SAJS
General Surgery

Management of sigmoid volvulus in Polokwane-Mankweng Hospital

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Summary

Objective. To evaluate the outcome of treatment of patients with sigmoid volvulus in the Polokwane-Mankweng Hospital and to identify the best management options for these patients.

Methods. A retrospective study was undertaken of 85 patients with sigmoid volvulus treated in Polokwane-Mankweng Hospital during the period July 1997 - May 2004.

Results. In total, 85 patients were evaluated (77 males and 8 females, male/female ratio 9:1). The age range was 7 - 80 years (mean 42 years). Sigmoidoscopic derotation was attempted in 17 patients, and was successful in 10 patients. Laparotomy was done in 84 patients, viz. 75 emergencies and 9 electives. During laparotomy, gangrenous sigmoid colon was found in 30 patients and viable sigmoid in 54 patients. Resection with primary anastomosis was done in 44 patients. Hartmann's procedure was performed in 33 patients. Sigmoidopexy was done in 7 patients. Total hospital mortality was 6% (5 deaths). Mortality in the 84 operated cases was 5% (4 deaths).

Conclusions. There was no mortality in patients undergoing elective resection and primary anastomosis after successful preoperative deflation and in patients with viable sigmoid volvulus who underwent an emergency Hartmann's procedure. There was low mortality in those patients with resection and primary anastomosis on viable sigmoid (3%, 1:39). The highest mortality (1:5) occurred in cases of resection and primary anastomosis of gangrenous sigmoid colon.

There is little debate that gangrenous sigmoid volvulus must be resected. In the majority of centres, resection is followed by Hartmann's procedure.[1-7] Others advocate primary anastomosis in the absence of absolute contraindications such as shock, local purulent infection, faecal contamination, perforation of necrotic bowel, etc.[8] However the final decision depends on the surgeon's experience and attitude. There is also unanimity that in cases of acute sigmoid volvulus with viable bowel, the best option is preoperative rectal deflation and when successful, conversion from emergency to elective laparotomy, with resection and primary anastomosis. This policy has achieved excellent results.[3-5] Other centres promote non-resectional options such as sigmoid plication,[9] mesosigmoplasty,[6,10] sigmoid extraperitonealisation,[1,11,12] fixation of the redundant sigmoid by colostomy on a catheter,[13] fixation by other means and sigmoidopexy or colo-sigmoidopexy. These two last measures are ineffective, with a high recurrence rate.[1] The main objective of this study was to evaluate the outcome of treatment in patients with sigmoid volvulus in Polokwane-Mankweng Hospital and to identify the best management options for such patients.

Materials and methods

A retrospective study was undertaken of patients diagnosed with sigmoid volvulus and treated in Polokwane-Mankweng Hospital the period July 1997 - May 2004. All information was obtained from hospital files. Routine investigations, namely full blood count (FBC), urea and electrolytes, and abdominal and chest radiographs were done in every case.

Results

Of the 117 patients with sigmoid volvulus, only 85 files were available for analysis. There were 77 males and 8 females. Ages ranged from 7 to 80 years, with a mean of 42 years. Follow-up was from 1 week to 9 months. The main complaints were constipation, abdominal pain, distension and vomiting. Duration of symptoms ranged from 1 to 21 days. Sigmoidoscopic deflation was attempted in 17 patients and was successful in 10. Laparotomy was done in 84 patients: 75 emergency procedures, and 9 elective procedures done after successful sigmoidoscopic deflation, during one hospital admission. At laparotomy, gangrenous sigmoid volvulus was found in 30 patients (36%); 54 patients (64%) had viable sigmoid. In 1 case the patient died during preparation for surgery, following successful sigmoidoscopic deflation. Of the 84 operated patients, 44 had resection with primary anastomosis. Of these 44 patients, 5 had gangrenous sigmoid volvulus and 39 had a viable sigmoid. Hartmann's procedure was done in 33 patients. Of these, 25 had a gangrenous sigmoid and 8 had a viable volvulus. Simple surgical derotation and sigmoidopexy was done in 7 patients. Major complications occurred in 23 patients (27%) (Table I). Wound sepsis was the most frequent (8%). In this study 5 patients died, giving an overall hospital mortality rate of 6%. There were no deaths

TABLE I. OPERATIVE PROCEDURES FOR SIGMOID VOLVULUS AND COMPLICATIONS

Group	Type of procedures	No. of patients	Complications
Gangrenous sigmoid colon	**Resection and primary anastomosis**	**5**	**One death due to anastomotic leak, and septicaemia** **One anastomotic leakage and fistula, colostomy done later**
	Hartmann's procedure	**25**	**Two deaths, 1 due to septic shock, the other to aspiration pneumonia** **One ARDS / respiratory distress** **Three wound sepsis** **One colostomy retraction** **One septicaemia** **One stenosis of colostomy**
Viable sigmoid colon	**Resection and primary anastomosis**	**39**	**One death due to cardiorespiratory failure** **Two paralytic ileus** **One respiratory distress** **Two wound infection** **One anastomotic leak and fistula**
	Hartmann's procedure	**8**	**One prolapse of colostomy** **One bowel obstruction** **One wound sepsis and aspiration pneumonia**
	Sigmoidopexy	**7**	**One recurrence, 1 wound sepsis and burst abdomen**

*ARDS = acute respiratory distress syndrome.

TABLE II. MORTALITY AND COMPLICATIONS

Group of patients	Number of patients	Mortality (%)	Complications (%)
Total mortality and morbidity in all 85 patients	**85**	**6**	**27**
Total mortality and morbidity in all 84 operated patients	**84**	**5**	**26**
Patients with viable bowel and Hartmann's procedure	**8**	**0**	**38**
Patients with viable bowel with resection and primary anastomosis	**39**	**3**	**18**
Patients with gangrenous bowel with Hartmann's procedure	**25**	**8**	**36**
Patients with gangrenous bowel with resection and primary anastomosis	**5**	**20**	**40**
Patients with viable bowel, irrespective of procedures	**54**	**2**	**22**
Patients with gangrenous bowel, irrespective of procedures	**30**	**10**	**37**
Patients with resection, primary anastomosis, irrespective of viability of bowel	**44**	**5**	**20**
Patients with Hartmann's procedure, irrespective of viability of bowel	**33**	**6**	**36**
Elective procedures	**9**	**0**	**22**
Emergency procedures	**75**	**6**	**28**

among the 9 patients operated electively after successful rectal deflation. Of the 5 patients who died, 3 had gangrenous sigmoid, 1 had a viable sigmoid and 1 died before surgery after a successful sigmoidoscopic deflation, in poorly understood circumstances. Details are given in Tables I and II.

Discussion

Volvulus of the sigmoid colon is the commonest cause of large bowel obstruction in Africa. The highest incidence is reported from Ethopia where it accounts for 50% of patients with intestinal obstruction.[14] Our patients showed a male/female ratio of 9:1; 67% were below 50 years of age.

The aetiology of sigmoid volvulus may have a genetic component, including congenital redundancy of the sigmoid, narrowed sigmoid mesentery and megacolon, although other factors may also play a role.[1,15] Geographical differences in the patterns of presentation influence treatment. In Western Europe, patients with sigmoid volvulus are mostly old, with many co-morbid pathologies. In Africa, patients are young and in a better general condition, but because of difficulties in accessing health care facilities, they often reach hospital late. In our series, gangrenous volvulus was found in 36% and viable bowel in 64%. Preoperative rectal deflation was seldom performed, when compared with data from the literature.[2,3,5] Reasons cited were that sometimes the sigmoidoscope could not be found, and in a few cases the diagnosis was not confirmed, but in many cases patients presented with signs of necrotic bowel (peritonism/rebound tenderness), in which case sigmoidoscopic derotation would not have been safe.[16,17] We tried preoperative deflation in 17 cases, with success in 10; 9 patients were operated later electively following sigmoidoscopic deflation, during one admission. The mortality in

these patients was 0% which correlates well with data from the literature, confirming the safety of such a policy.[2-5] Of the 54 patients with viable bowel, 39 had resection and primary anastomosis, with a mortality rate of 3% (1:39, 38%) and morbidity of 18% (7:39); 8 cases underwent Hartmann's procedure, with 0% mortality but a higher morbidity (3:8). Operative derotation and simple sigmoidopexy was done in 7 cases. In some centres non-resectional procedures are very popular.[1,6,9-13] In our series no one tried mesosigmoplasty or other non-resectional techniques, probably because the surgeons were not keen to use such techniques. These techniques are not difficult and mortality is also low; [1,10,11] we intend to enrol patients for these procedures in future as we have a good number of patients with sigmoid volvulus in Limpopo. Of the 30 patients with gangrenous sigmoid volvulus, 5 had resection and primary anastomosis, of whom 1 died as a result of an anastomotic leak and related complications. The literature reports good results of primary anastomosis in selected patients with gangrenous sigmoid bowel;[1,8] however we still feel that Hartmann's procedure is safer. We performed Hartmann's procedure in 25 patients with gangrenous bowel, with a mortality rate of 8% (2/25) and morbidity of 36% (9/25). We strongly believe that in patients with gangrenous bowel, resection without immediate restoration of bowel continuity has the lowest possible achievable mortality. None of the other known procedures could achieve as low a mortality rate as Hartmann's procedure in these particular cases. The additional increase in mortality and morbidity related to the closure of colostomy in recently published literature is low, at about 1%.[18] We have not yet recorded any death related to closure of Hartmann's colostomies.

Conclusions

The ratio of males to females was 9:1, with 67% of patients below the age of 50 years. There was a high rate of emergency operations (88%).

Total mortality for all 85 patients was 6% (5% in the 84 operated patients). Overall morbidity was 27%. The zero mortality rate was in the group of patients with viable bowel who underwent resection and primary anastomosis after rectal deflation and in the group of patients who had Hartmann's procedure with viable bowel. The mortality rate for patients with viable sigmoid volvulus who had resection and primary anastomosis was 3%. The highest mortality (20%) was among patients with gangrenous volvulus who underwent resection and primary anastomosis is 20%. Mortality was strongly related to viability of the bowel. Patients with viable bowel had a mortality rate of 2% and 10% when bowel was gangrenous.

Hartmann's procedure should be performed for cases of gangrenous sigmoid volvulus because in our experience primary anastomosis for those patients gave a higher mortality rate (1/5) compared with Hartmann's procedure (2/25). Hartmann's procedure is also indicated in other cases of viable sigmoid volvulus, where general and local conditions are not favourable or the surgeon is relatively inexperienced.

We recommend: (*i*) attempt at sigmoidoscopic deflation in patients without clinical signs of ischaemic sigmoid volvulus, followed by elective laparotomy if the procedure is successful; (*ii*) Hartmann's procedure for gangrenous sigmoid volvulus; and (*iii*) resection with primary anastomosis for viable sigmoid volvulus, provided that the patient's general condition is stable.

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