

Case Report

A rare case of appendiceal haemorrhage causing life-threatening haematochezia

Howard H.Y. Tang^{1,2,3,†,*}, Daming Pan^{1,4,†}, Andrew Fitzdowse^{1,4}, Aaron Ow⁵, Stephen Chan⁶, Jason S.C. Tan^{1,4}

¹Department of General Surgery, Western Health, 160 Gordon Street, Footscray, Victoria 3011, Australia

²WestSuRG Collaborative, Level 3, WCHRE Building, Sunshine Hospital, 176 Furlong Road, St Albans, Victoria 3021, Australia

³Department of Surgery (Western Precinct), The University of Melbourne, Level 3, WCHRE Building, Sunshine Hospital, 176 Furlong Road, St Albans, Victoria 3021, Australia

⁴Department of General and Endocrine Surgery, Western Health, 160 Gordon Street, Footscray, Victoria 3011, Australia

⁵Department of Medical Imaging, Western Health, 160 Gordon Street, Footscray, Victoria 3011, Australia

⁶Dorevitch Pathology, Footscray Hospital, 160 Gordon Street, Footscray, Victoria 3011, Australia

*Corresponding author. Department of Surgery (Western Precinct), The University of Melbourne, Level 3, WCHRE Building, Sunshine Hospital, 176 Furlong Road, St Albans, Victoria 3021, Australia. E-mail: howard.tang@unimelb.edu.au

†Howard Tang and Daming Pan contributed equally as co-first authors of the manuscript.

Abstract

Our case involved a 28-year-old man who presented with life-threatening haematochezia. Computed tomography angiogram revealed contrast extravasation from the appendix pooling in the caecum. Management via laparoscopic stapled partial caecectomy was successful. Histopathology revealed focal mild acute appendicitis with focal ulceration to submucosa.

Keywords: haematochezia; appendiceal haemorrhage; caecectomy

Introduction

Large volume haematochezia is life threatening and necessitates urgent diagnosis and treatment. Commonest causes include diverticular bleed of the colon and anorectal disorders [1]. Appendiceal haemorrhage is rare. We hereby describe a case of significant lower gastrointestinal haemorrhage from the appendix.

Case presentation

A 28-year-old male of East Asian ethnicity presented with 1-day history of hematochezia of ~700 ml. His past medical history included gout, diet-controlled diabetes, oesophagitis and duodenal ulcer in 2016 that did not require endoscopic intervention. He had recently taken ibuprofen for headaches.

On admission, he was pale, tachycardic at 105 beats per minute with a blood pressure of 107/70 mmHg. Haemoglobin was 95 g/L (normal range 130–180 g/L), with a white cell count of $7.8 \times 10^9/L$ (normal range $3.6\text{--}11 \times 10^9/L$), platelets count of $289 \times 10^9/L$ (normal range $140\text{--}400 \times 10^9/L$) and mean corpuscular volume of 76 fL (normal range 80–100 fL). Computed tomography abdominal angiogram (CTA) demonstrated no active contrast blush or abnormality within the gastrointestinal tract. The patient was resuscitated and transfused two units of packed red blood cells, with plan for gastroscopy the next day to exclude upper gastrointestinal bleeding due to recurrent duodenal ulcers.

On Day 1 of admission, his haemoglobin count continued to drop to 89 g/L despite further transfusions and a normal gastroscopy. Repeat CTA performed at the time of another episode of large volume haematochezia demonstrated contrast extravasation arising from the appendix on the arterial phase, with pooling and spillage of contrast into the caecum on the subsequent phases, consistent with active haemorrhage within the appendix (Fig. 1). No overt appendiceal or caecal mass was seen. After discussion with the interventional radiologist, we decided not to pursue endovascular management. The patient was further resuscitated and preceded to a diagnostic laparoscopy. The appendix appeared healthy with neither overt masses nor signs of peritoneal disease. The appendiceal artery was controlled by endoclips, and the decision was made to perform a limited stapled caecectomy to incorporate the entire base of the appendix.

Macroscopic examination of the specimen demonstrated a clot-filled appendiceal lumen and a minimal increase in darkness in the submucosa. Microscopic examination demonstrated focal mucosal ulceration of 2 mm depth, with inflammatory infiltration extending to the muscularis propria, interstitial haemorrhage, and fibrosis (Figs 2 and 3). There was no eosinophilia or significant microscopic inflammatory exudate. This was deemed the most likely origin of bleeding with the final histological diagnosis of focal mild acute appendicitis with focal ulceration to submucosa (Fig. 1).

Received: September 11, 2024. Accepted: October 28, 2024

Published by Oxford University Press and JSCR Publishing Ltd. © The Author(s) 2024.

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited. For commercial re-use, please contact journals.permissions@oup.com



Figure 1. CT-angiogram, late arterial phase. Coronal CT slice showing contrast extravasation into the appendiceal lumen and spillage into the caecum.

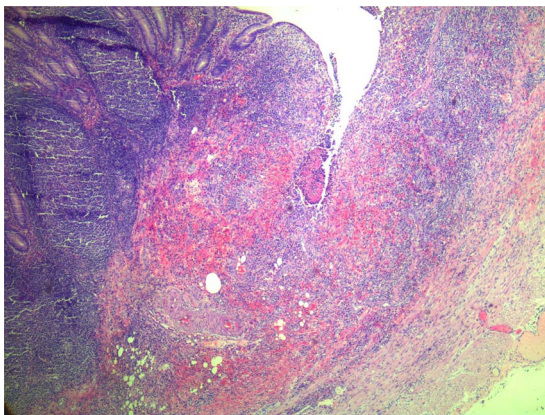


Figure 2. Microscopic view of appendix specimen with small ulceration.

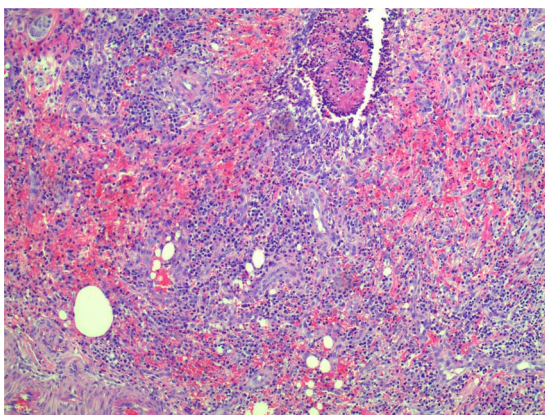


Figure 3. Microscopic zoomed in view of small ulceration measured to be 2 mm.

The patient had an uncomplicated post-operative course and was discharged 2 days after surgery with planned outpatient colonoscopy.

Discussion

Haematochezia is a common surgical presentation. Appendiceal haemorrhage, however, is rarely encountered, accounting for 0.014% of cases of gastrointestinal haemorrhage in a recent Chinese series [2]. Causes of appendiceal haemorrhage can be divided into neoplastic and non-neoplastic. Past case reports have described malignancy, vascular malformation, ulceration, and diverticular bleed as some of the causes, summarized in Table 1. Amongst these cases, the sources of bleeding were usually identified by CTA with contrast extravasation into the appendiceal lumen, or direct visualization of active bleeding from the appendiceal orifice on colonoscopy (Table 1).

After initial resuscitation, management should prioritize identifying and stopping the bleeding source. While digital subtraction angiography may be useful in identification of the bleeding vessel, endovascular embolization of the appendiceal artery, an end artery, places the appendix at risk of ischaemia [12]. Smith et al. [12] reported using angioembolization as a temporizing measure for a patient who refused blood products, in which the appendix subsequently developed ischaemia and required appendectomy. Colonoscopy is another modality to identify the source of bleeding amongst the reported cases, with most describing active bleeding from the appendiceal orifice. However due to the small size of the appendiceal lumen, visualization of the lesion and endoscopic treatments were limited.

The source of bleeding from the appendix was identified using a CTA in our case. As the source of bleeding had been identified, colonoscopy was also not performed to expedite definitive management. Given the proximal location of the bleed relative to the appendiceal base, and the concern of an occult neoplastic process near the base, the decision was made to perform a stapled wedge caecectomy to incorporate the base for a wider margin.

Conclusion

Appendiceal bleeding is a rare cause of haematochezia, and can be caused by neoplastic or benign processes. CTA is a useful tool to identify the source of bleeding and suspicion of the presence of a mass. Endovascular and endoscopic management options are limited due to the risk of ischaemia and the small size of the appendiceal lumen. In the case of a proximal bleeding point, a partial caecectomy can be considered to ensure adequate margins.

Conflict of interest statement

Written consent was obtained from the patient to publish this case report. The authors jointly declare no conflict of interest.

Funding

None declared.

Author contributions

Howard H.Y. Tang (Conceptualization; Writing – original draft, Writing – review & editing); Daming Pan: (Conceptualization; Writing – original draft, Writing – review & editing); Andrew Fitzdowse (Writing – review & editing), Aaron Ow (Writing – review & editing); Stephen Chan (Writing – review & editing), Jason S.C. Tan: (Writing – review and editing, Supervision).

Table 1. Compilation of case reports with appendiceal lesions presenting with haematochezia

Demographics	Diagnosis	Investigation and findings	Treatment	References
Neoplastic causes				
88 Male	Low grade mucinous neoplasm	<ul style="list-style-type: none"> CT: Normal Active bleeding from appendiceal orifice with no lesion identified 	Appendicectomy	Karatas 2022 [3]
73 Male	Mucinous adenocarcinoma	<ul style="list-style-type: none"> Colonoscopy: Mucous plug and blood clot at appendiceal opening CT: No active bleeding Diagnostic laparotomy: Retrocaecal appendix with dilated tip adherent to caecal wall 	Right hemicolectomy	Wijayaratne 2021 [4]
81 Male	Primary adenocarcinoma	<ul style="list-style-type: none"> Colonoscopy: Sessile polyp at appendiceal orifice with high grade dysplasia Contrast CT: Mild thickening of appendix and the base of caecum 	Right hemicolectomy	Sain 2021 [5]
Benign causes				
41 Male	Mucosal erosion	<ul style="list-style-type: none"> CT: Active contrast extravasation at distal appendix Colonoscopy: Active bleeding from appendiceal orifice with no lesion identified 	Laparoscopic appendicectomy	Baek 2010 [6]
72 Male	Angiodysplasia	<ul style="list-style-type: none"> CT: Mild thickening of appendix Colonoscopy: Active bleeding from appendiceal orifice 	Laparoscopic appendicectomy and wedge resection of caecum	Choi [7]
37 Female	Endometriosis	<ul style="list-style-type: none"> Colonoscopy: 20 mm ulcerated polypoid lesion extending from appendiceal orifice into caecum 	Partial caecectomy	Ostiz Llanos [8]
71 Male	Diverticular bleeding	<ul style="list-style-type: none"> CT: Normal Colonoscopy: Active bleeding from appendiceal orifice 	Appendiceal orifice clipped during colonoscopy	Nakashima [9]
57 Male	Arteriovenous malformation of mesoappendix	<ul style="list-style-type: none"> CT: Thickened appendix, vascular proliferation and dilated veins Angiography: Arteriovenous malformation 	Laparoscopic appendicectomy	Nguyen [10]
32 Male	Dieulafoy's lesion	<ul style="list-style-type: none"> CT: Hyperdense area in appendix Colonoscopy: Active bleeding from appendiceal orifice 	Laparoscopic appendicectomy	Zhou [11]

References

- Oakland K, Chadwick G, East JE, et al. Diagnosis and management of acute lower gastrointestinal bleeding: guidelines from the British Society of Gastroenterology. *Gut* 2019;**68**:776–89. <https://doi.org/10.1136/gutjnl-2018-317807>.
- Xing XC, Yang JL, Xiao X. Clinical features, treatments and prognosis of appendiceal bleeding: a case series study. *BMC Gastroenterol* 2023;**23**:377. <https://doi.org/10.1186/s12876-023-03025-6>.
- Karatas M, Simsek C, Gunay S, et al. Acute lower gastrointestinal bleeding due to low-grade mucinous neoplasm of appendix. *Acta Chir Belg* 2022;**122**:357–60. <https://doi.org/10.1080/00015458.2020.1860397>.
- Wijayaratne H, Fernando KJA, Matheeshan T. A case report on life-threatening lower gastrointestinal bleeding: a rare presentation of mucinous adenocarcinoma of the appendix. *Case Rep Surg* 2021;**2021**:1–6. <https://doi.org/10.1155/2021/2349737>.

5. Sain B, Gupta A, Bhattacharya S, et al. Primary adenocarcinoma of the appendix presenting with fresh bleeding per rectum: a case report. *Int J Surg Case Rep* 2021;**86**:106285. <https://doi.org/10.1016/j.ijscr.2021.106285>.
6. Baek SK, Kim YH, Kim SP. Acute lower gastrointestinal bleeding due to appendiceal mucosal erosion. *Surg Laparosc Endosc Percutan Tech* 2009;**19**:e211–4. <https://doi.org/10.1097/SLE.0b013e3181ba83de>.
7. Choi JM, Lee SH, Lee SH, et al. Hematochezia due to angiodysplasia of the appendix. *Ann Coloproctol* 2016;**32**:117–9. <https://doi.org/10.3393/ac.2016.32.3.117>.
8. Ostiz Llanos M, Martínez-Acitores de la Mata D, Sáinz Gómez C, et al. Cyclic hematochezia in a young woman with appendiceal endometriosis. *Rev Esp Enferm Dig* 2024;**116**:37–8. <https://doi.org/10.17235/reed.2022.9257/2022>.
9. Nakashima T, Sano B, Ikawa A, et al. A case of laparoscopic appendectomy for appendiceal bleeding. *Surgical Case Reports* 2023;**9**:179. <https://doi.org/10.1186/s40792-023-01760-2>.
10. Nguyen TA, Van Pham H, Tran TM. Hematochezia due to arteriovenous malformation of the mesoappendix: a rare case report. *J Surg Case Rep* 2023;**2023**:rjad164. <https://doi.org/10.1093/jscr/rjad164>.
11. Zhou SY, Guo MD, Ye XH. Appendiceal bleeding: a case report. *World J Clin Cases* 2022;**10**:6314–8. <https://doi.org/10.12998/wjcc.v10.i18.6314>.
12. Smith EJ, Coventry C, Taylor J, et al. A case of endovascular management to gain control of a lower gastrointestinal haemorrhage caused by appendiceal artery bleeding. *J Surg Case Rep* 2021;**2021**:rjab204. <https://doi.org/10.1093/jscr/rjab204>.