



Isolated jejunal perforation following blunt abdominal trauma

Künt abdominal travma sonrası izole jejunal perforasyon

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Isolated jejunal perforation caused by blunt abdominal trauma is uncommon and most often seen after motor vehicle accidents. We present a case of “blowout” perforation of the jejunum in a young male who was admitted to our hospital with intense abdominal pain following a physical assault. The Injury Severity Score was 0. Although the erect chest radiograph was negative for free air, abdominal computed tomography scan revealed a large amount of free intraperitoneal air. The exploratory laparotomy that followed revealed only a 3 cm-long perforation of the jejunum, 20 cm from the ligament of Treitz. Although our experience as a trauma center is limited, clinical suspicion and timely exploration in this case led to prompt surgical intervention and a successful outcome.

Key Words: Blunt; jejunum; perforation; trauma.

Künt abdominal travmanın neden olduğu izole jejunal perforasyon nadirdir ve çoğu kez motorlu taşıt kazalarından sonra görülür. Darp edildikten sonra şiddetli karın ağrısı ile hastanemize yatırılan genç erkek hastaya ilişkin “patlama” şeklinde bir jejunal perforasyon olgusu sunuyoruz. Yaralanma Şiddet Skoru 0 olarak değerlendirildi. Ayakta çekilen göğüs radyogramında serbest hava saptanmadıysa da karın bilgisayarlı tomografisi taraması büyük miktarda serbest intraperitoneal hava bulunduğunu ortaya koydu. Tanısal laparotomide yalnızca, Treitz ligamanının 20 cm uzağında yer alan 3 cm uzunluğunda bir jejunum perforasyonu belirlendi. Bir travma merkezi olarak, sınırlı deneyimlerimiz olmasına rağmen, klinik kuşku ve zamanında gerçekleştirilen eksplorasyonla, hızlı cerrahi girişim uygulanarak başarılı bir sonuç elde edildi.

Anahtar Sözcükler: Künt; jejunum; perforasyon; travma.

Since Samuel Annan reported the first case of intestinal rupture secondary to blunt trauma in 1837,^[1] there have been abundant publications on this subject. Although jejunal perforation from blunt abdominal trauma is a common injury, isolated jejunal perforation is extremely rare.^[2]

Punctate or slit-like perforations often occurring on the antimesenteric border are probably the consequence of a sudden increase in intraluminal pressure in a fluid or air-filled loop. Robbs et al.^[3] in 1980 reported five such lesions in Zulu tribesmen, most caused by a blow to the abdomen with a heavy, round-headed weapon. The small bowels of almost all victims were distended with large quantities of local beer. These perforations were not surrounded by damaged tissue and did not appear to result from a crushing-type injury.^[3,4] They are referred to as “blowout” perforations.

The assessment of modern-day blunt intestinal injury reveals that the vast majority of intestinal perforations following blunt abdominal trauma are caused by motor vehicle accidents.

We present a rare case of isolated jejunal perforation in a young male following blunt abdominal trauma during a physical assault.

CASE REPORT

A 22-year-old male was admitted to the emergency department with intense abdominal pain caused by interpersonal violence. No bruises or other external injuries were noted on his physical examination. Palpation revealed abdominal tenderness and guarding, and auscultation was marked by the absence of bowel sounds. Vital signs were normal. Blood tests and urine analysis showed leukocytosis and slight elevation of liver transaminases and amylase. Urine analysis also revealed high amylase as well as microscopic hematuria. The blood hemoglobin concentration was normal.

The erect chest radiograph did not show the presence of any free air under the diaphragm (Fig. 1a).

Abdominal ultrasound was negative for free fluid. The patient was admitted for observation. Despite the fact that his clinical picture was unaltered during the first

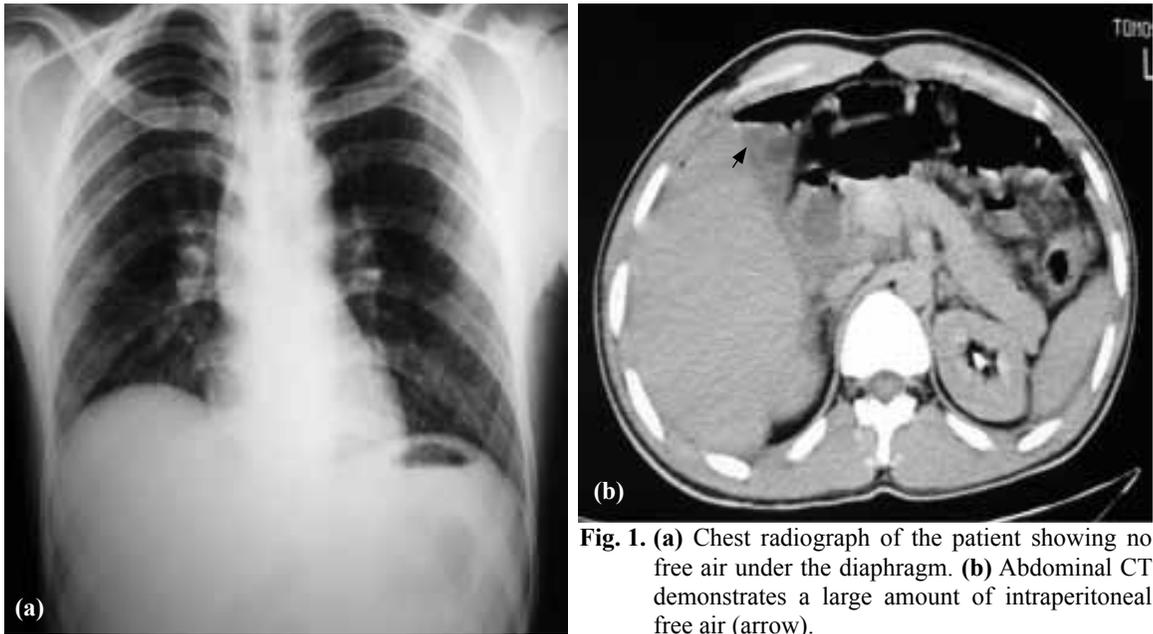


Fig. 1. (a) Chest radiograph of the patient showing no free air under the diaphragm. **(b)** Abdominal CT demonstrates a large amount of intraperitoneal free air (arrow).

hours following his admission, due to the persistence of abdominal tenderness and the high suspicion for intraabdominal injury, an abdominal computed tomography (CT) with oral contrast was performed, which demonstrated a large amount of intraperitoneal free air, suggestive of a hollow viscus injury. Nevertheless, there was no contrast leakage on abdominal CT (Fig. 1b).

Twelve hours post-admission, the decision was made for an exploratory laparotomy that revealed a small amount of bile-stained fluid and an isolated perforation of the jejunum on the longitudinal axis 3 cm in length, 20 cm distal from the ligament of Treitz. Exploration of the rest of the peritoneal cavity was unremarkable. The ruptured jejunum was sutured primarily.

The patient had an uneventful postoperative course and on the 4th postoperative day a contrast swallow was performed, which was normal.

DISCUSSION

The abdomen is the third most commonly injured part of the body following trauma. Early recognition of small bowel injury is important in the prevention of morbidity.^[5-7] Seventy-five percent of blunt abdominal traumas are caused by motor vehicle accidents.^[8] Although small-bowel injury has been reported to be the third most common injury in blunt abdominal trauma, it occurs in less than 1% of blunt trauma patients.^[9,10] In the medical literature, 62 cases of small intestine perforations caused by physical assault were reported from 1970 to 1998.^[10]

Hollow organ injury following a history of blunt abdominal trauma is a dilemma for emergency department physicians. The diagnosis of hollow viscus organ injury should be based upon the mechanism of injury, history and serial physical examinations.

Physical examination is not adequate on its own for the diagnosis, and it was reliable in only 30% of blunt trauma injuries.^[10] According to Schenk et al.,^[11] there are no reliable signs or symptoms, and free air under the diaphragm on erect chest plain radiographs is characteristically absent. Among 111 patients with small bowel perforations, abdominal tenderness was a common finding, but it was not specific for bowel perforation. Only 40% of the CT scans were diagnostic for bowel perforations; 50% of them showed suggestive signs and 10% were considered as negative. Persistence of abdominal signs indicated peritoneal lavage.^[12]

Apart from physical examination, there are three diagnostic tools for hollow viscus perforation: diagnostic peritoneal lavage (DPL), CT scanning, and focused abdominal sonography for trauma (FAST). The DPL is the most widely used method. According to Burney et al.,^[13] peritoneal lavage has proven sensitive in the demonstration of hemoperitoneum, but is less reliable in the early diagnosis of intestinal injuries. Powell et al.^[14] noticed that the routine use of peritoneal lavage in stable trauma patients often leads to nontherapeutic laparotomies.

The gold standard for assessment of blunt trauma diagnosis is CT scanning, with a sensitivity of 92%, specificity of 94%, positive predictive accuracy of 30%, negative predictive accuracy of 100%, and overall accuracy (validity) of 94%.^[15] It is emphasized that CT scan might have the capacity to accurately diagnose blunt intestinal trauma, providing it is performed and interpreted with care. It has proved to be an excellent imaging modality for diagnosis and management of hemodynamically stable patients with abdominal injuries, contributing toward a significant reduction in morbidity and mortality in trauma victims.^[16]

Although the impact of operative delays on morbidity and mortality has been unclear, even relatively brief delays as little as eight hours result in morbidity and mortality directly attributable to a “missed” small-bowel injury.^[17] Small bowel perforation has low mortality and complication rates if it is treated earlier than 24 hours after injury. The principle of “rushing to the operation suite” for a stable patient with blunt abdominal trauma without detailed systemic examination is not justified. Because delay in diagnosis does not seem to affect morbidity or mortality, dedication to observation and serial physical examinations will aid in the proper identification of elusive small-bowel and mesenteric injuries in blunt trauma.^[17]

In one study,^[18] mortality from operative blunt trauma was associated with admission blood pressure ≤ 90 mmHg, age ≥ 24 years and Injury Severity Score ≥ 35 . Morbidity was associated with age ≥ 24 years and delay in operative therapy ≥ 24 hours. Some authors^[19] believe that mortality is associated with other serious concomitant injuries and that complications are associated with diagnostic delays.

Our case confirmed the above-mentioned observations. Thus, although the clinical state of the patient was not severe enough to justify the diagnosis, it was the maintenance of high clinical suspicion that led us to perform additional investigations that brought the perforation to light.

With the above in mind, we can conclude that diagnosis of traumatic jejunal perforation is challenging. For optimal outcomes, vigilance is needed together with the maintenance of a high index of clinical suspicion. This is achieved with repeated physical examinations and the available appropriate imaging modalities.

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