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Acute Abdomen Pain Following Omental Infarction Treated Laparoscopically. Case Report with Surgical Technique Notes and Literature Review

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Omental infarction; Acute abdomen pain; Laparoscopy; Acute appendicitis

1. Abstract

1.1. Background: Omental infarction is a rare cause of acute abdomen pain. It can be primitive or secondary. The clinical picture is nonspecific with laboratory tests of an inflammatory picture, and instrumental diagnosis is still challenging today. Treatment can be conservative or surgical, with laparotomy treatment or, more rarely, laparoscopically.

1.2. Case Reports: A 40-year-old male patient arrives in the emergency room complaining of pain in the right iliac fossa. CT (Computed Tomography) abdomen was performed, highlighting the thickening of the cecal appendix (9mm) with a fluid layer. Laparoscopic exploration highlights hemoperitoneum with omental infarction, which is resected and removed by associating appendectomy.

1.3. Results: The patient is discharged on the third postoperative day in good clinical condition.

1.4. Conclusions: The laboratory, clinical and instrumental picture of omental infarction is often unclear. The laparoscopic approach allows the diagnosis to be clarified and the operation to be carried out minimally invasive and with quicker postoperative recovery.

2. Introduction

The causes of omental infarction are divided into primary (idiopathic) and secondary. It represents 0.1% of all acute abdominal laparotomies [1]. More frequent in males aged between 40-50 years [2]. The primary causes are not yet known. The medical case can vary from localised abdominal pain, lasting a few days, which resolves spontaneously, to an acute abdomen treated with laparotomy. The picture of the blood chemistry tests also varies with the alteration of the non-specific inflammatory indices. Instrumental tests are not always diagnostic due to the rarity of the pathology and the differential diagnosis with appendicitis and/or cholecystitis, as the pain is often localised to the right quadrants of the abdomen.

3. Case Reports

A 40-year-old male patient arrives at the emergency room complaining of pain in the right iliac fossa that began two days earlier. He reports no fever, nausea and vomiting, loss of appetite, and bowel movements said to be channelled only to gas but not to faeces for 24 hours. Denies previous surgical history. ASA 1. BMI 29 [3].

On examination: globular abdomen due to fat with pain on superficial and deep palpation in the lower quadrants of the abdomen with prevalence on the right. Blumberg positive. Rovsig positive, Mc Burney positive. Peristalsis absent. Reduced tympanism. Vital parameters are normal. Blood chemistry tests showed neutrophilia (79%) with total white blood cell count normal (9.2 x 10 3 / uL), ESR (22) and CRP (66 mg/l) slightly increased while all other values were within the range norm. For the persistence of painful symptoms, CT Abdomen with and without contrast is required, which shows the increased thickness of the cecal appendage (9mm) with free fluid in the abdomen, particularly in the right laterocolic gullet and the Douglas.

A decision is made for urgent surgery with a laparoscopic approach.

3.1. Technical Notes

Nasogastric tube and bladder catheter. Open intraumbilical laparoscopy, 12 mm trocar in the left iliac fossa and a 5 mm trocar in the suprapubic region. Surgeons on the patient's left for laparoscopic appendectomy. The hemoperitoneum is associated with a purplish-coloured omentum attached to the cecal fundus and the ascending colon with a clear transition line compared to the healthy omentum (Figure 1). The appendix appears catarrhal, thickened but without signs of complications. The mesoappendicular appears intact and non-bleeding. The cecum and right colon do not seem affected by complicated diverticular disease. No perforations are evident. The parenchymatous organs are explored, but no further signs of active bleeding are revealed. The pelvis and pelvic organs are examined. The midsection of the entire small intestine and colon is explored. The right lateral third of the omentum, which appeared violaceous, was explored without further haemorrhagic sources. The posterior layer of the omentum is affected by a hematoma with active oozing of venous blood (Figure 2). We proceed with partial omentectomy (Figure 3) and subsequent appendectomy. Abundant washing of the abdominal cavity. Placement of drainage tube in Douglas for monitoring.

The postoperative course was ordinary. Gas canalisation on the first day and removal of the nasogastric tube. Liquid diet on the first day. Removal of drainage and bladder catheter on the second day. On the third day, with stable blood tests, he resigned.

Histological: confirmed the diagnosis of segmental omental infarction. Venous congestion is represented by dilated veins filled with red blood cells and thrombosis extravasation of red blood cells into the interstitium with adiponecrosis.

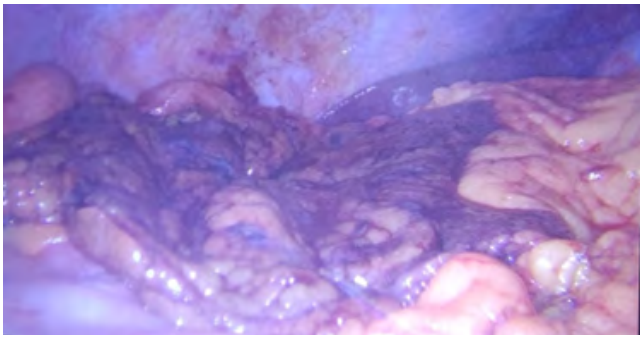

Figure 1:

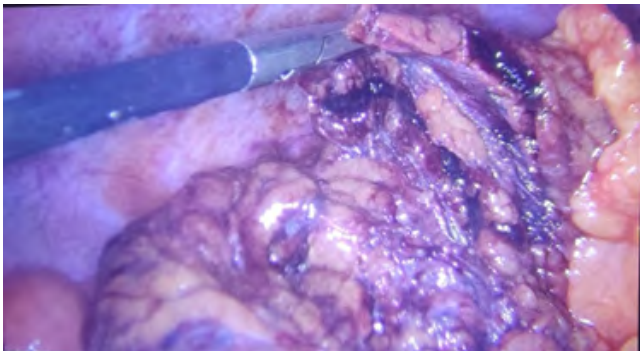

Figure 2:

Figure 3:

4. Discussion

The greater omentum is a double layer of peritoneum with four layers. It covers the abdominal organs inferiorly and plays its role in preventing adhesions, limiting infections and promoting neo-vascularization [3].

4.1. Epidemiology

Omental infarction is a rare cause of acute abdomen pain. It has a bimodal distribution with 15% in paediatric age and another peak between 40-50 years [2].

4.2. Aetiology

Several theories exist among the primary (idiopathic) causes of omental infarction. Some theories describe vascular alterations of the omentum, with increased venous stasis, haemorrhage and necrosis; a small omental root; increased intra-abdominal pressure due to exertion, coughing, or coagulation disorders [4]. When the right half of the omentum contains vascular changes, it is less tolerant of venous stasis, leading to a greater likelihood of omental vein thrombosis even after slight lengthening. It is more common on the right side due to the greater mobility and length of this section of the omentum. Still, torsion and omental infarction on the left or in the epigastrium have also been reported [4].

Omental torsion can be secondary to tumours, hernia, trauma, postoperative adhesions, and localised inflammation. Rarer causes of omental torsion are vasculitis and thrombophilia [5, 6]. Many authors have highlighted a correlation between obesity and omental infarction, considering it a risk factor for excess omental fat, which can act as a torsion point [7]. Excess omental fat can promote thrombosis and ischemia [8]. In our case, it was a spontaneous omental infarction, having excluded, upon laparoscopic exploration, other secondary causes.

4.3. Clinical Picture

Nonspecific abdominal pain is associated with other vague and nonspecific symptoms. The pain is predominantly localised on the right. Signs of peritonism are not always present. No bowel alterations have been reported unless secondary to paralytic ileus 8. Physical examination of the abdomen only rarely reveals a mass with increased consistency. Differential diagnosis should be made with appendicitis, cholecystitis or diverticulitis of the right colon. In our case, the medical case was typical of an acute abdomen due to hemoperitoneum. Catarrhal appendicitis could be considered secondary.

4.4. Instrumental Diagnosis

Observational studies have analysed parameters such as leukocytes, CRP (C-reactive protein), and ESR (erythrocyte sedimentation rate) in an unsuccessful attempt to seek help in the differential diagnosis [9]. This study by Yang highlights that a neutrophil count lower than 77% (100% sensitive and 100% specific) could be used in the differential diagnosis between omental infarction and appendicitis [10]. In our case, this was not the case, with a neutrophilia of 79%.

CT rarely highlights a well-circumscribed, ovoid area of soft tissue such as omental fat. The radiological sign of the vortex with hyper-attenuated striations, typical of omental infarction and torsion, may not be present.

Ultrasound may highlight a hyperechoic ovoid or triangular area in correspondence with the greater omentum [11]. In our case, the CT showed appendicitis; therefore, the position of the laparoscopic trocars was also influenced by this conclusion. Only upon postoperative review of the images is a fatty mass containing linear structures shown, representing the dilated thrombosed veins.

4.5. Therapy

Spontaneous omental infarction is self-limiting and requires non-operative treatment. Surgery should be reserved for patients with worsening of the clinical picture [12]. Non-operative treatment has a longer length of stay than surgery. On average, non-operative treatment has a hospital stay of 13 days, while surgical treatment lasts five days, which can be reduced to 2.5 with laparoscopic surgery [13]. Non-operative treatment is characterised by a 15.6% failure rate [13]. The clinical observation period must be 48 hours. Conservative treatment is preferable in paediatric age [14]. In our case, the presence of hemoperitoneum, which resulted in marked peritonism, led us to intervene immediately.

The gold standard has not yet been highlighted, as the literature consists mainly of case reports and case series.

5. Conclusions

Omental infarction is a condition that the surgeon must remember when preparing to operate on an acute abdomen with localisation of pain predominantly on the right, without a precise laboratory and radiological picture. Laparoscopy allows us to put an optic and perform the final diagnostic action before the therapeutic one. The laparoscopic approach is practical and safe, completing the diagnostic process and reducing hospitalisation times with less invasiveness.

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