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Primary Omental Infarction Diagnosed Intraoperatively in a Child in a Rural Hospital

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1. Abstract

Omental infarction occurs with torsion of the omentum on itself leading to necrosis. This is rare and can mimic acute appendicitis clinically. This can be primary or occur secondary to previous surgeries, malignancies or hernias. We present a case of a 9 year old boy who was diagnosed with primary omental infarction intraoperatively.

2. Main Text

Omental Infarction (OI) is rare and can clinically mimic acute appendicitis. It occurs when the omentum torts on itself leading to infarction and necrosis of omental tissue [1]. There have been 400 reported cases since it was first described in 1899.2 15% of OI cases are paediatric patients [1, 3-5]. The rate of OI discovered incidentally in children undergoing laparoscopic appendicectomy is 0.1% to 0.5% [1, 2, 5]. The rate of preoperative diagnosis for primary OI is only 10% despite use of imaging.2 We present a paediatric primary OI case diagnosed intraoperatively in the rural setting.

3. Case Presentation

A 9 year old boy presented at night to the Emergency Department of our regional hospital with a 2 day history of right lower quadrant pain. The pain began while swimming in school. It was nonspecific and vague in characteristic. He continued to feel unwell with progressively worsening pain prompting presentation to hospital. His past history included tonsillectomy and suxamethonium allergy. He was otherwise healthy, with immunisations up-to-date and not on regular medications. He had a temperature of 37.9°C, heart rate 85, blood pressure 108/75, saturations 98% on room air and respiratory rate 24. His abdomen was soft, tender in the right iliac fossa and Rovsing's positive. His white cell count was 15x109/L with neutrophilia of 11.2x109/L. His CRP was 9mg/L with normal electrolytes and renal function. His height was 114cm and weight 53.9kg resulting in BMI of 42.

A clinical diagnosis of likely early acute appendicitis was made by the on-call general surgeon. As the patient was haemodynamically normal with no signs of sepsis, a decision was made to defer any diagnostic imaging. He was commenced on intravenous antibiotics. On review the next morning his symptoms were persistent and after discussion with his parent, a decision was made to proceed to operation. After informed consent, laparoscopic appendicectomy was planned.

Intraoperatively, a macroscopically normal appendix was identified with a small amount of serous free fluid in the pelvis. There was thickened inflamed omentum attached to the ascending colon and right abdominal wall with associated localised peritonitis (Figure 1 and 2). The right colon was mobilised and found to be healthy with no haematoma, localised inflammation or perforation. The distal small bowel was inspected and found to be normal without Meckel's diverticulum. There was no mesenteric lymphadenopathy. Appendicectomy was performed and the inflamed omentum was excised.

Histopathology showed a normal appendix. The second specimen was a piece of congested fat measuring 56x24x12mm. It showed widespread peritoneal reaction with fibroblastic proliferation, patchy surface fibrin deposition, diffuse vascular congestion and widespread acute haemorrhage. In addition, scattered lobules of adipose tissue show fat necrosis with mild infiltrate of macrophages and neutrophils. There was no evidence of malignancy.

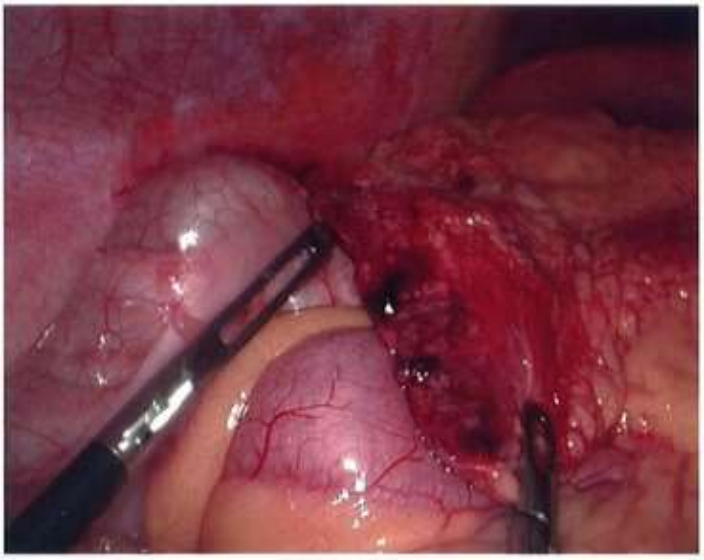

Figure 1: Thickened inflamed omentum attached to ascending colon and right abdominal wall

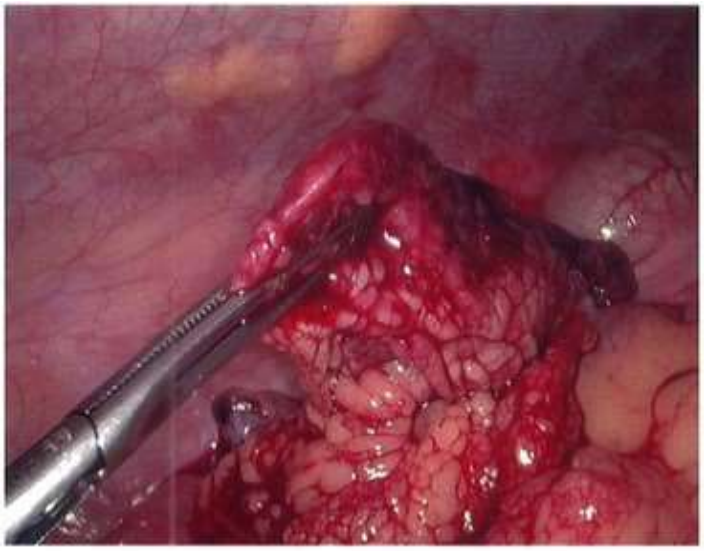

Figure 2: Thickened inflamed omentum lifted off abdominal wall and colon with grasping forceps

4. Discussion

OI can be primary or secondary to previous abdominal surgery, malignancies, hernias and vascular anomalies [3, 6]. Risk factors for primary OI include obesity, local trauma, occupational vibration, heavy food intake, excessive exercise, coughing, excessive strain, sudden changes in position, polycythaemia, hypercoagulability, vasculitides and use of laxatives [3, 4]. The most important risk factor is obesity and the lower incidence in the paediatric population is theorised to be due to lower amount of intra-abdominal fat compared to adults [5].

The abdominal pain in this condition can occur in any location but has a predilection for the right side. This is likely because the omentum is more mobile and longer on the right causing more tenuous blood supply [1, 3]. There is neutrophilia in two-thirds of OI cases [1]. OI is often diagnosed intraoperatively but this rate has decreased with widespread use of Ultrasound (US) and Computed Tomography (CT) [6]. In the last 20 years, 32% of OI have been diagnosed intra-operatively [1].

On US, OI appears as a non-compressible hyperechoic oval mass within the omentum or adherent to the abdominal wall and tender on pressure [1, 6]. US is operator dependent and can lead to misinterpretation of infarcted fatty lesion as normal intra-abdominal fat if clinician or sonographer does not have a high index of suspicion [4]. CT is considered the gold standard for diagnosis of OI [1]. On CT, OI appears as a well-circumscribed, inflammatory triangular or oval-shaped fatty mass or an interspersed area with hyperattenuating streaky infiltration that is located between the anterior abdominal wall and colon [1, 4].

There is no consensus for the best treatment modality for OI as conservative and surgical management have yielded similar outcomes [3, 4]. OI can be self-limiting so with a confident diagnosis by imaging, conservative management with analgesia, intravenous fluids, non-steroidal anti-inflammatory treatments and occasionally intravenous antibiotics can be used [1, 3, 4]. This would require monitoring for complications like persistent pain, abscess, adhesion and intestinal obstruction [3, 4]. The surgical approach is laparoscopic with resection of the infarcted segment of omentum. Surgical management can rapidly ameliorate pain, have shorter hospital stay and quicker recovery.3, 4 Laparoscopic surgery is the widely used approach in paediatric cases [2].

5. Conclusion

Our patient with primary OI had two risk factors including obesity (BMI>30) and excessive exercise (pain occurred while swimming). He underwent laparoscopic appendicectomy and resection of infarcted omentum. He did not undergo imaging so conservative management was not considered. The literature is divided regarding whether conservative versus surgical management of OI is best. This case has highlighted the importance of considering OI as a differential in the paediatric acute abdomen.

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