

Outcome of Sigmoid Colectomy in patients with recurrent Sigmoid Volvulus A single center experience from a Rural Hospital

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ABSTRACT

Objective: To assess the outcomes of definitive surgical management (sigmoid colectomy) in recurrent sigmoid volvulus.

Study Design: Retrospective analytic study.

Place and Duration: Department of Surgery at Balfour Hospital, Orkney, Scotland from 1st September 2014 to 1st September 2021.

Methodology: Data of patients admitted with recurrent volvulus for three or more times and selected for surgery by a multiple disciplinary team retrieved. The median follow up of 32 (5-60) months was analyzed. The demographic features of the patient, symptoms, and complications after surgery, number of admissions before and after surgery and patient quality of life before and after surgery were analyzed.

Results: A total of 33 patients were analyzed with an age ranges from 35 to 76 years with a median age of 55.5 years, M:F ratio of 12:2 and with duration of symptomatic volvulus 12 to 36 (median 24) months. Of the patients in the study, 24 patients had three previous admissions and 9 had more than three admissions with sigmoid volvulus that was managed conservatively. Complications experienced included post-operative ileus in 33.3%, wound infection 6%, and readmission with volvulus was 3.03% however 57.5% reported no complications.

Conclusion: Our study concluded an excellent intermediate term outcome with very low clinical recurrence in patients who were offered definitive management following multiple admissions.

Keywords: Sigmoid volvulus, Recurrent, Co-morbidities, Colectomy, Complications, Outcome

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INTRODUCTION

Literature has reported that around 15% of colonic obstruction presentations is attributed to volvulus^{1,2}. In management of sigmoid volvulus, three surgical approaches were widely used. Among them, the emergency resection carried a mortality of up

to 50%^{3,4}. Elective resection became common after few attempts of colonic decompression. This approach remains the preferable option as it offers definitive management. Patients who commonly present with recurrent volvulus have complex care needs and normally carry multiple co-morbidities which make them a higher anaesthetic risk⁵.

Chronic constipation in western society and a high fiber diet in developing countries lead to an over loaded sigmoid colon.⁶ The weight of this loaded sigmoid colon makes it susceptible to torsion along the axis of the elongated mesentery. As a result of repeated sub-acute attacks of torsion, the base of the mesentery and the two limbs of the sigmoid colon loop lead to the formation of adhesive tissue. This leads the sigmoid loop to become chronically fixed into a paddle like sigmoid volvulus. The presence of a long mesentery with a narrow base of fixation of the retroperitoneum and elongated, redundant bowel predispose to the formation of volvulus. Sigmoid volvulus may occur because of sigmoid elongation, most commonly as a result of chronic constipation and the progressive dilatation and lengthening of the sigmoid colon and its mesentery.

Institutionalized patients with neuro-psychiatric disorders often develop sigmoid volvulus. A high incidence also seen in patients with Parkinson's disease, multiple sclerosis and spinal injuries and pseudobulbar palsy this is due to. Psychiatric drugs interfere with colonic motility and are etiologically implicated in the high incidence seen in psychiatric institutes^{6,7}. Patients in nursing

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homes also commonly develop sigmoid volvulus. This association may be a manifestation of the prolonged decumbency and chronic constipation that patients in chronic care facilities experience. Not surprisingly, the excessive use of laxatives, catheters and enemas is highly associated with the development of volvulus. In this cohort of patients repeated admissions caused disruption to their daily routine, admission into a unfamiliar environment quite often resulted in mild confusion and due to a change in environment and delivery of care.

In previous years surgeons would shy away from operating on such patients due to the risk however in this study we wish to revisit this due to the multiple admissions such patients go through. The admissions are disruptive to their daily routine, have a significant impact on the health service and also patients find it quite distressing. The number of acute surgical admissions with sigmoid volvulus reduced which also reduced the stress and financial strain on the National Health Service. So, keeping in view the above reasons, we have designed this study with an objective to assess the outcomes of definitive surgical management (sigmoid colectomy) in recurrent sigmoid volvulus.

METHODOLOGY

This retrospective analytic study was performed at Surgical Department, Balfour Hospital, Orkney, Scotland from 1st September 2014 to 1st September 2021. The data of patients retrieved from hospital data base by using key words, sigmoid volvulus, recurrent, surgery after Caldecott approval of Hospital Ethical Committee. All diagnosed patients with recurrent sigmoid volvulus by imaging, having three or more than three-time recurrence, assessed by multidisciplinary team (comprising of surgeon, anesthetist, geriatrician, social services, carers, occupational therapist), and offered surgical procedure were included in the study. The multidisciplinary team has selected each patient by ensuring that they were suitable with rehabilitation potential and appropriate support post operatively would be available especially if they needed a stoma post operatively in their home environment and psychological support to prepare them before and after surgery. The patients not fulfilling inclusion criteria, not having adequate support to aid with stoma support or with significant cognitive impairment were excluded from the study. Post-operatively, all these patients should have been followed up for at least one year at regular intervals in clinic and by telephonic. All patients should have an initial face to face appointment where they were clinically examined for post-operative complications and history of early reoccurrence. From data the post-operative details of all patients with post-operative complications, recurrence of volvulus, hospital admissions, bowel habits, their quality-of-life following surgery and return to previous state of fitness were retrieved and analyzed.

Data Analysis: The data was analyzed through SPSS version 25. Descriptive statistics in frequency and percentages were calculated for all variables. A p-value of <0.05 was considered as statistically significant.

RESULTS

Data of 33 patients who fulfil the inclusion criteria was retrieved from hospital record and analyzed. Majority of patient 90.90% (n=30) developed no complications after surgery. Only 6.06% (n=2) developed wound infection post-operatively which was treated successfully with oral antibiotics. One patient (3.03%) had recurrence of volvulus with further hospital admissions. After 24 months 32 patients had no further admissions with sigmoid volvulus. The paralytic ileus was the most common (n=11, 33%) complication observed in our patients and among them only one patient needed TPN for a total of 5 days. The length of stay of patients was 8 days median (5-11 days average). Except one patient (3.03%), all other patients did not have recurrent admissions into hospital after surgery.

Table – I: Frequency of outcome or complications in the patients operated for recurrent volvulus (N=33)

Complications	n, %
Need for stoma post operatively	1 (3.03%)
Recurrence of volvulus	1 (3.03%)
Wound infection	2 (6.06%)
Paralytic Ileus	11 (33%)
Recurrent admissions post-surgery with volvulus	1 (3.03%)
Surgical outcome	
Regular bowel movement post-surgery	32 (96.97%)
Resolution of symptoms (abdominal pain, vomiting and abdominal distension)	32 (96.96%)
Carer Satisfaction	32 (96.97%)
Patient Satisfaction	32 (96.97%)

In the outcome after surgery, 32 (96.97%) patients have reported an overall improvement in the quality of life with return to activities of daily living within 8 weeks of surgery. All these patients (n=32, 96.97%) also shows, resolution of their symptoms, and satisfaction. These patients (n=32, 96.97%) also reported reduced stress and anxiety amongst themselves and their carers' (Table-I).

DISCUSSION

Sigmoid volvulus is a clinical problem which presents as an emergency putting pressure on acute surgical units, the suggestive interval between endoscopic decompression and definitive surgical intervention is 48-72 hours⁵⁻⁷. This is adequate time for resuscitation, investigations and intervention to further reduce surgical risk. In our study all the cases were done as elective with careful and thorough preparation because even when volvulus is adequately treated mortality is in the region of 12-15%, according to various studies.

In our study, there was a male dominance in admissions with recurrent volvulus which was 96.97% which is consistent with literature⁸. It is widely accepted that patients that do present with recurrent admissions have multiple co-morbidities that can pose a significant risk to post-operative morbidity and also mortality⁹. In some instances, it is considered that the safest operation in patients with recurrent volvulus and multiple co-morbidities are treated with bowel resection and stoma

formation¹⁰. However, such patients should be selected with care with multidisciplinary approach. This is because although the operation may be the safest it may cause more complications in the care of the patient. Considerations that need to be taken into account out with the surgical procedure are things such as the ability of the patient to change their own stoma bag, this can be impaired due to loss of finger dexterity due to osteoarthritis or rheumatoid arthritis and also previous injury, visual impairment due to long term conditions such as diabetes, cataracts to name a few. Inappropriate assessment can lead to adverse patient outcomes for quality of life hence the importance of thorough assessments¹¹. All patients should be therefore consented for stoma formation and counselled pre operatively. Length of hospital stay was comparable to other studies. Our mean stay was one day higher than the average quoted by some^{8,12}. However, this can be attributed to living in a remote and rural community where an additional day is required to book transportation and often due to patients living on outer isles the availability of transportation is restricted. So, although most patients were medically ready for discharge on 6th post-operative day but few patients required an additional day.

Post-operative wound infections were significantly lower than those quoted by others in literature with our average being 6% and others 12%¹². This is likely seems to be a good surgical technique, the use of prophylactic antibiotics and also bowel preparation used in patients which is also well described in literature to reduce the incidents of post-operative infection¹³. Volvulus can occur anywhere on the length of the colon although it is more common in the sigmoid colon. In patients with a significant redundant bowel, post operatively, there may be further episodes of volvulus this may be due to inadequate sigmoid resection however also can be due to volvulus in the caecum or even in the transverse colon¹⁴.

The incidence of paralytic ileus in this subset of patients is well described and is expected. Patients with recurrent volvulus are prone to dehydration, electrolyte imbalance which then contributes to ileus. The additional factor is the handling of the bowel intra-operatively¹⁵. To mitigate this most patients were admitted a day prior to surgery for pre-operative optimization with fluid resuscitation and correction of electrolyte imbalance. Recurrent admissions into hospital were reduced having a significant impact on the cost of stay and also quality of life of the patient. Admissions with volvulus make up 5% of acute admissions¹⁶. With conservative management the average length of stay is 4 days. The cost of an acute bed and disruption to patients negatively impacts on patient experience and also hospital capacity. The recurrent admission impacts on the delivery of care of patients with less available surgical beds the requirement for cancellation of elective procedures increases which then negatively impacts on the community as a whole. The reoccurrence rate for volvulus increases with following each admission we therefore recommend that surgery be considered for all patients irrespective of their co-morbidities.

CONCLUSION

Our study concluded an excellent intermediate term outcome with very low clinical recurrence in patients who were offered definitive management following multiple admissions.

Recommendation: Looking at our results we do recommend offering sigmoid colectomy to patients with recurrent sigmoid volvulus who had three or more admissions for endoscopic decompression taking into account their fitness for surgery. Early surgical management reduces the readmission rate for patients which in turn alleviate pressure on the NHS thus being a more cost-effective management. This is still not a first line management as it cannot be predicted who will have multiple reoccurrences however it seems from our cases that once they had more than three reoccurrences the recurrent rate frequency exponentially increased.

AUTHOR'S CONTRIBUTION

Gandiya T: Manuscript writing, Literature review, Data analysis

Hina S: Literature review, Manuscript writing

Rafi A U: Literature review, Data analysis

Alubaidi K: Manuscript supervisor, Data analysis

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