

Endoscopic clipping of a big periampullary perforation during endoscopic retrograde cholangiopancreatography

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Abstract

Perforation is an uncommon but serious complication during endoscopic retrograde cholangiopancreatography (ERCP). The incidence of perforation though small but is the one that requires immediate management. Delay in identifying this complication can lead to severe morbidity and even mortality in selected cases. If one can identify a perforation during the procedure (ERCP), then the minimally invasive technique such as clipping of the perforation in expert hands can save a lot of additional operative procedures and additional hospital stay costs. We present one such case of large perforation during precut sphincterotomy in a case of difficult cannulation. The perforation was identified and successfully treated by clipping the perforation during the procedure which leads to quick recovery and short hospital stay.

Key words

Clipping, endoscopic retrograde cholangiopancreatography, perforation, precut sphincterotomy

Introduction

Endoscopic retrograde cholangiopancreatography (ERCP) is a useful procedure for hepatobiliary biliary diseases. However, a small percentage of cases end up having complications, more common being pancreatitis, bleeding, and perforation. Perforation is the most disturbing to the operator. Incidence of perforation varies from 0.3% to 1.3%.^[1] Broadly, they are divided into three types - Guidewire-induced perforations, periampullary perforations during sphincterotomy, and luminal perforations away from papilla.^[2] In difficult cannulations, a procedure called precut sphincterotomy is used. This increases the success rate but increases the risk of complications. We present a case of one big periampullary perforation created during precut sphincterotomy.

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Case Report

A middle-aged female about 55 years of age presented in emergency with complaints of pain abdomen, fever with chills and rigors, and yellowness of sclera. There was a history of open cholecystectomy 10 years back which was uneventful. On examination, there was tenderness in the right hypochondrium and epigastric region. She was having tachycardia with heart rate of 110 beats per minute and fever with oral temperature of 100°F. On investigations, she had a raised total leukocyte count (TLC) of 12,500/cmm with differential leukocyte count reading N - 78, L - 20, M - 02. Bilirubin level was 4.5 mg% (direct - 3.4%) and hemoglobin was 10 g%. Ultrasound revealed multiple common bile duct (CBD) stones.

Diagnosis of choledocholithiasis with obstructive jaundice and cholangitis was made, and the patient was started on intravenous (IV) antibiotics, and adequate IV hydration was

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started. She was assessed for ERCP by an anesthesia team, and the same day, she was taken up for ERCP.

During ERCP papilla was found to be inflamed and eccentric in position with a pronounced rightward shift. All this made cannulation difficult, and after a few attempts at cannulation, a decision to perform a precut sphincterotomy was taken. Precutting was started from the papillary orifice upward using a pure cut with an ERBE cautery. As the cut was being deepened, at one point the tissue gave way and needle knife with wire could be pushed a few centimeters into the wall believing it to be in CBD. On injecting the contrast, it was realized that a periampullary perforation has been created.

The assembly was withdrawn. It was evident that the actual orifice was medial to the perforation site. A call was sent to other members of the gastrointestinal (GI) sciences team which comprises another gastroenterologist and a surgeon to quickly reach a consensus about the future mode of treatment in this complicated case. A joint decision was taken to proceed with a more medially directed new precut to gain access to CBD to complete the procedure and to cater to the perforation later with the help of clips or surgery.

The medially directed new precut lead to the CBD and after enlarging the sphincterotomy, all the stones were removed and later a plastic stent placed [Figure 1].

The perforation was then assessed and a decision to clip the perforation using Olympus hemoclips was taken. The perforation was clipped from up to downward direction using the ERCP scope. The initial clip placement proved to be the most difficult as the correct orientation was becoming difficult to achieve. Furthermore, it was a challenge to apply the clips using a duodenoscope as the clips were not firing well. Upper GI endoscope was tried, but it could not reach the intended site with precision. Hence, we shifted back to the duodenoscope.

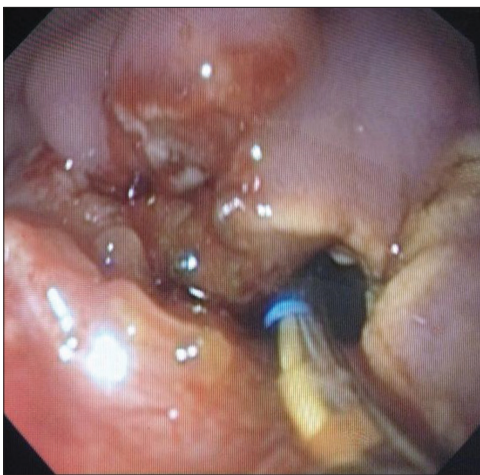


Figure 1: Perforation is seen at 10 o'clock position, sphincterotomy can be seen lower and inferolateral to the perforation in the common bile duct-postsphincterotomy

Once the first clip was applied, the subsequent clips were easier to apply. In total five clips were applied in place. It appears to be the first case in literature where the procedure was successfully completed after the perforation, and the perforation was sealed thereafter [Figure 2].

After a satisfactory sealing of the perforation, the patient was shifted to Intensive Care Unit with a continuous Ryle's tube aspiration. Patient complained of mild pain which was controlled with analgesic injection. Adequate hydration and higher antibiotics were started. A computed tomography abdomen was performed which showed very little retroperitoneal air but no collection.

The patient recovered uneventfully and the fever subsided in the next 2 days. TLC count also fell to 7000/cmm by day three and bilirubin fell to 2.3 mg%. Patient was shifted to the ward and oral feed started on day four. Patient was discharged on day 5.

On follow-up, the patient remained stable. CBD stent was removed after 4 weeks.

Discussion

ERCP is one of the most important tools with the endoscopists today for pancreatic and biliary diseases. However, the procedure is not without complications.^[3] There are some early procedure related complications.^[4] The success rate for cannulation by experienced endoscopists during ERCP is approximately 85% using standard cannulation techniques. It increases to 98% when precut sphincterotomy is used.^[5] However, the use of precut sphincterotomy leads to an increase in the rate of complications especially pancreatitis^[5] and periampullary perforations. The most important factor in preventing morbidity and mortality in ERCP-related perforation is early recognition and management.^[1]

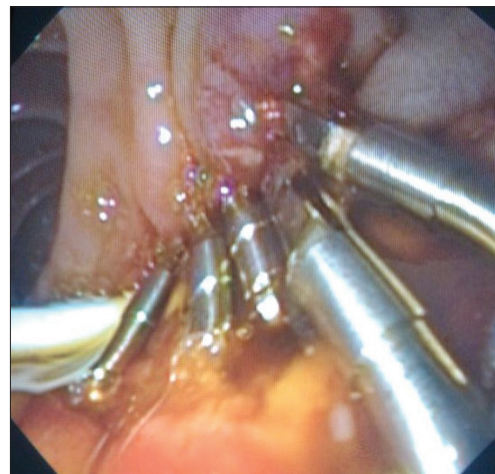


Figure 2: Multiple clips applied to seal the perforation effectively, plastic stent in common bile duct seen at 8 o'clock position

Once a perforation is recognized, especially in case of periampullary perforation usual course of management is either medical or surgery.^[1]

Another modality which was added to the treatment algorithm was the use of hemoclips for sealing the perforation.^[6-10] Binmoeller *et al.* were the first to use clips successfully for an iatrogenic perforation in 1993.^[6] The first such case was described by Kaneko *et al.* in 1999.^[7] It was followed by another case report by Seibert describing descending duodenal perforation during endoscopic ultrasound.^[8]

Baron *et al.* reported the use of six hemoclips in a postsphincterotomy perforation very similar to the current one.^[10]

It is important to recognize perforations during ERCP early and if there is expertise at hand, then early closure using hemoclips is a very important tool. It goes a long way in decreasing the mortality and morbidity and saves any surgical intervention. The limiting factor, however, is that tangential placement of clips with a forward viewing gastroscope is many times futile. Side viewing duodenoscope gives much better views, but clip does not fire with ease. Need of the hour is to for the clip manufacturers to innovate and make duodenoscope friendly clips.

Conclusion

ERCP can be extremely technically taxing procedure in a small percentage of patients. In cases, where routine cannulation is not possible one has to resort to the more difficult procedures such as precut sphincterotomy. This procedure, however, increases the morbidity sometimes by increasing the risk of complications. Perforation is one such complication. Perforation can be a life-threatening complication in a patient undergoing ERCP. It is important that once there is a perforation, it has to be recognized early. Once recognized

prompt treatment in the form of clipping can be a lifesaving maneuver in expert hands. Surgery should be reserved for patients in whom clipping fails or when adequate clipping is not possible.

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Conflicts of interest

There are no conflicts of interest.

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