

JEJUNAL PERFORATION SECONDARY TO KICK DURING KICK-BOXING PRACTICE: LAPAROSCOPIC MANAGEMENT

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Abstract Small bowel injury in a sports setting is a rare occurrence with a paucity of reported cases. A 30-year old male patient consulted for generalized abdominal pain subsequent to secondary blunt abdominal trauma during kick-boxing practice. A computed tomography scan of the abdomen and pelvis revealed a moderate amount of free fluid in both the parietocolic space and the rectovesical pouch, with perihepatic pneumoperitoneum. Emergency laparoscopy was indicated and a closure of small bowel defect was performed. Diagnosis of small bowel injuries is difficult, resulting in delayed treatment and increased mortality and morbidity.

Key words: abdominal injuries, sports medicine, intestinal perforation, acute abdomen, laparoscopy

Resumen *Perforación yeyunal secundaria a patada durante práctica de kick-boxing: Manejo laparoscópico.* La lesión intestinal en un entorno deportivo es infrecuente con pocos casos comunicados.

Un varón de 30 años consultó por dolor abdominal generalizado posterior a un traumatismo abdominal cerrado secundario a la práctica de kick-boxing. Una tomografía computarizada de abdomen y pelvis reveló líquido libre tanto en el espacio parietocólico como en la bolsa rectovesical, con neumoperitoneo perihepático. Se indicó laparoscopia exploradora con cirugía de rafia intestinal. El diagnóstico de las lesiones del intestino delgado es difícil, lo que provoca un retraso en el tratamiento y un aumento de la mortalidad y la morbilidad.

Palabras clave: traumatismos abdominales, medicina deportiva, perforación intestinal, abdomen agudo, laparoscopia

Small bowel perforation is a rare injury following blunt abdominal trauma, and is rarely reported in a sports setting¹. It accounts for less than 0.3% of cases in patients with blunt abdominal trauma^{1,2}.

Delays in the diagnosis and surgical treatment of small bowel injury are associated with significant morbidity and mortality².

Small bowel injury in a sports setting is a rare occurrence with a paucity of reported cases. Up to 2017, only seven cases had reported jejunal perforation resulting from sports activities³.

Clinical case

A 30-year-old male with a personal pathological history of a mild infection by SARS-CoV-2 in January 2021 and a surgical record of trauma surgery of cruciate ligaments consulted to the emergency room for generalized abdominal pain associated with bilious vomiting. The pain was subsequent to secondary blunt abdominal trauma during kick-boxing practice, after receiving a kick in the left flank region. On physical examination, he presented preserved vital signs; a slightly depressible wooden abdomen; and generalized pain predominantly in the upper abdomen, with abdominal guarding and pain on decompression at this level. Laboratory examination showed white blood cells of 10.6/mm³, and neutrophilia of 92%. A computed tomography (CT) scan of the abdomen and pelvis revealed a moderate amount of free fluid in both the parietocolic space and the rectovesical pouch, with perihepatic pneumoperitoneum (Fig. 1).

It was decided to perform an emergency exploratory laparoscopy, where a moderate amount of free fluid perforation was observed in the four abdominal quadrants, and an inflammatory plastron in the left flank region. The small intestine was

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rewound and a perforation of approximately 2 centimeters was observed in the jejunal region. A small bowel raffia with polyglactin 3.0 surget was performed, followed by a reinforcement with polypropylene 3.0 stitches (Fig. 2). A drain was left in the rectovesical pouch.

The patient's postoperative course was uneventful. He was discharged from the hospital on the fifth postoperative day, after a CT scan with oral contrast showed no oral contrast leakage. The control at fifteen days after surgery showed no particularities.

Fig. 1.– A: CT scan of abdomen and pelvis with intravenous contrast, sagittal section: perihepatic pneumoperitoneum (yellow arrow). B: CT scan of abdomen and pelvis with intravenous contrast, axial view: free fluid in right and left parietocolic spaces (yellow arrows), small bowel loops edema (yellow arrowhead)

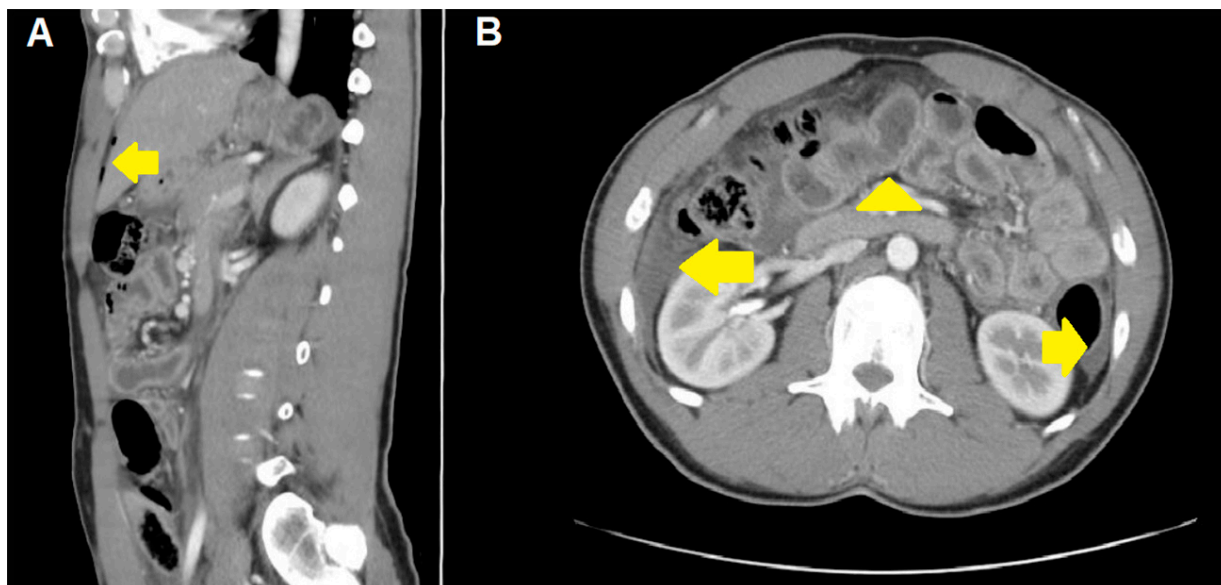
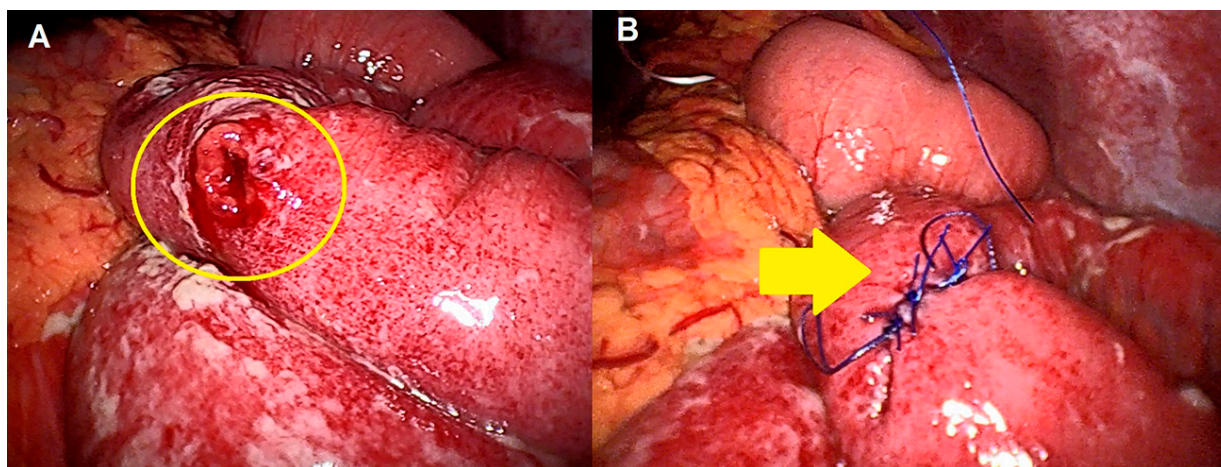


Fig. 2.– Intraoperative images of exploratory laparoscopy. A: Jejunal perforation (yellow circle). B: Laparoscopic small bowel raffia (yellow arrow)



Discussion

Unlike the penetrating injury patient in whom visceral injury is common, the blunt trauma patient rarely shows clinical evidence of visceral rupture. Solid organ injury and the resulting haemodynamic instability are a higher priority in the management of the blunt abdominal trauma patient, and blunt visceral injury is generally not suspected unless the clinical picture is highly suggestive^{2, 4}.

There is some debate in the literature on the mechanism of small bowel injury due to blunt trauma. Three mechanisms are commonly discussed: shear forces, compression between the abdominal wall and the spine, and burst injury due to a sudden increase in intraluminal pressure^{3, 5, 6}.

Hollow viscus injuries are infrequent and have a high associated mortality, requiring increased follow up to ensure timely diagnosis and treatment². The highest mortality rate was recorded for stomach injury at 28.2%. The mortality rate for small bowel injury was 15%, and 19.4% for colon and rectal injury².

Full-thickness perforations due to rupture forces are most common in the small intestine. In some series, burst injuries have tended to occur in the proximal jejunum, 15-60cm from the ligament of Treitz⁵.

In patients with isolated perforating hollow viscus injury, we found that a delay in surgical intervention of more than 24 hours was associated with a significantly higher mortality rate than that found in patients who underwent surgical repair within 24 hours (5% vs. 16%, p 0.18). This was independent of the associated injury².

Diagnosis of small bowel injuries is difficult, resulting in delayed treatment and increased mortality and morbidity. Early diagnosis is necessary for prevention of mortality and morbidity⁴. Pain is the most constant symptom, sometimes associated with vomiting or absence of peristalsis. Abdominal bruising is found in 70% of patients and abdominal tenderness occurs in 75% of cases⁴.

When abdominal trauma is associated with other injuries or altered mental status due to head trauma or drug or alcohol use, clinical recognition becomes difficult. Laboratory testing is of little value. The sensitivity and specificity of leukocytosis were estimated at 84.8% and 55.2%, respectively, after small bowel injury⁴.

Computed tomography (CT) appears to be the diagnostic method of choice to assess haemodynamically stable patients⁴. CT findings for small bowel trauma include free fluid without solid organ injury, thickening of the bowel wall, and mesentery striae or dilated bowel loops⁴. CT has a sensitivity between 69% and 95%⁶.

In patients with blunt abdominal trauma a positive point-of-care sonography (POCS) findings are helpful for guiding treatment decisions. However, a negative POCS exam does not rule out injuries and must be verified by test such as CT.⁷ Taking this information into account, in the present case it was decided to defer the FAST ultrasound and perform a CT.

In haemodynamically stable patients after blunt abdominal trauma, laparoscopy is an acceptable and successful alternative to laparotomy both as a diagnostic and therapeutic procedure^{1, 3, 4}, provides patients with the benefits of minimally invasive surgery, and reduces the rate of unnecessary laparotomy^{3, 8}.

A delay in diagnosis and definitive treatment of bowel injury may result in increased morbidity and mortality. Fakhry et al. reported morbidity and mortality rates of 25% and 2%, respectively, for small bowel injury treated surgically within the first 8 hours. Morbidity and mortality increased to 76% and 30%, respectively, when surgical treatment was performed later than 24 hours after injury⁹.

The treatment for small intestine lesions with smaller defects is the primary closure while bowel resection is the treatment of choice for larger lesions and ischaemic segments⁵.

Exploratory laparoscopy can make the diagnosis of small bowel injury by showing direct signs or indirect signs of perforation, such as free fluid. In the study by Mathonnet et al, 40% of patients were treatable laparoscopically⁴.

In conclusion, laparoscopic surgical treatment is a valid alternative in patients with blunt abdominal trauma. An appropriate and timely surgical treatment without delaying the decision is essential to provide adequate therapy to the patient.

Conflict of interest: None to declare

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Según la teoría de Darwin, el hombre evoluciona seleccionando, de los miles de genes paternos y maternos entrelazados en el óvulo fertilizado, la combinación más apropiada –not the best but the fittest–. Así, se consigue aumentar lo bueno y eliminar, poco a poco, lo defectuoso, obteniendo nuevas generaciones más aptas para sobrevivir. Esta evolución genética [...] es parte de la ecuación, pero lo epigenético y el micro y macro ambiente son tanto, si no más importantes para mejorar la descendencia. Se cumple así el enunciado Nature vs Nurture o Darwin vs Lamark, que se define de la siguiente manera:

*Nature is all that a man brings himself into the World;
Nurture is every influence which affects him after his Birth*

C. Dosne Pasqualini. En: La vida te regala 30 años. Aprovéchalos.
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