

Emergency surgery of fulminant ulcerative colitis and toxic megacolon

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SUMMARY

Subtotal colectomy and ileostomy (SCI) is now urgently used as the life-saving management of the severe, life-threatening, progressions in the course of ulcerative colitis (UC). **PURPOSE.** To evaluate the efficacy of SCI in patients with severe colitis, we reviewed our own experience in 12 patients with this condition. **METHODS.** Patients undergoing SCI included 6 males and 6 females aged 12 to 56 years (mean 35,8 years). The duration of the disease averaged 29 months (range 4 to 92 months). Three had had their disease less than 6 months. Eleven patients had total colitis and only one patient had left-sided colitis. Three patients endured a continuous course and in 9 the course was intermittent. All were anemic with protein concentration less than 5 gm/dl at the time of surgery. Five patients had fulminant colitis with severe hemorrhage and seven patients with pancolitis developed toxic megacolon with unrecognized perforation in one case preoperatively. All patients underwent an emergency SCI with either intrapelvic oversewing the rectum (7 patients) or exteriorizing it as a mucus fistula (5 patients). One patient with toxic megacolon died in the first postoperative day because of uncontrolled septic shock. The remainder 11 patients survived and later underwent rectectomy, anal mucosectomy and ileal pouch anal anastomosis (IPAA). **CONCLUSION.** SCI for patients with fulminant ulcerative colitis and toxic megacolon is a life-saving procedure which gives the chance for ileal pouch anal anastomosis (IPAA) a second time.

Key Words: Ulcerative colitis, fulminant colitis, toxic megacolon, subtotal colectomy.

INTRODUCTION

Surgical management of acute severe ulcerative colitis is indicated when the parameters outlined by Danovitch¹ and Cambe² are present and an aggressive medical therapy has failed to significantly improve the diseases status within the initial five days of therapy³⁻⁵. The decision to proceed urgently with a total rectocolectomy has, in large part, been responsible for the decrease in morbidity and mortality in patients with severe UC^{4,6,7}.

If surgery is delayed too long when medical treatment is obviously failing there will be an increased morbidity and mortality^{9,10}. When the decision to operate has been made, this should be carried out as soon as possible. Two decades ago proctocolectomy with permanent ileostomy was the recommended approach for patients with fulminant disease, toxic megacolon, perforation of the colon or, rarely, massive hemorrhage^{3,4,6}. Since 1980 subtotal colectomy, temporary ileostomy with preservation of the rectum has been the operation of choice because it leaves the only possibility of restoration of the continuity by a subsequent later ileal pouch-anal anastomosis (IPAA)^{4,9,10}. Some patients may have persistence of the disease in the rectal remnant, but the majority regain their physical well-being and steroids can be tapered¹¹⁻¹⁴. There are two ways of handling the rectal stump: a) oversewing it as a conventional intrapelvic, Hartmann's type, pouch and b) exteriorizing of the rectum by oversewing it or creating of a mucus fistula. We transected the colon at the rectosigmoid junction and oversewed the rectum to create a Hartmann's pouch (7 patients) or exteriorized it as a mucus fistula (5 patients). Some authors are of the opinion that with the mucus fistula a blown rectal stump is avoided and the associated intraabdominal sepsis^{12,14}. Also the subsequent pelvic dissection of the Hartmann's pouch is often technically difficult compared with the take down of the exteriorized rectum^{9,12,13}.

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PATIENTS AND METHODS

Twenty five patients with ulcerative colitis underwent a total rectocolectomy with ileal pouch-anal anastomosis at the 1st Surgical Clinic of the Aristotelian University of Thessaloniki (AHEPA Gen Hospital). Thirteen of them underwent an elective two-stage procedure, i.e. a) total rectocolectomy with mucosectomy of the anorectal ring, ileal pouch-anal anastomosis with covering ileostomy, b) closure of the ileostomy. These 13 patients were excluded from this study. The remaining 12 patients (48%) were operated on urgently, because of life-threatening complications, and had a three-stage life-saving procedure, i.e. a) subtotal colectomy and ileostomy (SCI) with either intrapelvic oversewing of the rectum (7 patients) or exteriorizing it as mucus fistula 5 patients, b) rectectomy, mucosectomy of anorectal ring and ileal pouch - and anastomosis, c) closure of the ileostomy.

Table 1 shows general characteristics of these 12 patients. There were 6 males and 6 females with a mean age of 38.8 years (range, 12-56 years). The time elapsed between diagnosis of UC and urgent SCI varied from 4 to 92 months (average 29.5 months). Three patients had had their disease less than 6 months and 4 patients less than 3 years. Eleven patients had total colitis and only one patient left-sided colitis. In 9 patients the course of the disease was intermittent and 3 patient endured a continuous course.

The indications of urgent SCI are given in table 2. Nonresolving severe colitis or fulminant colitis was defined as the association of bloody diarrhea (>6 stools/24 hr), fever (>38,5° C), tachycardia (>120 beats/min) and

Table 1. Patients characteristics

Characteristics	Patients	
	N	%
Sex: Male	6	50
Female	6	50
Extent of disease:		
Left - sided	1	8,33
Total	11	91,67
Time elapsed between diagnosis and operation:		
≤6 months	3	25
6 months - 3 years	5	41,66
>3 years	4	33,34
Course of disease:		
Intermittent	9	75
Continuous	3	25

Table 2. Indications for urgent surgery

Indications	Patients	
	N	%
1. Serere hemorrhage	2	16.7
2. Non resolving severe (fulminant) colitis	3	25.0
3. Toxic megacolon	7	58.3

weight loss (>10% in 10 days from the initial body weight at the time of admission)^{1,2,12}. Toxic megacolon was defined as a dilatation of more than 7 cm of the transverse colon on plain x-ray examination in acute colitis. Although toxicity exists in both fulminant colitis and toxic megacolon the differentiating finding is the colonic diameter¹². Fulminant colitis is the predecessor of toxic megacolon^{1,9,10,12}.

Operative management

All patients underwent SCI through a midline incision with meticulous dissection to prevent an intraoperative colonic perforation. The omentum was sacrificed only when it was adherent to the inflamed colon. The colon was mobilized and excised from the ileocecal to the rectosigmoid junction. A Brooke ileostomy was performed in the right iliac fossa. The remaining rectum was managed either by oversewing it intrapelvicly (5 patients) or by exteriorizing it as a mucus fistula at the bottom of the midline incision (7 patients, table 3).

RESULTS

One patient (8.3% with toxic megacolon and septicemia died in the first postoperative day from septic shock. The postoperative complications of the remaining 11 patients are given in table 4. It is important that one patient with toxic megacolon showed adernal insufficiency in the 12th postoperative day and was successfully managed by steroids for a week again. Three other

Table 3. Surgical procedures performed in 12 patients with fulminant colitis

Procedures	Patients	
	N	%
Group A:	5	41,7
a) Subtotal colectomy, b) ileostomy, c) Hartmann's rectal pouch		
Group B:	7	58,3
a) Subtotal colectomy, b) Ileostomy, c) Rectal mucus fistula		

Table 4. Incidence of complications following surgery

Complications	Patients	
	N	%
Infection:		
Septic shock	1	8.33
Abdominal wound infection	3	25
Wound dehiscence	1	8.33
Adrenal insufficiency	1	8.33
Small bowel obstruction	3	25
Anal stricture ⁺	4	33.33
Ileal pouch fistula ⁺	2	16.66

+: After the IPAA at the second time

patients showed abdominal wall infection, and two patients developed ileal pouch-abdominal wall fistula 3-4 weeks after closure of the ileostomy after the IPAA construction. All patients successfully underwent, rectectomy, anorectal ring mucosectomy and ileal pouch-anal anastomosis a second time. All are in good health with satisfactory functional results of the ileal pouch (table 5) and two young females have had children.

DISCUSSION

Fulminant colitis and toxic megacolon may complicate any form of colitis^{1,11}. They represent acute exacerbations of UC with systemic manifestations of toxicity. Fulminant or toxic colitis is the predecessor of toxic megacolon. The two terms are often interchangeably used, but such use is not correct: toxicity exists in both scenarios, but the differentiating finding is the colonic diameter. Whereas fulminant colitis implies an acutely ill patient with a diseased colon, toxic megacolon signifies that the colonic diameter has progressed to the point of imminent perforation^{9,10,12}.

Medical management of severe US has improved greatly but still fails in over of 80 per cent of patients if

Table 5. Functional outcome of 11 patients with UC after the ileostomy closure at one year

Stools/24h (M±SD)	4.2±1.2
Stools/night (M±SD)	0.79±0.5
No nocturnal stool (patients %)	(39.5)
Normal daytime continence (patients %)	(86%)
Normal nighttime continence(patients %)	(74%)
Ability to delay defecation >30 min (patients %)	(97%)
Normal gas/stool discrimination (patients %)	(88%)

the disease does not significantly improve within one week^{3,16,17}. Grant and Dozois¹⁸ concluded that in the extreme case of fulminant colitis and toxic megacolon medical management should be regarded as preparation for surgery, as 47 per cent of patients that resolved with medical management required a later colectomy for recurrent severe disease. Despite these basic guidelines the experience of many authors^{12,17,18} has been that the gastroenterology community still tends to prolonge medical management.

Surgical management of severe life-threatening UC i.e. fulminant colitis, toxic megacolon and, rarely, massive hemorrhage, has changed since Goligher et al (4) recommend earlier aggressive operative intervention. Surgical trends varied from proresection ileostomies¹⁹, to either subtotal colectomy or total proctocolectomy⁴. Both subtotal colectomy with ileorectostomy and total proctocolectomy are contraindicated in the acutely ill patient with unprepared bowel and proctocolectomy in the urgent setting carries a prohibitively high mortality rate¹². Moreover morbidity and mortality have not decreased after proctocolectomy vs subtotal colectomy and ileostomy^{9,10}. In fact proctocolectomy presents an additional disadvantage by precluding ileal reservoir reconstruction, if the sphincter musculature is removed. Hawley⁹ recently reviewed options in emergency surgery for UC and recommended SCI as the option of choice, thus preserving the reconstructive option for the future. The advantage of this approach is obvious for patients with fulminant colitis and toxic megacolon. Harms et al¹⁷ reported their good experience with primary restorative rectocolectomy with IPAA in 23 patients with "severe or rapidly progressing fulminant disease". They claimed that the procedure minimized the postoperative complications and achieved better functional outcome than the SCI. However they stated that no toxic megacolon was included in their series.

Contrary to the conclusions drawn from studies analyzing the outcome of IPAA carried out several months after colectomy,²⁰⁻²² our findings suggest that SCI does not increase the morbidity and does not modify the functional outcome of IPAA carried out later on at the second stage. This is in agreement with the findings of Pena et al¹⁶, who noticed that IPAA after previous SCI accelerated functional recovery at least in terms of stool frequency. One possible explanation is that perirectal inflammatory lesions are reduced after SCI. Thus, in addition to facilitating subsequent surgery (rectectomy, IPAA) it permits more rapid and extensive dilatation of the ileal reservoir and this is important since its capacity

partly determines the daily number of stools^{22,24}.

That 48 per cent of our patients operated on for UC required urgent surgery is not too dissimilar from published reports^{1,25-27} in which surgery ultimately is necessary in approximately half the patients with severe UC.

The majority of published data have come to the conclusion that SCI with a mucus fistula is the operation of choice. Flatmark et al²⁸ reported excellent results with no mortality in 63 patients treated in this manner, whereas 2 of 12 patients (16,6%) having a total proctocolectomy died. The mortality rate rises sharply when the fulminant state progresses to toxic megacolon and is complicated by perforation. According to Heppel et al²⁷ in 15 patients with free or sealed perforation present at surgery, the mortality rate was 27% compared with the non-perforated group of 50 patients where it was only 4%. The same, approximately, was also noted in other series with a mortality rate of 29,4%²⁹ and 44%³⁰. In our series only one out of 12 patients (8,3%) with unrecognized perforation died. We must emphasize that no one patient died when surgery was performed within a week of the onset of fulminant condition and this is reported in the majority of published data^{1,9,10,12,16,26-29}.

The goal in an urgency for severe UC is not to eradicate the fulminant mucosa but to extricate the patient from a life-threatening situation i.e. fulminant colitis, toxic megacolon and, rarely, massive hemorrhage. Our own preference is a subtotal colectomy with ileostomy and rectal mucus fistula. The early and later results obtained from this urgent procedure by us and reported in other published series are very good and justify its world-wide acceptance.

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