



## Case Report

# Transcatheter Arterial Embolisation of NSAID-Induced Diverticular Haemorrhage: A Case Report

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### Abstract

A 47-year old female patient with a background of diverticulosis presented to the emergency department with painless haematochezia. This occurred after a course of diclofenac sodium for musculoskeletal pain. She was haemodynamically stable and thus underwent attempted endoscopic haemostasis. This unfortunately was unsuccessful, and she then went on to undergo contrast-enhanced computed tomography which revealed extravasation of contrast media into the proximal descending colon. Transcatheter arterial embolisation was performed after catheterisation with immediate resolution of bleeding and no procedure-related complications. Although NSAID-induced mucosal damage of the foregut is well recognized, side effects in the large intestine are often overlooked. This case report highlights the need to consider these especially in patients with known diverticulosis, as well as the advantages of transcatheter arterial embolisation.

**Keywords:** NSAID; Diverticular; Bleeding; Haemorrhage; Transcatheter Arterial Embolisation

### Introduction

#### Diverticular lower gastrointestinal haemorrhage

Lower gastrointestinal bleeding (LBIG) is defined as any bleeding originating distal to the ligament of Treitz [1]. The commonest cause of LGIB is diverticulosis with most publications stating it causes 20 to 40% of all LGIB [1–3]. This is fortunately self-limiting in up to 90% of cases [1] but a small proportion will require transfusions followed by endoscopic, radiological or surgical interventions to achieve haemostasis. Risk factors for diverticular LBIG (DLGIB) requiring intervention include history of hypertension, cardiovascular disease and use of antiplatelet, anticoagulant and nonsteroidal anti-inflammatory drugs (NSAIDs) [4,5]. NSAID use has been historically linked to upper gastrointestinal bleeding, however LGIB is a less recognised side-effect with potentially life-threatening outcomes [6]. In this case

report we discuss the management of NSAID-induced DLGIB requiring transcatheter embolisation.

### Case Presentation

#### Background

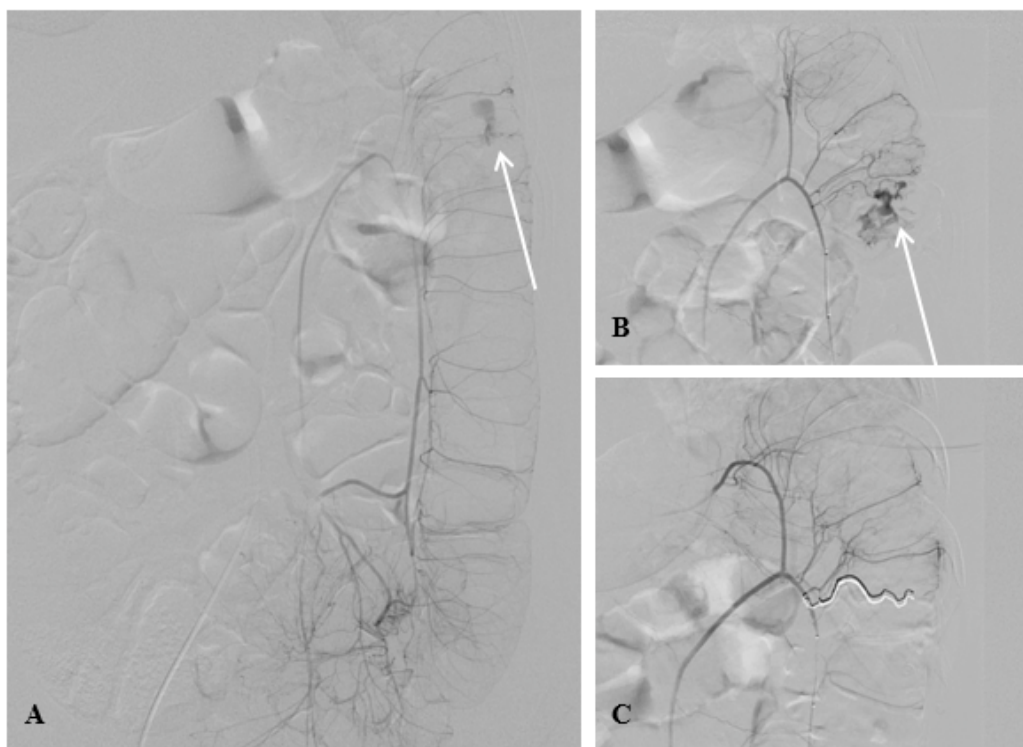
A 47-year old woman with a personal history of diverticulosis, gastro-oesophageal reflux and irritable bowel syndrome presented to her local emergency department after three episodes of fresh blood per rectum. She had been receiving diclofenac 75mg twice daily for seven days prior to this event to manage musculoskeletal pain. On initial assessment her blood pressure was 109/62 mmHg, pulse 73 beats/min with a normal temperature and peripheral oxygen saturations. The abdomen was soft without tenderness and fresh blood was noted on digital rectal examination. Laboratory investigations revealed normocytic anaemia; haemoglobin was initially 11.9 g/dL and then dropped to 9.9 g/dL. Contrast-enhanced abdominal computed tomography (CT) in the arterial phase was carried out, revealing extravasation of contrast into the descending colon as shown in Figure 1.

## Embolisation

A flexible sigmoidoscopy was carried out which revealed stigmata of recent haemorrhage however haemostasis was not achieved endoscopic ally; thus trans catheter arterial embolisation (TAE) was carried out. Access was obtained via common femoral artery. The SIM1 catheter was passed to the inferior mesenteric artery and arteriography displayed extravasation of contrast medium in the proximal descending colon which is displayed in Figure 2A below. The ascending branch of the left colic artery was then catheterised via microcatheter (2.7 F) and a repeat arteriogram shown in Figure 2B confirmed the location of haemorrhage. Coil embolization was performed, and a repeat arteriogram demonstrated no further extravasation of contrast as shown in Fig. 2C so the procedure was completed. After this, she did not suffer any further LGIB and was discharged after a few days of monitoring. A follow up conducted a week later as an outpatient revealed she did not suffer any complications from the procedure or further LGIB so she was discharged with a repeat colonoscopy in two years.



**Figure 1:** Axial contrast-enhanced computed tomography of the abdomen in the arterial phase. Extravasation of contrast into the lumen of the large intestine is highlighted by the white arrow.



**Figure 2:** Inferior mesenteric artery angiography showing active haemorrhage into the large intestine, followed by transcatheter embolisation. (A) Arteriography of the inferior mesenteric artery, with white arrow highlighting the point of contrast extravasation. (B) Dedicated arteriogram of the left colic artery vasa recta, with white arrow highlighting the point of contrast extravasation. (C) Arteriogram obtained post-embolisation, showing no contrast extravasation remaining.

## Discussion

### Overview of DLGIB and relationship to NSAIDs

Colonic diverticula are present in over half of the population aged 60 and above, and become more common with age [7,8]. Over 75% of these people will not develop DLGIB in their lifetime; despite this DLGIB remains the commonest cause of LGIB given the high prevalence of diverticulosis [9]. Minimising the progression from uncomplicated diverticulosis to DLGIB can reduce presentations to hospital emergency—departments this can be achieved through accurate characterisation and modification of DLGIB risk factors. This case report highlights one of these factors: NSAIDs [4,5]. These medications have been classically linked to upper gastrointestinal bleeding whereas LGIB is a serious and often overlooked consequence in daily practice. NSAID-induced gastrointestinal side effects are attributed to non-selective inhibition of both isoforms of the enzyme cyclooxygenase (COX). COX-1 (but notably not COX-2) is expressed in the gastrointestinal tract where it is involved in prostaglandin production to help maintain mucosal health, and furthermore in platelets where it is involved in platelet aggregation and haemostasis [10]. As a result, suppression of COX-1 propagates both gastrointestinal mucosal damage and increased bleeding risk. This is why selective COX-2 inhibitors have been shown to have a better gastrointestinal side effect profile compared to non-selective NSAIDs [11]. This side effect is widely known in relation to the upper gastrointestinal tract, but often overlooked in routine practice in the context of LGIB. A recent meta-analysis of case-control and cohort studies investigated the incidence of both DLGIB and diverticulitis in patients taking non-selective NSAIDs compared to controls not taking these. Thirteen studies were included and an increased risk of both outcomes was shown in patients taking non-selective NSAIDs [6], which implies significant NSAID-related side effects throughout the gastrointestinal tract. A separate cohort study identified NSAID use as one of the main risk factors in recurrent DLGIB [5]. This is significant as recurrent DLGIB is more likely to require radiological or surgical intervention compared to isolated events [3,12]. Switching to COX-2 selective inhibitors has been shown to reduce these

side effects beyond combining non-selective NSAIDs with proton pump inhibitors, but DLGIB remains a possibility which requires prompt investigation and management [11].

### Management of DLGIB with TAE

The first-line investigation for a patient presenting with suspected DLGIB remains colonoscopy as this allows both diagnosis and treatment of the haemorrhage if stigmata of recent haemorrhage can be visualised. However, if this is not practical or stigmata are not visible then contrast-enhanced CT should be arranged [3]. Once the source of bleeding is identified, endoscopic haemostasis should first be attempted followed by TAE if the former is not possible, ineffective or the patient is haemodynamically unstable [3]. This case is an example of endoscopy which was not successful in resolving the haemorrhage. If TAE also fails to control the bleeding then surgical colectomy should be considered [3]. Despite the above, recent trials have been investigating if utilising contrast-enhanced CT angiography and TAE should be a first-line measure. For example, a retrospective cohort study by Kojima et al. showed significantly reduced 30-day rebleeding rates for patients receiving first-line treatment with TAE (7.69%) instead of colonoscopy (23.02%;  $p = 0.038$ ) [13]. Additionally, they were able to demonstrate that bleeding point detection was less likely via colonoscopy (37.30%) than using angiography (89.74%;  $p < 0.001$ ) [13]. Other studies report immediate cessation of bleeding in over 80% of cases [14–17]. While there is ongoing research in this field, most data suggests that TAE is a very effective method for the localisation and treatment of DLGIB. On the other hand, the risks with TAE must also be considered as with any procedure. The main concern is bowel ischaemia due to embolization of excessive vasa recta, especially in the colon which has less collateral vascular supply compared to the upper gastrointestinal tract. Two small retrospective studies (22 and 39 patients respectively) found no significant bowel ischaemia requiring any intervention following super-selective TAE [14,18]. Following this, a meta-analysis by Kim et al. examined TAE outcomes and revealed ischaemic complication rates as low as 6.1% (95% CI, 3.1%-11.6%) alongside encouraging success rates (86.1%; 95% CI, 79.9%-90.6%) [19]. Interestingly, in a trial by Kodani et al. patients with DLGIB were stratified according to how selective their TAE was into these three groups: one vas rectum with one branch, once vas rectum with multiple branches and multiple vasa recta. The third group were the only to experience ischaemic complications requiring surgical intervention [15]. This suggests relatively predictable and thus avoidable complications depending on the vascular selectivity of the TAE.

### Conclusion

In conclusion, this case report serves as an important reminder of the risks associated with the use of NSAIDs especially

in the context of diverticulosis to avoid DLGIB and the different treatment options available. Opting for selective COX-2 inhibitors in patients with known risk factors for gastrointestinal haemorrhage is a safer option. In cases where haemorrhage does occur, TAE is a very effective and safe technique which may become first-line intervention depending on further research in this field.

### Disclosure

**Contributions:** Patient management and capturing diagnostic images, NP; conceptualisation and writing, GK.

**Informed Consent Statement:** Informed consent has been obtained from the patient to publish this paper.

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