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Original Research Article

A clinical study on the management of sigmoid volvulus

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ABSTRACT

Background: Sigmoid volvulus is a surgical emergency and significant cause of large bowel obstruction with high mortality and morbidity. The disease is more prevalent in India, especially rural population. It constitutes 15% of total bowel obstructions. This study analyzes various management options in our institute which caters mainly to patients from the surrounding rural areas.
Methods: The present work is study of 36 cases, carried out as regards to the etiological factors which predispose to the sigmoid volvulus, the clinical features, modes of treatment and the outcome. Particular stress has been laid on the various treatments. The duration study was 2 years between November 2014 and October 2016 at Government Chengalpattu medical college, Tamil Nadu, India.
Results: The mean age of sigmoid volvulus was 49 years (range 19-75) and male to female ratio was 2:1. Comparatively less frequent in less than 20 years and above 70 years. Distention of abdomen (100%), followed by constipation in 88% were common mode of presentation. Sigmoidopexy done in 22% patients with nil mortality and, for primary resection and anastomosis, it was 17%. Common post-operative complication found to be wound infections.
Conclusions: Primary resection anastamosis is found to be definitive safe procedure if the colon is viable. Hartman's procedure is suitable only if the bowel is gangrenous. Absence of co morbid conditions a notable feature. Pre operative X-RAY helpful in diagnosis. Mortality found to be 17.5% in our study.

Keywords: Investigations, Management options, Mortality, Sigmoid volvulus

INTRODUCTION

Sigmoid volvulus, first described by Von Rokitansky in 1836, has increased in frequency during the past several decades. It is defined as abnormal twisting of sigmoid colon around its mesentery resulting in complete or partial obstruction. The disease is more prevalent in the volvulus belt which includes Middle East, Africa, India, Turkey, and South America.[1] Sigmoid volvulus is acquired in majority of the cases, typically in elderly patients with constipation, abdominal pain, and distention of sudden onset. This classical clinical picture along with plain radiographs is usually sufficient to diagnose the condition. Diagnostic difficulties, however, are not uncommon. Non-specific nature of symptoms and clinical presentation make the diagnosis of sigmoid volvulus challenging at times.[2] Although surgical exploration itself is an accepted mode of diagnosing acute abdomen, accurate preoperative diagnosis will reduce mortality and morbidity.[3] Post-operative mortality ranges from 6% to 60%. Factors associated with poor prognosis include advanced age, delay in diagnosis, and presence of intestinal infarction, peritonitis and shock at presentation.[4]

This study involves the clinical course and manifestations of sigmoid volvulus and various methods of reducing the mortality in patients, mainly from surrounding rural areas, admitted in Government Chengalpattu medical

college during the period of November 2014 to October 2016. The objectives was to study the clinical course and manifestations of sigmoid volvulus, to study the various methods of treatment of sigmoid volvulus, to study the outcome of the disease by employing various methods of treatment.

METHODS

Inclusion criteria

All the patients admitted in surgical ER at Government Chengalpattu medical college with clinical diagnosis of sigmoid volvulus and underwent surgical procedures, during the study period.

Exclusion criteria

All large bowel obstruction representing as emergency other than sigmoid volvulus is excluded. A list of patients who benefitted from sigmoidoscopy reduction was compiled.

A proforma was made for the study of these cases. The cases are subjected to a detailed clinical examination, and essential investigations namely sigmoidoscopic examination and X-ray of erect abdomen. And if possible CT scan of abdomen and pelvis was used in diagnosis.

A detailed history was obtained and examination was done. The history of presenting illness, past illness, related to bowel disorders, diet habits and constipation was taken and the detailed findings at physical examination were recorded. The x- rays were taken in all cases. Plain x-ray of abdomen in erect posture was of great diagnostic aid. This confirmed the diagnosis of sigmoid volvulus in most instances pre-operatively. The highly distended Omega loop could be demonstrated in 99% of cases. Operative findings, treatment, complications, mortality and results of various types of operations and follow ups were recorded.

Various surgical procedures performed were analyzed. After the volvulus of sigmoid was diagnosed, in a few patients when clinically no evidence of gangrene was present, the volvulus could be reduced with a flatus tube passed in knee elbow position or in right and left lateral positions. When this method failed, it was decided to operate upon the patients. Arnold JG reported a success rate of 67% in such instances. Such cases were not included for the purpose of our study.

Pre-operatively the patients were administered intravenous solutions, mostly 5% dextrose in normal saline. While feasible and desirable on clinical grounds, other electrolyte solutions were administered. In all patients general anesthesia was administered. Antibiotic prophylaxis injection salbactum+ceftriaxone l .5 gm was given at the time of induction of anesthesia to bring down wound infection rate post-operatively.

Post operatively all the patients received Dextrose Saline, 5% Dextrose and blood, if required Inj. Ceftriazone + Salbactum l.Sgm was given intravenously every 12 hours. If bowel was viable, Inj. amikacin 500 mg was administered intravenously in the appropriate divided doses, every 12 hours. In addition, I.V. metronidozole solution was administered, every 8 hours for seven to ten days in case of gangrenous bowel. Patients were kept nil orally till the return of bowel sounds and during this period nasogastric suction was carried out. Average hospital stay was 14 days. Patients were followed up for colostomy closure after their discharge.

RESULTS

A total of 36 cases of sigmoid volvulus patients, who underwent surgical treatment were included in this study. Age, symptoms, sex, signs, investigations and operative findings were analyzed.

In this series of 36 cases, all the patients who presented with distention of abdomen with acute symptoms, and diagnosed to have sigmoid volvulus were included.

Incidence/age

Table 1: Age group percentage.

Age	Total number	Percentage
1-10	-	
11-20	-	
21-30	5	13.8
31-40	5	13.8
41-50	13	36.1
51-60	7	19.4
61-70	3	8.3
71-80	3	8.3

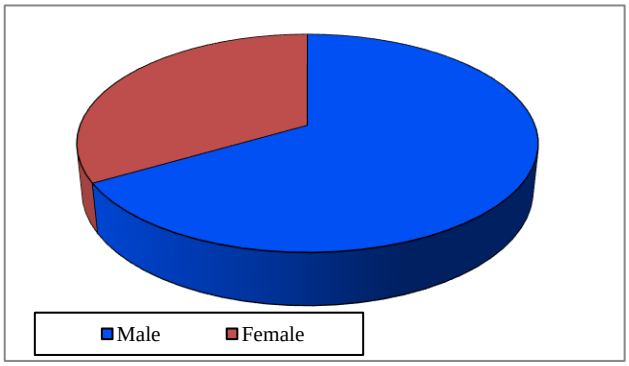

Figure 1: Sex ratio.

Mode of presentation

In the present study distention of the abdomen (100%) was the commonest symptom followed by constipation (88%) and pain abdomen (83%) (Table 2).

Table 2: Common mode of presentation.

Symptoms	No. of patients	Percent
Pain abdomen	30	83
Distension of abdomen	36	100
constipation	32	88
vomiting	15	42
Retention of urine	3	8
Fever	1	3

Clinical presentation on admission

In the present study abdomen distention (100%), dehydration (83%) was the commonest physical findings followed by abdominal tenderness (75 %) and absence of bowel sounds (70%). All patients had distension of abdomen whereas fever was less frequent, found in cases of peritonitis only.

Types of surgery performed and outcome

Table 3: Types of surgeries performed and out come

Procedure	No. of patients	%	Cured	Expired
Sigmoidopexy	8	22	8 (100%)	-
Primary sigmoid resection and end to end anastomosis	12	34	10 (83%)	2(17%)
Hartmann's Procedures	16	45	12 (75%)	4(25%)

Choice of procedure depended on the clinical condition of the patient, preoperative findings, viability of bowel, and surgeon's experience. Where the bowel was viable (56 %), the procedure performed was either sigmoidopexy or resection and anastomosis. While all patients survived in the sigmoidopexy group, there were two deaths in resection and anastomosis group. Munir A et al in his study concluded that meso sigmoidoplasty is a definitive procedure. Though treatment of volvulus can be non operative sigmoidoscopy decompression (Bruusgarrd), the disadvantage includes recurrence, perforation and risk of non viable bowel. Sutcliffe is in favour of resection and primary anastamosis in all cases.

In our study, 12 cases where the colon was viable, primary resection and anastomosis was done (33%). Proximal colostomy also done in 3 cases. The anastomosis technique followed is single layer full thickness intermittent sutures with non-absorbable suture material. In this group there was no anastomotic leak. Of the resection and primary anastomosis, without proximal colostomy done in (9) cases, 2 cases (22%) had anastomotic leak. Hartmann's procedure was done in 16 cases (45%) where the bowel was gangrenous (Table 3). The distal stump was closed and proximal bowel brought as end colostomy. Colostomy closure was done on later stage. Mortality in this group was 25%.

Table 4: Percentage of wound infection.

Procedure	Wound infection	Percent
Sigmoidopexy (8)	1	12.5%
RPA (12)	3	25.0%
Hartmann's (16)	11	68.0%

We consider resection and primary anastomosis (RPA) is preferable if the bowel is viable. Hartmann's procedure is the procedure of choice if the bowel is gangrenous. A.K. Khanna in JIMSA 2012 states that amongst the patients with non-viable bowel, resection does not have recurrence but high mortality. Mortality rate is 17% in this procedure and 83% survived. For patients with gangrenous bowel the mortality recorded was 25%. Wound infection is the major complication (68%), anastomotic leak developed in 2% of the patients who underwent RPA without colostomy. Anastomotic leak in RPA patients with proximal colostomy. Mean duration of hospital stay for sigmoidopexy was 6 days, where as RPA and Hartmann's procedure it was more than 2 weeks.

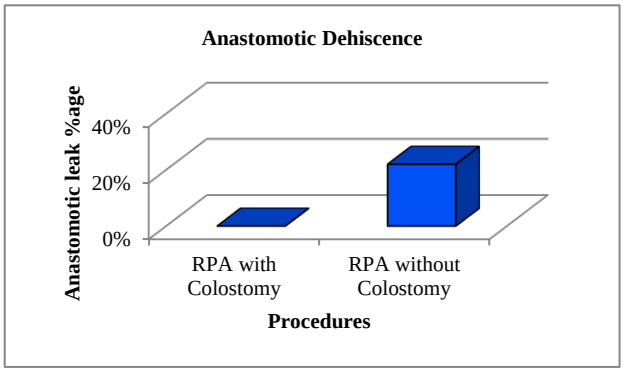

Figure 2: Percentage of anastomotic dehiscence.

In 3 patents who underwent resection and anastomosis with proximal colostomy there was no anastomotic leak, whereas patients who underwent the same procedure, without colostomy 22% developed anastomotic leak.

DISCUSSION

Sigmoid volvulus has wide geographic variations, more common in the low socio economic group. High altitude, fiber rich diet all attributed to it.[5] Ideal management of sigmoid volvulus still remains debated.[6] Different surgical options for sigmoid volvulus have been compared with similar studies. Classical presentations include abdominal distention, constipation and abdominal pain. Almost all the cases could be diagnosed with clinical examination, radiological, endoscopic, and operative findings in our set up.[7] With limited resources, most of the time with x-ray abdomen alone (with typical coffee bean appearance), we were able to make preoperative diagnosis (88%). The treatment of sigmoid

volvulus has been varied. These variation depended on many factors, such as general health of the patient prior to the onset of the disease, condition at the time of operation, availability of ancillary support such as blood, investigative facilities, good anesthetist and individual preference and experience of the surgeon.[8] The fact that many operative procedures have been described in the treatment of sigmoid volvulus, would probably mean that no single operation is suitable in all patients or there are differences in the outlook of pattern of diseases.[9]

There is a high incidence of recurrence of sigmoid volvulus after the commonly performed procedures such as rectal tube deflation, sigmoidoscopic deflation, laparatomy and simple derotation, operative derotation and fixation of the "omega loop" to the lateral or anterior abdominal wall or the transverse colon.[10] Sigmoidopexy, simple fixation of the colon to the intra abdominal structures can be an effective procedure in a viable redundant colon. The mortality and morbidity is almost nil in this procedure.[11] The main problem associated with this procedure is recurrence. In uncomplicated sigmoid volvulus non operative derotation may be tried with flexible sigmoidoscope especially in elderly debilitated patients.[12] The problem with sigmoidoscopy derotation or sigmoidopexy is that, since our patients are mostly from surrounding villages, earning daily wages, once their symptoms relived by temporary measures only 10% of the patients come for definitive procedure unless recurrence happened. To prevent recurrence following sigmoidopexy, Bhatnagar an Indian author described a procedure of extraperitonealization of whole sigmoid colon in 1970 in non gangrenous sigmoid volvulus. The whole bowel is brought in to a closed space without the need to open the bowel.[13] Resection and primary anastomosis as an emergency procedure the situation far from ideal and in our undernourished patients has its own price in the increased morbidity and mortality. In primary resection and anastomosis there are different studies showing variable cure rates and mortality rates. This is the gold standard when the colon is viable.[14] RPA in elective situation has acceptable mortality, but in an unprepared bowel this procedure as an emergency carries a high mortality. The main problem is anastoamotic leak. This can be prevented doing proximal colostomy. Wound infection rates are high, especially in unprepared bowel, with this type of procedure (Table 4). This is the procedure of choice in young patients with viable colon. Dudley et al reported that primary resection and anastomosis can be done after on the table ante grade colonic lavage.

Hartmann's procedure: this is a life saving procedure in emergency conditions when the bowel is gangrenous15, the distal stump closed proximal end brought out as colostomy. This is done in elderly patients with gangrenous bowel. Bowel, when it turns gangrenous, increases the mortality rate by many folds. Increase in absorption of toxic material and profuse mucous diarrhea after derotation (Wangeneston) leads to hypokalemia.

CONCLUSION

Preoperative diagnosis, preoperative findings, type of surgery, pre operative time intervals and age all affect prognosis. In our study sigmiodoscopy is done in selective patients because of its high recurrence rate, in patients who underwent resection and primary anastomosis with proximal colostomy there was no anastomotic leak. This can be safely done in gangrenous colon where chances of leak are high. But the need for proximal colostomy in cases of viable colon is still questionable. In all the cases anastomosis was done in an unprepared bowel. Hartmann's procedure, done in gangrenous colon, has significant mortality and morbidity rates. Only elderly patients with gangrenous bowel were managed by this procedure. Among the various procedures done in our study for sigmoid, this procedure had high mortality and high wound infection rates. The overall mortality was 17.5% in this series.

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