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# Blunt trauma induced perforation of transverse colon – An uniquely Australian presentation

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## I. Case

A physically well-developed 18 year-old male presented with 24-h with abdominal painpreceded by aknee striketo his abdomen during an Australian Football match. He noticed epigastric and mid abdominal pain immediately after the trauma, but was able to play through the remainder of the match. The pain reached a crescendo of severitytwo hours post-match, and subsequently migrated and localized to his right iliac fossa (RIF). He presented the following day with RIF pain, anorexia, nauseaand temperatures up to 39.2$^{o}$C at home.

Examination revealed a severely tender RIF with signs of rebound tenderness, localized guarding, and pain with coughing. His vital signs were within normal limits other than an isolated tachycardia of 102 bpm. He had a leucocytosis of 21x109, a neutrophilia of 19.2 x109, and a CRP 197mg/L. His other biochemical markers remained normal.

The decision was made on history, clinical exam, and biochemical results to forego computed tomography (CT) and bring the patient for an emergency explorative laparoscopy, which revealed a blow-out perforation of the transverse colon (Fig. 1) covered by oedematous omentum (Fig. 2) with a right paracolic gutter covered by a large number of congenital adhesions and gross amounts ofpurulent free fluid (Fig. 3). A hemicolectomy followed by a thorough washout of the abdomen was performed and the patient recovered without issues on the ward. Subsequent histology showed acute inflammation and abscess formation associated with trauma, with no evidences of other underlying bowel pathology.

## II. Discussion

Australian rules football is unique from the point of view that it is a contact sport but little protective equipment is utilized by participants. It is the leading cause of sport injury related hospitalizations in Australia (government report), yet medical literature on the subject remains limited. The majority of injuries are peripheral limb injuries and fractures (government report), while intraabdominal injuries are rare. High profile cases of players requiring nephrectomies but no cases of colonic injury in modern Australian football.

Unlike small bowel injury, colon specificinjury is rare and seen in only 0.15-0.5%of cases of blunt abdominal trauma (BAT).1,2 Of these, full thickness colonic perforation makes up only 3%.2 Reported cases of colonic perforation areoften associated with other injuries, reflecting the high energy required to produce a perforation in the first place.2,3This is in contrast to the low energy mechanism of injury reported here.To our knowledge, there have only been two other reported cases of low velocity, person-to-abdomen impacts (soccer and kickboxing) leading to colonic perforation in persons without pre-existing underlying bowel pathology.4,5

Viscous and mesentericinjury can be due to crushing between the instrument of trauma and a patient's own spine, bursting of a closed loop segment of bowel due to sudden increase in intraluminal pressure, or shearing forces between fixed and mobile portions of a patients gastrointestinal tract.2The latter being a possible cause in our patient, given the presence of numerous congenital adhesions between the ascending colon and abdominal wall.

The decision for exploratory surgery is often more obvious in patients with solid organ injuriesdue to resultant early haemodynamic instability andclinical signs of abdominal injury.4 Diagnostic certainty is less clear

in patients with bowel perforation as they tend to remain stable for some time. This may be due to the time needed for ischemia and infection to take place in the perforated segment, or delayed progressionofan initial serosal or musculocutaneous tear.6This prospect of delayed colonic perforation after BAT adds a further level of complexity as there have been cases of delayed presentations of up to one month after initial trauma.7

Concerningly, negative exploration rates are as high as 20-40% when laparotomies are undertaken due to clinical findings, while sensitivity for non-solid organ injury on CT is only 73-85% at best.1,3,8In patients too unstable for CT, focused abdominal sonography for trauma (FAST) is recommended as an initial investigation,although no imaging can reliably exclude blunt colonic injury.1

We present a rare case of low-velocity BAT induced isolated colonic perforation in a fit, healthy 18-year old male. Interestingly he presented with history and exam typical of appendicitis a la Valentino's syndrome, albeit with a transverse colon perforation rather than duodenal. To our knowledge, this is the only reported case of colonic rupture on an Australian football pitch.

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