

Mortality and Morbidity — Colostomy Closure

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Summary

A retrospective review of 50 colostomy closure cases has been made: the patients were operated during 1984–85 in Surgical 'B' Unit, Postgraduate Medical Institute, Lady Reading Hospital, Peshawar; 40 were extra-peritoneal and 10 intra-peritoneal; 30 closures were performed in 2 layers and 20 in single layer. There were post-operative complications in 10 cases: one patient died of peritonitis and 9 cases developed complications ranging from infection to faecal fistula. Patients with complications stayed in the hospital for a longer period. The incidence of complications was more or less the same in intra-peritoneal and extra-peritoneal closure except for incisional hernia which developed only in extra-peritoneal closure. Pre-operative barium studies, chemotherapeutic bowel preparation and insertion of a wound drain did not reduce the incidence of complications. The time for closure was 2–3 months after formation of colostomy.

Introduction

Goligher has stated that closure of colostomy has a notorious reputation for subsequent break down and faecal leakage¹. In 1971, Knox reported 23% incidence of faecal fistula and mortality rate of 2.2% in a review of 179 patients in the Exeter Hospitals². He concluded that extra-peritoneal closure of colostomy was the method of choice. One year later, Thomson and Hawley from St. Marks Hospital, London reported a 29% incidence of faecal fistula and no death in 139 patients who underwent closure of colostomy during the period 1961–70³. They recommended intra-peritoneal closure and noted that colostomy closure could be a simple procedure without mortality or morbidity.

In view of these conflicting reports, it was decided to undertake a retrospective review of colostomy closure in Postgraduate Medical Institute, Lady Reading Hospital, Peshawar for the period 1984–85.

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Material and Methods

The medical record of patients in Lady Reading Hospital, Peshawar who were submitted to closure of colostomy during the 1984-85 was obtained. Only patients over the age of 10 years were studied.

The age and sex of the patients, the disease leading to the formation of colostomy and the type of procedure whether emergency or elective were recorded.

The preparation of the patients for colostomy closure and the results of barium studies were noted. Closure was undertaken only if there was no evidence of hold up or extravasation of contrast medium at the site of anastomosis. The technical details of closure of colostomy were recorded and also whether or not a wound drain was put in.

Local post-operative complications such as ileus, wound infection, faecal fistula, prolapse and incisional hernia were noted.

Results

Of the 50 patients, 46 were male and 4 female. The age range was 16-90 years. The reasons for colostomy are given in Table I.

TABLE I
COLOSTOMY FOR UNDERLYING PATHOLOGY

Cause	No. of Patients
Firearm injuries	32
Intestinal obstruction	17
Carcinoma pelvic colon	1

TABLE II
MORBIDITY AFTER CLOSURE

Complication	Extraperitoneal Closure	Intraperitoneal Closure
Faecal fistula	5	1
Wound infection	8	2
Incisional hernia	2	—
Ileus	—	1

49 of the colostomies were performed at emergency operation either to cover an emergency anastomosis after resection and anastomosis or for the relief of acute obstruction. Only one colostomy was made at the time of elective surgery for carcinoma pelvic colon, resected and anastomosed as elective procedure.

The time interval between colostomy formation and closure was 2-3 months; 40 colostomies were closed extra-peritoneally and 10 were closed intra-peritoneally; 30 colostomies were closed in 2 layers: an inner continuous and outer interrupted—with chromic catgut 1, and 20 colostomies were closed in one continuous layer with chromic catgut 1.

One patient died who was 70 years old; colostomy was done for volvulus of pelvic colon which was gangrenous: resection and end to end anastomosis performed with proximal defunctioning colostomy; colostomy was closed 3 months later but the patient developed peritonitis and died on 6th post-operative day.

Six patients developed wound sepsis, followed by faecal fistula; 2 closed spontaneously within two months and 4 patients required further surgery, and one of them underwent two attempts. All faecal fistulae occurred within a week, usually on the 4th day. Two patients developed incisional hernia and one had prolonged ileus following closure.

Patients with uncomplicated closure stayed on an average of 6 days after operation, those with complications stayed longer.

DEVELOPMENT OF COMPLICATIONS

1. Age and sex group :

There was no significant difference between sex and age groups.

2. Underlying pathology :

In 32 patients colostomy was constructed for firearm injuries of abdomen; 6 developed complications, faecal fistula occurred in 4 patients, one closed spontaneously, one required surgery, two required incisional hernia.

3. Method of closure :

In 40 patients extra-peritoneal closure was performed and the total local complication rate was 37%. In 10 patients intra-peritoneal closure was undertaken and the complication rate was 40%.

One death occurred with intra-peritoneal closure and the two incisional herniae occurred with extra-peritoneal closure.

4. *Bowel preparation :*

13 patients had bowel sterilization with Neomycin sulphate and 4 patients had Metronidazole before the operation but there was no significant difference in complications between those receiving and those not receiving chemotherapeutic bowel preparation.

5. *Distal barium studies :*

Distal loop barium studies were performed in 45 patients before closure of the colostomy and 7 developed complications. In the five patients in whom barium studies were not undertaken, 3 developed complications.

6. *Wound drainage :*

A superficial wound drain was inserted in 60% of patients. There was no difference in the local complication rate between those with and those without drain.

Discussion

The present study suggests that extra-peritoneal closure of colostomy is preferable to intra-peritoneal closure and confirms the report of Nottingham Hospital (1971 and 1974) though the report given by Thomson and Hawley from St. Marks Hospital, London shows that intra-peritoneal closure is preferable to extra-peritoneal closure in their series of 105 cases (1961–1970). In the Exeter series, there was a slight preponderance of intra-peritoneal closure, but Knox and his colleagues firmly concluded that extra-peritoneal closure was preferable. All the incisional hernias occurred in the extra-peritoneal group; but in St. Marks series where the vast majority of colostomies were closed by intra-peritoneal technique, there was more incidence of incisional hernia in the intra-peritoneal group. It seems, therefore, that incisional hernia may occur at the site of colostomy closure, irrespective of the technique used.

Death occurred in only one patient who had chronic bronchitis and had developed peritonitis.

The incidence of faecal fistula occurred mostly in older age group, fire-arm injury or when the patient reached the hospital after 24 hours; in 2 cases the leak closed spontaneously and in 4 patients there was more or less complete dihesence.

Neither confirmation by barium study before closure to see that there was no hold up or extravasation of contrast medium at the site of anastomosis, nor chemo-therapeutic bowel preparation affected the incidence of faecal leakage; post-operative complications were not related to the presence or absence of a wound drain. However it should be noted that Thomson and Hawley had come to a similar conclusion but still suggested that a small superficial wound drain should be inserted which produces no harm.

Knox and his colleagues compared the incidence of complications with the length of time the colostomy had been present. They advocated that colostomy should be closed at least 2 months after its formation.

In the present series, over 70% of the colostomies were closed 2 months or more after the construction. Thomson and Hawley were also of the opinion that closure of a colostomy should not be undertaken until 28 days had lapsed. It thus seems that colostomies should not be closed until one to two months after formation.

Conclusion

If colostomy is closed after 2 months, there is not much difference in a single or double layer closure, the technique and material used and whether one does or does not insert a drain, provided closure is performed extra-peritoneally.

References

1. Goligher, J.C., (1975): *Surgery of the Anus, Rectum and Colon*, 3rd edition.
2. Knox, A. J.S., Birkettfdh, Collin, C.D., (1971).
3. Thomson, J.P.S., Hawley, P.R., (1972): *B.M.J.*