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LAPAROSCOPIC SIGMOIDOPEXY BY EXTRAPERITONEALISATION OF SIGMOID COLON FOR SIGMOID VOLVULUS: FURTHER EXPERIENCE

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Abstract

Sigmoid colectomy, open or laparoscopic, though associated with a high incidence of morbidity and mortality has been advocated as the definitive treatment for sigmoid volvulus. We report a series of 11 patients with recurrent non-gangrenous sigmoid colon volvulus who were successfully treated by our technique of Laparoscopic Sigmoidopexy by Extraperitonealisation of Sigmoid Colon. This technique has been reported by us previously in 2003 where in the procedure had been described for our initial two cases. In all the eleven patients, initial detorsion was achieved by rectal tube insertion followed, within a week by elective laparoscopic sigmoidopexy by extra peritonealisation of sigmoid colon. There have been no complications, mortality or recurrences of the volvulus within the 10 year follow up period. In conclusion, laparoscopic sigmoidopexy by extraperitonealization of the sigmoid colon is a preferable mode of surgical treatment of non-gangrenous sigmoid volvulus.

Key words: Sigmoid, Volvulus, Laparoscopy, Extraperitonealization, Acute Intestinal Obstruction

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Introduction:

Sigmoid colon volvulus causing acute intestinal obstruction has the potential for high morbidity and mortality[2,3]. Numerous surgical and non-surgical treatment alternatives have been described to treat this condition. Most of the options, by both open and laparoscopic approach involve resection of the sigmoid colon[1-6]. Since sigmoid resection has a high potential for morbidity and mortality, a non resective alternative is preferable[7-9]. We have published our initial two cases treated laparoscopically by extra peritonealisation of the sigmoid colon in 2003[1]. We have successfully treated eleven consecutive cases over the last 10 years by our technique. The low number of cases in our series is because the incidence of sigmoid volvulus is low in the western part of India.

Materials & Method:

From 2002 upto December 2012, we have treated twelve patients with sigmoid volvulus. Eight of these patients were treated at Seth V C Gandhi & M A Vora Municipal General (Rajawadi) Hospital, Mumbai. One patient was treated at Dhanwantari Hospital and Research Centre, Mumbai and the remaining three were treated at Medico Surgical Hospital, Mumbai. A preoperative consent for Anaesthesia and the surgical procedure was taken from all the patients. Diagnosis of sigmoid volvulus was confirmed by clinical examination and a plain erect skiagram of the abdomen. Detorsion of the volvulus was achieved in all the cases by

insertion of a rectal tube. There were 11 males and 1 female. The age of the patients ranged from 12 years to 82 years (Median: 42 years). 8 patients were operated 48 hrs after detorsion while 3 were operated after 2 weeks. None of the patients harboured any other co morbidities. Clearance from the Ethical committee of the Institution was obtained for this study.

Operative technique: The details of the laparoscopic procedure have been described in our earlier paper. Briefly, the patient is placed in a supine position with a 30^o lateral tilt to the table to raise the left flank. The surgery is performed with the surgeon and assistant standing on the right side of the patient. Pnuemoperitoneum is created using a veress needle with the upper insufflation pressure limit set at 13mm Hg. A sub umbilical 10 mm port is used for the 30^o telescope. Two 5 mm ports are placed in the midline, one midway between the umbilicus and the pubic symphysis and the second midway between the umbilicus and the xiphisternum. The sigmoid is traced proximally after identifying the recto-sigmoid junction. A longitudinal incision is made in the left paracolic gutter along the line of Toldt. The peritoneum is incised on the lateral side of the base of the sigmoid mesocolon starting at the pelvic brim. The incision is extended upwards and laterally to the descending colon, upto the level of the splenic flexure. The lateral leaf of the peritoneum is lifted off the parietal wall. The edge of this peritoneal leaf is sutured to the medial surface of the sigmoid colon with interrupted sutures. The first stitch is taken at the midpoint of the lateral leaf of the peritoneum and the right surface of the sigmoid colon at the apex near the mesenteric border. Multiple interrupted sutures are taken above and below the first stitch. The upper part of the peritoneal leaf is sutured to the proximal limb of the sigmoid loop upto its junction with the descending colon. The lower half of the peritoneal edge is sutured to the distal limb of the sigmoid loop upto the recto sigmoid junction. All the sutures on the sigmoid colon were seromuscular on its medial surface near the mesenteric border. A 3-0 polyglactin suture material on a round body needle is used with intracorporeal knotting. After all the sutures are taken, the sigmoid colon effectively becomes plastered to the parietal wall akin to an extra peritonealised colostomy.

Results:

The end point observations were success of Laparoscopic technique, duration of surgery, return to oral intake, time of discharge, wound infection and recurrence. One of our patients had chronic volvulus and a massively dilated sigmoid colon. This had to be treated by open sigmoid Colectomy as even after opening up the patient as it was difficult to accommodate the dilated sigmoid colon within the peritoneal cavity. Laparoscopic Sigmoidopexy by Extraperitonealization was successful in all the other eleven cases. All the patients presented with the pathognomonic findings of sigmoid volvulus including redundant sigmoid colon and narrow sigmoid mesenteric pedicle. The operative time varied from 50 minutes to 90 minutes with a median of 55 minutes. All the patients had normal peristalsis within 24 hrs and were put on orals. 8 patients were discharged after 48 hours and 3 patients after 4 days of the operative procedure. We have had no peri-operative morbidity or mortality. Barium enema studies were performed 4 weeks after the surgery for the initial 4 cases which showed a straightened sigmoid colon [1]. The follow up has been from 6mts to 8 yrs. There have been no recurrences over this period. The 82 year lady died 6 yrs after the surgery due to unrelated cause.

Discussion:

The management of sigmoid volvulus involves relief of obstruction and the prevention of recurrent attacks. Bruusgard in 1947 first described sigmoidoscopy as the initial treatment of sigmoid volvulus and it is now the procedure of choice in patients with viable bowel[13]. Sudden decompression by rigid sigmoidoscopy is successful in 70-90% of cases. A rectal tube should subsequently be placed in situ. This non-operative decompression is however, only a temporary measure, which permits further medical assessment, bowel preparation, and definitive surgery under improved circumstances during which no oral or physical restrictions are necessary[14]. Sigmoid Colectomy, open or Laparoscopy assisted has been advocated as the definitive elective treatment for non gangrenous

sigmoid volvulus[2,3]. Even though the traditional method for preventing recurrence of sigmoid volvulus is primary resection of the diseased colon, a review of literature reported morbidity from 11% to 30% and mortality from 9 % to 20 % following Colectomy [2,3,7,9.] The recurrence rate varies from 3% to 36 % [2, 3,10]. The recurrence rate of Colocoloplasty is 38.5%[9]. Hospital stay with this procedure varies from 7 to 12 days. In the series published by Chung CC et al and Liang JT et al on laparoscopic assisted Colectomy, barring minimal invasion, the severity of Colectomy remains the same in open as well as laparoscopy[11, 12]. The procedure involves an incision for the retrieval of the specimen, while our technique requires only three 5 mm operative ports for the entire procedure[12]. The hospital stay quoted is within 7 days of the post operative period. Tube sigmoidostomy is advocated only for poor risk patients. These patients may harbour fistulas for upto 17 days[5]. Khanna AK et al, have described Extraperitonealization by open method in a large series of 88 patients[8, 9]. Extraperitonealization of the sigmoid colon by open approach, is a reasonable non-resection alternative for non-gangrenous sigmoid volvulus and has minimal morbidity and mortality, since resection with its associated complications are entirely eliminated7, 8, 9. They report no recurrences of the volvulus over 1 to 6 years follow up in their series. Open surgery, however is associated with a longer hospital and a delayed return to normal activity due to an abdominal incision. We have modified this open technique, by doing the same procedure laparoscopically and have achieved the same results of low morbidity, no recurrences and no mortality. Laparoscopy is minimally invasive and patients may be discharged within three days after surgery. Miller et al have reported a single case where they have described a three point fixation of the colon to the parietal wall. [6] This technique harbours the potential danger of internal herniation of the bowel loops. Extraperitonealization of colon is similar to Extraperitonealization of terminal colostomy. The probability of internal herniation of bowel loops iseliminated as the peritoneal flap is pulled over the sigmoid loop. The raw area created due to the dissection of the parietal peritoneum flap prompts adhesions between the sigmoid loop and the parietal wall, thus preventing recurrence. There were no complications and postoperative hospital stay was only three days. If the colon is viable after detorsion, laparoscopic sigmoidopexy by Extraperitonealization can be performed as an elective procedure after proper bowel preparation.

Conclusion:

The overall incidence of Sigmoid Volvulus is low in our country. This study includes the management of eleven cases over ten years by this technique. The follow up period of eight years has yielded no recurrences. The procedure of Laparoscopic Sigmoidopexy by Extraperitonealization is technically simple and eliminates all the morbidities and mortality associated with resection. Thus, this technique is now our method of choice for the management of all patients with non gangrenous sigmoid Volvulus who are fit to undergo Laparoscopy.

Table 1: Surgical outcome of patients who underwent laparoscopic sigmoidopexy by Extraperitonealisation

Pt. Sr. No.	Sex	Age in Yrs	Timing of surgery after Detorsion	Operative time in Minutes	Return to orals after Surgey	Hospital Stay
1	M	20	48 hours	50	24 hours	2days
2	M	72	48 hours	45	24 hours	2days
3	M	68	2 weeks	90	24 hours	2days
4	M	42	48 hours	50	24 hours	2days
5	M	36	48 hours	55	24 hours	2days
6	M	12	2 weeks	75	24 hours	4days
7	M	42	48 hours	60	24 hours	2days
8	F	82	2 weeks	70	24 hours	4 days
9	M	38	48 hours	55	24 hours	2days
10	M	76	48 hours	40	24 hours	4 days
11	M	42	48 hours	55	24 hours	2days

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