Surgical Treatment of Cecal Volvulus

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Abstract

Purpose: Right sided intestinal volvulus is considerably rare and requires high clinical suspicion in diagnosis and prompt surgical intervention. Several surgical procedures have been employed for the treatment of this condition, and there is no wide agreement on the most appropriate technique. The aim of this study is describe our experience with volvulus of the cecum and the outcome of different management strategies.

Methods: A cohort retrospective study was conducted, including all patients diagnosed with cecal volvulus between January 2012 and January 2016.

Results: Nine patients were diagnosed and treated for cecal volvulus. 3 patients (33.3%) underwent a failed attempt for endoscopic decompression. 8 patients (88.8%) were operated urgently and one patient with spontaneous resolution at initial presentation was operated subsequently. Five patients (55.5%) underwent right colonic resection and 3 patients (33.3%) underwent cecopexy. One patient underwent a tube cecostomy. Post-operative complications occurred in 5 patients (55.5%) and 3 patients died (33.3%) in the post-operative period, all considered high risk patients prior to surgery.

Conclusion: Cecal volvulus is a clinical emergency requiring immediate intervention. Endoscopic intervention in cecal volvulus should not be attempted. Selection of the surgical procedure should rely on the clinical presentation of the patient and surgical judgment.

Keywords: Cecal volvulus; Surgical treatment; Computerized tomography

Introduction

Cecal volvulus is the rotation or torsion of a flexible cecum and ascending colon, frequently progressing to bowel obstruction, ischemia, necrosis, and perforation unless promptly treated [1]. It is an uncommon entity, with a relatively low incidence, causing approximately 1% of all colonic obstructions, but is associated with significant morbidity and mortality [2]. Volvulus of the right colon is considered less common than volvulus of the left colon, but several reports found similar occurrence rates, with correlation to certain age groups [3-5]. Colonic volvulus should be suspected with a clinical picture of abdominal pain, bloating and constipation and plain abdominal radiography suggesting the diagnosis. Computerized tomography of the abdomen and pelvis is highly accurate in the diagnosis of both sigmoid’ transverse colon and cecal volvulus [6]. Despite similarities in epidemiology, clinical presentation and diagnostic measures, the surgical treatment of colonic volvulus differs greatly between right and left sided volvulus, not only in timing of surgical intervention but also in possible surgical procedures.

This series retrospectively reviews cases of cecal volvulus in a large tertiary medical center in recent years, and focuses on the possible surgical treatment options.

Patients and Methods

Patients with cecal volvulus were retrospectively identified from a prospective database initiated in January 2012. Over 4 years, nine patients with cecal volvulus were found and their charts were reviewed for demographics, clinical presentation, imaging reports, surgical treatment, length of stay and post-operative follow-up.

The study has been approved by the local IRB committee.

Results

Nine patients with cecal volvulus were identified over a period of 4 years, between January
2012 and December 2015, including 3 males and 6 females. Age varied widely with a mean of 54.2 (range 18-93) years. Average Body mass index was 20.4 (range 17.1-24.3) with 4 patients (44.4%) with an underweight (18.5 and below) body mass index. 7 patients out of 9 (77.7%) had history of prior open abdominal surgery, with repeated cesarean section and exploratory laparotomies being the most common surgical procedures. Prior medical history varied with 5 patients (55.5%) presenting with cecal volvulus without any chronic or significant medical history, and 4 patients (44.5%) presenting with severe co-morbidities including neurological conditions such as Alzheimer’s disease, dementia and cerebral palsy. The differences between the patients was seen also in the pre-operative ASA score that averaged at 2.77 (range 1-4) with 4 patients having score of ASA 4.

All patients presented with complaints of abdominal bloating, constipation and discomfort. In 8 out of 9 patients (88.8%) cecal volvulus was suspected based on clinical presentation and plain abdominal radiography, and all patients underwent computerized tomography to confirm the diagnosis (Figures 1-3).

Three patients (33.3%) underwent an attempt of endoscopic colonic decompression. None of these attempts succeeded and all three patients underwent surgery. All three patients underwent colonic resection with an end ileostomy due to signs of significant bowel ischemia and two out of these three patients died from post-operative complications.

All patients underwent surgery due to cecal volvulus. 8 out of 9 patients (88.9%) underwent an emergent open surgery and one patient underwent elective laparoscopic surgery, following spontaneous resolution of the volvulus with significant reduction in abdominal distention and passage of bowel movements. Despite spontaneous resolution, elective surgery was deemed necessary due to the high risk of recurrence and associated morbidity, and the patient was operated a few weeks following resolution.

The surgical procedure varied according to the patients’ age and comorbidities. Table 1 outlines the different surgical procedures.
performed, along with the patient age and the surgical outcome.

Selection of procedure type was correlated with the functional and clinical status of the patient. Resection with ileostomy was performed in high risk patients with significant comorbidities. Resection with anastomosis and cecopexy were performed in fit patients able to tolerate the surgery and the possible adverse surgical outcomes.

Length of stay varied and averaged at 16.4 days following surgery (range 3-56) but with high variability difference between fit patients and patients with significant comorbidities.

Overall morbidity and mortality rate was high, with 5 out of 9 patients (55.5%) presenting with post-operative complications. In three patients (33.3%) post-operative complications resulted in mortality within the same admission, from multi-organ failure.

**Discussion**

Colonic volvulus is an uncommon cause of colonic bowel obstruction, estimated to cause 3.4% of all colonic obstructions [7], though incidence is higher in certain areas as the middle east and Africa [8]. Cecal volvulus is less common than sigmoid volvulus, and is managed almost exclusively with surgery [3]. Despite similarities in pathophysiological features and diagnostic methods [9], sigmoid volvulus can be managed initially with decompressive endoscopy. The same therapeutic strategy in cecal volvulus has high failure rates with elevated risk for colonic perforation, prompting emergency surgical treatment to prevent bowel ischemia and necrosis [3,10,11]. In our series all attempted decompressive colonoscopies failed and surgery may have been delayed despite being inevitable.

The indication for surgical intervention in cecal volvulus is well established. However, the recommended surgical procedure for cecal volvulus is still controversial. Several procedures were suggested for this rare entity, from bowel diversion including decompressive cecostomy to cecal fixation and right colectomy, which is mandatory in cases of intestinal ischemia. Tube cecostomy was popular up to the 1970's and the 1980's [6,12-14] when studies demonstrated promising results with a fixing cecopexy compared with tube cecostomy, mainly due high rates of morbidity and mortality associated with cecostomy, and higher recurrence rate. Some early reports in small number of patients suggested a combination of cecopexy with cecostomy, and higher recurrence rate. Some early reports in small number of patients suggested a combination of cecopexy with cecostomy [15]. Abandonment of cecostomy was first suggested by Rabinovici [13] who demonstrated increased rates recurrence, complications and mortality with cecostomy when compared with detorsion and resection. Additional studies confirmed this surgical approach [16-18] emphasizing the need for resection in patients with significant bowel ischemia and sign of bowel gangrene.

The introduction of laparoscopy had a fairly negligible effect on the surgical treatment of cecal volvulus. Halabi et al [3] recently published a comprehensive review of patients with colonic volvulus over two decades and found that only less than 4% of patients were treated laparoscopically, most commonly in younger patients with less co-morbidities. The use of laparoscopy in the treatment of cecal volvulus is mentioned in the literature mainly as case reports and no comparative studies exist [2,19].

The retrospective nature of this study and the relatively small number of patients with this rare condition are obvious limitations of this study. The selection of surgical procedure was based on surgeon preference and clinical judgment, which limits firm conclusions regarding the proper selection of surgery. Despite these limitations, our series has a relatively large number of patients diagnosed with an uncommon condition over a period of four recent years, and confirms prior data regarding the high morbidity and mortality of cecal volvulus. It also demonstrates that initiating therapeutic intervention with decompressive colonoscopy should be avoided. The wide range of surgical procedures used for cecal volvulus suggests that the selection of the procedure should be tailored to the patients’ clinical status. Although the more aggressive surgical approach was used in high risk patients, mortality in these patients remains high. Larger studies, perhaps multi-institutional, with a predefined treatment paradigm, are required to define the best surgical procedure for cecal volvulus.

**Conclusion**

Cecal volvulus is a clinical emergency condition requiring immediate intervention. Endoscopic intervention in cecal volvulus should not be attempted. Selection of the surgical procedure should rely on the clinical presentation of the patient. Large-scale studies are required to define the best surgical procedure for this condition.

**References**


