



MESENTERIC VASCULAR OCCLUSION: A THERAPEUTIC CHALLENGE – OUR EXPERIENCE OF FIVE CASES.

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ABSTRACT Acute mesenteric ischaemia (AMI) is an uncommon event and requires comprehensive clinical care to minimize the morbidities and mortality associated with the condition. SBS is a common occurrence in A M I patients who undergo massive bowel resection due to reduced intestinal absorptive surface area. We report our experience of five patients with AMI, who presented at our surgical emergency within a period of one and half year (Aug 2015 – Dec 2016) with a follow-up of one year and their outcome so as to encourage others in managing such a challenge with more positive mindsets. A mortality rate of 20 % (1/5) was observed. A structured clinical approach, timely surgical intervention with exteriorisation of anastomosed bowel loop and multidisciplinary post operative management are essential for managing such frail patients to achieve best possible results.

KEYWORDS : Mesenteric ischemia, Intestinal failure, Therapeutic challenge, Short bowel syndrome

INTRODUCTION:

Acute mesenteric ischemia (AMI) is an uncommon event, accounting for less than 1 case in every 1000 hospital admissions¹. Arterial embolism is the major cause of AMI, accounting for 40% to 50% of cases². Most events are thromboembolic and arise from a cardiac source². Thromboemboli tend to lodge in proximal superior mesenteric artery (SMA), just beyond the first jejunal branches, a minority (15%) may lodge at the SMA origin. Bowel infarction is more insidious because extensive collateral are able to maintain viability until there is a final closure of critically stenotic vessel or collateral. Acute presentation on a history of chronic mesenteric ischemia is usual.

Short bowel syndrome (S B S), one of the patho-physiological types of intestinal failure, is a common occurrence in A M I patients who undergo massive bowel resection. SBS is defined as length of less than 100-120 cm of small bowel without a preserved ileocecal (IC) junction or less than 60 cm of remnant small bowel with intact IC junction leading to inadequate digestive and absorptive capacity³. The emerging options of dietary approaches, pharmacotherapies, parenteral nutrition and timely surgical interventions have led to better management of such patients and improved their survival outcome; however, the mortality rate still remains high (30-40%)⁴.

We report a series of five cases of AMI admitted in our tertiary care hospital and underwent massive bowel resection in a period of 18 months w.e.f August 2015 to December 2016.

METHOD : we did a retrospective analysis of five cases of Mesenteric vascular ischemia during period August 2015 to December 2016 admitted to surgical emergency of our hospital with a follow-up for one year. All of them presented at surgical emergency with acute abdomen secondary to various underlying primary conditions and required emergency laparotomy and bowel resection leading to S B S.

RESULTS: Four patients were males and one female. Female patient was in her 6th decade of life, while of the four male patients – 3 were in fourth decade and one in fifth decade of life (table 1). The duration between start of symptoms and time of presentation varied among the patients: 3 presented within 4 days of onset of their symptoms, while 2 presented within 5 to 7 days of onset of symptoms. All the patients were operated on the day of admission after adequate resuscitation and necessary preoperative diagnostic evaluation. All our patients were secondary to mesenteric ischemia. The cause of mesenteric ischemia was coagulopathy and atherosclerosis in two patients each and venous thrombosis in one.

Table 1: Demographic features and operative details of cases

Case no	Age	Sex	Pre-op diagnosis	Primary surgery	Post-op course
1.	35	M	AIO, Mesenteric Ischaemia	Resection jejunum + ileum, jejunio-ileal anastomosis	Discharge

2.	55	F	SAIO, Mesenteric Ischaemia	Resection entire ileum + cecum + ascending colon with end jejunostomy	Expired (3months)
3.	37	M	AIO, Shock	Resection entire ileum + cecum + ascending colon, jejunio-transverse anastomosis	Discharge
4.	46	M	AIO, Mesenteric Ischaemia	Resection entire ileum + cecum + ascending colon, jejunio-transverse anastomosis	Discharge
5.	38	M	D U perforation, Mesenteric Ischaemia	Closure of D U perforation+ resection of ileum, jejunio-ileal anastomosis	Discharge

AIO = acute intestinal obstruction; DU = duodenal ulcer

Out of five, in four patients jejunio-ileal / jejunio-transverse anastomoses was performed to maintain G I continuity but anastomosed gut loop was kept outside on anterior abdominal wall, and in one case end jejunostomy was done.

All of our cases supplemented with partial parenteral nutrition for about 4 weeks and there after oral nutritional supplementation with high protein diet. The patient, in whom end jejunostomy done expired after 3 months secondary to complications of intestinal failure added with septicemia. The rest 4 cases in whom gastro-intestinal anastomoses was done but anastomosed loop was exteriorised leaked, but all four patients survived and required closure of ileostomy (loop) varying from 10 weeks to 16 weeks.

DISCUSSION:

Mesenteric ischemia is a medical condition in which the supply of oxygen is too small to satisfy the needs of the intestines. Acute disease often presents with sudden severe pain⁵. Symptoms may come on more slowly in those with acute on chronic disease⁶. Signs and symptoms of chronic disease include abdominal pain after eating, unintentional weight loss, vomiting, and being afraid of eating.

The most common cause of acute occlusive mesenteric ischemia is strangulation. The other common causes of occlusive intestinal ischemia are arterial emboli, arterial thrombosis, complications of aorto-iliac surgery and venous thrombosis. The unusual causes of occlusive mesenteric ischemia include trauma and small vessel disease.

The best method of diagnosis is angiography, with computer tomography (CT) being used when that is not available⁵. Treatment of acute ischemia may include stenting or medications to breakdown the clot provided at the site of obstruction by interventional radiology⁵. Open surgery may also be used to remove or bypass the obstruction and may be required to remove any intestines that may have died⁶.

Those who have thrombosis of the vein may be treated with

anticoagulation such as heparin and warfarin, with surgery used if they do not improve^{6,7}.

After initial resuscitation and stabilization of the patient, surgery is required for all patients who have evidence of threatened bowel. Surgeon should proceed with revascularization before resecting any intestine unless faced with an area of frank necrosis or perforation or peritoneal soilage. In such cases resection of the affected bowel without reanastomosis and containment of the spillage should be rapidly achieved before revascularization. In few patients with massive bowel necrosis revascularization can be avoided.

Surgical intervention is instead mandatory for patients with a complete small bowel obstruction with signs or symptoms indicative of strangulation, perforation or those patients with simple obstruction that has not resolved within 24 to 48 hours of non operative treatment⁸. The surgical approach includes adhesiolysis and resection of non viable intestine.

In our one case end jejunostomy and 4 jejunio-ileal/jejunotransverse anastomosis were done. The main problem at time of surgery in these cases is preference for maintenance of gastro-intestinal continuity, because end jejunostomy carries a very high mortality. However performing anastomosis increases chances of survival but there is very high possibility of leak which leads to stormy post operative course. Therefore, it is the obligation of surgeons to do their best to reduce the risk of anastomotic leaks. Unfortunately despite one's best efforts, these complications are bound to occur and we cannot underestimate the importance of a high index of suspicion, leading to early diagnosis of leaks.

Thus we have done the anastomosis in four of our cases (80%), but the anastomosed loop was exteriorized, in all these four cases anastomoses leaked. Though the leak was small, but since it was exteriorized so it did not add to any adverse effect on outcome, further our patients were in younger age group and that is the reason we were able to have a 100% survival in anastomosis cases.

The spectrum of dysfunction and thus the postoperative prognosis of patients following the bowel resection vary according to the length of bowel segment removed, residual bowel segment, presence or absence of ileocecal junction, the primary etiology, presence of any comorbidities and age of the patient. However, the primary determinant of the outcome of SBS is the remnant bowel length. SBS commonly develops in those with less than one third length of the remaining small intestine⁹. The common procedures associated with SBS are end jejunostomy, jejunio-ileal anastomosis and jejunio-colic anastomosis. The most commonly done is jejunio-colic and the most challenging to manage is end jejunostomy⁹.

Almost all patients of SBS had to depend upon parenteral/intravenous nutritional support initially but in later post operative period, the process of intestinal adaptation helps in weaning off parenteral support. This process of adaptation begins within 12 to 24 hours after resection and continues for 1 to 2 years during which the majority of structural and functional changes occur.

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