



# Idiopathic omental hemorrhage: A case report and review of the literature



Jiro Kimura<sup>a,\*</sup>, Kenji Okumura<sup>a</sup>, Hideki Katagiri<sup>a</sup>, Alan Kawarai Lefor<sup>b</sup>, Ken Mizokami<sup>a</sup>, Tadao Kubota<sup>a</sup>

<sup>a</sup> Department of Surgery, Tokyo Bay Urayasu Ichikawa Medical Center, Chiba, Japan

<sup>b</sup> Department of Surgery, Jichi Medical University, Tochigi, Japan

## ARTICLE INFO

### Article history:

Received 22 June 2016

Received in revised form 2 October 2016

Accepted 2 October 2016

Available online 4 October 2016

### Keywords:

Idiopathic omental hemorrhage

Omentectomy

Laparotomy

Acute abdomen

## ABSTRACT

**INTRODUCTION:** Omental hemorrhage results from rupture of the omental vessels. There are many causes of omental hemorrhage including trauma, aneurysm, and vasculitis. Idiopathic omental hemorrhage is a rare cause of an acute abdomen, which is potentially life-threatening. We report a patient with idiopathic omental hemorrhage, which may have been caused by overeating.

**CASE PRESENTATION:** A 29-year-old man without a history of trauma, bleeding disorders, or other significant medical history, presented with left upper quadrant pain, which began after overeating the previous evening. The pain worsened and he presented to the emergency department. On physical examination, his BP was 111/69 mmHg and pulse 71 and he reported tenderness and involuntary guarding in the left upper quadrant on palpation. Contrast enhanced computed tomography scan revealed intraperitoneal fluid collection with intra-omental extravasation. Significant intraperitoneal hemorrhage was suspected and emergency laparotomy was performed. On exploring the abdominal cavity, a hematoma was found in the greater omentum, adjacent to the right gastroepiploic artery. No active bleeding was seen, and partial omentectomy was performed. There were no obvious lesions suggestive of malignancy or aneurysm, supporting the diagnosis of idiopathic omental hemorrhage. On postoperative day six, the patient developed a wound dehiscence, which was surgically closed. The subsequent postoperative course was uneventful and he was discharged on fifth day after the second operation.

**CONCLUSION:** Idiopathic omental hemorrhage is a rare cause of an acute abdomen, which may develop after eating. Omentectomy is preferred to ligation or transcatheter arterial embolization to rule out an underlying malignancy or aneurysm.

© 2016 The Authors. Published by Elsevier Ltd on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1. Introduction

Rupture of visceral arteries can lead to symptoms of an acute abdomen, which is potentially life-threatening. There are many causes of intraperitoneal hemorrhage including trauma, aneurysm [1,2], or vasculitis [3]. Most patients with rupture of visceral arteries have vascular diseases, such as hypertension [4] and arteriosclerosis. It is reported that weakness of the tunica media may lead to vascular rupture with an abrupt increase in pressure. However, the exact mechanism is still obscure [5]. We report a patient with idiopathic omental hemorrhage.

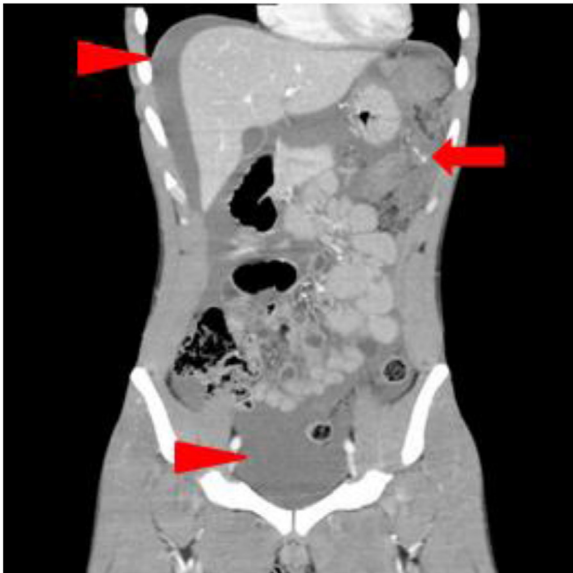
## 2. Presentation of case

A 29-year-old man came to the emergency department complaining of left upper quadrant pain after eating dumplings too much in the previous evening. He had no significant past medical histories. He also denied any trauma or bleeding disorders in the past. The symptom gradually worsened over the night and he came to the emergency department. On physical examination, his BP was 111/69 mmHg, pulse 71 and his abdomen was flat but rigid. There were tenderness and involuntary guarding in the left upper quadrant on palpation. Laboratory studies showed a hemoglobin level of 12.8 g/dl, white blood cell count of 10,600/ $\mu$ l, platelet count of  $23.6 \times 10^4$ / $\mu$ l, international normalized ratio of prothrombin time of 1.25, activated partial thromboplastin time of 30.4 second and C-reactive protein level of 0.32 mg/dl. An enhanced abdominal computed tomography scan revealed a large intraperitoneal fluid collection in the left upper quadrant and extravasation adjacent to the stomach (Fig. 1 a,b). Significant intraperitoneal hemorrhage was suspected and laparotomy was performed urgently.

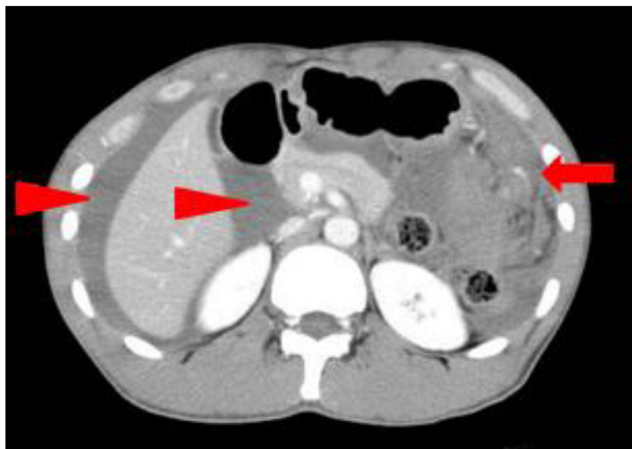
\* Corresponding author at: Department of Surgery, Tokyo Bay Urayasu Ichikawa Medical Center 3-4-32, Todaijima, Urayasu City, Chiba, 279-0001, Japan.

E-mail addresses: [me17022@s.okadai.jp](mailto:me17022@s.okadai.jp) (J. Kimura), [kenjioku620@gmail.com](mailto:kenjioku620@gmail.com) (K. Okumura), [x62h20k38@yahoo.co.jp](mailto:x62h20k38@yahoo.co.jp) (H. Katagiri), [alefor@jichi.ac.jp](mailto:alefor@jichi.ac.jp) (A.K. Lefor), [kenmi@jadecom.jp](mailto:kenmi@jadecom.jp) (K. Mizokami), [tadaokubota@me.com](mailto:tadaokubota@me.com) (T. Kubota).

(a)



(b)



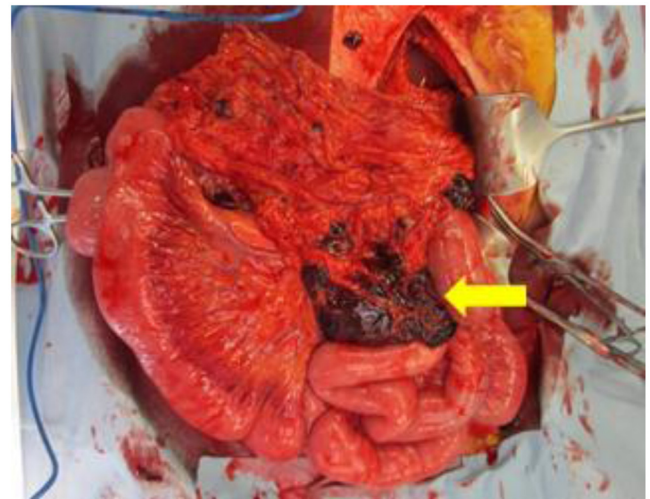
**Fig. 1.** ab. Preoperative enhanced abdominal computed tomography scan. A diffuse intraperitoneal fluid collection is shown (arrowhead). Extravasation near the stomach is in the left upper quadrant (arrow).

An upper midline incision was made, and on exploring the abdominal cavity, a large amount of intraperitoneal blood was found, with no active bleeding. There was a hematoma attached to the greater omentum around the right gastroepiploic artery (Fig. 2). We performed partial omentectomy including the right gastroepiploic vessels. There was no evidence of malignancy or aneurysm on palpation. Histopathologic examination of the resected omentum showed no abnormalities (Fig. 3). The diagnosis of idiopathic omental hemorrhage was confirmed.

On postoperative day six, a wound dehiscence was found, which was repaired surgically. The remainder of the postoperative course was uneventful, and he was discharged on the fifth day after the closure of the dehiscence.

### 3. Discussion

Omental hemorrhage can be associated with trauma, malignancy [6], omental torsion [7], aneurysm, vasculitis, varix, or



**Fig. 2.** Intraoperative findings. A large amount of intraperitoneal blood was found. The hematoma was attached to the greater omentum at the site of the right gastroepiploic artery.



**Fig. 3.** Macroscopic findings. The resected greater omentum shows evidence of gross bleeding.

anticoagulant therapy [8]. However, there are few reports of idiopathic omental hemorrhage [5,9–11]. In the present patient, there is no history of trauma, coagulopathy, or comorbidities. Pathological examination of the specimen revealed hemorrhage, but there was no evidence of thrombosis, vasculitis, or malignancy.

The age for occurrence of idiopathic omental hemorrhage ranges widely from children to octogenarians. It occurs more frequently in men than in women [5,9,10,12–15]. Omental hemorrhage generally presents with epigastric pain and occasionally involves other abdominal symptoms such as nausea, vomiting or diarrhea. Ultrasonography, computed tomography scan, and paracentesis may be useful to establish the diagnosis [15]. However, omental hemorrhage is rare and the patient's condition is often unstable. Emergency operation is required for definitive diagnosis and treatment [1,15]. One patient was reported with rebleeding after non-operative management, so definitive treatment may be preferred in many patients [15]. Definitive treatment has been described using transcatheter arterial embolization [16], laparotomy or laparoscopy with omentectomy or simple ligation of the artery. In recent years, minimally invasive interventions, such as transcatheter arterial embolization or laparoscopic surgery, have been used more often [5,12,16].

**Table 1**  
Idiopathic omental hemorrhage in Japan.

Patient	Year	Age(y)	Gender	Chief Complaint	Preoperative diagnosis	Time Pain Begins	Therapy	Site of Bleeding
1	1987	70	M	diarrhea, abdominal pain	cystic lesion or old hematoma	–	hematoma removal	R
2	1988	68	M	abdominal pain	abdominal aortic aneurysm	waking up	partial omentectomy	–
3	1993	71	F	dyspnea	intraperitoneal hemorrhage	–	partial omentectomy	–
4	1996	22	M	abdominal pain	omental hemorrhage	–	preservation	L
5	1996	20	M	upper abdominal pain	omental hemorrhage	–	partial omentectomy	L
6	1998	53	M	abdominal pain	omental cyst or carcinomatosa by ovarian cancer	night	partial omentectomy, gastrectomy	R
7	2001	65	M	Epigastric Pain	intraperitoneal hemorrhage	–	partial omentectomy	Omental bursa
8	2002	25	M	upper abdominal pain, nausea, vomiting	omental hemorrhage	–	partial omentectomy	L
9	2003	30	M	abdominal pain	omental hemorrhage	after dinner	partial omentectomy	L
10	2003	40	M	upper abdominal pain	omental hemorrhage or abscess	–	partial omentectomy	L
11	2004	30	M	upper abdominal pain	intraperitoneal hemorrhage	night	partial omentectomy	middle body of stomach
12	2005	20	M	abdominal pain, diarrhea, vomiting	intraperitoneal hemorrhage	AM0:00	partial omentectomy, gastrectomy	L
13	2005	27	M	abdominal pain	gastrointestinal perforation	–	partial omentectomy	
14	2006	36	M	abdominal pain, back pain, left shoulder pain	gastrointestinal perforation	after lunch	partial omentectomy	L
15	2006	30	F	right lower quadrant pain	appendicitis	after lunch	partial omentectomy	R
16	2006	37	M	abdominal pain	omental hemorrhage	–	preservation → partial omentectomy	–
17	2007	44	F	right flank pain	intraperitoneal hemorrhage	–	laparoscopic partial omentectomy	R
18	2007	51	M	abdominal pain	omental hemorrhage	after dinner	laparoscopic ligation	R
19	2008	17	F	right lower quadrant pain	appendicitis	–	laparoscopic partial omentectomy	
20	2008	31	M	Epigastric Pain	perforation due to gastric ulcer	PM7:00	partial omentectomy	L
21	2009	58	M	left upper abdominal pain	omental hemorrhage	PM7:00	arterial embolization	R
22	2009	16	M	Epigastric Pain	omental hemorrhage	after handball	preservation	
23	2009	32	M	left upper abdominal pain	omental hemorrhage	after dinner	partial omentectomy	
24	2009	61	M	abdominal pain, abdominal fullness	omental hemorrhage	AM2:00	partial omentectomy	R
25	2010	55	F	vomiting, upper abdominal pain	intraperitoneal hemorrhage	after lunch	laparoscopic ligation	L
26	2012	54	M	upper abdominal pain	omental hemorrhage	AM	arterial embolization → partial omentectomy	R
27	2013	21	M	whole abdominal pain, abdominal bloating	intraperitoneal hemorrhage	After large meal	laparoscopic partial omentectomy	–
28	2013	22	M	Epigastric and left shoulder pain	omental hemorrhage	waking up	laparoscopic omentectomy	L
29	2014	62	M	Epigastric Pain	omental hemorrhage	AM	partial omentectomy	L
30	2016	29	M	left upper abdominal pain	intraperitoneal hemorrhage	After large meal	partial omentectomy	R

R, right omental; L, left omental.

**Table 2**  
Reports of omental hemorrhage related to malignancy.

Patient	Year	Age(y)	Gender	Type of Malignancy	Time of Diagnosis
1	1978	30	M	mesothelioma	preoperative arteriogram
2	1984	85	M	leiomyosarcoma	autopsy
3	1989	–	–	leiomyoblastoma	operation
4	2003	67	M	gastrointestinal stromal tumor	operation
5	2011	74	F	angiosarcoma	autopsy

**Table 3**  
Reports of idiopathic omental hemorrhage from outside Japan.

Patient	Year	Age(y)	Gender	Country	Chief complaint	Preoperative Diagnosis	Pain Starts	Treatment	Site of Bleeding
1	1920	21	M	Russia	right lower quadrant pain, vomiting	appendicitis with general peritonitis	14 h before admission	partial omentectomy	R
2	2010	55	M	UK	diffuse abdominal pain	gastrointestinal stromal tumor	–	partial omentectomy	L
3	2012	24	F	USA	diffuse abdominal pain, vomiting	intraperitoneal hemorrhage	morning	ligation	R
4	2014	68	M	Australia	left sided abdominal pain	omental hemorrhage	–	partial omentectomy	L
5	2016	53	M	Australia	right iliac fossa and right periumbilical pain	omental hemorrhage	4 h before admission	partial omentectomy	R

R, right omental; L, left omental.

We reviewed 30 patients with spontaneous rupture of the omental artery reported from 1987 to 2016 in Japan (Table 1). All patients complained of abdominal pain. Eight of 30 patients noticed the symptom just after eating. Eleven patients had no description of the meal. Other patients had no description about the onset of symptoms. The reason why hemorrhage occurs after a meal may be explained by increased blood flow to the viscera after eating [17]. A large meal may result in more flow in the vessels and result in rupture.

Of the 30 patients reviewed, 26 underwent surgery. Twenty-three patients underwent omentectomy, one patient had only removal of the hematoma, and two had ligation, all of which achieved hemostasis. Three patients were managed non-operatively, but one patient subsequently needed surgery because of rebleeding. In patients with omental hemorrhage, pathological examination is necessary because some patients have bleeding secondary to malignancy [6] or an aneurysm [1,2].

There are five reported patients with omental hemorrhage related to malignancy (Table 2). Four of these were diagnosed at the time of operation or autopsy. Two patients, who underwent operation, had a good postoperative course. It is difficult for omental malignancy to be diagnosed preoperatively. Omentectomy is useful for therapeutic diagnosis. Therefore, omentectomy is preferred to ligation, transcatheter arterial embolization, or observation.

Outside of Japan, there are only five patients reported with idiopathic omental hemorrhage (Table 3). As with patients in Japan, it likely occur in men, and young to elderly patients had this disease. All patients complained of abdominal pain and underwent laparotomy. Four patients underwent omentectomy, and only one patients had ligation. Their postoperative courses were uneventful. There were more reports of idiopathic omental hemorrhage in Japan than in other countries. Although the reason for that was unknown, idiopathic omental hemorrhage may occur more frequently in Japanese patients.

This patient highlights two important points. First, idiopathic omental hemorrhage can occur after a meal. We should consider omental hemorrhage in patients with symptoms of an acute abdomen if the symptoms started after eating. Second, omentectomy is preferred to ligation or transcatheter arterial embolization to rule out underlying malignancy or vascular disease. Omentectomy, as definitive therapy, should eliminate rebleeding in these patients.

**4. Conclusion**

Idiopathic omental hemorrhage can occur after eating. Omentectomy is preferred to ligation or transcatheter arterial embolization to exclude the diagnosis of malignancies or aneurysms.

**Conflict of interest**

No conflict of interest.

**Funding**

No funding.

**Ethical approval**

No approval is required for this case report.

**Consent**

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

**Author contribution**

JK drafted the manuscript. HK and AL revised the manuscript. KO performed the operation. KM and TK participated in the operation. All authors read and approved the final manuscript.

**Guarantor**

Dr. Jiro Kimura.

**References**

[1] R. Borioni, M. Garofalo, P. Innocenti, D. Fittipaldi, P. Tempesta, L. Colagrande, et al., Hemoperitoneum due to spontaneous rupture of an aneurysm of the left gastroepiploic artery, *J. Cardiovasc. Surg.* 40 (February (1)) (1999) 63–64.  
 [2] N. Bettini, Y. Goueffic, O. Marret, M.F. Heymann, A. Costargent, P. Patra, et al., Hemoperitoneum due to rupture of an omental arterial aneurysm, *J. Chir.* 144 (Nov–Dec (6)) (2007) 544–545.

- [3] E.J. Kroot, C.L. Mak, R.U. Boelhouwer, M.P. Middelkoop, A. Dees, Involvement of the omentum in Wegener's granulomatosis, *Ann. Rheum. Dis.* 62 (December (12)) (2003) 1238–1239.
- [4] S.R. Carr, R.C. Dinsmore, N.W. Wilkinson, Idiopathic spontaneous intraperitoneal hemorrhage: a clinical update on abdominal apoplexy in the year 2001, *Am. Surg.* 67 (April (4)) (2001) 374–376.
- [5] T. Matsumoto, T. Yamagami, H. Morishita, S. Iida, J. Tazoe, S. Asai, et al., Transcatheter arterial embolization for spontaneous rupture of the omental artery, *Cardiovasc. Intervent. Radiol.* 34 (Suppl (2)) (2011) S142–S145.
- [6] A.Y. Dixon, J.S. Reed, N. Dow, S.H. Lee, Primary omental leiomyosarcoma masquerading as hemorrhagic ascites, *Hum. Pathol.* 15 (March (3)) (1984) 233–237.
- [7] Z. Nihei, K. Kojima, K. Uehara, S. Sawai, M. Kakihana, R. Hirayama, et al., Omental bleeding with spontaneously derotated torsion—a case report, *Jpn J. Surg.* 21 (November (6)) (1991) 700–702.
- [8] M.I. Adelman, P. Gishen, P. Dubbins, R.S. Mibashan, Localised intramesenteric haemorrhage—a recognisable syndrome in haemophilia? *Br. Med. J.* 15 (September (2)) (1979) 642–643.
- [9] H. Takahashi, Y. Adachi, Y. Kasahara, J. Maruyama, S. Maeda, H. Kitagishi, et al., Case reports Two cases of spontaneous omental hematoma, *Acta Med. Kinki Univ.* 21 (September (3)) (1996) 255–261.
- [10] A.A. Ghiatas, R. Fisher, CT of spontaneous haematoma of the omentum, *Eur. Radiol.* 4 (5) (1994) 474–475.
- [11] L.E. Schottenfeld, H. Rubinstein, Hemorrhage and thrombosis of the omentum, *Am. J. Surg.* 51 (February (2)) (1941) 449–451.
- [12] R. Tsuchiya, S. Takahashi, T. Takaoka, Y. Mineoka, N. Nakabe, N. Sakamoto, et al., A case of idiopathic omental bleeding treated successfully with transarterial embolization, *Jpn J. Gastro-enterol.* 106 (April (4)) (2009) 554–559.
- [13] H. Hosokawa, H. Tanemura, M. Sato, A case of a ruptured left gastroepiploic artery aneurysm, diagnosed on mdct angiography and treated by transcatheter arterial embolization, *J. Jpn. Pract. Surg. Soc.* 70 (September (9)) (2009) 2844–2848.
- [14] R. Yasuoka, S. Nishino, S. Ogino, Y. Sonoyama, H. Fujiki, S. Morita, et al., A case of the greater omental hemorrhage due to segmental arterial mediolysis, *Jpn. J. Gastroenterol. Surg.* 41 (January (1)) (2008) 46–51.
- [15] T. Ishii HY, A. Hosokawa, N.A. Kitagawa, Case of idiopathic omentum bleeding, *J. Mitoyo Gen. Hosp.* 27 (2006) 86–88.
- [16] M. Takahashi, Y. Matsuoka, T. Yasutake, H. Abe, K. Sugiyama, K. Oyama, Spontaneous rupture of the omental artery treated by transcatheter arterial embolization, *Case Rep. Radiol.* 2012 (2012) 273027.
- [17] T. Nagata HO, N. Murase, R. Kime, T. Katsumura, Determining effect of food intake on comprehensive abdominal–pelvic visceral blood flow by Doppler ultrasound, *J. Tokyo Med. Univ.* 73 (January (1)) (2015) 35–44.

#### Open Access

This article is published Open Access at [sciedirect.com](http://sciedirect.com). It is distributed under the [IJSCR Supplemental terms and conditions](#), which permits unrestricted non commercial use, distribution, and reproduction in any medium, provided the original authors and source are credited.