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Case Report

Surgery Section

Management of Colocutaneous Fistula with Surgical Intervention: A Case Report

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ABSTRACT

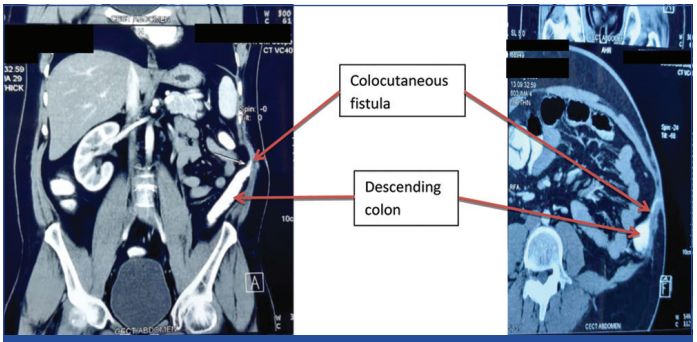
A colocutaneous fistula is a type of enterocutaneous fistula where communication exists between the colon and the skin of the abdominal wall. The present case report was of postoperative colocutaneous fistula in a 32-year-old male patient, who had undergone left open nephrectomy. This is unique, as nephrectomy is not a procedure that is usually associated with such colocutaneous fistulas, particularly as this was a case of non functioning kidney and was not associated with severe inflammation or adhesions, which are usually prerequisites for a fistula to arise. Following surgery, patient developed feculent discharge from the drain in the early postoperative period. A Contrast Enhanced Computed Tomography (CECT) scan for evaluation of the cause of leak was done, which showed a colocutaneous fistula arising from the proximal descending colon with an abscess surrounding the fistula tract. The abscess was drained and conservative management was initially attempted to allow for spontaneous resolution of the fistula as spontaneous closure is the norm, when there are no unfavourable factors hindering spontaneous closure, as was the case in this patient. However, despite all factors being favourable for spontaneous closure of the fistula, it failed to occur in the present case. Furthermore, this patient required multiple surgical procedures, which is also unusual for a fistula such as this, where all factors being favourable for its spontaneous healing. Closure of the fistula was finally being achieved by resection of the fistula tract along with the segment of the bowel containing the internal opening. The present case report highlighted the challenges posed by cases of colocutaneous fistulas and shows that thorough knowledge of all the treatment modalities available for its treatment, is required to successfully treat it.

Keywords: Colonic, Conservative, Intestinal, Nephrectomy

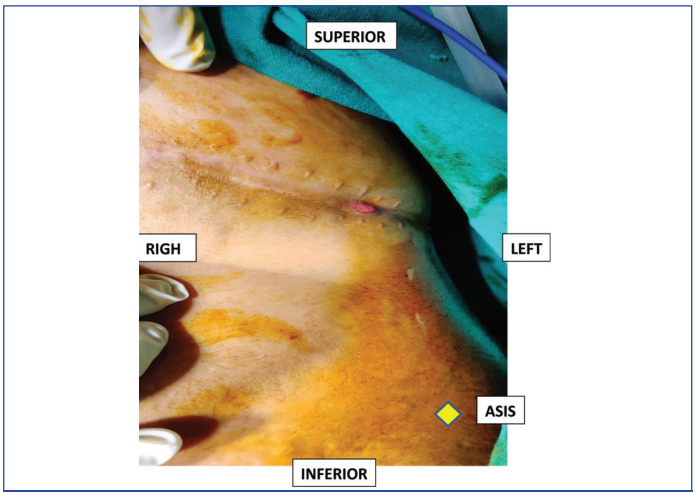
CASE REPORT

This was a case report of 32-year-old male diabetic patient on regular follow-up who presented with complaints of burning micturition and increased frequency. After performing routine urine examination, the patient was diagnosed with urinary tract infection. Further workup revealed deranged renal function test parameters due to non functioning left kidney secondary to diabetic nephropathy, confirmed by Diethylenetriamine Pentaacetate (DTPA) scan. Following this left open nephrectomy was undertaken to remove the risk of future complications due to the non functioning kidney. Nephrectomy was performed through a left flank incision and intraoperatively left kidney was found to be shrunken, discoloured and free of adhesions. On postoperative day 3, patient developed feculent discharge from the drain placed at surgical site, with an output of ~150 mL per day. CECT scan of the abdomen and pelvis on postoperative day 6 was done which revealed an abscess with colocutaneous fistula of length of 7 cm and diameter ~7 mm in the wall of the colon without any distal obstruction as shown in [Table/Fig-1]. As it was a low output fistula, with no history and underlying bowel disease and all other factors were favourable for spontaneous healing, patient was initially managed conservatively. Conservative management in this case included bowel rest, parenteral nutrition, antibiotics, drainage of abscess and regular dressings.

Conservative management was successful in controlling the local infection but feculent discharge from fistulous opening continued. Since conservative management failed to bring about spontaneous resolution of the fistula, patient was taken up for a defunctioning ileostomy, three months after nephrectomy [1]. This was done to achieve diversion of intestinal contents away from fistula site to allow the affected segment to be rested and promote healing of the fistula. Diversion procedure was unsuccessful, in reducing output to ~30-50 mL/day, however fistula once again persisted as shown in [Table/Fig-2]. Spontaneous closure did not occur even after six months of ileostomy.

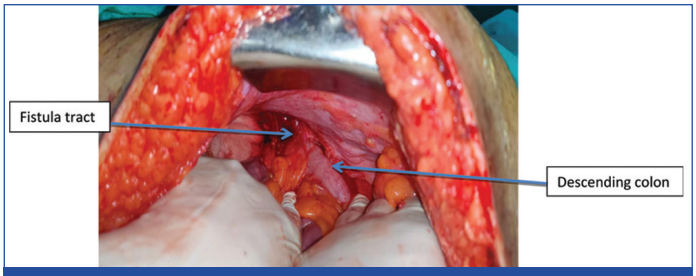


[Table/Fig-1]: Contrast Enhanced Computed Tomography (CECT) abdomen and pelvis showing the colocutaneous fistula.



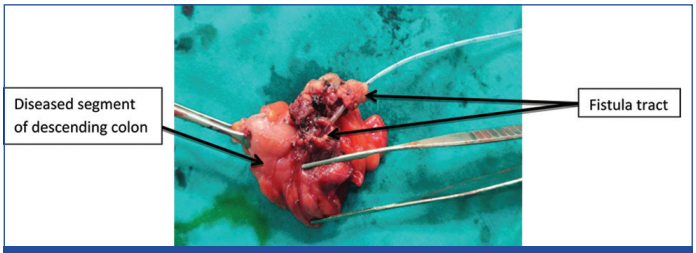
[Table/Fig-2]: External opening of the fistula.

Ultimately definitive surgical procedure was performed in the form of excision of the fistulous tract with resection of the involved segment of colon and side-to-side colocolic anastomosis. Intraoperatively fistulous tract was noted, arising from proximal descending colon as shown in [Table/Fig-3].

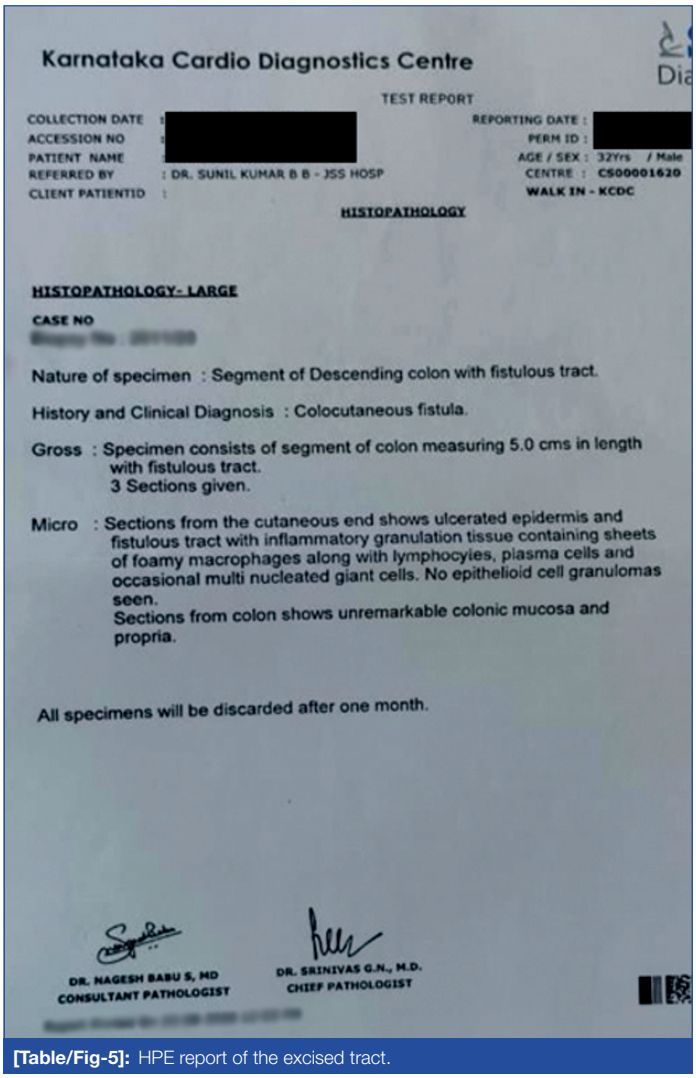


[Table/Fig-3]: Intraoperative findings.

Resected segment of the descending colon along with the fistulous tract [Table/Fig-4] was sent for Histopathological Examination (HPE), which revealed signs of chronic inflammation of the fistulous tract with no epithelioid granuloma and unremarkable colonic mucosa and propria [Table/Fig-5]. Patient recovered well after the surgery and was discharged with ileostomy. Patient was regularly followed-up and fistula site healing was noted. Patient was taken up for ileostomy reversal two months after resection and anastomosis. Following ileostomy reversal, patient was passing stools normally and was further followed-up for six months, with no evidence of fistula recurrence.



[Table/Fig-4]: Excised tract.



Karnataka Cardio Diagnostics Centre

TEST REPORT

COLLECTION DATE : [redacted]
ACCESSION NO :
PATIENT NAME :
REFERRED BY : DR. SUNIL KUMAR B B - JSS HOSP
CLIENT PATIENTID :
REPORTING DATE : [redacted]
PERM ID :
AGE / SEX : 32Yrs / Male
CENTRE : CS00001620
WALK IN - KCDC

HISTOPATHOLOGY

HISTOPATHOLOGY- LARGE

CASE NO

Nature of specimen : Segment of Descending colon with fistulous tract.

History and Clinical Diagnosis : Colocutaneous fistula.

Gross : Specimen consists of segment of colon measuring 5.0 cms in length with fistulous tract.
3 Sections given.

Micro : Sections from the cutaneous end shows ulcerated epidermis and fistulous tract with inflammatory granulation tissue containing sheets of foamy macrophages along with lymphocyles, plasma cells and occasional multi nucleated giant cells. No epithelioid cell granulomas seen.
Sections from colon shows unremarkable colonic mucosa and propria.

All specimens will be discarded after one month.

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CONSULTANT PATHOLOGIST

DR. SRINIVAS G.N., M.D.
CHIEF PATHOLOGIST

[Table/Fig-5]: HPE report of the excised tract.

DISCUSSION

Colocutaneous fistula is a type of Gastrointestinal (GI) fistulas, constituting ~10-30% of all GI fistulas [1,2]. Common causes of GI fistulas are: Diseased bowel extending to surrounding epithelialised structures, extra-intestinal disease extending into normal bowel, trauma to bowel and anastomotic disruption [3]. GI fistulae can be classified anatomically, physiologically and aetiologically. Anatomically, fistula may originate from stomach, duodenum, proximal or distal small bowel, large bowel or rectum. Physiologically, they are classified based on output as being either low output (<200 mL/24 hour), moderate output (200-500 mL/24 hour) or high output fistulas (>500 mL/24 hour) [4,5]. Colocutaneous fistulas, in particular are those fistulae in which communication exists between colon and the external skin [6]. They are further classified aetiologically into spontaneous or postoperative. About 25% of fistulas occur spontaneously, in the setting of cancer, post irradiation or inflammatory conditions like Inflammatory Bowel Disease (IBD), diverticular disease, or ischaemic bowel, with IBD being the most common. The remaining three-quarters of fistulas occur in the postoperative setting, most commonly subsequent to procedures performed for malignancy, IBD, or adhesive bowel obstruction [4,5].

In present case report, fistula was developed following left open nephrectomy. Postoperative colocutaneous fistulas occur due to anastomotic leakage, breakdown of enterotomy closure, missed enterotomy or occasionally after instrumentation or drainage of an appendiceal, diverticular fluid collection or abscess. Fistula formation is predisposed by factors such as distal obstruction, intrinsic intestinal disease (e.g., Crohn's disease), radiation enteritis, or a hostile abdominal environment, like peritonitis/abscess. The risk is also higher in emergencies when the patient may be malnourished or poorly prepared. Factors which prevent spontaneous closure of fistulas are high output, severe disruption of intestinal continuity, active IBD of involved segment, malignancy, radiation enteritis, distal obstruction, undrained abscess cavity, foreign body in fistula cavity, fistula tract <2.5 cm, epithelisation of tract [1,6]. The first step in the management of a colocutaneous fistula is to prevent its occurrence. Reducing the likelihood of an anastomotic leak requires adherence to sound surgical principles and proper techniques [7]. If a fistula forms, management involves several phases that are applied systematically and simultaneously. The initial phase is aimed at stabilisation of the patient, with prompt fluid resuscitation and electrolyte replacement followed by sepsis control, which may require all infections to be adequately drained, either percutaneously or operatively, along with appropriate antibiotic administration [4-6,8]. Nutritional support is paramount in this phase with total parenteral nutrition being particularly valuable, especially for high output fistulas [4-6,8]. Wound and fistula care using a stoma bag with applications of zinc oxide, aluminum paste ointment and occasionally effluent control by intubation of the fistula tract with a drain maybe necessary [4-6,8,9]. Next phase involves evaluation of anatomical and aetiological characteristics [4-6,8]. This allows us to identify factors which are unfavourable for spontaneous healing of fistula and correct them, if possible [6]. With such an orchestrated approach, approximately 60-90% of fistulas with favourable factors close spontaneously, with 90% closing within 4-6 weeks, and <10% closing in 2-3 months [4,10,11]. For patients in whom fistulas fail to resolve with conservative management, operative intervention will eventually be necessary [4-6,8].

A convalescent period of >6 weeks to allow recovery of immunologic competence, improvement of nutritional status, and resolution of period of dense inflammatory reaction is imperative, for the success of surgical intervention [1,4-6,8]. Surgery can be either single-staged procedure or two-staged procedure [4-6,8]. Early procedures are typically limited to drainage of infected fluid/collections, defunctioning, or exteriorisation of the defect. Preferred option for definitive repair is excision of fistulous tract and resection

of the involved segment of intestine and primary anastomosis or exteriorisation of both ends of the intestine, if primary anastomosis is deemed unsafe [4-6,8]. Basic surgical considerations include attempting a one-stage procedure, careful adhesiolysis, addressing compromised tissues with wedge excision or intestinal resection, covering sutures with viable tissues, and avoiding friable areas.

As discussed in a study by Kumar P et al., most colocutaneous fistulas have postoperative aetiology and various factors need to be taken into account when planning the management of such cases [12]. As shown by Hajong R et al., and Balachandra D et al., there are a multitude of factors to be considered when planning management of colocutaneous fistula [13,14]. It is uncommon for any colocutaneous fistula to resist spontaneous closure, once all influences that are unfavourable for such as outcome have been mitigated. However, the present case was unusual, since it required surgical intervention, in spite of conditions favouring its spontaneous resolution. Despite the absence of any unfavourable factors, the fistula failed to resolve spontaneously with conservative management. A defunctioning ileostomy was first attempted to provide bowel rest to the affected segment and facilitate spontaneous closure of the persisting colocutaneous fistula. A two-stage procedure is not commonly used, but in this particular case, two-staged procedure was undertaken, however, all factors were favourable for spontaneous resolution. All efforts to promote spontaneous closure ultimately failed, thus requiring definitive repair i.e., resection of the involved segment with primary anastomosis, to finally resolve this determined fistula.

CONCLUSION(S)

The present case report was of colocutaneous fitsula, developed following left open nephrectomy procedure in a diabetic pateint. Conservative management failed to bring about spontaneous resolution of the fistula, so defunctioning ileostomy was done. This procedure was also unsuccessful, so definitive surgical procedure was performed in the form of excision of the fistulous tract with resection of the involved segment of colon and side-to-side colocolic anastomosis. Surgeons should be aware of all the factors, that hinder spontaneous closure of fistula. Sound practice of surgical principles along with timely decision making, was employed in the present case for best outcome of this seemingly simple, but challenging case.

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