ORIGINAL RESEARCH

Evaluation of Laparoscopic Management of Colonic Diverticular Disease and Its Complications: An Institutional Based Study

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ABSTRACT

Introduction: Colonic diverticular disease refers to an entity where a small expelled out pouching of the large intestinal wall takes place. Colon diverticular disease is very common in some parts of western world with a prevalence ranging 33 % in patients over 60 years of age. The prevalence of colonic diverticulosis is gradually increasing day by day in western and Asian countries. Diverticular disease can also be referred as clinically significant and symptomatic diverticulosis mostly complicated by diverticulitis, diverticular bleeding, segmental colitis associated with diverticula or symptomatic uncomplicated diverticular disease; these are the well documented complications of colonic diverticulosis. **Materials and Methodology:** The present study was conducted for evaluating the laparoscopic management of colonic diverticular disease and its complications.During the elapsed study period, there were about 431 patients who had undergone laparoscopic surgery for the colorectal diseases. Of which, there were 42 (9.7 %) patients who had undergone laparoscopic treatment for diverticulitis.For diverticular disease, none of the patients required open surgery. An analysis was conducted on the disease's demographic characteristics, clinical manifestation, modified Hinchey stage, and therapeutic approach. In cases with diverticular illness, a pericolic abscess, two or more bouts of confirmed diverticulitis, perforation characteristics, and/or peritonitis were indications for surgery. If the preoperative CT scan showed that the ureter was near the inflammatory mass, preventive ureteric stenting was performed before surgery. **Results:** There were about 431 patients who had undergone laparoscopic surgery for the colorectal diseases. Of which, there were 42 (9.7 %) patients who had undergone laparoscopic treatment for diverticulitis. Comorbidities were seen in 30.95 percent of the patients. Sigmoid was the most common site of involvement found to be present in 80.95 percent of the patients.Primary resection anastomosis was done in 4.76 percent of the patients. Mean operative time was 269.3 minutes. Morbidity was 9.52 percent. Mean hospital stay was 10.23 days.**Conclusion:** Diverticulosis is complicated by diverticulitis, diverticular bleeding and segmental colitis associated with diverticula all of which report frequently.

Keywords: Diverticular Disease, Laparoscopy, Hartman Technique, Colon.

INTRODUCTION

Colonic diverticular disease refers to an entity where a small expelled out pouching of the large intestinal wall takes place. Colon diverticular disease is very common in some parts ofwestern world with a prevalence ranging 33 % in patients over 60 years of age.[1] Although autopsy series study has reported the incidence of diverticulosis in 50 % of population, about 10–25 % of them were symptomatic.[2]From them, about 25–30 % of patients will be seemed to develop certain complications like perforation, abscess, formation of fistula or obstruction.[3,4]

The prevalence of colonic diverticulosis is gradually increasing day by day in western and Asian countries.[5-7] Diverticular disease can also bereferred as clinically significant and symptomatic diverticulosis mostly complicated by diverticulitis, diverticular bleeding, segmental colitis associated with diverticula or symptomatic uncomplicated diverticular disease; these are the well documented complications of colonic diverticulosis. Diverticular disease is responsible for a greater number of gastrointestinal admissions and frequent clinical visits& stays.[8]Additionally, it has a high recurrence rate. Therefore, it usually possesses some significant

economic burden in terms of health-care costs, hospitalization and resource utilization in western as well as Asian countries. Furthermore, the incidence of diverticular disease appears to be increasing with aging.9 However, the prevalence of diverticulosis, diverticulitis and diverticular bleeding in western countries is entirely different from that seen in Asian countries. The distribution and clinical characteristics of colonic diverticulosis, diverticulitis and diverticular bleeding and the treatment of these using laparoscopy has been studied in this article.

MATERIALS AND METHODOLOGY

The present study was conducted for evaluating the laparoscopic management of colonic diverticular disease and its complications.During the elapsed study period, there were about 431 patients who had undergone laparoscopic surgery for the colorectal diseases. Of which, there were 42 (9.7 %) patients who had undergone laparoscopic treatment for diverticulitis.For diverticular disease, none of the patients required open surgery. An analysis was conducted on the disease's demographic characteristics, clinical manifestation, modified Hinchey stage, and therapeutic approach. In cases with diverticular illness, a pericolic abscess, two or more bouts of confirmed diverticulitis, perforation characteristics, and/or peritonitis were indications for surgery. If the preoperative CT scan showed that the ureter was near the inflammatory mass, preventive ureteric stenting was performed before surgery. In summary, endoscopic staplers were used to perform laparoscopic vision during the mobilization of the afflicted segment, vascular control, and distal bowel division, often at the upper rectum level. In order to bring down a healthy, normally-appearing colon for anastomosis, the proximal colon was sufficiently mobilized. A vertical infraumbilical incision was then made in order to retrieve and resect the material. The length of the procedure, blood loss, time needed to remove the nasogastric tube, flatus, feces, days spent eating liquid and semisolid meals, and length of hospital stay were all recorded as immediate postoperative outcome variables. The result of the surgery was examined. SPSS software was used to analyzeeach and every outcome.

RESULTS

There were about 431 patients who had undergone laparoscopic surgery for the colorectal diseases. Of which, there were 42 (9.7 %) patients who had undergone laparoscopic treatment for diverticulitis. Comorbidities were seen in 30.95 percent of the patients. Sigmoid was the most common site of involvement found to be present in 80.95 percent of the patients.Primary resection anastomosis was done in 4.76 percent of the patients. Mean operative time was 269.3 minutes. Morbidity was 9.52 percent. Mean hospital stay was 10.23 days.

Table 1: Laparoscopic treatment for diverticulitis

Laparoscopic surgery	Number	Percentage
For diverticulitis	42	9.7
Others	389	90.3
Total	431	100

Table 2: Clinical presentation

Variable		Number	Percentage
Mean age (years)		59.2	2.8
Gender	**Males**	28	66.67
	Females	14	33.33
Co-morbidities		13	30.95
Duration of surgery after drainage (months)		1.8	
Site of involvement	**Sigmoid**	34	80.95
	Diffuse	7	16.67
	Caecal	1	2.38

Table 3: Treatment details and short-term outcome

Variable	Number	Percentage
Emergency	6	14.28
Primary resection anastomosis	2	4.76
Hartmann's procedure	1	2.38
Mean operative time (minutes)	269.3	
Mean blood loss (ml)	186.1	
Conversion	None	
ICU stay (days)	1.7	
Nasogastric tube removal (days)	1.8	
Mean hospital stay (days)	10.23	
Morbidity	4	9.52

DISCUSSION

Diverticular disease is considered to be having low prevalence rate in Indian subcontinent when compared with the data obtained from western countries (9.9 versus 30 %).[1,3,10] There is a lag in data from India about surgical management of colonic diverticulitis and these reports obtained were predominantly discuss the management of such patients in the emergency setting.[11,12]Kakodkaret al[12] had reported that one-third of patients who were identified during emergency laparotomy and diagnosis was delayed most often. Laparoscopic technique for diverticulitis and its related complications is quite difficult due to the inflammatory process associated with the involved colon and adjacent vital structures which makes the surgery even more complicated due to ill-defined tissue planes.[9,10]Lack of tactile sensation has been declared as the most challenging condition in this clinical setting and hand-assisted approach[13] has been described to overcome this limitation of laparoscopy. Likewise, lateral approach and retrograde approach have also been described for a safe technique for colectomy in patients with diverticulitis.[14,15] In the current series, no such technical modifications were adopted and all procedures could be completed laparoscopically.

The guidelines to delay the surgery in those patients with inflammation or tiny abscess after an antibiotic course perform pre-operative ureteric stenting whenever indicated based on preoperative imaging and this could be the reason for a satisfactory outcome of these patients in this series. In this, there was no incidence of inadvertent injuries and we could complete these surgeries without any conversion. So, the approach towards the management of patients affected with diverticulitis with perforation and peritonitis had been performed using Hartmann's procedure. However, with laparoscopic approach, there is a approach towards primary resection and anastomosis with or without protecting stoma with good short and long-term results.[16–18] There are many researches and studies involving laparoscopic lavage to stabilise the general condition of the patient followed by successful elective surgery in recent studies.[19] Therefore Hartmann's resections has to be done when the risk involved in primary resection anastomosis is considered high due to various adverse local conditions or the patient's condition is unstable for a procedure like resection and anastomosis. In the current study, in spite of being a small number, same strategy has been adopted with successful outcomes. We had completed one Hartmann's procedure in a patient with large colonic perforation, faecal peritonitis and sepsis. In other patients, primary resection and anastomosis could be done with advertent use of diversion stoma. Fistula to another hollow viscus like urinary bladder or vagina in diverticulitis also presents a technical difficulty for management of this condition. In the current series, there were no conversion to open surgery compared to about one-third conversion in similar series, probably attributed to the selection of treatment alternative depending upon the local inflammatory condition and patient's general condition.[20,] The short-term outcome of the current series reported with a morbidity of 10.23% and a hospital stay of 9.52 days which has been reported similarly in the most other series as well.[10,16,18] To conclude, laparoscopic approach for diverticular disease and its complication is feasible, reliable and safe approach. Meticulous selection of the procedures and the advertent use of diverting stoma is still required when these surgeries are required in an emergency setting. Laparoscopic approach is technically approachable in diverticular disease with internal fistulae as well.

CONCLUSION

Diverticulosis is complicated by diverticulitis, diverticular bleeding and segmental colitis associated with diverticula all of which report frequently. The reasons for the mechanism of differences in the prevalence of diverticulosis, diverticulitis and diverticular bleeding between western and asian countries are expected to be clarified and prevention strategies for diverticular disease are mandatory to be established.

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