



Spontaneous Acute Superior Mesenteric Artery Dissection. A Case Report & Literature Review

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Abstract

Spontaneous isolated superior mesenteric artery dissection (SISMAD) is an uncommon vascular pathology with variable presentations. This case report details the clinical course of SISMAD in a young patient and provides an overview of the current literature

Introduction

- Overview:** SISMAD is a rare cause for abdominal pain with presentations ranging from incidental imaging findings to bowel ischaemia or fatal aneurysmal rupture.
- Risk factors:** Hypertension, atherosclerosis, connective tissue disorders, vasculitis and trauma.
- Management Goals:** Prevention of bowel ischaemia and arterial rupture.
- Imaging:** Advances have improved early detection and classification of SISMAD.
- Treatment Options:**
 - Conservative:** Anticoagulation, antiplatelet therapy and close monitoring for stable cases.
 - Endovascular:** Interventions such as stent placement for symptomatic or larger dissections.
 - Surgery:** Bypass, intinectomy & patch plasty reserved for severe presentations or when endovascular treatment fails.

Case Report

Patient Profile: 37- year -old Indian male smoker with undiagnosed hypertension.

Presentation: Acute abdominal pain with nausea and hypertension (170/90mmHg). Abdomen soft, tender but no peritonism

Initial Findings:

- Computed tomography angiography (CTA) (FIG 1): Stenosis of SMA trunk. SMA dissection with thrombosed false lumen; mild oedema of jejunum. No established bowel infarction
- Labs: Unremarkable; Lactate 1.6mmol/L.

Initial Management: Multi-disciplinary (vascular, general surgeons & interventional radiology); decision in the context of resolving abdominal pain for conservative management (bowel rest, broad spectrum antibiotics, intravenous heparin fluid resuscitation, antihypertensives).

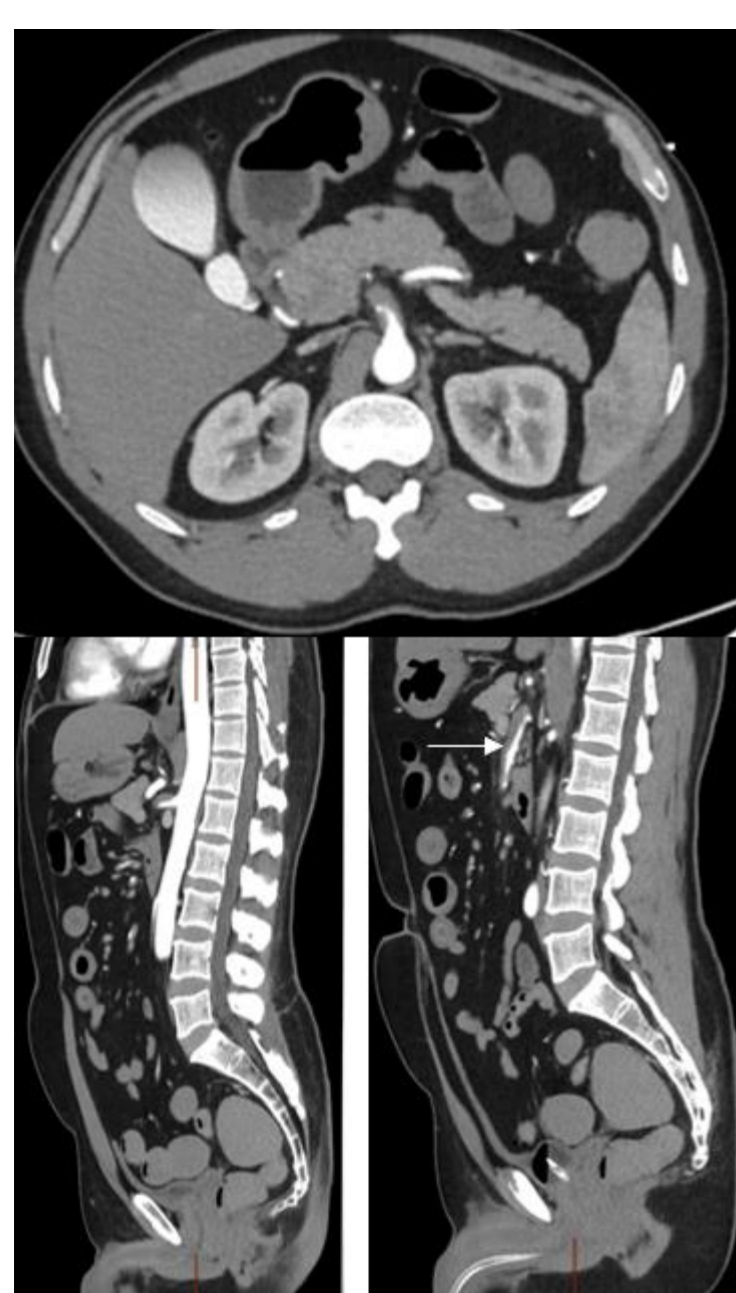


FIGURE 1. CTA showing the SMA dissection and false lumen (arrow)

Complication: On Day 5

- Worsening abdominal pain with peritonism.
- Elevated white cell count of $16 \times 10^9/L$; Lactate 2.2mmol/L.
- Triple phase CTA: Partial recanalization of the thrombosed SMA lumen. Thrombus extension into SMA tributaries & Jejunal ischaemia (FIG 2)

Surgical Intervention:

- Laparotomy: 65cm of gangrenous jejunum resected.
- Second look laparotomy at 48 hours: Well perfused proximal and distal bowel; jejunio-ileal anastomosis performed.

Outcome:

- Discharged day 33 on anticoagulation
- Echo, 48hr Holter monitor, Vasculitic /Auto-immune screen: Normal.
- Surveillance CTA at 3 months: Patent SMA trunk with persistent flow into the false lumen and collateralized flow to the right colon via the inferior mesenteric and marginal arteries.
- The patient remains well with good blood pressure control on antihypertensives and has successfully ceased smoking.
- Annual surveillance continues



FIGURE 2. CTA showing partial recanalization of SMA false lumen (arrow)

Discussion

Management Challenges:

- No randomized controlled trials (RCTs) exist comparing treatment strategies for SISMAD.
- Absence of clear standardized guidelines.

Current Practice:

- Relies on observational studies, case series and clinical expertise.
- Treatment choice depends on symptom severity, arterial involvement and complications.

Systematic Review:

- Reviewed all scientific literature published up to January 2025 using PubMed, Embase and Cochrane databases.

Findings:

- Conservative Management:**
 - Suitable for patients with minimal symptoms and limited arterial involvement; includes anticoagulation, antiplatelet therapy and close monitoring.
 - Most cases show resolution/stabilization of dissection on follow-up imaging.
- Endovascular Techniques:**
 - Stent placement or embolization is preferred for larger or symptomatic dissections
 - Higher success rates with symptom resolution and arterial remodelling
 - Long term follow-up essential to monitor for stent complications; stenosis or thrombosis

Surgical intervention:

- Reserved for severe cases of SISMAD.
- Indicated in complications such as ischaemia and aneurysm formation.
- Higher morbidity compared to other approaches.
- Ongoing surveillance necessary to prevent recurrence or secondary complications

Yun's Classification (FIG 3):

- Provides a structured framework for categorizing SMA dissections into four types:

- Type I:** Patent true & false lumen with adequate blood flow in both.
- Type II:** False lumen partially thrombosed:
 - Ila** Patent false lumen with partial thrombosis
 - Iib** False lumen thrombosed with restricted blood flow
- Type III:** Completely thrombosed false lumen with restricted flow in true lumen
- Type IV:** Ruptured dissection or ruptured aneurysm

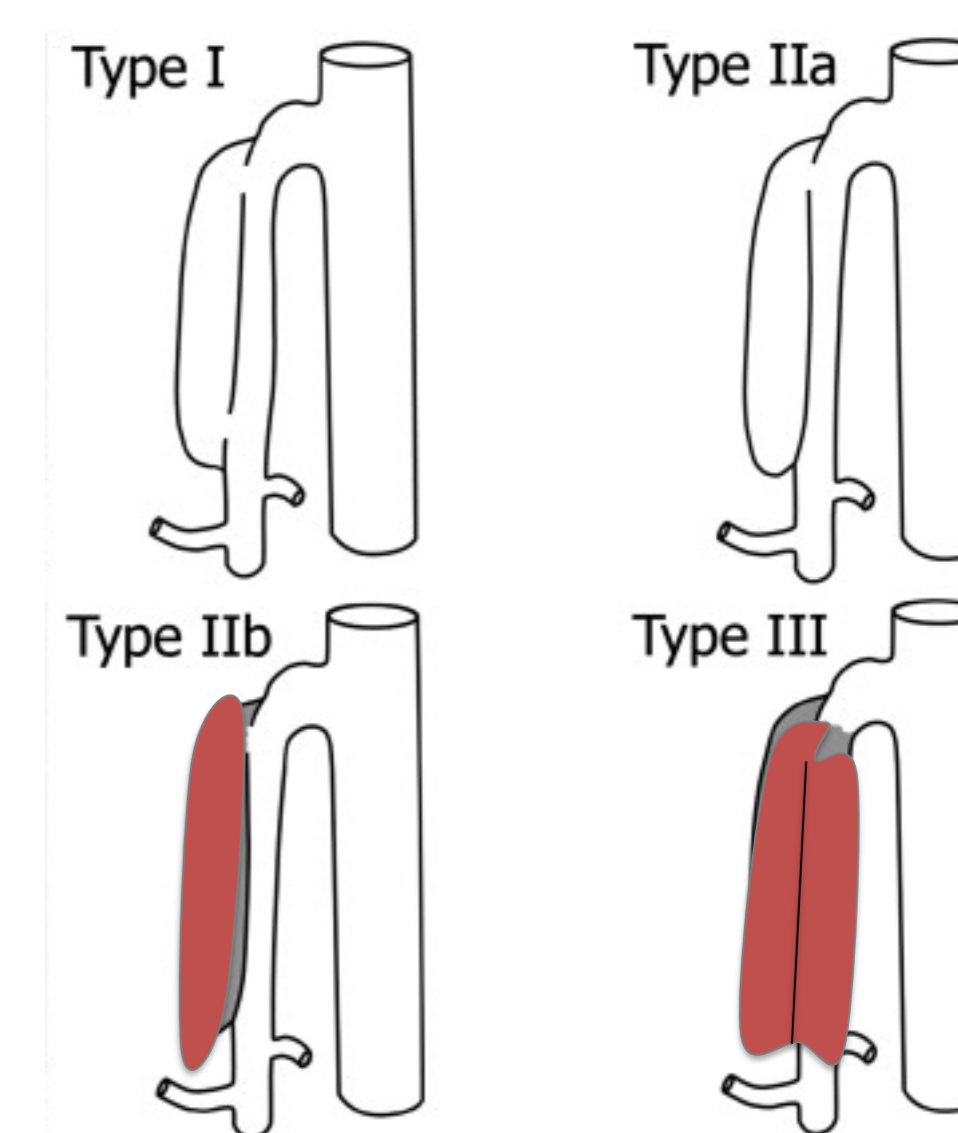


FIGURE 3. Yun's Classification (Adapted from JVascSurg 2011;54:1727-33)

Clinical Relevance:

- Provides guidance for selecting the most appropriate treatment strategy.
- Type I and IIa:** Typically managed conservatively
- Types Iib, III and IV:** Higher risk of ischaemia or complications, often requiring endovascular or surgical intervention.

Due to the complexity and presentation of our patient's SMA dissection, conservative management was deemed appropriate and successfully implemented. However, given the extent and characteristics of the dissection, endovascular intervention with stent placement could also have been a viable option.

Key Takeaway:

- Highlights the importance of individualized treatment planning in SISMAD.
- Both conservative and endovascular approaches may be appropriate depending on clinical judgement and available resources

CONCLUSION

- The optimal treatment strategy for ISMAD should be individualized, considering patient-specific factors and the expertise of the medical team. Prospective studies are needed to establish standardized treatment guidelines and long-term outcomes for patients with ISMAD

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