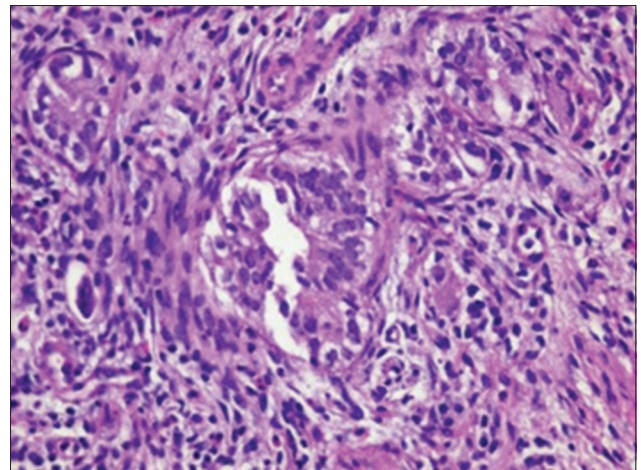


Figure 2: Histopathology showing varying sized glands lined by cuboidal to columnar cells with pleomorphism and hyperchromatic nuclei-well differentiated adenocarcinoma

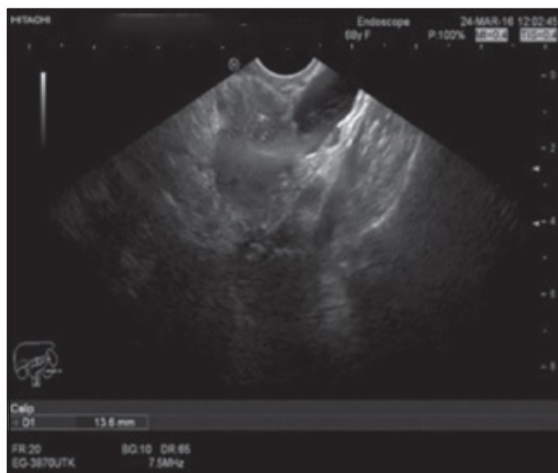


Figure 3: Endoscopic ultrasound transduodenal window showing the tumour with dilated distal common bile duct

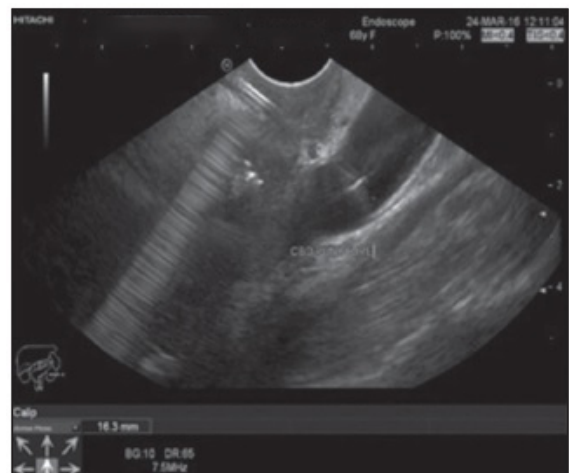


Figure 4: Endoscopic ultrasound transduodenal window showing transduodenal puncture of bile duct

GIF-Q150), a 0.035' guidewire was passed into the CBD over which a 10Fr 10 cm Amsterdam biliary stent was placed after confirmation with cholangiography. A 0.035" guidewire was then advanced through the channel of the endoscope and passed into the fourth portion of the duodenum; Duodenal SEMS placement was done with evolution controlled release introducer system (90 mm length, 22 mm × 27 mm) which passes through the working channel of the endoscope. The stent was deployed across the duodenal stricture with proximal end in first part of duodenum [Figure 7]. There was minor bleed from the EUS-CDS site which settled without any intervention [Figures 8 and 9]. After discussions with patient and family, plan was made for chemotherapy and follow-up.

DISCUSSION

Periampullary tumors constitute a number of diverse neoplastic lesions located within 2 cm of the major

duodenal papilla.^[2] Periampullary cancer includes lesions from papilla, head of the pancreas, distal CBD and duodenum. The presentation is usually late and curative surgical treatment is not feasible. The mean survival time of these patients ranges from 6 to 12 months. However, when concomitant duodenal obstruction occurs, their survival decreases to 2 months.^[3,4] The location of the duodenal obstruction in relation to the major papilla is the major determinant of successful endoscopic simultaneous palliation of biliary and duodenal obstruction. Mutignani *et al.*^[3] proposed a classification system for the three anatomic scenarios of duodenal obstruction in relation to the major papilla. Type I stenosis occurs at the level of the duodenal bulb or upper duodenal genu but without involvement of the papilla. Type II stenosis affects the second part of the duodenum with involvement of the major papilla. Type III stenosis involves the third part of the duodenum distal to and without

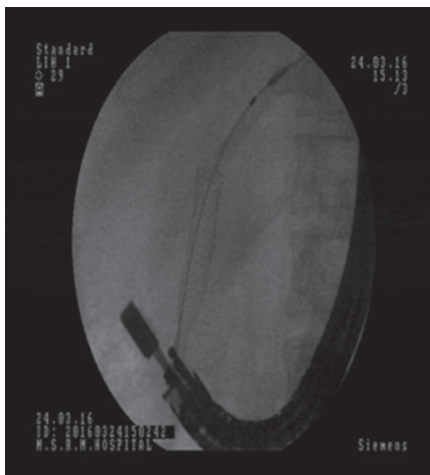


Figure 5: Fluoroscopic image of biliary metallic stent placement under endoscopic ultrasound guidance

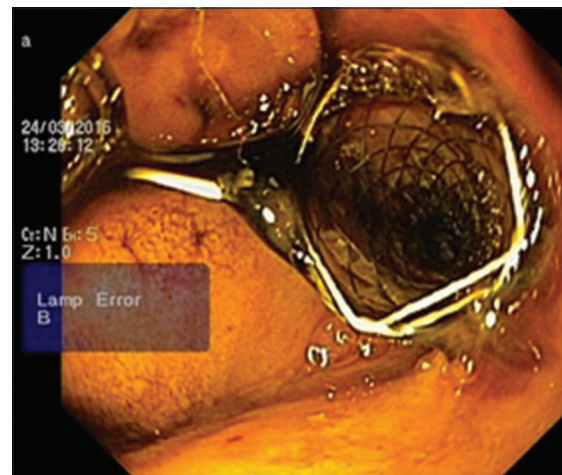


Figure 6: Endoscopic image of biliary metallic stent from first part of duodenum



Figure 7: Fluoroscopic image showing biliary plastic stent *in situ* and guidewire placement for enteral stenting



Figure 8: Fluoroscopic image of the biliary plastic and enteral metallic stent in place -postprocedure

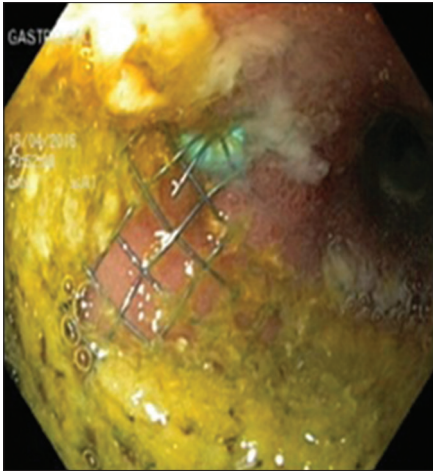


Figure 9: Endoscopic image of the biliary plastic and enteral metallic stent in place - postprocedure

involvement of the major papilla. This classification determines the endoscopic approach and technical success to combined palliation of biliary and duodenal obstruction. Type II obstructions are difficult as the papilla is involved and its preferable to place biliary SEMS followed by enteral SEMS endoscopically. In Types I and III as the papilla is not involved, the sequence of SEMS placement (biliary first or enteral first) is not critical. For biliary drainage EUS guided CDS as well as hepaticogastrostomy have been used but a recent metanalysis has shown EUS-CDS to be safer. The cumulative success of EUS guided biliary drainage was 90% and adverse event rate was 17% in the meta-analysis.^[5] In Indian series of EUS biliary drainage by Dhir *et al.*, successful stenting was achieved in 95% and complication rate of 20%.^[4] One of the limitations of CDS is lack of suitably designed stent for this purpose and hence stent migration is not infrequent as seen in our case. We were able to successfully manage the biliary obstruction by CDS in our patient and avoided the need for percutaneous or surgical biliary drainage. We were also able to relieve the duodenal obstruction by using enteral stent. Enteral stenting has been shown to be effective in palliation of duodenal obstruction in previous trials and meta-analysis.^[6]

Due to financial constraints instead of SEMS, a plastic stent was placed in the EUS-CDS site. Plastic stents have higher rates of cholangitis, stent migration and bile leak as compared to SEMS.^[7] A second SEMS can be successfully placed after stent migration in EUS-CDS.^[8] The earlier studies had index placement of plastic stent. New stents are now available that reduce migration.

Cho *et al.* Have shown in a prospective observational study that hybrid metal stent helps in reducing stent migration.^[9] Others have used lumen opposing self expanding fully covered metal stent for palliative EUS-CDS.^[10] In our case, we replaced SEMS migration with plastic stent which was in place and functioning well at 4 months follow-up. The reason for SEMS migration was presumed to be due to usage of 10-Fr cystotome for dilation of tract.

EUS-CDS represents a reasonable alternative for biliary drainage where ERCP is not feasible although data from large proper randomized trials is still needed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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