

A STUDY OF SIGMOID VOLVULUS PRESENTING TO A TERTIARY CARE HOSPITAL AT PESHAWAR

Usman Ali¹, Ashab Noor², Muhammad Alam³

¹Department of Anatomy, Bacha Khan Medical College, Mardan, Pakistan

²Department of Urology, Postgraduate Medical Institute, Lady Reading Hospital, Peshawar, Pakistan

³Department of Surgery, Hayatabad Medical Complex, Peshawar, Pakistan

ABSTRACT

Objective: The study's goal was to identify the different surgical treatments for sigmoid volvulus and its postoperative complications in individuals who had this condition.

Methodology: 38 individuals with sigmoid volvulus who presented to the accident and emergency department were included in the research. All of the sufferers were taken in and looked into. The erect abdomen on the x-ray provided the basis for the diagnosis. Additionally, an x-ray, an ECG, urea, sugar, and S. electrolysis were performed. A nasogastric tube was inserted for gastric decompression after catheterizing each patient. Due to the lack of facilities for colonoscopic sigmoidoscopic decompression and the failure of rectal tube decompressions, all patients were rehydrated and made ready for surgery.

Results: There were 26 (68.42%) men and 12 (31.58%) women among the sigmoid volvulus patients. The majority of the 18 cases (47.4%) were between the ages of 61 and 70. Eight patients (21.05%) suffered sigmoid colon gangrene; 15 patients (39.47%) had resection and colostomy; and 15 patients (39.47%) had resection and primary anastomosis. Five (13.15%) patients developed wound infections and one (2.6%) suffered wound dehiscence as surgical sequelae. Because to sepsis and cardiopulmonary problems, two (5.26%) individuals passed away.

Conclusion: Urgent laparotomies should be performed as quickly as feasible on patients who report with an acute abdomen. The gold standard treatment for stable people with sigmoid volvulus is colonoscopy. The preferred method is sigmoidectomy and primary anastomosis since it not only prevents a second hospitalization and surgery but also the adverse effects and maintenance of a stoma, which is a significant contributor to morbidity. **Keywords:** Sigmoid volvulus, Surgical treatments, Complications

INTRODUCTION

One of the most common causes of blockage in the large intestine is sigmoid volvulus. It is the sigmoid colon's axial rotation or twisting with respect to its mesentery. When finished, it results in a tight loop of blockage with ischemia as a consequence of vascular occlusion. A life-threatening disorder called sigmoid volvulus is brought on by the rotation of the sigmoid colon around the axis of the mesentery.³ Sigmoid volvulus is widespread across parts of Russia, Iran, India, and Africa.⁴

The third most frequent reason for a major bowel

blockage in the western world is sigmoid volvulus.⁵ Rotation nearly usually happens counterclockwise.¹ If a volvulus rotates more than 180 degrees, the intestinal lumen and mesenteric arteries become obstructed.^{6,7} Increased colon length, colonic distention, a small base of the mesentery, and persistent constipation are the causes of volvulus. Fecal impaction, which causes the colon to twist to its maximum extent, is the trigger factor triggering volvulus. The sigmoid volvulus presents clinically as colicky stomach discomfort and distension that is eased by passing flatus and loose stools. The most frequent symptoms in the acute stage are stomach discomfort, constipation, and distension. Digital rectal examination reveals blood in the rectum in gangrene sigmoid volvulus.^{8,9} Clinical and radiological findings are used to make the diagnosis. Bird beak deformity will be seen upon radiological discovery at the site of torsion.¹⁰ Derotation by enema, endoscopic deflation, and minimally invasive procedures are the mainstays

Correspondence:

Dr. Usman Ali

Asstt. Professor and Head Department of Anatomy, Bacha Khan Medical College, Mardan, KPK.

Cell: 03339135453

Email: usalikhan60@yahoo.com

of conservative therapy for sigmoid volvulus. colopexy small.^{10,11} Correcting any fluid and electrolyte imbalances in all patients with sigmoid volvulus should be the initial step, followed by the administration of broad-spectrum antibiotics in gangrenous sigmoid volvulus. In the past, sigmoid volvulus treatment of choice was colostomy. However, such operations were linked to higher rates of morbidity and death as well as frequent hospitalization.¹¹ Resection and primary repair of both the gangrenous and viable sigmoid colons may be done as a one step procedure to solve these issues.^{12,13,14} In terms of patient economy and morbidity, as well as the psychological and social complications of colostomy, one-stage surgery is preferable to two-stage surgery.^{13,14}

The study’s goal was to identify the different surgical treatments for sigmoid volvulus and its postoperative complications in individuals who had this condition.

MATERIAL AND METHODS

The hospital ethical committee gave its approval before the study’s data collection on patients with sigmoid volvulus began. From September 2009 to July 2010, this research was carried out at the surgical A unit of the Government Lady Reading Hospital in Peshawar. The research included all sigmoid volvulus patients who visited the Accident and Emergency Department. After obtaining the patients’ or their relatives’ informed agreement, all patients were hospitalized and examined; they were then told of the surgical procedure’s risks and advantages. The erect abdomen on the x-ray provided the basis for the diagnosis. Additionally, an x-ray, an ECG, urea, sugar, and S. electrolysis were performed. A nasogastric tube was inserted for gastric decompression after catheterizing each patient. Due to the lack of facilities for colonoscopic sigmoidoscopy and the failure of rectal tube decompressions, all patients were rehydrated and made ready for surgery. The descriptive analysis was performed on all the examined variables, including demographic information and post-operative problems such leakage, intraabdominal abscess, ileus, fistula, and wound infection. Age was determined using the mean + standard deviation, and the male to female ratio was derived for sex. Tables of frequencies, graphs, and charts were used to express and show the data. With the aid of the computer application SPSS version 12, all the data was analyzed.

RESULTS

38 instances of sigmoid volvulus in total were admitted throughout the research period, with a male to female ratio of 2.16:1. Of them, 26 (68.42%) were men and 12 (31.58%) were girls. With a mean age of 63.78+7.32 years, the majority of patients—18—were in the 61–70 age range (47.4%), followed by 11 (28.9%) in the 51–60 age range, 8 (21.1%) in the 71–80 age range, and one (2.6%) in the 41–50 age range. The minimum and maximum ages were 50 and 80 years, respectively (Table No. 1).

Hartmann’s operation was carried out on eight (21.05%) patients who had sigmoid colon gangrene. 15 patients (or 39.47%) underwent resection and colostomy surgery, whereas 15 patients (or 39.47%) had resection and primary anastomosis surgery. The group receiving resection and anastomosis did not get any on-table lavage. The anastomosis procedure included two layers that were inverted.

Five (13.15%) patients developed wound infections and one (2.6%) suffered wound dehiscence as surgical sequelae. Sepsis and cardiopulmonary problems caused the deaths of two (5.26%) patients (Table No. 2).

DISCUSSION

In India and Africa, sigmoid volvulus accounts for about half of all occurrences of intestinal blockage.¹⁵ The ancient Greeks were well aware of the illness. Hippocrates untwisted the intestines using an anal installation and a suppository that was 12 inches in length.¹⁶ The patient has been experiencing symptoms of dehydration, nausea, vomiting, and abdominal distention. Tympanitic and sometimes painful abdominal pain. We find no contents in the rectum.

Although diagnostic plain abdominal x-rays are available, MRI and flexible endoscopy provide more definitive results.⁷ Radiologic diagnostic signals such as the omega or horseshoe sign, the bird’s beak sign, the overlap of the liver, and an empty left iliac fossa are discussed.¹⁷ Ano-endoscopic derotation followed by an elective surgical treatment is the ideal scenario from the surgeon’s perspective.¹⁸ Patients without peritoneal inflammatory indicators should first undergo sigmoidoscopy.

Table No. 1: Various patient characteristics (n=38)

Demographic data	No. of cases	Percentage
Age:		

41 - 50 years	01	02.60%
51 - 60 years	11	28.90%
61 - 70 years	18	47.40%
71 - 80 years	08	21.10%
Gender distribution:		
Male	26	68.42 %
Female	12	31.58%

Table No. 2 Techniques and postoperative complications (n=38)

Procedures and postoperative complications	No. of cases	Percentage
Procedures:		
Resection and primary anastomosis Resection and Colostomy	14	40%
Hartmann's procedure	15	38%
Postoperative complications:	09	20%
Wound infection	06	14%
Wound dehiscence	02	02%
Mortality rate:	01	06 %

Seventy percent to ninety percent of such instances benefit with decompression. Ischemia may be ruled out because to the safety and direct mucosal vision afforded by flexible sigmoidoscopy. The rectal tube is then inserted to allow for more decompression (step 19). Decompressing the sigmoid colon with barium enema has also been reported. ⁷

Recurrence rates are high, although the risks associated with non-operative decrease of volvulus are reduced. Due to its high recurrence rate (87%), endoscopy cannot be considered a definite treatment option. ⁷ There was no fatality rate at all when surgery was performed as a semi-elective technique. ¹⁶

After the first decompression, the patient is rehydrated and no longer poisonous, allowing for final surgery to be conducted without further difficulties.

Resection of the sigmoid colon, with or without anastomosis, is the definitive treatment.²⁰ In cases of gangrene and complex volvulus, a less invasive

method is not advised due to a low success rate. Both laparoscopic derotation of the colon and open derotation and fixation of the colon have a high risk of death.²¹

Recently, nine patients who had laparoscopic rectosigmoidectomy after colonoscopy decompression were reported.²² The shorter base makes it possible to do a stapled primary anastomosis on the lengthy colonic mesentery, which is readily manipulated and removed by laparoscopy.²³ Laparoscopy also has the added benefits of minimizing postoperative complications such as blood loss, discomfort, and ileus.²⁴

On-table lavage has been studied extensively as a potential single-step technique.²⁵ The benefits of this method include eliminating the need for a second surgery on sick or elderly patients and shortening the time they spend in the hospital. The process takes more time and requires a lot of irrigating fluid, which are both drawbacks. Although emergency resection and primary anastomosis are still debated, the one-stage technique is gaining popularity. Primary anastomosis on unprepared bowel for the treatment of malignant and nonmalignant colonic blockage has shown encouraging outcomes in recent trials.¹⁶

Recurrence rates are little affected by Hartmann's operation and resection with primary anastomosis. Sigmoidectomy and, more recently, percutaneous endoscopic colostomy, both number 26 on the list of methods used to treat sigmoid volvulus.²⁷

Endoscopic decompression is the gold standard technique for a clinically stable patient, with a 70%-90% success rate and a recurrence rate of 18%-19%.²⁸ Endoscopic failure or the appearance of peritonitis symptoms warrants immediate laparotomy. The mortality and recurrence rates for meso-sigmoidoplasty are between 10 to 70%.

Volvulus has a death rate of 8% and a morbidity rate of 13-26%, making sigmoidectomy and primary anastomosis the preferred treatment option.²⁸ Our data show that resection and primary anastomosis have a high success rate. For the first 48 hours after surgery, all patients who had primary anastomosis had a rectal tube placed.

Primary anastomosis patients were chosen based on colonic diversity and vascularity. In comparison to a research, our overall death rate was 5.26% and our morbidity rate was 15.75%.²⁸ Resection followed by

primary anastomosis resulted in zero cases of anastomotic leak in our series.

Despite this, we did not see any pregnant women who had sigmoid volvulus. In pregnant women, sigmoid volvulus accounts for 25% to 44% of cases of intestinal blockage.²⁹ One of the best ways to permanently treat sigmoid volvulus is by a sigmoidectomy followed by primary anastomosis.³⁰

CONCLUSIONS

A laparotomy should be performed urgently on patients who appear with an acute abdomen. In times of crisis, procedures should be streamlined to minimize delay. For stable individuals with sigmoid volvulus, colonoscopy is the gold standard technique, and afterwards final surgery is required to prevent recurrence.

The primary anastomosis and sigmoidectomy technique is preferred because it eliminates the need for a second hospital stay and surgery, as well as the complications and aftercare associated with having a stoma, a leading source of morbidity.

REFERENCES

1. Winslet MC. Intestinal obstruction. In: William NS, Blustrode CJK, O'Connell PR, editors. *Bailey and Love's short practice of surgery*. 25th ed. London: Hodder Arnold, 2016:1188-1203.
2. Mahmoud N, Rombeau J, Ross HM, Fry RD. Colonic volvulus. In: Townsend CM, Beauchamp RD, Evers BM, Mattox KL, eds. *Sabiston's textbook of surgery: the biological basis of modern surgical practice*. 18th ed. Philadelphia: WB Saunders, 2018: 1602-80.
3. Akinkuotu A, Samuel JC, Msiska N, Mvula C, Charles AG. The role of the anatomy of the sigmoid colon in developing sigmoid volvulus: a case-control study. *Clin Anat*. 2017;24:634-7.
4. Samuel JC, Msiska N, Muyco AP, Cairns BA, Charles AG. An observational study addressing the anatomic basis of mesosigmoidopexy as a rational treatment of non-gangrenous sigmoid volvulus. *Trop Doct*. 2016;42:44-5.
5. Coban S, Yilmaz M, Terzi A, Yildiz F, Ozgor D, Ara C, et al. Resection and primary anastomosis with or without modified blow-hole colostomy for sigmoid volvulus. *World J Gastroenterol*. 2008;14:5590-4.
6. Ward S, Khan D, Edwards T, Daniels I. Sigmoid volvulus: A new twist to an old problem. *Internet J Surg*. 2011;27:2. [Online] 2011 [Cited on 2013 April 52]. Available at: <http://archive.ispub.com/journal/the-internet-journal-of-surgery/volume-27-number-2/sigmoid-volvulus-a-new-twist-to-an-old-problem.html>
7. Weingrow D, McCague A, Shah R, Lalezarzadeh F. Delayed presentation of sigmoid volvulus in a young woman. *West J Emerg Med*. 2012;13:100-2.
8. Lau KC, Miller BJ, Schache DJ, Cohen JR. A study of large bowel volvulus in urban Australia. *Can J Surg*. 2006;49:203-7.
9. Tiah, L, Goh, SH. Sigmoid volvulus: diagnostic twists and turns. *Eur J Emerg Med*. 2006;13:84-7.
10. Khan AN, Macdonald S, Weinberg EP, Coombs BD, Krasny RM, Lin EC. Sigmoid volvulus. [Online] 2008 [Cited on 2013 April 12]. Available from: [URL://:http://www.emedicine.com/sigmoid_volvulus.htm](http://www.emedicine.com/sigmoid_volvulus.htm).
11. Turan M, Sen M, Karadayi K, Koyuncu A, Topeu O, Yildiris C, et al. Our sigmoid colon volvulus experience and benefits of colonoscope in detortion process. *Rev Esp Enferm Dig*. 2004;96:32-5.
12. Raveenthiran, V. Restorative resection of unprepared left-colon in gangrenous vs. Viable sigmoid volvulus. *Int J Colorectal Dis*. 2004;19:258-63.
13. Sule AZ, Misauno M, Opaluwa AS, Ojo E, Obekpa PO. One stage procedure in the management of acute sigmoid volvulus without colonic lavage. *Surgeon*. 2007;5:268-70.
14. Zarin M, Ahmad I, Wahid D. Management of volvulus of sigmoid colon by resection and single layer primary anastomosis. *J Surg Pak*. 2003;8:2-4.
15. Welch GH, Anderson JR. Acute volvulus of the sigmoid colon. *World J Surg*. 1987;11:258-62.
16. Larkin JO, Thekiso TB, Waldron R, Barry K, Eustace PW. Recurrent sigmoid volvulus - early resection may obviate later emergency surgery and reduce morbidity and mortality. *Ann R Coll Surg Engl*. 2009;91:205-9.
17. Hirao K, Kikawada M, Hanyu H, Iwamoto T. Sigmoid volvulus showing "a whirl sign" on CT. *Intern Med*. 2006;45:331-2.
18. Ciocchi R, Farinella E, La Mura F, Morelli U, Trastulli S, Milani D, et al. The sigmoid volvulus: surgical timing and mortality for different clinical types. *World J Emerg Surg*. 2010;5:1.
19. Das R, Hagger RW. Endoscopic fixation of rectal decompression tube for sigmoid volvulus. *Ann R Coll Surg Engl*. 2008;90:425-6.
20. Kuzu MA, Aşlar AK, Soran A, Polat A, Topcu O, Hengirmen S. Emergent resection for acute sigmoid volvulus: results of 106 consecutive cases. *Dis Colon Rectum*. 2002;45:1085-90.

21. Lal SK, Morgenstern R, Vinjirayer EP, Matin A. Sigmoid volvulus an update. *Gastrointest Endosc Clin N Am.* 2006;16:175-87.
22. Cartwright-Terry T, Phillips S, Greenslade GL, Dixon AR. Laparoscopy in the management of closed loop sigmoid volvulus. *Colorectal Dis.* 2008;10:370-2.
23. Sadot E, Greenstein AJ, Zisman SR. Laparoscopic approach for metachronous cecal and sigmoid volvulus. *JSLs.* 2010;14:561-5.
24. Schwenk W, Haase O, Neudecker J, Müller JM. Short term benefits for laparoscopic colorectal resection. *Cochrane Database Syst Rev.* 2005;(3):CD003145.
25. Sule A, Obepka PO, Iya D, Ogbonna B, Momoh J. Intraoperative colonic irrigation in the management of left sided large bowel emergencies in Jos University Teaching Hospital, Nigeria. *East Afr Med J.* 2000;77:613-7.
26. Akcan A, Akyildiz H, Artis T, Yilmaz N, Sozuer E. Feasibility of single-stage resection and primary anastomosis in patients with acute noncomplicated sigmoid volvulus. *Am J Surg.* 2007;193:421-6.
27. Chiang LL, Lai HS, Ni YH, Hsu WM. Management of sigmoid volvulus based on Ladd's procedure: a case report. *Pediatr Neonatol.* 2009;50:129-31.
28. Katsikogiannis N, Machairiotis N, Zarogoulidis P, Sarika E, Stylianaki A, Zisoglou M, et al. Management of sigmoid volvulus avoiding sigmoid resection. *Case Rep Gastroenterol.* 2012;6:293-9.
29. Ribeiro Nascimento EF, Chechter M, Fonte FP, Puls N, Valenciano JS, Fernandes Filho CL, et al. Volvulus of the sigmoid colon during pregnancy: A case report. *Case Rep Obstet Gynecol.* 2012;2012:641093.
30. Suleyman O, Kessaf AA, Ayhan KM. Sigmoid volvulus: long-term surgical outcomes and review of the literature. *S Afr J Surg.* 2012;50:9-15.

Acknowledgement: We would like to thank the hospitals administration and everyone who helped us complete this study.

Disclaimer: Nil

Conflict of Interest: Nil.

Funding Disclosure: Nil

Authors Contribution

Concept & Design of Study: Usman Ali1

Drafting: Motasim Billah2; Ashab Noor2

Data Analysis: Muhammad Alam3

Critical Review: Usman Ali1

Final Approval of version: Usman Ali1



Open Access: This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/>. © The Author(s) 2020