



Contents lists available at ScienceDirect

## International Journal of Surgery Case Reports

journal homepage: [www.casereports.com](http://www.casereports.com)

## Spontaneous closure of an ileostomy: A rare occurrence



Ashish Saxena, Lovekesh Kumar, Mahendra Singh\*, Yuvraj Kolhe, Snehal K. Karande, P. Venkatesh, R.N. Sahai

Hindu Rao Hospital, New Delhi, India

## ARTICLE INFO

## Article history:

Received 5 August 2014

Received in revised form 26 October 2014

Accepted 29 October 2014

Available online 5 November 2014

## Keywords:

Loop ileostomy

Ileum

Stoma retraction

Tuberculosis

## ABSTRACT

**INTRODUCTION:** Ileostomy is an iatrogenic entero-cutaneous (EC) fistula designed for controlled evacuation of bowel contents. Once ileostomy has served its purpose, it is reverted by surgical procedure. We are reporting an interesting case of spontaneous closure of an ileostomy, obviating the need of surgical intervention.

**PRESENTATION OF CASE:** A 26 year old lady presented with perforation peritonitis. Upon exploration, a tubercular perforation of terminal ileum was found. Loop ileostomy was formed and patient was discharged on anti-tubercular treatment (ATT) after an uneventful recovery. During follow up visits, stoma was found to be retracting gradually. Retraction was not associated with any signs of peritonitis. Patient was able to pass stools per rectally. Stoma regressed completely within 8 months followed by epithelialisation of stoma site. Patient was leading an essentially normal life until her last follow up visit.

**DISCUSSION:** Considering the various factors affecting spontaneous healing of EC fistulas, all the intestinal stomas do have favourable characteristics essential for spontaneous closure. However, this is seldom seen in day to day surgical practice. The factors pertaining to this particular case that led to spontaneous closure of stoma remain poorly understood.

**CONCLUSION:** Further research is warranted to understand the mechanism behind spontaneous regression of a stoma. Relationship between this event and intestinal tuberculosis or ATT needs to be analysed.

© 2014 The Authors. Published by Elsevier Ltd. on behalf of Surgical Associates Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/3.0/>).

## 1. Introduction

Ileostomy is an iatrogenic enterocutaneous (EC) fistula fashioned to facilitate evacuation of bowel contents in a controlled manner, thereby preventing contamination of peritoneal cavity and simultaneously protecting surrounding skin from contact with effluent material.<sup>1</sup> Physiologically an ileostomy is analogous to a controlled EC fistula. Major difference between ileostomy and EC fistula lies in their management. While approximately one third of EC fistulas respond well to conservative measures, rest of them require surgical intervention. Ileostomy on the other hand always requires a surgical procedure for its closure; be it primary repair of stoma or resection followed by anastomosis.<sup>2–4</sup> Spontaneous closure of ileostomy without surgical intervention is virtually unknown and to the best of our knowledge, has not been reported in medical literature till date. We hereby report such an interesting

case of spontaneous closure of an ileostomy. A brief discussion over the contributing factors follows.

## 2. Case report

A 26 years old lady presented to surgical emergency with acute abdomen. She complained of diffuse abdominal pain for past 4 days. She was unable to pass stool and flatus for past 2 days and she had 4 episodes of bilious vomiting within last 24 h. She gave history of loss of appetite and significant weight loss within last 8 months. Family history revealed that her husband was suffering from pulmonary tuberculosis and was currently on anti-tubercular therapy. On examination, patient was moderately built and poorly nourished. She was dehydrated, anxious and tachypnoeic. She had tachycardia (104 min<sup>-1</sup>) but blood pressure was normal (106/72 mmHg). Bilateral respiratory crepitations were audible upon auscultation. Her abdomen was grossly distended and tender. Board like rigidity was evident all over the abdomen. Shifting dullness was positive and bowel sounds were conspicuous by their absence. Blood investigation reports and electrocardiogram were unremarkable. Plain X-ray of abdomen revealed free air under the right dome of diaphragm, thus establishing the diagnosis as a case of perforation peritonitis.

\* Corresponding author: Mahendra Singh, c/36, Hardevpuri, Gautam Nagar, New Delhi 110049, India. Tel.: +91 7023436575.

E-mail addresses: [docashish4u@gmail.com](mailto:docashish4u@gmail.com) (A. Saxena),

[lovekeshkumar@gmail.com](mailto:lovekeshkumar@gmail.com) (L. Kumar), [dr.mahi1118@gmail.com](mailto:dr.mahi1118@gmail.com) (M. Singh),

[yuvraj11784@gmail.com](mailto:yuvraj11784@gmail.com) (Y. Kolhe).



Fig. 1. Loop ileostomy in early post operative period.

After adequate intra-venous hydration and stabilization of vital parameters, patient was taken up for exploratory laparotomy under general anaesthesia. Abdomen was entered through a midline vertical incision. Upon opening the peritoneal cavity, around 300 cc of frank pus was encountered, which was duly aspirated. A transversely placed oval perforation of  $2 \times 1$  cm size was noticed in terminal ileum, 25 cm proximal to the ileocaecal junction. Multiple enlarged mesenteric lymph nodes were found and multiple tubercles were present over the mesentery and bowel surface. An on table diagnosis of abdominal tuberculosis was made and management was planned accordingly. Mesenteric lymph node biopsy was taken. Perforated segment of ileum was brought out in right iliac region as loop ileostomy (Fig. 1). Abdomen was closed by mass closure approach after adequate peritoneal lavage.

Post operative period was essentially uneventful and ileostomy started functioning on 2nd post operative day. Oral liquids were allowed from 4th post operative day, followed by semisolid diet. We noticed superficial surgical site infection in peri-umbilical area on fourth post-operative day, so four sutures present near umbilicus were removed immediately and that area was allowed to heal by secondary intention. Rest sutures were removed on 10th post operative day. Histopathology of excised mesenteric lymph nodes confirmed the provisional diagnosis of abdominal tuberculosis. Patient was discharged on 11th post operative day on anti-tubercular therapy with an advice to come for ileostomy closure after one month. Patient reported in the OPD on due date. The ileostomy was functioning satisfactorily. However, she gave history of passing stools per rectally as well. At that time ileostomy closure could not be undertaken because of deranged respiratory status. She was sent back with instructions to continue ATT and follow up in OPD. On further follow-up visits, the stoma showed tendency to retract gradually. However no surgical intervention was done as patient was regularly passing stools per rectally and effluent volume had reduced considerably. There were no signs suggestive of obstruction or peritonitis. At the end of 6 months, the stoma was completely retracted within peritoneal cavity and stoma site was covered with healthy granulation tissue (Fig. 2). Patient was leading a near normal life with normal passage of stool per rectally. Regular aseptic dressing of the stoma site was advised. Epithelialisation of stoma site was completed by the end of 8 months (Fig. 3). The patient was finally let off with advice to complete her 9 months ATT course. She has not reported back since then.

### 3. Discussion

In India, main indication for ileostomy is terminal ileal perforation due to enteric fever or tuberculosis.<sup>2</sup> These conditions are prevalent in low socio-economic group. They tend to ignore initial symptoms and report late. By this time peritoneal cavity gets grossly contaminated by faecal matter and bowel becomes oedematous and inflamed, precluding primary repair of perforation.<sup>3</sup>



Fig. 2. Gradually retracting stoma.

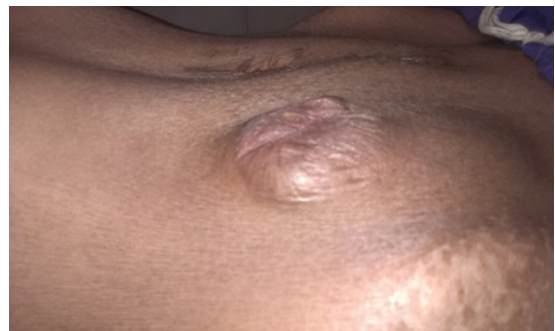


Fig. 3. Completely retracted stoma.

Considering the scarcity of literature upon spontaneous closure of an ileostomy, it is only appropriate that we consider factors that affect spontaneous healing of EC fistulas and try to gain an insight into the mechanism of spontaneous ileostomy closure by correlation.

EC fistulas are most commonly iatrogenic, usually the result of a surgical mishap (e.g., anastomotic breakdown, injury to bowel or mesentery). Other contributing factors include previous radiation therapy, intestinal obstruction, inflammatory bowel disease, mesenteric vascular disease, trauma or intra-abdominal sepsis.<sup>5</sup> On reviewing the literature it becomes clear that healing of an EC fistula is delayed by myriad factors. These include the classic 'FRIEND' factors, which is an acronym for foreign body, radiation, infection or inflammation, epithelialisation, neoplasm and distal obstruction. There are several other significant factors associated with an adverse outcome, such as fistula being of high output variety (>500 ml/24 h), involvement of more than 50% of bowel circumference and length of fistula tract being less than 2.5 cm.<sup>6</sup> Fistulas occurring post operatively are more likely to heal spontaneously when compared to those occurring due to other causes such as radiation, malignancy, inflammatory bowel disease etc.<sup>7</sup> The fistulas having two or more external openings are known as complex fistulas. According to a study conducted by Mawdsley et al.,<sup>8</sup> complex fistulas are two times less likely to close by conservative approach and show four times higher recurrence rate than that of a simple fistulas. There is another recently recognized entity known as enteroatmospheric fistula (EAF) or exposed fistula, which can be broadly defined as a fistula in an open abdomen or fistula occurring in the wound of a dehiscant laparotomy scar.<sup>9</sup> This type of fistula

is also associated with relatively lesser probability of spontaneous healing. According to a report by Visschers et al., spontaneous closure is 5 times less likely in such fistulas.<sup>10</sup> Fistulas can also be categorized into superficial and deep on the basis of their site of drainage. While the superficial EC fistulas drain upon skin or granulating wound, the deep EC fistulas drain into peritoneal cavity. As a result, the superficial fistulas are less prone to systemic infections and are associated with low morbidity and mortality. On the other hand, deep EC fistulas are associated with peritonitis, sepsis and malnutrition and therefore seldom show inclination towards spontaneous healing.<sup>7</sup>

Keeping all these factors in mind, an ileostomy can be considered as a post operative, low volume, simple and superficial type of EC fistula without any associated foreign body, infection, distal obstruction or malignancy. All of these factors favour spontaneous healing of an EC fistula. Thus theoretically we can expect that all ileostomies should regress spontaneously without any surgical intervention. But spontaneous regression of an ileostomy to such an extent is not routinely observed in day to day surgical practice, the present case being an obvious aberration from the natural course of a stoma.

On the other hand, the beginning of regression is viewed as an early complication of ileostomy. This condition is known as stomal retraction. Various studies have reported a 20–25% incidence of stomal retraction following ileostomy.<sup>11,12</sup> The underlying factor causing retraction is separation of skin from mucosa suture line. It usually results from excessive tension on bowel or its mesentery due to inadequate mobilization.<sup>13</sup> Minor degrees of retraction can usually be managed conservatively however a stricture may develop as healing occurs by secondary intention. Re-laparotomy is indicated if there is cellulitis around the stoma indicating escape of bowel contents into the abdominal wall, or if signs of peritonitis indicate escape of effluent into the peritoneal cavity.<sup>14</sup>

The spontaneous closure of a stoma can be considered as the final outcome of a gradually progressive stomal retraction. In the present case, retraction of stoma was not associated with any complication such as peristomal oedema or peritonitis. Even more important was the fact that patient was passing stools and flatus per anus. Therefore an approach of watchful waiting was adopted and stoma was given a chance to regress spontaneously, which it did eventually. However, the special factors pertaining to this particular case which led to spontaneous closure of stoma remain undiscovered. Remotely possible explanations might include an effect of intestinal tuberculosis or anti-tubercular drugs upon the stoma closure which can be the focus of further studies. Another possibility is entero-enteric or entero-colic fistula bypassing ileostomy leading to spontaneous closure. This possibility should be kept in mind and need additional testing like CECT abdomen or contrast studies. The approach towards a retractile stoma not associated with complications should also be re-evaluated.

#### 4. Conclusion

Spontaneous closure of an ileostomy is a rare and interesting phenomenon. The mechanism behind this spontaneous closure of stoma however remains poorly understood. Any relationship between this strange occurrence and Koch's disease of intestine or anti-tubercular drugs also remains to be analyzed. Because of scarcity of literature upon this subject, it is difficult to explain this

phenomenon in a simple manner. The present case can either be put aside as just another interesting case report or it can be used as a foundation stone for further studies and experiments that may lead to a paradigmatic shift in the basic principles of stoma management. In our opinion, further research is warranted to arrive upon a logical conclusion. Animal models of ileostomy can be utilized for conducting relevant trials.

#### Conflict of interest

None.

#### Funding

No funding obtained.

#### Ethical approval

Written informed consent to publish the article was obtained from the patient.

#### Author contributions

Ashish Saxena prepared the manuscript and carried out the literature search. Lovekesh Kumar was the operating surgeon. Mahendra Singh was the assistant surgeon and helped in manuscript preparation. Snehal K. Karande, Yuvraj Kolhe and P. Venkatesh assisted in literature search. R.N. Sahai reviewed the manuscript.

#### References

- Cataldo PA. Intestinal stomas; 200 years of digging. *Dis Colon Rectum* 1999;**42**:137–42.
- Ojerskog B, Andersson H, Bosaes I, Brevinge H, Nilsson LO. Total body water and total body potassium in ileostomy patients before and after conversion to the continent ileostomy. *Gut* 1988;**29**(9):1198–201.
- Mohil RS, Singh T, Arya S, Bhatnagar D. Risk adjustment is crucial in comparing outcomes of various surgical modalities in patients with ileal perforation. *Patient Saf Surg* 2008;**2**(31):200–8.
- Hollington P, Mawdsley J, Lim W, Gabe SM, Forbes A, Windsor AJ. An 11-year experience of enterocutaneous fistula. *Br J Surg* 2004;**91**:1646–51.
- Evenson AR, Fischer JE. Current management of enterocutaneous fistula. *J Gastrointest Surg* 2006;**10**:455–64.
- Evers BM. Small intestine. In: Townsend CM, Beauchamp RD, Evers BM, Mattox KI, editors. *Sabiston Text Book of Surgery*. 9th Ed. Philadelphia: Elsevier Saunders; 2012. p. 1271.
- Martinez JL, Luque-de-Leon E, Mier J, Blanco-Benavides R, Robledo F. Systemic management of postoperative enterocutaneous fistulas: factors related to outcomes. *World J Surg* 2008;**32**:436–43.
- Mawdsley JE, Hollington P, Bassett P, Windsor AJ, Forbes A, Gabe SM. An analysis of predictive factors for healing and mortality in patients with enterocutaneous fistulas. *Aliment Pharmacol Ther* 2008;**28**:1111–21.
- Levy E, Frileux P, Cugnenc PH. Exposed fistula of the small intestine, a complication of peritonitis or laparotomy: apropos of 120 cases. *Ann Chir* 1986;**40**:184–95.
- Visschers RG, Olde Damink SW, Winkens B, Soeters PB, van Gemert WG. Treatment strategies in 135 consecutive patients with enterocutaneous fistulas. *World J Surg* 2008;**32**:445–53.
- Arumugam PJ, Bevan L, Macdonald L. A prospective audit of stomas – analysis of risk factors and complications and their management. *Colorectal Dis* 2003;**5**(January (1)):49–52.
- Robertson I, Leung E, Hughes D. Prospective analysis of stoma related complications. *Colorectal Dis* 2005;**7**(May (3)):79–85.
- Kann BR. Early stomal complications. *Clin Colon Rectal Surg* 2008;**21**(February (1)):23–30.
- Furquharson M, Moran B. Classic operations on the small and large bowel. In: *Farquharson's Textbook of Operative General Surgery*. 9th ed. Hodder Arnold; 2005. p. 388.

#### Open Access

This article is published Open Access at [sciedirect.com](http://sciedirect.com). It is distributed under the [IJSCR Supplemental terms and conditions](#), which permits unrestricted non commercial use, distribution, and reproduction in any medium, provided the original authors and source are credited.