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An Unnatural Presentation of Biliary Stent Migration - A Case Report

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ABSTRACT

A very small number of these migrated stents causes perforation, even less so can reach up to the anterior abdominal wall through the rectus to lie under the skin.
In this case report, we describe an unusual presentation of biliary stent migration as an abdominal wall mass. The patient had a history of laparoscopic cholecystectomy followed by endoscopic stenting of the common bile duct for biliary peritonitis and stricture. He was lost to follow-up for 2 years and then presented with a palpable lump in the right hypochondrium. Imaging studies showed that the stent had pierced through the rectus muscle and was lying under the external oblique aponeurosis. The stent was removed surgically without any complications. A full laparotomy and thorough examination of bowel were not performed as there was no evidence of biliary leak or bowel perforation.

Keywords: CBD stent, biliary stent, displaced biliary stent

INTRODUCTION

Endoscopic biliary stenting is now widely accepted as a safe and effective method for palliative or preoperative drainage of malignant biliary obstruction, as well as for treatment of benign biliary strictures [1].
Endoscopically inserted biliary stents have been used as a treatment option for obstructive biliary diseases, as a management of duct leakage, for internal drainage as treatment for acute cholangitis and as management of irretrievable bile duct stones [2] [3] [4].
Migration of the endoscopically placed stent in the common bile duct is a well-documented complication of endoscopic retrograde cholangiopancreatography (ERCP) with stenting of common bile duct if the stent is not removed in time [5][6].
The expected complications of biliary stent migration depend on the direction, location, and duration of the migration. Some of the possible complications are stent malfunction or stent occlusion; where the stent may become blocked by tumor growth, sludge, stones, or biofilm, leading to cholangitis, jaundice, or liver failure, requiring stent exchange or removal. The stent may erode through the bile duct wall or adjacent organs, causing bleeding, perforation, or fistula formation. This is due to pressure erosion. Or the stent may perforate the bowel wall, especially if it migrates distally into the duodenum or colon and may cause peritonitis, abscess, or sepsis. The stent may fracture or collapse due to mechanical stress or corrosion, resulting in stent fragments that may migrate or cause injury. The stent can also act as a nidus for bacterial colonization and infection, leading to cholangitis, liver abscess, or bacteremia [5][6][7].

Biliary stents are tubes made of plastic or metal that are inserted into the bile duct to relieve obstruction or leakage. Plastic stents are usually made of polyethylene, polyurethane, or Teflon, and have flaps or pigtails at one or both ends to prevent migration. Metal stents are self-expandable and have a larger diameter and longer patency than plastic stents.

Biliary stent migration is the displacement of the stent from its original position in the bile duct. It can occur in either proximal or distal direction, and it can affect up to 5% of endoscopically placed stents. The risk factors for stent migration include papillary stenosis, dilated bile duct, wide sphincterotomy, balloon dilation, malignant stricture, short or large stent, and long duration of stent placement.

Stent migration can cause various complications such as cholangitis, stent obstruction, bleeding, perforation, fistula, abscess, or bowel obstruction. Most of the migrated stents pass spontaneously with feces, but some may require endoscopic or surgical retrieval. One study found that an increased risk of proximal bile duct stent migration was associated with malignant strictures, larger diameter stents, and shorter stents [8].

Endoscopically placed plastic stents for cholangitis or choledocholithiasis are removed by 3 to 6 months. A metallic stent on the other hand can be kept in place for 6 months to a year. Stents for palliation in case of malignancies are usually metallic stents [9].

CASE REPORT/ PATIENT INFORMATION

This patient is a 65-year-old male of Indian ethnicity who is a farmer by profession. This patient underwent laparoscopic cholecystectomy, 6 weeks later after developing biliary peritonitis due to leak in the cystic duct stump and stricture of common bile duct, underwent endoscopic stenting of the common bile duct and sphincterotomy (Figure 1). Though he was called for regular reviews, he stopped visiting the clinic and was lost to follow-up. After 2 years, the patient presented with a right hypochondrial swelling.

Clinical Findings

On examination, there was a palpable lump in the right hypochondrium with minimal tenderness (Figure 2).

Diagnostic Assessment

Ultrasound of abdomen done reported a curvilinear foreign body in the right hypochondrium with edema, possibly arising from the hepatic flexure of colon piercing the muscle wall. X ray of the abdomen (Figure 3) showed the stent as the foreign body. Thus, a clear picture of the forgotten stent was deducted, the tip of which was residing in the right rectus abdominus muscle. This has led to the formation of an inflammatory mass in the rectus, clinically palpable as a lump.

Surgery

Patient was planned for a limited approach elective surgery while prior informed consent was also obtained for a full explorative laparotomy if required. Incising the skin and separating the subcutaneous fat immediately allowed access to the stent which had pierced trough the muscles with the tip lying just above the external oblique. As soon as the flaps of the stent were freed from the tissues, the stent was expelled from the abdomen by the patient's own respiratory movements (Figure 4,5). Limited local exploration was done, involvement of bowel was ruled out and closure was performed in layers.

Postoperative period was uneventful and the patient was discharged from the hospital on the fourth post operative day.

DISCUSSION

The history of endoscopic biliary stenting can be traced back to the early 1970s, when the first endoscopic retrograde cholangiopancreatography (ERCP) was performed by McCune et al. in 1971 The first endoscopic external drainage case was

reported in Japan in 1974 by Kurachi et al. The first plastic stent placement in the bile duct was reported by Soehendra et al. in 1979 [10][11][12].

Generally, plastic stents are used for temporary drainage and should be removed or replaced every 3 months to prevent complications where stent occlusion being the commonest complication, others being migration or infection [13].

Biliary stent migration occurs in about 8-10% of patients and can be either proximal (into the duct) or distal (out of the duct). The incidence rates of proximal and distal biliary stent migration are reported to be 4.9% and 5.9%, respectively. Some of the risk factors for biliary stent migration are dilated common bile duct, wide sphincterotomy, biliary balloon dilation, and stent insertion for more than 1 month [8].

In our case, imaging revealed a superficial stent which allowed a limited approach to the operative site. Preoperative ERCP was also done which revealed no indications of biliary leaks, hence this approach was considered.

We emphasize the importance of proper patient education and timely removal of biliary stents to prevent such cases in the future.

Possible routes of the displaced stent

In this case, the possible mechanisms of biliary stent migration from the common bile duct to the anterior abdominal wall was not well understood. One possible way was that the stent exits through the gall bladder stump, which may be inflamed at the time, and then gets pushed by the respiratory and peristaltic movements within and of the abdominal cavity. Another mechanism is that the stent migrates distally and perforates the bowel wall, possibly through a colonic diverticulum, and then erodes into the anterior abdominal wall.

The bile duct is itself considered an inert tube. The pressure of bile flow is provided by the contraction of gall bladder and the principal site of resistance is at the sphincter of Oddi. There is no known peristalsis in the cystic duct and the bile duct while there is constant peristaltic motion in the adjacent bowel. This is the possible reasoning of the stent being pushed out through the biliary stump rather than distally [14].

The abdominal cavity is always in a state of rhythmic turbulence due to the interplay of respiratory and peristaltic movements, and the activity of external pressure due to active movements of the person and change in posture. Once inside the abdominal cavity, the stent got pushed on to the abdominal wall and thein eroded into the muscle planes. Do note that the location of the stent is not on a port site of the previously performed laparoscopic cholecystectomy.

Other cases have also described where stents have migrated out of the abdominal cavity but these cases were associated with a ventral hernia [15][16].

Thus, migration of a stent through the anterior abdominal wall spontaneously without an association with a preexisting defect is unheard of in established literature.

CONCLUSION

There should be proper patient education regarding the possible complications of a forgotten stent before discharging from the hospital to avoid such cases in the future.

FIGURES

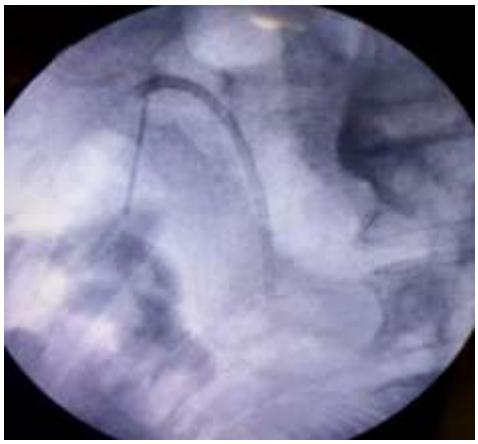

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Declaration by Authors

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