

**Research Article**

**ACUTE MESENTERIC ISCHEMIA: A RETROSPECTIVE CASE SERIES FROM A  
TERTIARY CARE CENTRE**

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**Abstract**

**Background:** Acute mesenteric ischemia (AMI) is a life-threatening surgical condition caused by interruption of intestinal blood supply and may progress rapidly to bowel necrosis, sepsis and death. Delayed diagnosis remains a major challenge.

**Aim:** To review the clinical presentation, radiological spectrum, operative management and outcomes of surgically treated patients with AMI at a tertiary care centre, with particular attention to revascularization and non-revascularization strategies.

**Methods:** This retrospective case series included 15 patients older than 18 years who presented with acute abdomen, had computed tomography findings suggestive of AMI, and underwent surgical management at Ramaiah Medical College between August 2022 and August 2023. Patients managed conservatively were excluded. Demographic characteristics, presenting symptoms, vascular involvement, operative procedures, extent of gangrene and outcomes were extracted from the study material.

**Results:** The patients ranged from 22 to 56 years of age. There were 9 females and 6 males. Arterial occlusion was documented in 7 patients and venous occlusion in 8. Abdominal pain (12/15), vomiting (11/15) and fever (6/15) were the commonest reported symptoms. Revascularization was performed in 2 patients, both undergoing a right iliac-to-superior mesenteric artery bypass. Thirteen patients underwent non-revascularization procedures, including bowel resection with anastomosis in 8 and stoma formation in 5. Jejunal involvement was reported in 9 patients and ileal involvement in 6; transverse colon and splenic involvement were each reported in 2 patients. Perioperative mortality occurred in 3 patients. Eight patients had recurrent symptoms during follow-up, 3 underwent stoma reversal, and 2 were lost to follow-up. No patient developed short-bowel syndrome or required re-exploration.

**Conclusion:** In this small retrospective series, delayed presentation, arterial occlusion and extensive ischemic injury with intra-abdominal sepsis and multiorgan failure were associated with perioperative

mortality. Early recognition, prompt imaging, appropriate revascularization when feasible, and timely resection or diversion of non-viable bowel remain central to the management of AMI.

**Keywords:** acute mesenteric ischemia; mesenteric ischemia; bowel ischemia; mesenteric revascularization; bowel necrosis; intestinal ischemia; case series

## INTRODUCTION

Acute mesenteric ischemia (AMI) is a potentially fatal abdominal emergency resulting from an acute reduction or interruption of intestinal blood flow. The severity of intestinal injury ranges from reversible mucosal ischemia to transmural bowel necrosis. When perfusion is not restored promptly, progressive bowel-wall necrosis may be followed by bacterial translocation and intramural gas formation, portal venous gas, perforation, sepsis and death.

The study material describes AMI as comprising arterial occlusive disease, venous occlusive disease and non-occlusive mesenteric ischemia. Surgical treatment depends on the underlying vascular mechanism, the extent and reversibility of bowel injury, and the patient's clinical condition. Management may require restoration of mesenteric perfusion, resection of non-viable intestine, creation of a stoma, or a combination of these approaches.

Because diagnosis can be delayed and bowel viability may deteriorate rapidly, institutional experience with presentation, operative findings and outcomes can provide useful practical information. The present study reviews the experience of a tertiary care centre in surgically managed AMI.

## AIM AND OBJECTIVES

The objectives of this study were:

- To review the experience in the management of acute mesenteric ischemia at a tertiary care centre.
- To assess outcomes following revascularization and non-revascularization procedures.

## MATERIALS AND METHODS

### Study design and setting

This was a retrospective observational case series conducted in the Department of General Surgery, Ramaiah Medical College. The study period was August 2022 to August 2023 (12 months). Fifteen surgically managed cases were included.

### Eligibility criteria

#### Inclusion criteria:

- Patients of either sex aged >18 years.
- Patients presenting with acute abdomen whose CT findings were suggestive of acute mesenteric ischemia and who were managed surgically.

#### Exclusion criterion:

- Patients with acute mesenteric ischemia who were managed conservatively.

### Investigations and data collection

Routine laboratory evaluation included complete blood count, arterial blood gas analysis and serum lactate. Contrast-enhanced CT of the abdomen and pelvis was performed in all patients. The available study material was reviewed for demographic characteristics, presenting symptoms, vascular involvement, operative procedures, extent of gangrene and postoperative outcomes.

### Operative management

Operative management was individualized according to the presumed mechanism of ischemia and intraoperative assessment of bowel viability. Revascularization was undertaken in selected patients with early disease and limited or absent intestinal necrosis. In patients with established bowel necrosis or threatened/non-viable bowel, treatment consisted of resection with anastomosis or stoma formation as documented in the series.

### Statistical analysis

The study material reports descriptive observations from 15 patients. Categorical data are presented as frequencies and percentages where calculable. No inferential statistical analysis was reported in the source material.

### Ethical considerations

Ethics committee approval, waiver of consent, and patient confidentiality procedures were not specified in the source material and should be added after verification from the institutional records before journal submission.

## RESULTS

### Demographic profile

Fifteen patients were included. Age ranged from 22 to 56 years. The largest age groups were 40–49 years (7 patients) and 50–59 years (6 patients), with 2 patients aged 20–29 years and 1 patient aged 30–39 years. There were 9 females (60%) and 6 males (40%).

| Characteristic | Finding     |
|----------------|-------------|
| Sample size    | 15          |
| Age range      | 22–56 years |
| Female         | 9 (60%)     |
| Male           | 6 (40%)     |

### Clinical presentation

The duration of symptoms ranged from 1 to 15 days, with a reported mean duration of 10 days. Abdominal pain was the most frequently reported symptom, followed by vomiting and fever. Because the symptom frequencies exceed the number of patients, the symptoms were not mutually exclusive.

| Symptom              | Number of patients | Percentage (n=15) |
|----------------------|--------------------|-------------------|
| Abdominal pain       | 12                 | 80.0%             |
| Vomiting             | 11                 | 73.3%             |
| Fever                | 6                  | 40.0%             |
| Abdominal distension | 5                  | 33.3%             |
| Melena               | 4                  | 26.7%             |
| Obstipation          | 2                  | 13.3%             |

### Radiological spectrum

Contrast-enhanced CT of the abdomen and pelvis was performed in all 15 patients. Seven patients had arterial occlusion and eight had venous occlusion. Among the arterial occlusion group, the superior mesenteric artery was involved in 6 patients and the inferior mesenteric artery in 1 patient. Of the 6 superior mesenteric artery cases, 2 were described as proximal and 4 as distal. The venous occlusion cases involved the superior mesenteric vein, portal vein and splenic vein in the patterns illustrated in the source presentation; exact vessel-wise patient counts were not provided.

| Vascular category  | Number | Percentage |
|--------------------|--------|------------|
| Arterial occlusion | 7      | 46.7%      |
| Venous occlusion   | 8      | 53.3%      |
| Total              | 15     | 100%       |

### Operative management

Two patients underwent revascularization, both treated with a right iliac-to-superior mesenteric artery bypass. Thirteen patients underwent non-revascularization procedures. Among these, 8 underwent bowel resection with anastomosis and 5 underwent ileostomy or jejunostomy. Splenectomy was reported in 2 cases as part of the operative management.

| Operative strategy        | Number | Percentage |
|---------------------------|--------|------------|
| Revascularization         | 2      | 13.3%      |
| Non-revascularization     | 13     | 86.7%      |
| Right iliac-to-SMA bypass | 2      | 13.3%      |
| Resection and anastomosis | 8      | 53.3%      |
| Ileostomy/jejunostomy     | 5      | 33.3%      |
| Splenic removal reported  | 2      | 13.3%      |

### Extent of intestinal and solid-organ gangrene

Intraoperative assessment documented jejunal involvement in 9 patients and ileal involvement in 6 patients. Transverse colon and splenic involvement were each reported in 2 patients. These categories are not necessarily mutually exclusive and therefore should not be interpreted as a distribution summing to 15.

| Site involved    | Number of cases |
|------------------|-----------------|
| Jejunum          | 9               |
| Ileum            | 6               |
| Transverse colon | 2               |
| Spleen           | 2               |

### Outcomes

Perioperative mortality occurred in 3 patients. The source material attributes these deaths to late presentation, arterial occlusion, ongoing mesenteric ischemia, intra-abdominal sepsis and multiorgan failure. No patient developed short-bowel syndrome and no re-exploration was reported. Three patients underwent stoma reversal, while 2 patients were lost to follow-up. Recurrent symptoms were reported in 8 patients, comprising abdominal pain in 6, diarrhea in 4, nausea/vomiting in 2 and abdominal distension in 2; these symptom categories may overlap.

| Outcome                 | Number | Percentage (n=15) |
|-------------------------|--------|-------------------|
| Perioperative mortality | 3      | 20.0%             |
| Short-bowel syndrome    | 0      | 0%                |
| Re-exploration          | 0      | 0%                |
| Stoma reversal          | 3      | 20.0%             |
| Lost to follow-up       | 2      | 13.3%             |
| Recurrent symptoms      | 8      | 53.3%             |

## DISCUSSION

The present retrospective case series describes 15 surgically treated patients with acute mesenteric ischemia over a 12-month period. Patients were predominantly in the fourth and fifth decades of life, and females constituted 60% of the cohort. The most frequent presenting symptoms were abdominal pain and vomiting, with fever also commonly reported.

All patients underwent contrast-enhanced CT of the abdomen and pelvis, reflecting the central role of cross-sectional imaging in establishing the diagnosis and defining the vascular and bowel findings before surgery. In this series, venous occlusion was documented in 8 patients and arterial occlusion in 7. The arterial group predominantly involved the superior mesenteric artery.

Operative strategy was determined by the timing of presentation, the vascular mechanism and the extent of bowel injury. Two patients underwent mesenteric revascularization using a right iliac-to-superior mesenteric artery bypass. The remaining 13 patients underwent procedures directed at established or threatened bowel injury, including resection with anastomosis or stoma formation. The study indicates that resection and anastomosis was preferred for limited bowel gangrene with minimal contamination, whereas stoma formation was used for extensive gangrene and severe contamination.

Three perioperative deaths occurred, giving a crude perioperative mortality of 20% in this series. The reported clinical context of these deaths included late presentation, arterial occlusion, persistent mesenteric ischemia, intra-abdominal sepsis and multiorgan failure. These observations emphasize the importance of early recognition and timely intervention, while acknowledging that causal relationships cannot be established from this small retrospective series.

### 5.1 Comparison with the source study's management principles

The presentation identifies early presentation (<24 hours), early identification and absence or limited intestinal necrosis as situations in which revascularization may be considered. Conversely, late presentation (>24 hours) and threatened bowel were associated with non-revascularization management in the reported experience. These should be interpreted as the authors' observed institutional approach rather than as universally applicable treatment thresholds.

## Strengths and Limitations

### Strengths:

- The series reflects real-world surgical management from a tertiary care centre.
- All included patients underwent CT evaluation and surgical management.
- The study describes vascular involvement, operative procedures, intraoperative extent of gangrene and clinically relevant outcomes.

### Limitations:

- Small sample size (n=15) and retrospective design limit generalizability.

## CONCLUSION

Acute mesenteric ischemia remains a life-threatening surgical emergency requiring a high index of suspicion, prompt contrast-enhanced CT assessment and timely intervention. In this 15-patient retrospective series, late presentation, arterial occlusion and extensive ischemic injury complicated by intra-abdominal sepsis and multiorgan failure were associated with perioperative mortality. Management was individualized, with revascularization used in selected patients and bowel resection or stoma formation used when non-viable or threatened bowel was encountered. Early recognition and appropriate vascular or surgical intervention remain central to improving outcomes.

## REFERENCES

1. Bala M, Catena F, Kashuk J, De Simone B, Gomes CA, Weber D, et al. Acute mesenteric ischemia: updated guidelines of the World Society of Emergency Surgery. *World J Emerg Surg.* 2022;17:54. doi:10.1186/s13017-022-00443-x.
2. Reichert M, Roller FC, Kalder J, Hecker M, Bala M, Catena F, et al. Acute mesenteric ischemia—an overview and recommendations of the World Society of Emergency Surgery. *Chirurgie (Heidelb).* 2023;94(7):608-615. doi:10.1007/s00104-023-01913-x.
3. Clair DG, Beach JM. Mesenteric ischemia. *N Engl J Med.* 2016;374(10):959-968. doi:10.1056/NEJMra1503884.
4. American College of Radiology. ACR Appropriateness Criteria® Imaging of Mesenteric Ischemia. Reston, VA: American College of Radiology.
5. Menke J. Diagnostic accuracy of multidetector CT in acute mesenteric ischemia: systematic review and meta-analysis. *Radiology.* 2010;256(1):93-101. doi:10.1148/radiol.10091938.
6. Acosta S. Mesenteric ischemia. *Curr Opin Crit Care.* 2015;21(2):171-178. doi:10.1097/MCC.000000000000188.
7. Gatz JD, Wilkerson RG. Diagnosis and management of acute mesenteric ischemia in the emergency department. *Emerg Med Pract.* 2024;26(12):1-28.
8. Garzelli L, Ben Abdallah I, Nuzzo A, Zappa M, Corcos O, Dioguardi Burgio M, et al. Insights into acute mesenteric ischaemia: an up-to-date, evidence-based review from a mesenteric stroke centre unit. *Br J Radiol.* 2023;96(1151):20230232. doi:10.1259/bjr.20230232.

9. Hess B, Cahenzli M, Forbes A, Burgos R, Coccolini F, Corcos O, et al. Management of acute mesenteric ischaemia: results of a worldwide survey. Clin Nutr ESPEN. 2023;54:194-205.  
doi:10.1016/j.clnesp.2022.12.022.