

Available online at [www.sciencerepository.org](http://www.sciencerepository.org)

Science Repository



## Case Report

# Fifty Shadows of Mesenteric Ischemia

Patrizia Pelizzo, Elisa Sacchet, Ugo Grossi\* and Giacomo Zanus

2<sup>nd</sup> Surgery Unit, Treviso Regional Hospital, DISCOG, University of Padua, Italy

### ARTICLE INFO

#### Article history:

Received: 3 June, 2021

Accepted: 19 June, 2021

Published: 6 July, 2021

#### Keywords:

Bowel ischaemia

volvulus

indocyanine green fluorescence

angiography

### ABSTRACT

A 66-year-old female presented to the emergency department with sudden onset of central abdominal pain irradiated to the back. Blood tests were unremarkable. Computed tomography scan showed acute focal ischaemia of small bowel loops sustained by an encircling omental band around a mid ileal loop, which was released on urgent mini-laparotomy. The ischaemic loops were covered with hot moist gauzes for several minutes until the normal luster and peristaltic wave returned. Indocyanine green fluorescence angiography confirmed sufficient bowel perfusion and viability. The patient was discharged 5 days after surgery and did not experience any symptom recurrence up to 6 months later. Mesenteric or colonic ischaemia may respectively affect the small or large intestine. The small intestine is able to compensate for a 75% reduction in mesenteric perfusion for up to 12 hours. If promptly treated, resection may be successfully avoided.

© 2021 Ugo Grossi. Hosting by Science Repository.

### Introduction

Mesenteric or colonic ischaemia may respectively affect the small or large intestine. This digestive tract is mainly supplied by two major arteries, i.e., the superior and inferior mesenteric arteries. The small intestine is able to compensate for a 75% reduction in mesenteric perfusion for up to 12 hours [1]. Abdominal pain is the most common symptom of bowel ischaemia.

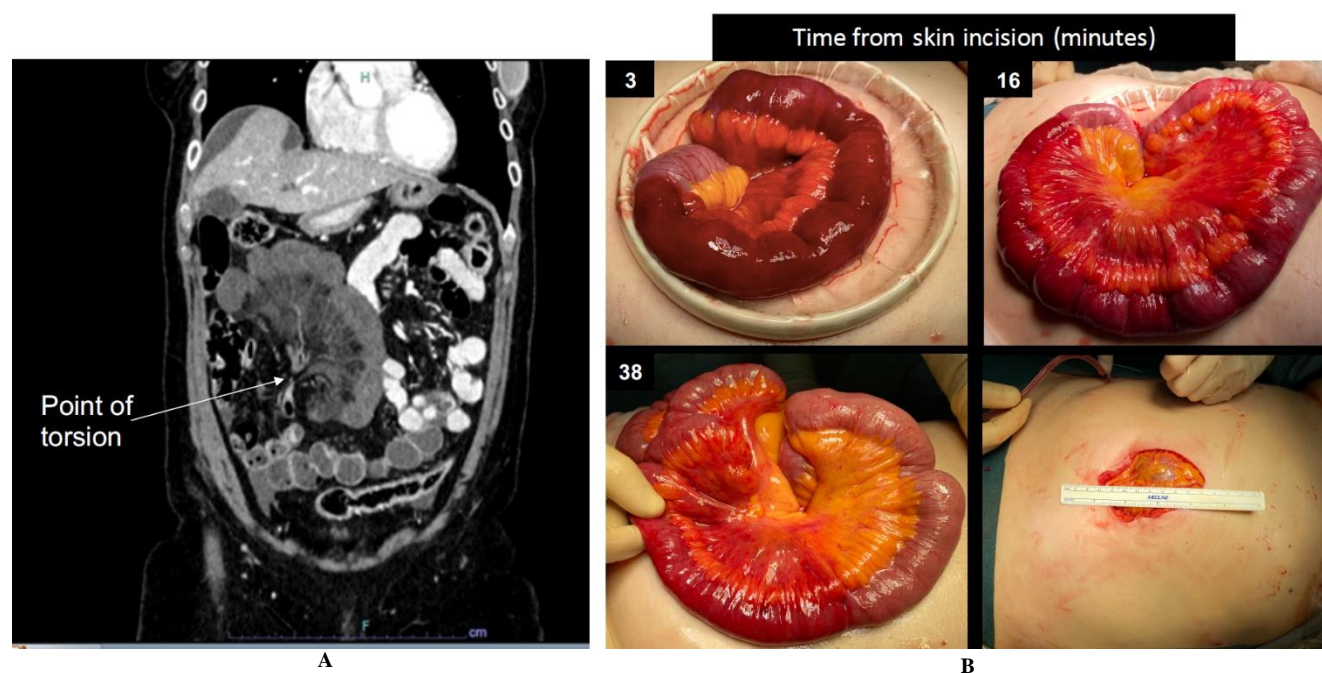
### Case Report

A 66-year-old Caucasian female presented overnight to the emergency department with sudden onset of continuous and worsening central abdominal pain irradiated to the back. She denied fever or vomiting. Blood test showed no increase in inflammatory indices. Her past medical history included hypertension. She has been on aromatase inhibitor therapy for 7 years following a surgically treated breast cancer.

Computed tomography scan performed 7 hours after symptom onset showed acute focal ischaemia of small bowel loops with patency of both spleno-mesenteric-portal axis and mesenteric arteries, and a free intraperitoneal effusion (Figure 1A). On urgent explorative mini-laparotomy (incision length, 8 cm) performed 1 hour later, an encircling omental band around a mid ileal loop causing proximally dilated dark red bowel was released, with prompt return of peristalsis (Video 1). The length of the affected bowel was approximately 90 cm, with clear demarcation of the normal intestine (Figure 1B).

Bowel loops were carefully investigated from ileo-colic junction to the ligament of Treitz. The ischaemic loops were covered with hot moist gauzes for several minutes until the normal luster and peristaltic wave returned (Figure 1B). Indocyanine green fluorescence angiography (ICG-FA) was performed to confirm sufficient bowel perfusion and viability. Post-operative course was uneventful, and the patient was discharged 5 days after surgery. She did not experience any symptom recurrence on the last follow-up visit 6 months later.

\*Correspondence to: Ugo Grossi, M.D., Ph.D., 2<sup>nd</sup> Surgery Unit, Treviso Regional Hospital, DISCOG, University of Padua, Piazzale dell'Ospedale 1, 31100 Treviso, Italy; E-mail: [ugo.grossi@aulss2.veneto.it](mailto:ugo.grossi@aulss2.veneto.it)



**Figure 1:** A) Coronal contrast-enhanced CT images showing the point of torsion. B) Intra-operative view showing the demarcation border of the normal intestine, with gradual revascularization following untwisting.

## Discussion

The term volvulus is derived from the Latin word ‘volvere’, which means to turn or roll. When a twisting of the small bowel around its mesentery greater than  $180^\circ$  occurs, the results are intestinal obstruction and impairment in vascular inflow and outflow [2]. Small bowel volvulus is categorized as primary or secondary. The former usually occurs in children and young males with no predisposing abnormality found on laparotomy. Anatomically, the small bowel and the corresponding mesentery, in high-risk populations, are longer with a narrower insertion and a lack of mesenteric fat. Instead, secondary midgut volvulus typically affects adults in their sixth to eighth decade of life, with similar gender distribution. The intestine is twisted around an underlying point of fixation, which may arise from several causes: adhesions, internal hernias, tumors, mesenteric lymph nodes, Meckel’s diverticulum, mesenteric lipoma, mesenteric lymphangioma, pregnancy, endometriosis, abscess, mycobacterial disease, aneurysms, and hematomas [3].

The ICG-FA is a feasible, reliable, and not expensive (in terms of cost and time) technique to assess the mesenteric blood supply and intestinal microcirculation. While routinely used to confirm the gastrointestinal anastomotic perfusion, it can also detect the boundary between the ischaemic and the vascularized zones across a bowel segment. Several studies showed that ICG-FA assessment determined a change in surgical plan, with resections extended into more vital tissue [4]. There is not enough literature about the time of reversible bowel ischaemia. Indeed, the reperfusion time depends on the level of atherosclerosis, dehydration, and other comorbidities. In circumstances where bowel viability cannot

be clearly ascertained due to extensive involvement of the superior mesenteric vein, a second look within 24-48 hours may be required [5].

## Conflicts of Interest

None.

## Funding

None.

## REFERENCES

1. van Petersen AS, Kolkman JJ, Meerwaldt R, Huisman AB, van der Palen J et al. (2014) Mesenteric stenosis, collaterals, and compensatory blood flow. *J Vasc Surg* 60: 111-119. [[Crossref](#)]
2. Papadimitriou G, Marinis A, Papakonstantinou A (2011) Primary midgut volvulus in adults: report of two cases and review of the literature. *J Gastrointest Surg* 15: 1889-1892. [[Crossref](#)]
3. Iwuagwu O, Deans GT (1999) Small bowel volvulus: a review. *J R Coll Surg Edinb* 44: 150-155. [[Crossref](#)]
4. Degett TH, Andersen HS, Gögenur I (2016) Indocyanine green fluorescence angiography for intraoperative assessment of gastrointestinal anastomotic perfusion: a systematic review of clinical trials. *Langenbecks Arch Surg* 401: 767-775. [[Crossref](#)]
5. Bryski MG, Sulyok LGF, Kaplan L, Singhal S, Keating JJ (2020) Techniques for intraoperative evaluation of bowel viability in mesenteric ischemia: A review. *Am J Surg* 220: 309-315. [[Crossref](#)]