Drain Erosion Into Bowel: An Unusual Complication
S Sahu, D Bahl, M Husain, P Sachan

Abstract
Abdominal drains are frequently placed to drain the post-operative collection of blood, pus and other body fluids and are usually made up of inert silastic material. The aim of this drainage is to reduce the potential source of infection, detect early anastomotic leakage or hemorrhage and to leave a tract for potential collections to drain following removal of these drains. However, these drains themselves are also a potential source of infections; may induce anastomotic leakage and can cause damage by mechanical pressure and suction. Bowel erosion by abdominal drains is rare. The duration of placement of drains contributes to the erosion of bowel. We present a rare case of erosion of a drain into the stomach, which was detected by upper GI endoscopy.

INTRODUCTION
Abdominal drains are frequently placed to drain the post-operative collection of blood, pus and other body fluids and are usually made up of inert silastic material. They aim of this drainage is to reduce the potential source of infection, detect early anastomotic leakage or hemorrhage and to leave a tract for potential collections to drain following removal of these drains. Abdominal drains also help in the prevention of abdominal compartment syndrome. However, these drains themselves are also a potential source of infections; may induce anastomotic leakage and may cause damage by mechanical pressure and suction.

CASE REPORT
A 32-year-old female presented with history of high-grade fever, severe pain and distension of the abdomen since 3 days. Vital examination at the time of admission showed a pulse of 124/min, a blood pressure of 110/80mmHg and a respiration rate of 22/min. Abdominal examination revealed generalized guarding and rigidity with absence of bowel sounds.

Investigations showed a hemoglobin of 9.4gm/dl and a total leukocyte count of 29000/cu.mm with a differential count showing 88% neutrophils, 11% lymphocytes, and 1% eosinophils. Liver function test showed a bilirubin of 2.8mg/dl with mild elevated liver enzymes. Renal function tests were within normal limits. Ultrasonography of the abdomen showed multiple liver abscesses in both lobes with evidence of bursting into the peritoneal cavity along with free fluid in the peritoneum. The gall bladder also showed evidence of multiple calculi.

Exploratory laparotomy revealed two large burst abscesses in both lobes of the liver with pyoperitoneum. The caecum was found to be perforated and the gall bladder was filled with multiple calculi. Drainage of the abscess cavities was done along with thorough peritoneal toileting. Cholecystectomy and caecectomy was done followed by primary ileo-ascending anastomosis with a proximal protecting loop ileostomy. Drains were placed in the right and left sub-hepatic space and the abdomen was closed.

Post-operatively the patient started accepting food orally on the 3rd day, with proper functioning of the ileostomy. The volume of the right sub-hepatic drainage gradually reduced to less than 50ml and the drain was removed on the 5th post-operative day. However, the volume of the left sub-hepatic drainage remained in the range of 50-100ml/day with purulent discharge. On the 10th post-operative day, the amount of drainage in the left sub-hepatic drain suddenly increased to about 500ml/day. Histopathology of the gall bladder specimen was suggestive of chronic cholecystitis. The caecum showed evidence of chronic inflammation. The patient was discharged on post-operative day 21 with the left sub-hepatic drain in situ draining purulent discharge in the range 200-300ml/day, with the advice of strict regular follow-up.

The patient was again admitted after one and a half months post-operatively with the chief complaint of persistent
Drainage of around 200-300ml/day from the left sub-hepatic drain. On enquiring, it was found that, at times, food materials taken in immediately before were also found in the drainage bag, infrequently.

Upper GI endoscopy was planned and revealed the tip of the drain in the fundus region of the stomach. (FIG. 1)

**Figure 1**
Figure 1: Upper Gastrointestinal Endoscopy Showing The Tip Of The Drain In The Stomach.

Distal loopogram of the ileostomy also showed anastomotic leakage at the ileo-ascending anastomosis.

After adequate nutritional built-up, exploratory re-laparotomy was planned which showed anastomotic dehiscence of the ileo-ascending anastomosis. Erosion of the left subhepatic drain was detected in the fundus of the stomach. Resection of the bowel segment containing the dehiscent ileo-ascending anastomosis, ascending colon and the proximal ileostomy site was done along with ileo-transverse anastomosis. Repair of the gastric perforation was done along with the removal of the previous left subhepatic drain. The abdomen was closed with a drain in the pelvis.

The patient had an uneventful post-operative recovery and was discharged on the 10th post-operative day with removal of the abdominal drain.

**DISCUSSION**

Hippocrates first reported the usage of an abdominal drain in the case of a gallbladder empyema. Celsus later employed drains in the treatment of ascites. Abdominal drains have been traditionally classified into open and closed drainage systems. Open drains include corrugated rubber or plastic sheets and the drained fluid gets collected in the gauge pad or stomal bag. Thus, the risk of infection is increased. Closed drains consist of tubes draining into a bag or bottle. Based upon the mode of function, they are also classified as active or passive drains reducing the risk of infection. Active drains are maintained under suction, which may be high or low. Passive drains have no suction and function by differential pressure between body cavities and exterior and by gravity.\(^1\), \(^2\), \(^3\), \(^4\)

Bowel erosion by abdominal drains is rare. The duration of placement of drains contributes to the erosion of bowel. Both open as well as closed suction drains are reported to cause this erosion. The mechanisms of erosion in both groups are postulated to be different. The open drains erode bowel due to pressure necrosis whereas closed suction drains cause drawing of the bowel into the side holes causing erosion of the wall. Direct perforation of the bowel during blind placement of drains is also reported.\(^5\), \(^6\), \(^7\), \(^8\), \(^9\)

Erosion of drain into bowel may present as either localized or generalized peritonitis. An enterocutaneous fistula with drainage of the enteric content through the drain may lead to the diagnosis of this condition. Imaging in the form of fistulogram through the drain may show passage of the contrast medium into the bowel. Contrast-enhanced computed tomography may also help in diagnosing this erosion. Endoscopy was employed in our case to directly visualize the tip of the drain inside the bowel.\(^9\), \(^10\)

Conservative management may be indicated in cases with localized peritonitis or low output enterocutaneous fistula. Patients with general peritonitis or having high drainage output require re-exploration.\(^5\), \(^10\)

Erosion of a drain into the bowel is a rare complication and should be suspected when the drain remains for a prolonged period with persistent high output. Adequate management depends upon the amount of drain output and/or evidence of peritonitis.

**CORRESPONDENCE TO**

Dr. Shantanu Kumar Sahu Assistant Professor, Department of General Surgery Himalayan Institute of Medical Sciences Swami Ram Nagar Post: Doiwala Dehradun Uttarakhand, India Mob.: 0-9412933868 Email: lntshantanu@yahoo.co.in
References

Drain Erosion Into Bowel: An Unusual Complication

Author Information

Shantanu Kumar Sahu, MS (General Surgery)
Assistant Professor, Department of General Surgery, Himalayan Institute of Medical Sciences

Dig Vijai Bahl, MS (General Surgery), MCh (Cardio-thoracic and Vascular Surgery)
Professor, Department of General Surgery, Himalayan Institute of Medical Sciences

Musharraf Husain, MS (General Surgery), DNB (General Surgery), MRCS (Edin.)
Department of General Surgery, Himalayan Institute of Medical Sciences

Praveendra Kumar Sachan, MS (General Surgery)
Professor and Head, Department of General Surgery, Himalayan Institute of Medical Sciences