CASE REPORT

Successful faecal microbiota transplant for recurrent *Clostridium difficile* infection delivered by colonoscopy through a diverted ileostomy in a patient with severe perianal Crohn's disease

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SUMMARY

We present the first reported case of successful treatment of recurrent *Clostridium difficile* infection with faecal microbiota transplantation delivered antegrade with a colonoscope through a diverting ileostomy.

BACKGROUND

Faecal microbiota transplantation (FMT) is a highly effective treatment for recurrent *Clostridium difficile* infection (rCDI)¹ and has been widely adopted by many institutions including our own. Several methods of delivery of FMT have been described and choice will depend on local expertise, patient acceptability and the patient's anatomy. The methods with most experience include: via colonoscopy, nasojejunal tube, nasogastric tube, rectal enema, encapsulated FMT. Novel methods include via endoscopically placed transcolonic enteral tubes² or via enema through percutaneous colostomy which allows repeated caecum delivered FMT without the need for repeated colonoscopy.

Our patient presented an intriguing dilemma to delivering FMT given the altered nature of her anatomy. Her anus was so strictured and distorted that a colonoscopy or enema was impossible, and the nasojejunal route would not deliver the transplant to the affected area (the colon) due to a prior diverting loop ileostomy. Therefore, we decided to intubate the distal limb of her loop ileostomy with a colonoscope and deposited the FMT via the biopsy channel of the colonoscope.

CASE PRESENTATION

A 28-year-old woman was admitted to hospital with passage of rectal blood and mucus.

Her medical history was of severe fistulising perianal Crohn's disease for which she had a diverting loop ileostomy (as an attempt to settle her Crohn's disease) in 2014. Drug history included infliximab and azathioprine and recurrent courses of antibiotics including ciprofloxacin for perianal sepsis and an extended course of co-amoxiclav to treat a renal abscess 1 year previously.

Stool samples taken from her ileal effluent were found to be negative for toxins A/B by enzyme immunoassay (EIA), however the rectal discharge sample was toxin A/B EIA positive. She was started

on vancomycin³ which resolved her symptoms but within a few weeks her symptoms returned. She was treated for rCDI with fidaxomicin⁴ which initially improved her symptoms but then they recurred a few weeks later, and so she was restarted on vancomycin with a good symptomatic response. Both vancomycin and fidaxomicin act luminally, and therefore their benefit in suppressing this patient's symptoms was a surprise as neither drug would enter the colon due to her diverting ileostomy. Therefore, the drugs' apparent initial success may have been overestimated as assessment was based on resolution of passage of rectal mucus rather than conventional assessment of resolution of liquid stool.

After discussion with our microbiologists, FMT was approved for recurrent *C. diff* infection, and the mode of delivery was discussed among the team, and we felt that delivery of the FMT to the colon (the affected organ) would be important to maximise the efficacy of the treatment. Due to the patient's severe stricturing perianal Crohn's disease, a colonoscopy through the rectum or enema was impossible, and nasojejunal, nasogastric or encapsulated delivery would not deliver the FMT to the colon. Therefore, we decided to deliver the FMT by inserting an endoscope through the distal limb of the loop ileostomy into the caecum.

Vancomycin was discontinued 2 days prior to the procedure. The donor underwent extensive faecal and serum testing for infectious diseases according to our local protocol. The patient received sedation of fentanyl 100 mcg and midazolam 5 mg. Then a colonoscope was inserted via the distal limb of the loop ileostomy through 10 cm of normal ileum into the caecum. About 250 mL of stool was instilled into the caecum by flushing through the colonoscopy biopsy channel followed by 20 mL of water.

OUTCOME AND FOLLOW-UP

The patient had cessation of bleeding and mucus within a day of the FMT and was discharged 1 day later.

DISCUSSION

To our knowledge, there has been no previous experience of a successful FMT for treatment of rCDI delivered endoscopically via a diverting

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ileostomy. This innovative and successful method of delivery of FMT was well tolerated with no reported side effects, and no patient preparation was required.

The incidence of *Clostridium difficile* (CD) in inflammatory bowel disease has increased compared with the background population⁵; however, the incidence of CD in a diverted colon of any aetiology is lacking in the literature. We hypothesise that CD in a diverted colon is more likely as there is no flow of other indigenous bacteria through the colon to compete with CD, thereby creating an environment where it can rapidly multiply and cause symptoms.

Learning points

- We describe a novel method of delivery of a faecal transplant through intubation of the distal limb of a diverting ileostomy with a colonoscope.
- Faecal transplant is a successful treatment for recurrent *Clostridium difficile*.
- *Clostridium difficile* is more common in patients with inflammatory bowel disease.

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Patient consent Obtained.

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REFERENCES

- 1 van Nood E, Dijkgraaf MG, Keller JJ. Duodenal infusion of feces for recurrent *Clostridium difficile*. *N Engl J Med* 2013;368:407–15.
- 2 Peng Z, Xiang J, He Z, *et al*. Colonic transendoscopic enteral tubing: A novel way of transplanting fecal microbiota. *Endosc Int Open* 2016;04:E610–E613.
- 3 Zar FA, Bakkanagari SR, Moorthi KM, *et al*. A comparison of vancomycin and metronidazole for the treatment of *Clostridium difficile*-associated diarrhea, stratified by disease severity. *Clin Infect Dis* 2007;45:302–7.
- 4 Louie TJ, Miller MA, Mullane KM, *et al*. Fidaxomicin versus vancomycin for *Clostridium difficile* infection. *N Engl J Med* 2011;364:422–31.
- 5 Nguyen GC, Kaplan GG, Harris ML, *et al*. A national survey of the prevalence and impact of *Clostridium difficile* infection among hospitalized inflammatory bowel disease patients. *Am J Gastroenterol* 2008;103:1443–50.

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