Case study

Migrated feeding tube; a rare complication of distal feeding enteroclysis

Abstract:

In emergency, often a proximal stoma is created in view of compromised general condition of the patient (severe sepsis, malnutrition, hypoalbuminemia, vasopressor support, multiorgan dysfunction) while operating for intestinal obstruction, perforation, bleeding, or ischemia etc. The proximal stoma results in high output and consequent fluid and electrolyte deficit. Refeeding or enteroclysis of succus entericus into the distal mucous fistula is a well-known strategy in such patients. It reduces dependence on parenteral nutrition and facilitates faster transition to acceptable and sustainable home based therapy till the restoration of bowel continuity. Although this is an effective and safe procedure, certain known complications like non-tolerance to the refeed, bowel perforation, diarrhoea, and peristomal skin excoriation have been reported. Migration of entire Foley's catheter used for distal reefed, getting entrapped at IC junction is a rare complication. We, present a case of 59-years gentleman of abdominal tuberculosis, who presented with lower GI bleeding. He underwent laparotomy and diagnostic enteroscopy and ended-up having a proximal stoma. He received ATT post-operatively and distal refeeding through a Foley's catheter. After 1.5 months, he presented with migration of feeding catheter. Endoscopic retrieval was unsuccessful. Thus, exploratory laparotomy and retrieval of feeding catheter was done. This was a rare complication in usual surgical practice which could have prevented with proper patient counselling.

Key Words: Abdominal tuberculosis, Lower gastrointestinal bleeding, Intra-op enteroscopy, proximal stoma, distal refeeding, migration of Foleys catheter, surgical retrieval

Introduction:

In emergency settings, we face many situations where proximal bowel enterotomy or resection is required like bowel perforation, obstruction, mesenteric ischemia, small bowel bleed, trauma, or small bowel tumours. In a significant subset, condition of the patient (severe sepsis, malnutrition, hypoalbuminemia, vasopressor supports, multiorgan dysfunction) does not permit the restoration of bowel continuity in the same setting. Consequently, this leaves the patient with a very proximal stoma and insufficient bowel length to maintain adequate nutrition. It is associated with high stoma output leading to fluid-electrolyte imbalance and protein loss. Refeeding enteroclysis, or refeeding of succus entericus into the distal mucous fistula is a well-known strategy opted in such patients. It facilitates faster transition to acceptable and sustainable home based therapy till the restoration of bowel continuity. This allows the distal bowel to be utilized for normal digestion and absorption of fluid-electrolytes and nutrients, at the same time it prevents atrophy of the distal gastrointestinal(GI) tract [1]. It also helps to reduce dependence on parenteral nutrition, cost, and complications (invasive line associated, metabolic, septic etc.). Although refeeding enteroclysis is an effective and safe procedure, certain known complications have been described like non-tolerance to the refeed, diarrhea, peristomal skin excoriation, and bowel perforation etc[2]. Migration of entire Foley's catheter(FC) used for distal refeed is extremely rare occurrence[3-5]. We are reporting such a patient who required surgical removal of Foley's catheter.

Case Report:

A 59-year old gentleman presented to the emergency with overt GI Bleeding in the form of persistent melena and anemia. Hemoglobin was found to be 4 gm%, rest all parameters were within normal limits including the liver function test and coagulation profile. Oesophagogastroduodenoscopy (OGD scopy) showed a normal study. Colonoscopy showed multiple non-bleeding ulcers in the transverse colon, blood in the caecum and terminal ileum. Arterial phase of triple phase computed tomogram (CT) showed an active blush in the proximal jejunal loop(Figure 1) along with features of tubercular abdomen i.e. multiple focal hypodense nodular lesions in the subcapsular region of the liver with overlying thickened capsule giving the classical description of "sugar coating of liver" or 'frosted liver' (Figure

2), multiple mesenteric lymphnodes, diffuse fat and omental stranding, and a necrotic cavity extending from the base of sigmoid colon up to the hepatic flexure.

Antitubercular treatment (ATT) was started and blood products were transfused. Bleeding persisted with drop in haemoglobin. Selective angioembolization was not considered due to the risk of small bowel ischemia or gangrene. Hence, patient was planned for an emergency laparotomy and diagnostic enteroscopy. Intraoperatively, there were dense inter-bowel and bowel to parietal wall adhesions present. After adhesiolysis, an enterotomy was made in the mid small bowel (about 4 feet from the duodenojejunal flexure) for enteroscopy. Entire small bowel was evaluated and it demonstrated blood in the small bowel without any active bleeding site. A few necrotic lymph nodes were sampled for histopathology. In view of poor general condition, friable bowel, and possibility of recurrent bleeding, the site of enterotomy was brought out as a loop stoma.

Histopathology was consistent with the tuberculosis. Patient did not have further bleeding episodes in the post-operative period. He had persistently high stoma output and consequent malnutrition and electrolyte imbalance. This neccesitated the distal bowel refeeding of the proximal stoma effluents after entubating the distal limb of stoma with a Foley's catheter(FC). Patient tolerated the refeed and recovered well. He was discharged on ATT and regular distal refeeding through the FC.

After 1.5 month, he presented with migration of FC into the distal bowel with dehydration and acute kidney injury. He was resuscitated and abdominal sonography showed a migrated FC in the small bowel. Computed tomography(CT) imaging was performed after correction of AKI which revealed the entire FC with a 2 ml syringe with plunger (at the proximal end of catheter) stuck at the ileo-caecal junction(ICJ). The distal part of FC was in right colon with bulb inflated and proximal part with syringe plunger in distal ileum(Figure 3).

Initially, retrieval of Foleys bulb was attempted with colonoscopy, where the bulb of the Foley's catheter was punctured but it was stuck at the ICJ, so failed. Distal bowel enteroscopy (distal stomascopy) was also performed; however, it couldn't be removed as the hard plunger of the syring was difficult to catch and was lying in such an alignment that even after catching, it could not be dragged out of the bowel (Figure 4). Patient was taken up for emergency surgery. The stoma was mobilised and bowel was traced distally. Fortunately, because of ATT, adhesions were minimal and the bowel was soft and supple. Because of

failed attempt to retrieve the FC on colonoscopy and distal stomascopy, rendezvous procedure was not performed. After palpating the FC, an enterotomy was made in the small bowel and catheter was retrieved(Figure 5). Both the enterotomy and stoma were closed. Post-operative period was uneventful and discharged on day-7 with ATT. He is asymptomatic till date (12 months follow-up) and has completed ATT.

Discussion:

Distal stoma refeeding or enteroclysis, is an established method of utilizing the distal bowel. It works as an effective nutritional therapy for patients with functional short bowel syndrome due to proximal stoma and act as bridge to definitive surgery [6]. It also helps to reduce the parenteral nutrition related cost and complications.

Distal stoma refeed is done through the distal mucus fistula with a soft catheter. Most commonly, a Foley's catheter is used for this purpose. Numerous complications have been reported, like non-tolerance of feed, peri-stoma skin excoriation, bowel perforation due to the catheter etc[2]. Anecdotal case reports of migration of feeding gastrostomy and feeding jejunostomy tube have been published[3, 7-9]; however, migration of distal refeeding catheter with attached syringe and plunger has not been reported. In a retrospective study of 21 patients where a FC was used for feeding gastrostomy, 4 patients developed migration[5]. This can occur because of pro-grade peristalsis of the bowel, pulling the catheter inside, as in our case especially, in post discharge nonhospital unsupervised setting. Presence of an inflatable bulb at the tip of FC makes it more prone for migration, though, reports of migration of Pezzer catheter(no bulb at the tip) used for feeding jejunostomy has been reported[10]. Migration of FC may result in unwarranted emergency situation with obstruction or perforation. The clinician should be vigilant about this condition and patient should be cautioned. This catheter should be fixed to the abdominal wall, to prevent migration into the bowel.

There is no definite protocol or guideline for the management of GI foreign bodies. Most of the described management strategies are anecdotal. Mostly, if a foreign body make it beyond the ICJ, it passes per rectally. Almost 80-90% foreign bodies pass through the GI tract unaided[4]. The physical characteristics of the object, whether blunt or sharp guide the urgency, waiting period, and therapeutic intervention. Indications for intervention includes

impaction leading to obstruction or ischemia, and non-progression for periods greater than a week in in case of non-sharp objects[11,12].

This report brings into the light, the disadvantages of using FC as a means of refeeding. FC has a propensity for migration due to inflatable bulb at the tip and lack of an external anchoring system. However, an old randomized controlled trial comparing FC vs commercially available catheter for feeding gastrostomy found no difference in complication rates. Authors have recommended for use of a retention ring over the FC for prevention of migration[13]. At present no ideal catheter or tube is available for refeeding enteroclysis and wearable refeeding pumps are still in the initial stages of development [14,15]. Thus, even after having mentioned disadvantages, Foley' catheter (FC) is most commonly used tube for this purpose. It is soft, non-traumatic, easily available and has the desired lumen diameter for feeding. Hence, which ever tube is used, it is absolutely necessary to fix it to the stoma bag or adjacent skin to prevent it's dislodgement.

Conclusion:

Distal stoma refeeding is an established and safe way of maintaining the nutrition in patients with high output proximal stoma. Migration of catheter used for the refeeding is a real possibility. Hence, the clinician and patient should be vigilant about it. It can be easily avoided with proper fixation to the skin. This case is unique due to rare imaging finding of a "frosted liver" appearance in abdominal tuberculosis, and migration of Foleys catheter into the distal ileum presenting as acute abdomen and subsequent surgical management.

Ethical Approval:

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

Consent

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

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Figure 1:Picture A shows blush in proximal jejunal loop as indicated by the arrow. Picture B Reveals multiple mesenteric nodes with diffuse fat and omental stranding .C-D show the necrotic cavity extending from base of sigmoid colon up to the hepatic flexure.

Figure 2: Frosted appearance of liver" with multiple subcapsular hypodense lesions as indicated by arrows

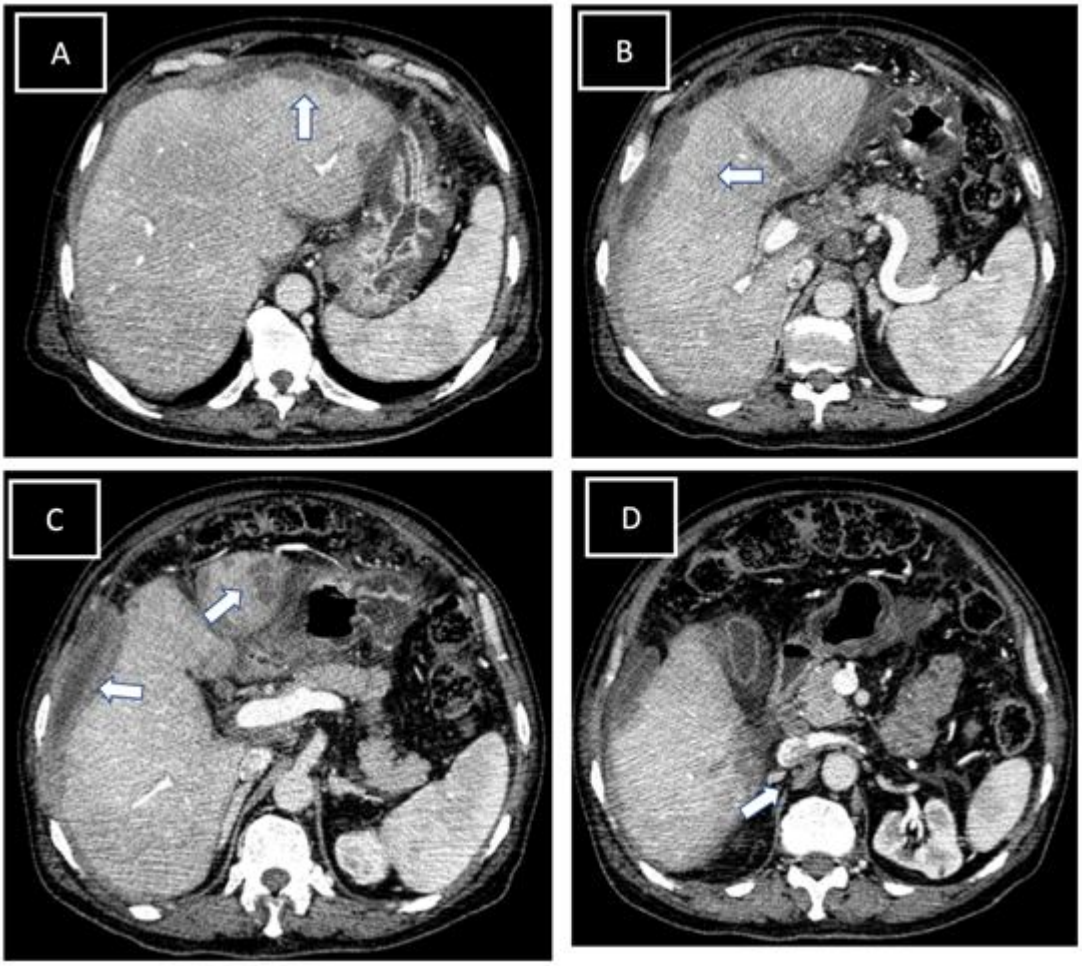

Figure 3: CECT picture (A and B) showing Inflated Foley's Bulb. C and D showing the plunger of the syringe

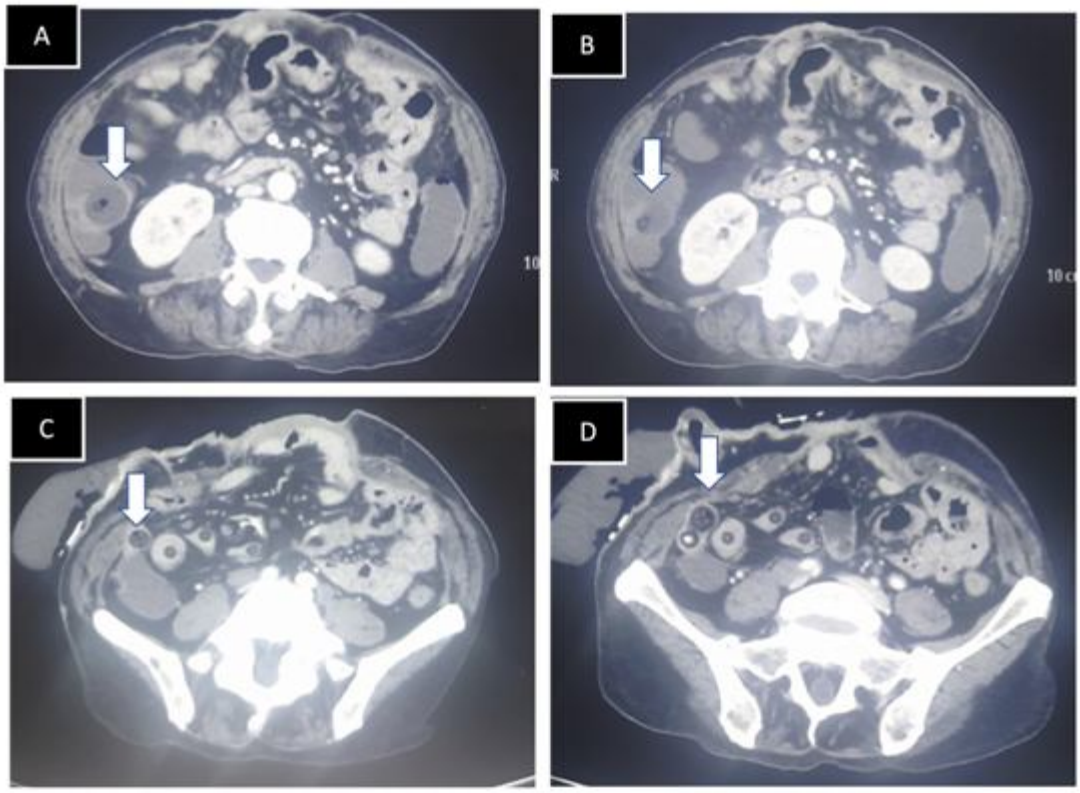

Figure 4: Endoscopic pictures(A-D) showing the entrapped foleys at IC junction .Snare being used to attempt retrieval of foley's catheter.

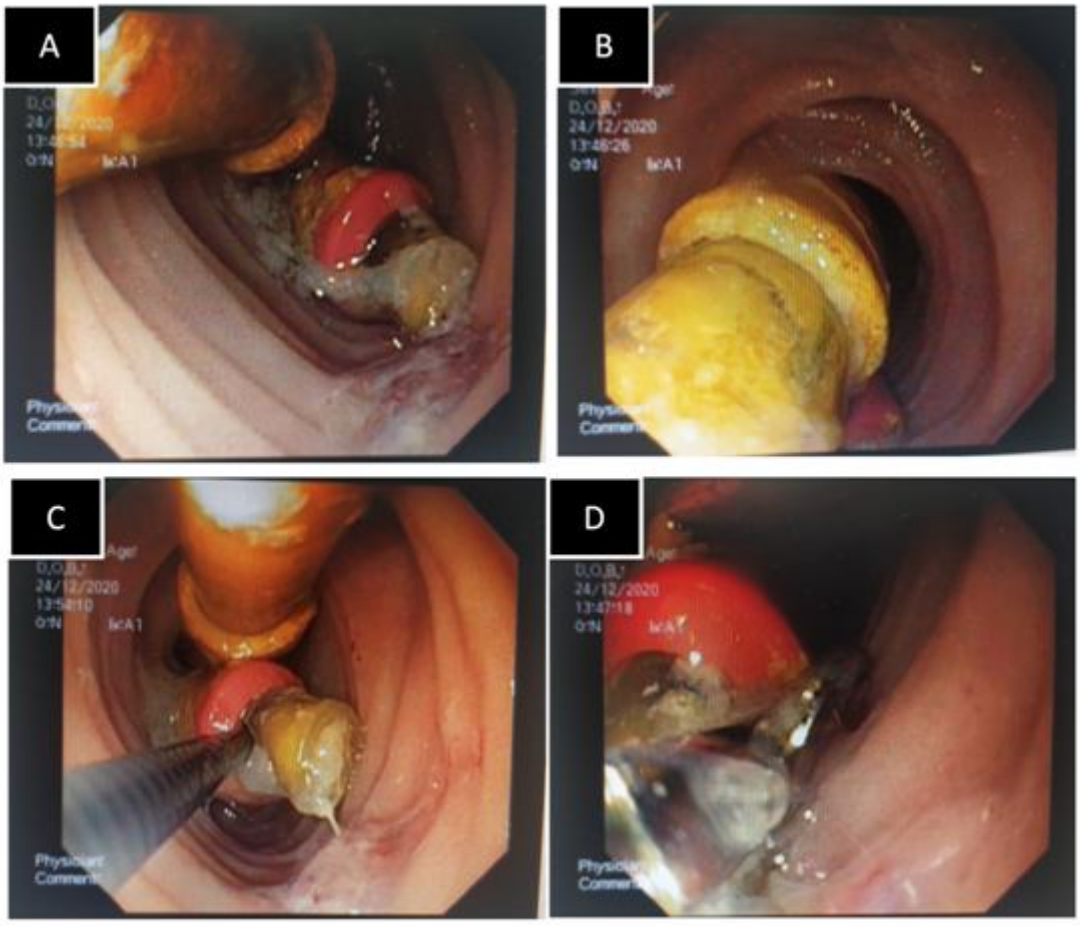

Figure 5: Surgical removal of feeding catheter (An enterotomy was made and catheter gently manipulated and pulled out . Enterotomy site and ileostomy closure was done subsequently.