

REFERENCES

1. Minami Y, Kudo M. Radiofrequency ablation of liver metastases from colorectal cancer: a literature review. *Gut Liver*. 2013;7:1-6.
2. Razafindratsira T, Isambert M, Evrard S. Complications of intraoperative radiofrequency ablation of liver metastases. *HPB (Oxford)*. 2011;13:15-23.
3. Frich L, Hol PK, Roy S, Mala T, Edwin B, Clausen OP, et al. Experimental hepatic radiofrequency ablation using wet electrodes: Electrode-to-vessel distance is a significant predictor for delayed portal vein thrombosis. *Eur Radiol*. 2006;16:1990-9.
4. Mulier S, Mulier P, Ni Y, Miao Y, Dupas B, Marchal G, et al. Complications of radiofrequency coagulation of liver tumours. *Br J Surg*. 2002;89:1206-22.
5. Desolneux G, Vara J, Razafindratsira T, Isambert M, Brouste V, McKelvie-Sebileau P, et al. Patterns of complications following intraoperative radiofrequency ablation for liver metastases. *HPB (Oxford)*. 2014. <http://dx.doi.org/10.1111/hpb.12274> [Epub ahead of print].
6. Evrard S, Brouste V, McKelvie-Sebileau P, Desolneux G. Liver metastases in close contact to hepatic veins ablated under vascular exclusion. *Eur J Surg Oncol*. 2013;39:1400-6.
7. Kim AY, Rhim H, Park M, Lee MW, Kim YS, Choi D, et al. Venous thrombosis after radiofrequency ablation for hepatocellular carcinoma. *Am J Roentgenol*. 2011;197:1474-80.

Óscar Alonso Casado^{a,*}, Santiago González Moreno^a, Sara Encinas García^b, Eduardo Rubio González^a, Gloria Ortega Pérez^a

^aUnidad de Oncología Quirúrgica Digestiva, MD Anderson Cancer Center Madrid, Madrid, Spain

^bUnidad de Oncología Médica Digestiva, MD Anderson Cancer Center Madrid, Madrid, Spain

*Corresponding author.

E-mail address: oononso@mdanderson.es (Ó. Alonso Casado).

2173-5077/

© 2014 AEC. Published by Elsevier España, S.L.U. All rights reserved.

Omental Infarction: Surgical or Conservative Management?★



Infarto omental: ¿manejo quirúrgico o conservador?

Omental infarction (OI) is a rare cause of acute abdomen.¹ The inclusion of the latest radiological advances in standard clinical practice leads one to question the classical surgical management of this disease.² We present a review of patients who were hospitalized with OI at our hospital in the last 10 years (6 cases) (Table 1), 3 of whom were treated surgically.

The patients who were treated conservatively were diagnosed with OI by computed tomography (CT), with no pathology diagnosis. One patient was readmitted 1 week after discharge due to worsened clinical condition, which required another CT scan and colonoscopy to rule out an underlying disease. All patients received analgesic, anti-inflammatory and antibiotic treatment, which has also been proposed by other authors,^{1,2} although antibiotic treatment has been disputed in other cases.^{3,4} After clinical improvement, patients were discharged from hospital after 5, 9 and 11 days, respectively. Two years later, the patients continue to be asymptomatic and annual follow-up CT scans show reduction of the inflammatory mass^{3,4} as well as the absence of any other omental lesions.^{1,5}

In the patients who were treated surgically, there was no preoperative diagnosis of OI. In 2 cases, surgery was indicated due to suspicion of acute appendicitis, and in one case due to

suspicion of tubo-ovarian abscess. In these 3 cases, the diagnosis of OI was confirmed during surgery. In all patients, the affected omentum was resected along with the appendix in order to avoid future errors in diagnosis.^{2,5,6} The hospital stays were 2, 4 and 4 days, respectively, and there were no postoperative complications. Patients were seen one month after surgery and were asymptomatic.

According to the classification proposed by Leitner et al., OI are defined as either primary or secondary depending on their pathogenesis.⁷ They can be secondary to torsion caused by adhesions, cysts, tumours or hernias, or thrombotic processes due to hypercoagulation disorder, vascular anomalies or trauma (as in our third case). Cases with no discernible cause are considered primary OI, which is the most frequent aetiology, as seen in 5 of our patients. Predisposing factors include obesity, local trauma, excessive eating or cough.⁵

Within the nonspecific symptoms, there is a predominance of progressive pain in the right hemiabdomen.² Our 6 cases debuted with symptoms that were compatible with acute abdomen. In general, nausea, vomiting, anorexia or other gastrointestinal signs are absent. This type of presentation should pose a differential diagnosis with cholecystitis, diverticulitis, epiploic appendagitis, tumours displaying fat

★ Please cite this article as: Sánchez Fuentes PA, López López V, Febrero Sánchez B, Ramírez Romero P, Parrilla Paricio P. Infarto omental: ¿manejo quirúrgico o conservador? *Cir Esp*. 2015;93:469-471.

Table 1 – Description of the Patients Diagnosed with Omental Infarction at Our Hospital (Period 2003–2013).

Diagnosis	Year	Age	Sex	History of Interest	Symptoms	Complementary Studies	Diagnosis	Hospital Stay (Days)	Other Data of Interest
Radiological (CT)	2010	59	F	TIA	Abdominal pain after colonoscopy	CT	OI	5	Annual CT scan for 2 years
Radiological (CT)	2013	50	F	No	RHC pain	CT	OI	9	Required readmittance Annual CT scan for 2 years
Radiological (CT)	2013	49	F	Cutaneous leukocytoclastic vasculitis AMI	RHC pain	Ultrasound CT	OI	11	Annual CT scan for 2 years
Surgical	2004	30	M	No	RIF pain	Simple abdominal radiograph	Appendicitis	2	Appendectomy + OI resection
Surgical	2007	33	M	No	RIF pain	No	Appendicitis	3	Appendectomy + OI resection
Surgical	2012	31	F	No	Epigastric pain	Ultrasound CT	Tubo-ovarian abscess	4	Appendectomy + OI resection
TIA, transient ischaemic attack; RIF, right iliac fossa; RHC, right hypochondrium; AMI, acute myocardial infarction; OI, omental infarction; F, female; CT, computed tomography; M, male.									

content, sclerosing mesenteritis or gynaecological causes and, above all, acute appendicitis.

While ultrasound can guide the diagnosis towards OI, CT scan is the study of choice. When OI is caused by torsion, there is a characteristic pattern of concentric hyper-attenuated linear strands in the fat mass, or "whirl sign".^{3,4}

Complications of OI include the development of adhesions and intraabdominal abscesses,^{3,4,8} so close monitoring is recommended in the first few days, followed by ultrasound follow-up in the first trimester and annual CT scan for the first 3 years.^{3,4} Surgical treatment, mainly laparoscopic, is recommendable when radiological findings are nonspecific and there are persisting symptoms. Advantages of the laparoscopic approach include shorter hospital stay and prevention of the complications involved in conservative management, while the disadvantages include the risks of general anaesthesia and those related with the surgical procedure itself.⁹

Although CT has provided a better diagnosis of this disease and enables us to opt for conservative treatment, the surgical approach is still the best alternative to confirm the diagnosis and, fundamentally, to make a differential diagnosis with acute appendicitis. In our series, the diagnosis of OI in the patients managed with conservative treatment was done with abdominal CT, but even so there were diagnostic uncertainties that prompted prolonged hospitalization. In the cases of surgical treatment, however, the pathology study provided the definitive diagnosis of OI.¹⁰

One aspect to keep in mind with regards to surgical treatment is that the patients treated conservatively required radiological follow-up studies for 2 years to rule out complications. Meanwhile, the group that received surgical treatment only required one routine office visit one month after the procedure.

As described in our series, most authors recommend conservative management when given a radiological diagnosis of OI, opting for the laparoscopic approach only in cases with worsening symptoms.^{1,6}

Given our experience in surgical cases and the lack of comparative studies demonstrating significant differences between surgical and conservative management, the laparoscopic approach could be considered the diagnostic and therapeutic tool of choice in patients with radiological diagnosis of OI. Surgical treatment favours quick resolution of symptoms and earlier discharge,⁸ with a low rate of complications. Surgery also avoids the complications of OI itself or those caused by a delay due to an erroneous diagnosis^{2,4,6,8} and requires fewer complementary studies as well as shorter patient follow-up.

Conflict of Interests

The authors declare having no conflict of interests.

REFERENCES

1. Miguel Perelló J, Aguayo Albasini JL, Soria Aledo V, Aguilar Jiménez J, Flores Pastor B, Candel Arenas MF, et al. Omental torsion: imaging techniques can prevent unnecessary surgical interventions. *Gastroenterol Hepatol.* 2002;25:493-6.
2. Abdulaziz A, El Zalabany T, Al Sayed AR, Al Ansari A. Idiopathic omental infarction, diagnosed and managed laparoscopically: a case report. *Case Rep Surg.* 2013;2013:193546.
3. Singh AK, Gervais DA, Lee P, Westra S, Hahn PF, Novelline RA, et al. Omental infarct: CT imaging features. *Abdom Imaging.* 2006;31:549-54.
4. Park TU, Oh JH, Chang IT, Lee SJ, Kim SE, Kim CW, et al. Omental infarction: case series and review of the literature. *J Emerg Med.* 2012;42:149-54.
5. Naffaa LN, Shabb NS, Haddad MC. CT findings of Omental torsion and infarction: case report and review of the literature. *Clin Imaging.* 2003;27:116-8.
6. Itenberg E, Mariadason J, Khersonsky J, Wallack M. Modern management of omental torsion and omental infarction: a surgeon's perspective. *J Surg Educ.* 2010;67:44-7.
7. Leitner MJ, Jordan CG, Spinner MH, Reese EC. Torsion, infarction and hemorrhage of the omentum as a cause of acute abdominal distress. *Ann Surg.* 1952;135:103-10.
8. Gosain A, Blakely M, Boulden T, Uffman JK, Seetharamaiah R, Huang E, et al. Omental infarction: preoperative diagnosis and laparoscopic management in children. *J Laparoendosc Adv Surg Tech A.* 2010;20:777-80.
9. Nubi A, McBride W, Stringel G. Primary omental infarct: conservative vs operative management in the era of ultrasound, computerized tomography, and laparoscopy. *J Pediatr Surg.* 2009;44:953-6.
10. Coppin T, Lipsky D. Twisting and infarction of the entire greater omentum managed by laparoscopy: a report of two cases. *Acta Chir Belg.* 2006;106:215-7.

Pedro Antonio Sánchez Fuentes*, Víctor López López, Beatriz Febrero, Pablo Ramírez, Pascual Parrilla Paricio

Servicio de Cirugía General y Digestiva, Hospital Clínico Universitario Virgen de la Arrixaca, Murcia, Spain

*Corresponding author.

E-mail address: fuentes_2005@hotmail.com (P.A. Sánchez Fuentes).

2173-5077/

© 2014 AEC. Published by Elsevier España, S.L.U. All rights reserved.