CLINICAL STUDY OF SIGMOID VOLVULUS IN ACUTE INTESTINAL OBSTRUCTION CASES: 3 YEARS EXPERIENCE
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ABSTRACT: Sigmoid volvulus is abnormal rotation of sigmoid colon along its mesenteric axis which may result in effects ranging from partial to complete obstruction of bowel to vascular compromise, culminating in gangrene of bowel. Sigmoid volvulus is responsible for about 4 -24% of all acute intestinal obstruction. Retrospectively for last 3 years all cases of acute intestinal obstruction admitted to surgery were reviewed and study of sigmoid volvulus cases done. We analysed 247 cases of acute intestinal obstruction retrospectively over a period of 3 years. 50 cases are due to sigmoid volvulus. Most of cases are around 41-60 years. Most of cases present with pain abdomen, abdominal distention, constipation. Diagnosis is made by plain x-ray abdomen. Most cases treated with Derotation, resection and anastomosis. Out of 50 cases 6 deaths occurred.

KEYWORDS: Acute intestinal obstruction, Sigmoid volvulus, Constipation, Derotation, Resection & anastomosis.

INTRODUCTION: Sigmoid volvulus is abnormal rotation of sigmoid colon along it’s mesenteric axis which may result in effects ranging from partial to complete obstruction of bowel to vascular compromise, culminating in gangrene of bowel. Their presentation with pain abdomen, distension of abdomen, constipation, vomiting. The diagnosis is made by clinical examination and plain X-ray abdomen. Delay in presentation can lead to gangrenous bowel and increase in mortality.

MATERIALS AND METHODS: Over the past 3 years all cases of acute intestinal obstruction admitted to surgery department were reviewed and study of sigmoid volvulus cases was done regarding their etiological factors, clinical presentation, investigations and line of management.

Inclusion Criteria:
1) Patients with features of intestinal obstruction.
2) Exclude other causes of obstruction from sigmoid volvulus.

Exclusion Criteria: Paediatric age group.

RESULTS: We had analysed 247 cases of acute intestinal obstruction retrospectively over 3 years in which 50 patients are due to sigmoid volvulus. Sigmoid volvulus is responsible for 20% of acute intestinal obstruction. Most of cases present around 41-60 years. (Table-1) with male predominance (2:1) (chart-1). Most common etiological factors are high residual diet, chronic...
constipation. All patients presented with pain abdomen, distension of abdomen, constipation, vomiting. All of them have diffuse tenderness all over the abdomen, guarding on palpation and tympanic note over abdomen on percussion. All cases were diagnosed by clinical examination and plain X-ray abdomen, which shows grossly distended sigmoid loop.

| Age (Years) | No. of Patients |
|-------------|-----------------|
| 21-30       | 1               |
| 31-40       | 2               |
| 41-50       | 17              |
| 51-60       | 24              |
| 61-70       | 4               |
| 71-80       | 2               |
| Total       | 50              |

Table 1: Age Distribution in Sigmoid Volvulus Cases

Chart 1: Sex Distribution of Sigmoid Volvulus (M:F-2:1)

Fig. 1: Plain X-ray Abdomen showing Coffee bean sign of Sigmoid Volvulus
Every patient was initially resuscitated with IV fluids and electrolyte replacement, kept nil by mouth and nasogastric aspiration done. All cases were operated under General Anaesthesia. Midline vertical incision given in all cases.

**Operative Findings:**

| Operative Findings         | No. of Cases |
|----------------------------|--------------|
| Viability of bowel         |              |
| viable                     | 34           |
| gangrenous                 | 16           |
| Fibrous band               |              |
| present                    | 8            |
| absent                     | 42           |
| Sanguineous fluid          |              |
| present                    | 15           |
| absent                     | 35           |
| Length of mesocolon        |              |
| 18 - 23 cms                | 34           |
| 24-30cms                   | 16           |

Table 2

| Diameter of Sigmoid Colon  | No. of Cases |
|----------------------------|--------------|
| 11-12cms                   | 5            |
| 13-14cms                   | 15           |
| 15-16cms                   | 15           |
| 17-18cms                   | 5            |
| 19-20cms                   | 0            |

Table 3

| No. of Turns of Mesocolon  | No. of Cases |
|----------------------------|--------------|
| One                        | 8            |
| One and half               | 22           |
| Two                        | 5            |
| Two and half               | 13           |
| Three                      | 3            |

Table 4

The choice of surgical operation depended upon general condition of patient including Age, co-existing medical illness, operative findings at laparotomy, whether sigmoid colon was viable or gangrenous, length of mesocolon, presence of any fibrous bands and whether rectal stump was of sufficient length or short. 40 cases were treated by derotation, primary resection and end to end anastamosis. Sigmoidopexy was done in 6 cases due to co-morbid medical problems. Hartmanns procedure was done in 4 cases due to short rectal stump and comorbid conditions.
Anastomotic leak seen in 20% of cases which are managed conservatively by keeping patient nil by mouth, giving aminoacid and lipid infusions intravenously, transfusing compatible whole blood, human albumin infusion. The leaks responded well to these measures and patient recovered over a period of 7-10 days. Wound sepsis seen in 24% of cases which are managed by daily sterile dressing and giving appropriate antibiotics after taking wound swab for culture and sensitivity. Burst abdomen occurred in 2% of cases which is managed by secondary suturing after controlling local infection. 6 deaths have occurred out of 50 patients. The mortality was mostly related to the development of gangrene of bowel, late presentation, development of peritonitis, old age and comorbid conditions.
DISCUSSION: Volvulus of the colon has been known since centuries. The natural history of and description of this disease were detailed in Egyptian Papyrus Edders and described in the writings of Greek and Roman physicians. Hippocrates used a 12 inch long suppository and anal insufflations with air to untwist the bowel, a method similar to what is currently used to treat sigmoid volvulus, conservatively in a patient not fit for surgery.

Sigmoid volvulus is most common in low socioeconomic status with history of constipation, as chronic constipation is the cause treating this condition from the basic level i.e; health education about treating this condition and avoiding it by taking appropriate measures will decrease the incidence up to 30%.

Sigmoid volvulus is responsible for about 4-24% of all acute intestinal obstruction. (1,2) Sigmoid volvulus is more frequent in the countries with vegetarian diet. High residual diet leads to elongation of sigmoid colon and mesocolon associated with narrowing of mesocolon of the posterior wall. (3,4) Other causes include constipation, previous abdominal surgery, pregnancy, diabetes, or neurological and psychiatric diseases such as dementia or schizophrenia have been described in the literature. (5) Sigmoid volvulus seen in age group of 45-60 years. Sigmoid volvulus is most common in males with ratio of 2:1. The condition has wide range of presentation from acute intestinal obstruction to fulminating strangulation with gangrene and perforation. (1) The most frequent symptom is crampy abdominal pain due to torsion of the mesentry and extreme distention of the bowel. Other symptoms include rapid abdominal distension, obstipation. Nausea and vomiting are late features until there is considerable abdominal distension (Usually over a period of 2-3 days). Gross distension can lead to respiratory embarrassment. Other findings include dehydration, generalised abdominal tenderness, visible peristalsis, tympanic note on percussion, empty rectum. If volvulus goes into strangulation results in peritonitis. (6)

Sigmoid volvulus patient may have diminished haemoglobin and raised WBC if bowel is gangrenous. Hypokalemia usually associated with sigmoid volvulus. Hypokalemia may be significant factor in unexplained death associated with sigmoid volvulus. Plain x-ray abdomen shows distended sigmoid loop, which assumes a bent inner tube or omega sign with limbs of sigmoid loop directed towards pelvis. (7) Contrast studies are not necessary when the diagnosis is
apparent on plain film. Barium enema is contraindicated when gangrene is suspected as there is a
danger of perforation of the necrotic segment. However in subacute cases, barium enema
reveals a site of torsion and spiralling of mucosal folds. This is known as “Birds beak or Ace of
spades” sign. The direction of the beak is towards the point of obstruction. A lateral barium
radiograph of the rectum shows the distance from anus to waist. CT is least invasive imaging
technique that allows assessment of ischemia. CT findings of sigmoid volvulus include “Whirl
sign”, which represents tension on the twisted mesocolon by the afferent and efferent limbs of
the dilated colon. Sonography might occasionally be useful in assessing large bowel obstruction.
Barium enema, rectal tubes, rigid and flexible sigmoidoscopy as therapeutic methods have been
adopted by clinicians. Colonoscopy, besides being a therapeutic measure, allows the evaluation
of colonic mucosa and therefore the presence or absence of signs of ischemia.

Operative procedure is treatment option for sigmoid volvulus. However proper and
careful preoperative assessment and resuscitative measures have to be carried out before
operative procedure. This includes intravenous infusion to restore the fluid and electrolyte
balance. Decompression of GIT by inserting a ryle’s tube. Preoperative broad spectrum
antibiotic minimizes the proliferation of bacteria with in the lumen. The operative procedure of
choice is derotation; primary resection and end to end anastomosis. Simple derotation
and sigmoidopexy can be done in patients complicated by other medical comorbidities. Time
gap between the diagnosis and intervention plays a major role in outcome of patient. If there is
concomitant megacolon or megarectum, subtotal colectomy carried out as the primary procedure
might reduce the recurrence of volvulus. Laparoscopic assisted sigmoid resection with functional
end to end anastomosis. Most common complications are wound sepsis, anastomatic leak,
burst abdomen, septicaemia, post-operative renal failure. Mortality rates varying from 20-25%,
depending on the interval between diagnosis and treatment. Gangrenous bowel is the most
significant cause of high mortality in sigmoid volvulus besides other contributing factors like old
age, delay in diagnosis, absorption of toxic substances from strangulated bowel, profuse
mucous diarrhoea after derotation with resultant hypokalemia.

CONCLUSIONS: Out of 247 cases of acute intestinal obstruction, 50 cases are due to sigmoid
volvulus. Most of patients were in the age group of 41-60 years with male predominance (Male:
female=2:1). The most frequent etiological factors were consumption of large quantities of high
residue bulky diet and chronic constipation. Most common presenting features were pain
abdomen, distention of abdomen and absolute constipation. Fever, vomiting and features of
peritonitis were commonly seen with gangrenous sigmoid colon. The diagnosis could be arrived
by clinical examination and plain x-ray abdomen. All 50 cases studied were subjected to surgical
treatment. Derotation; resection and end to end anastomosis were the most preferred surgery
and were performed on 40 out of 50 patients. Post-operative anastomatic leak was a frequent
complication which was managed conservatively by improving nutritional status, aminoacid and
lipid infusions supplementation.
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