



Case report

The case of spontaneous stoma closure in patient with loop ileostomy



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ABSTRACT

Introduction: An ileostomy is a mean to empty the contents of the bowel via ileum rather than usual anal route to prevent distal anastomotic leak. It is considered a controlled entero-cutaneous (EC) fistula which prevents contamination of peritoneal cavity, protecting the peri-stomal skin from effluent and excoriation. Spontaneous closure of ileostomy is a very rare phenomenon. Thus, we hereby report a case of spontaneous closure of ileostomy.

Case presentation: An 18-years male presented with complaints of pain abdomen, vomiting for 6 days. Chest X-ray showed free air under the right dome of diaphragm suggestive of pneumo-peritoneum. So explorative laparotomy with primary repair of ileal perforation with diversion loop ileostomy (2 ft proximal to ileocecal junction) was performed. Over the months stoma retracted and eventually spontaneous closure of stoma took place after 4 months of surgery.

Discussion: Retraction of stoma depends on multiple factors. Firstly, on patient's general condition, if he/she is malnourished/obese/immunocompromised then retraction occurs due to poor healing of wound. Secondly, it results from inadequate mobilization of bowel. Separation of stoma with muco-cutaneous fascial planes leads to gradual retraction of stoma which is primary mechanism of spontaneous closure of stoma.

Conclusion: To summarize, gradual retraction of stoma (complication of an ileostomy) and healing of EC fistula has to be correlated to know the complex mechanism of spontaneous closure of an ileostomy.

1. Introduction

An ileostomy is defined as when the lumen of ileum is brought through the abdominal wall via surgically created opening called stoma. An ileostomy is a mean to empty the contents of the bowel via ileum rather than usual anal route to prevent distal anastomotic leak. Ileostomy can be temporary or permanent or can be loop or an end. Ileostomy is considered controlled enterocutaneous (EC) fistula which protects contamination of peritoneal cavity, protecting the peri-stomal skin from effluent and excoriation [1]. One third of EC fistula responds well to conservative measures while ileostomy always require surgical procedure for its closure, be it primary repair of stoma or resection followed by anastomosis [2]. Spontaneous closure of ileostomy is a very rare and interesting phenomenon and has been reported very less [1]. Thus, we hereby report an interesting case of spontaneous closure of loop ileostomy. Our work has been reported in line with the SCARE 2020 criteria [3].

2. Case presentation

An 18 year old male, presented in surgical emergency with complaints of pain abdomen and repeated episodes of vomiting for the past 6 days. Pain was initially in periumbilical region which later involved whole abdomen with no aggravating or relieving factors; associated with repeated episodes of vomiting, non-bilious, non-projectile and contained food particles. No association of fever, jaundice, bleeding per rectum, weight loss, chronic cough. Patient had past history of seizure disorder since age of 3 years for which he was taking Tablet Oxcarbazepine 300 mg 1 tab twice a day. He had no past history of similar episode or major surgery/trauma in past.

On examination patient's general condition was poor; he was dehydrated, agitated, conscious, oriented to time, place and person. Patient's pulse rate was 88/min and blood pressure was 120/70 mm Hg after resuscitation. On abdomen examination all quadrants were not moving equally with respiration, abdomen was tense and distended; with generalized tenderness and guarding. Masking of liver dullness was also present along with absent peristaltic sounds. On digital rectal

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examination there was normal anal tone, fecal staining was present and lumen was collapsed. Vital monitoring with input/output charting was done and all necessary investigations were sent including complete blood count, serum electrolytes, liver function test, kidney function test, and coagulation profile.

On chest X-ray posterior-anterior view there was free air under right hemi-diaphragm which was strongly suggestive of pneumo-peritoneum secondary to perforation of hollow viscera. Blood investigations revealed severe anemia (hemoglobin = 6.9 g %), leukocytosis (total leucocyte count = 32,000/cumm) and deranged coagulation profile (international normalized ratio = 1.8). Adequate blood products were transfused in pre-operative period for optimization.

Exploratory laparotomy with primary repair of ileal perforation and temporary diversion loop ileostomy formation was done under general anesthesia. Intra-operatively approximately 0.5 × 0.5-centimeter perforation was present about 15 cm proximal to ileocecal junction and some blood clots were retrieved from perforation site. Rest solid and hollow visceral organs were within normal limits. Perforation margins were excised, perforation site was itself taken out as ileostomy and excised tissue was sent for histopathological examination (HPE). HPE of perforation margins shows fibromuscular tissue with prominent serositis, areas of hemorrhage, necrosis and dense mixed transmural inflammatory infiltrate. Also focally preserved epithelial lining showing crypt distortion and muco-depletion. However, no well-formed granulomas or acid-fast bacilli were identified and findings were compatible with ileal perforation peritonitis.

On post-operative day (POD)-2 stoma became functional and intra-abdominal drains were removed as there was minimal discharge. Midline wound was unhealthy with purulent discharge coming out through it. On POD-5 wound dehiscence occurred and was managed by aseptic dressing daily and antibiotics coverage as per culture sensitivity. On POD-12 stoma lost its skin contact as skin sutures gave away, but was fixed to underlying sheath. Eventually stoma retracted day by day but was functional.

On POD-22 patient was discharged with healthy midline wound and functional stoma. On regular follow-up in OPD patient performed well for initial 1 month, but gradually ileostomy output started reducing. Stoma output significantly reduced in 4th month of follow-up. After four months, patient complaint of further retraction of stoma and pus coming out from two different openings around healed midline wound. Patient also gave history of defecating through per rectal route for past 2 months.

Patient was admitted and managed as a case of controlled fistula.

Patient had nil output in his stoma bag for 7 consecutive days, after which contrast enhanced computed tomography (CECT) abdomen and pelvis was done. It revealed spontaneous closure of ileostomy stoma along with ileocecal junction thickening and abdominal lymphadenopathy (Fig. 1).

Patient was discharged and now defecating per rectally with normal bowel habits and following up in neurology department for seizure disorder.

3. Discussion

The intestinal stomas are created as diversion of enteric contents and giving enough time to heal the repaired perforation site. The stomas (ileostomy, colostomy) are made very frequently although they have many post-operative complications. Early complications (<1 month) are strangulation, obstruction, stenosis, ischemia, dehydration, muco-cutaneous separation fistula. Late complications (>1 month) are stoma retraction, prolapse, para-stomal hernia, fistula, variceal bleeding, ulceration/skin problems.

Various studies showed that 20–25% patient have stoma retraction after ileostomy formation [4]. Retraction of stoma depends on multiple factors. Firstly, on patients' general condition, if he/she is malnourished/obese/immune-compromised then retraction occurs due to poor healing of wound. Secondly, it results from inadequate mobilization of bowel or its mesentery which creates tension. Separation of stoma with muco-cutaneous fascial planes leads to gradual retraction of stoma which is the primary mechanism of spontaneous closure of stoma. The possible mechanism of spontaneous closure of stoma may be correlated with healing of EC fistula.

EC fistula can be managed conservatively. There are several factors which affect spontaneous healing of EC fistulae and comparable with spontaneous ileostomy closure. EC fistula is mostly iatrogenic [bowel/mesenteric injury, anastomotic leak]. The healing of EC fistula is delayed by several factors which include 'FRIEND' acronym for foreign body, radiation, infection, epithelialization, neoplasm and distal obstruction [5]. High output fistula (>500 ml/24 h), involvement of >50% bowel circumference and length of fistula tract < 2.5 cm are also several reasons included [5].

Fistula can be superficial or deep on the basis of drainage site. Superficial fistula drains up to skin while the deep fistula drains into peritoneal cavity. Thus, superficial fistula is less prone to systemic infections while deep fistula are associated with peritonitis, sepsis and malnutrition thus heal less spontaneously [6]. Ileostomy is considered as

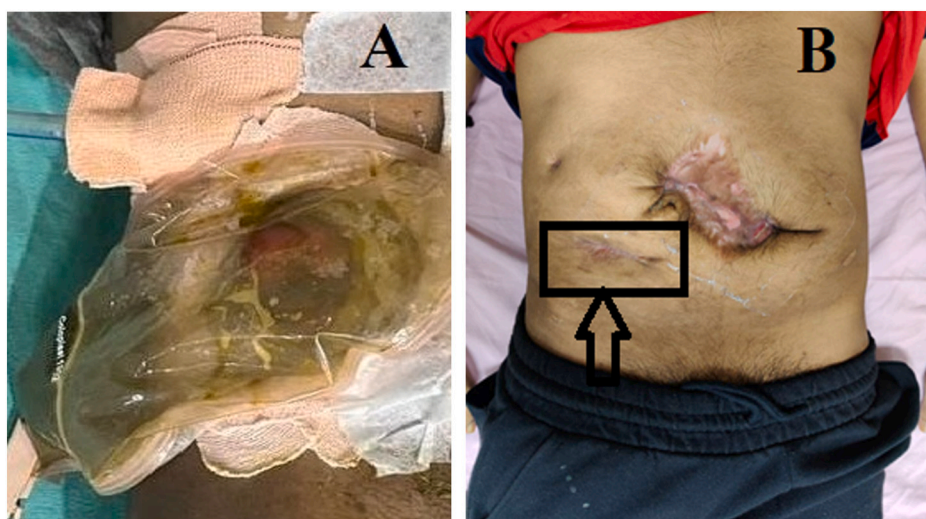


Fig. 1. (A) Illustrates functional loop ileostomy with stoma bag applied over it. (B): Illustrates spontaneous closure of ileostomy after gradual retraction.

superficial type of EC fistula. With recent advances in stoma management therapies, one could think of managing complications like retraction without any surgical intervention.

As patient was passing stool and flatus per rectally with gradual retraction of stoma, wait and watch technique was applied. Spontaneous closure of stoma occurred in this case with stoma complications like stomal fistula, peri-stomal edema and skin excoriation. Finally, after four months, stoma got closed on its own with secondary healing of midline wound.

Perhaps in future meta-analysis and research could be done to understand exact mechanism behind this phenomenon.

4. Conclusion

Retraction/malfunction of ileostomy leading to revision surgery is very common practice. Retraction need not be managed surgically always as there are cases reported in literature previously where conservative approach led to spontaneous closure of ileostomy. Although very poorly understood the mechanism behind, may be a well-functioning distal anastomosis is prime factor responsible for event. There are several other factors which should be studied and considered before arriving on logical explanation to the subject. Careful long-term follow-up of such patients is required to understand unclear implications of event.

Provenance and peer review

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Consent

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Author AA and SA wrote the first draft of the manuscript, collected data and managed the literature searches.

Author NS was the operating surgeon and scientific advisor.
All authors read and approved the final manuscript.

Declaration of competing interest

Authors have declared that no conflicts of interest exist.

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