

Drain Erosion Into Bowel: An Unusual Complication

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Citation

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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.^{1, 2, 3}

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.

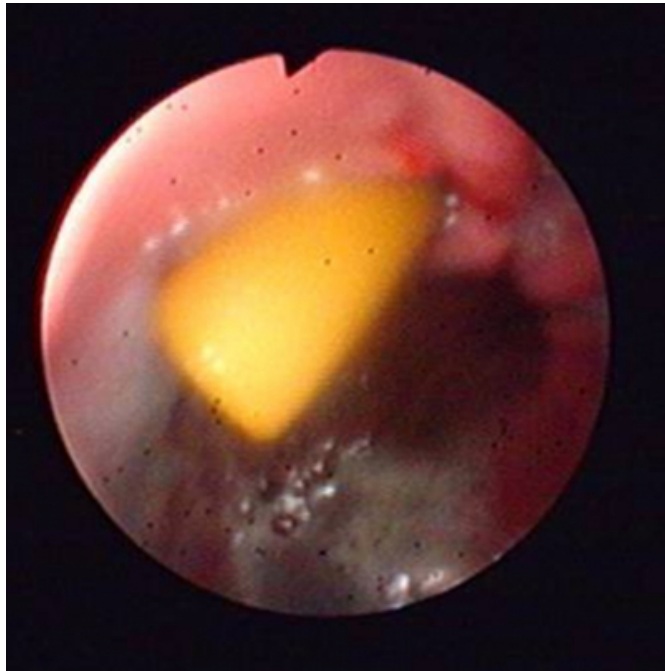
The patient was again admitted after one and a half months post-operatively with the chief complaint of persistent

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.^{9, 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.

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References

1. Memon MA, Memon MI, Donohue JH. Abdominal drains: a brief historical review. *Ir Med J* 2001; 94: 164-166.
2. Memon MA, Memon B, Memon MI, Donohue JH. The uses and abuses of drains in abdominal surgery. *Hosp Med* 2002; 63: 282-288.
3. Hippocrates. The genuine works of Hippocrates, translated from the Greek with a preliminary discourse and annotations by Francis Adam. London. Printed for the Syndemham Society, 1849, Vol. 1, p. 88.
4. Celsus AS. *De Medicina*, Book VII, Cap. XV, with an English translation by G. F. Collier, M.D., 3rd ed., London, A. F. Valpy, Red Lion Court, Fleet Street. Sold By Longman and Company, Whittaker and Company and Simpkin and Marshall, 1838, p. 292.
5. Benjamin PJ. Feculent peritonitis: a complication of vacuum drainage. *Br J Surg* 1980; 67: 453-454.
6. Gray AJ, Copeland GP. Small bowel perforation following vacuum drainage. *J R Coll Surg Edinb* 1985; 30: 324-325.
7. Hee, RV. Complication of drainage. *Acta Chir Belg* 1983; 83: 340-344.
8. Nomura T, Shirai Y, Okamoto H, Hatakeyama K. Bowel perforation caused by silicon drains: a report of two cases. *Surg Today* 1988; 28: 940-2.
9. Pankaj Srivastava, Shalini Srivastava, Manoranjan Sahu. Iatrogenic bowel perforation secondary to surgical drain after cholecystectomy: a case report with review of literature. *The Internet Journal of Surgery* 2007. Volume 13, Number 1.
10. Wang JY, Hsieh JS, Chen FM, Lee LW, Hou MF, Huang YS, Huang TJ. Rectal perforation secondary to surgical drains after low anterior resection: a report of two cases and review of the literature. *Kaohsiung J Med Sci* 2002; 18: 146-148.

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