

Introduction

Clostridium difficile is the most common cause of diarrhea acquired in hospitals. The incidence of nosocomial clostridium difficile associated diarrhea has increased since 2000. Surgery is indicated when the patient fails medical treatment or develops complications such as perforation. Total abdominal colectomy (TAC) with ileostomy is the standard procedure performed. However, it is associated with significant morbidity and mortality reaching up to 80%. An alternative promising surgical approach was proposed by Neal in 2011, which composed of diverting loop ileostomy (LI) with intraoperative colonic lavage and postoperative, antegrade vancomycin enemas. This is less invasive, takes less operative time, preserves the colon, and may reduce mortality. In our study we collate for analysis further cases of severe clostridium difficile treated with the Neal`s technique, and their outcome.

Methods

Comprehensive searches were conducted in MEDLINE (via Ovid), EMBASE, CINAHL, Cochrane Library, and Scopus. All possible variations for the major terms clostridium difficile and loop ileostomies were included in the search strategy including a wide range of keywords and controlled vocabulary. Articles were selected by two independent reviewers based on the following inclusion criteria:

- (1) adult participant ≥ 18 years;
- (2) number of subjects 3 and above;
- (3) diagnosed with clostridium difficile colitis;
- (4) underwent diverting ileostomy and colonic lavage.

A total of 1005 results were retrieved and 524 results remained for abstract screening.

Results

Five studies were included, total number of patients were 124. 69 were female, and 55 male. The mean age was 64.5 years, and mean hospital stay was 22.6 days. The procedures performed were: laparoscopic LI (72 patients), open LI (24 patients), LI not specified -open versus laparoscopic- (18 patients), laparoscopic LI converted to open (7 patients), diverting LI converted to TAC (3 patients). Six patients had recurrence of clostridium difficile infection postoperatively, 26 underwent reversal of loop ileostomy. Fashandi reported the highest mortality of 40% (Table 1). Controversy about mortality reported in 3 studies who compared LI with TAC, although cause of the death in most cases was not due to clostridium infection rather than the comorbid conditions patients were suffering from.

Conclusion

We found diverting loop ileostomy is a promising technique, less invasive with preservation of the colon. Surprisingly, only 6 patients reported to have recurrence. However, in order to apply such technique on broad patient population, we recommend multicentric, prospective trail to further validate and reproduce Neal`s findings.

no	Author	Year	no. of pt	Age	Hospital Stay	ICU stay	Lap. LI	Open LI	LI (not specified)	LI converted to open	LI converted to TAC	TAC	Reversal of ilesotmy	Recurrence	Reoperation	EBL	Operative time (median)	Mortality
1	Dela'O	2014	4	68.2	22	18.75		4					1	1				1 (25%)
2	Fashandi	2107	23	TAC 63.2, LI 59.7			7	3				13	TAC 3, LI 5	TAC 3, LI 4				TAC 6 (46%) LI 4 (40%) 1 year
3	Ferrada	2018	98	60 (median)	TAC 20, LI 27 (median)	TAC 5, LI 6 (median)			16		5	77			TAC 29, LI 9	TAC 250 ml, LI 30 ml (median)		TAC 33.8% , LI 28.3%
4	Hall	2018	457	TAC 65.4, LI 64.8	TAC 19.6, LI 18.7		30	17				392 open (lap 18)			TAC 43, LI 4		TAC 2.2 hr, IL 1.6 hr	TAC 125 (30.8%), LI 17 (36.2%)
5	Neal	2011	42	TAC 62.1 , LI 65.3			35		7				15	1	3			TAC 21 (50%) LI 8 (19%)

Table 1. Studies included in the review. (TAC: total abdominal colectomy, LI: loop ileostomy, EBL: estimated blood loss) Results reported as the mean for age, hospital and ICU stay