



Pediatric Seat Belt Syndrome & Delayed Intestinal Injuries: Case Report & Literature Review

Pedatrik Emniyet Kemerini Sendromu & Gecikmiş Bağırsak Yaralanmaları:
Vaka Raporu & Literatür İncelemesi

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ABSTRACT

We believe that this case report will help in the early diagnosis of possible seat belt injuries. We present a case of delayed ileal perforations in a pediatric patient with clinical signs and symptoms. A 10-year-old male patient was admitted to the intensive care unit for follow-up due to a grade 1 laceration of the liver in a vehicular traffic accident. Hemodynamics were stable and there was no perforation on CT scan. On the 2nd day of follow-up laparotomy due to abdominal distension and tenderness, primary repair of bird's eye perforation was performed at two points in the ileal intestine. Although negative abdominal CT scans are available in patients with seat belt-related abdominal ecchymosis in the acute phase, we believe that possible intra-abdominal organ damage should be kept in mind in vehicle accidents in high-energy collisions and keeping seat belt syndrome in mind in the presence of persistent pain and tenderness will lead the physician to early diagnosis and treatment.

Keywords: Seat belt, child, accident vehicle, intestinal perforation

ÖZ

Bu olgu sunumunun, emniyet kemeri olası yaralanmalarının, erken teşhisine yardımcı olacağına inanıyoruz. Emniyet kemerine bağlı çocuk hastada gecikmiş ileal perforasyonları olan hastanın klinik bulgu ve semptomları eşliğinde sunduk. 10 yaş erkek hasta araç içi trafik kazasında karaciğer grade 1 laserasyonu nedeniyle yoğun bakıma takip için yatırıldı. Hemodinami stabildi, çekilen tomografide perforasyon yokken, takibin 2. Günü abdominal distansiyon ve hassasiyet nedeniyle yapılan laparotomide ileal barsakta iki noktada kuş gözü perfosyan primer tamir edildi. Emniyet kemerine bağlı abdominal ekimozu olan hastalarda sonuç olarak, akut dönemde negatif abdominal BT taramaları mevcut olsa da, yüksek enerjili çarpışmalardaki araç kazalarında, olası intraabdominal organ hasarı akılda tutulmalı ve inatçı ağrı ve hassasiyet varlığında, emniyet kemeri sendromunu akılda tutmak, hekimi erken tanı ve tedaviye götüreceğine inanıyoruz.

Anahtar Kelimeler: Emniyet kemeri, çocuk, araç kazası, bağırsak perforasyonu

INTRODUCTION

The invention and spread of the three-point seat belt usage in the 1970's led to the decrease of traffic accident associated mortality up to 60% (1,2). Throughout the subsequent years, a clearly defined injury pattern associated with the wear of seat belts during traffic accidents has become the golden standard of presentation in cases involved, especially, in high energy accidents (3,4).

The wear of seat belt use has become a standard procedure over the last two decades. It has led to a

decrease in traffic accidents deaths. A well-designed and properly fitted seat belt will hinder the passengers of a car from being thrown to the opposite side. Whether it is the steering wheel, dashboard, or windscreen, the emerging force during a crash and the injury caused by the belt restraint increase the likelihood of intra-abdominal injuries (5).

The present article is considered to facilitate early diagnosis of pediatric seatbelt injuries. It is about intra-abdominal injury with delayed intestinal perforations to pediatric case attached to the seat belt.

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CASE

A 10-year-old male patient with grade 1 liver laceration and left foot fracture due to a vehicular traffic accident was admitted to the pediatric surgery intensive care unit for trauma follow-up. Hemodynamics were stable. No perforation was detected on abdominal contrast-enhanced tomography. On the first day of follow-up, the patient did not show any symptoms. On the second day, emergency laparotomy was decided due to cessation of oral intake, vomiting with bile, abdominal distension and tenderness, and peritonitis findings.

The patient was taken to surgery. The abdomen was entered through a midline incision below and above the umbilicus. On exploration, there was free stool in the abdomen and fibrin on the small intestine. There were 2 bird's beak shaped intestinal perforations 30 cm above the terminal ileum, 20 cm apart from each other (Figure 1,2). Primary repair was performed. The patient had subcutaneous fatty tissue necrosis under the umbilicus due to seat belt compression and the perforation was thought to be due to seat belt high-energy compression.

The patient who underwent primary repair was followed up in the pediatric surgery intensive care unit for eight days postoperatively. The patient who underwent primary repair had a penous drain, nasogastric catheter and urinary catheter in bilateral lower quadrants and his vital signs were stable postoperatively. On the 9th day following surgery, he was transferred to the orthopedic service for the treatment of left foot fracture.

DISCUSSION

Early diagnosis provides better results for seat-belt sign patients. But these patients continue to pose challenges for trauma surgeons, for timely diagnosis. Because in polytraumatized patients with seatbelt injuries, abdominal pain can become masked by pain caused by belt syndrome and non-abdominal injuries. Moreover, delayed diagnosis may result from the attribution of the physician of the current condition to the injury or abdominal wall muscle injury, rather than considering abdominal pain and tenderness. CT scans alone may be insufficient to estimate the need for surgical intervention at early stages (6).

In line with the present case, Michael and Rehan reported in a case without clinical and radiological findings of intraabdominal injury on the first day, acute abdominal findings and an emergency laparotomy and mesenteric vascular injury and ischemic segment of the jejunum were reported three days after the injury (7).

Gastrointestinal perforation and peritonitis are among the serious conditions that require timely intervention and have diagnostic difficulties, especially in pediatric

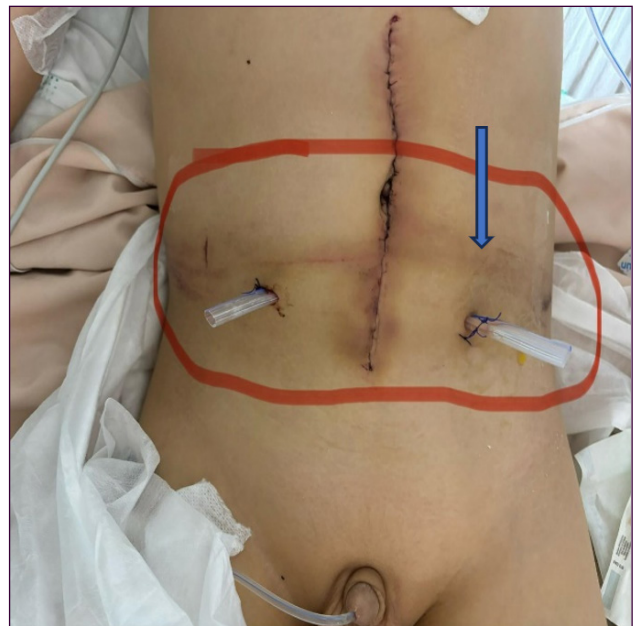


Figure 1: Seat belt sign, due to belt-style compression, marked with an arrow



Figure 2: Peroperative ileal perforation images, asterisked

patients. In post-traumatic perforation cases, delay in diagnosis can negatively affect clinical course and increase mortality rates. The fact that the imaging techniques used are not always sufficient shows the importance of physical examination (8,9).

As in our case, the absence of free air in tomography in these and similar cases clearly reveals the difficulties encountered in the diagnosis of perforation (10). In their study, Jones et al. found that symptoms became clinically evident within 9 hours after blunt abdominal trauma in all intraabdominal injuries (11). In our case, signs of acute abdomen and peritonitis were evident on the 2nd day after trauma.

Although imaging methods such as tomography have an important place in the diagnosis of perforation or peritonitis, they may not catch all the symptoms. During the follow-up on our patient, bile vomiting, sensitivity of the west and the development of peritonitis prevented the delay of diagnosis and treatment. This shows once again the critical role of post-traumatic regular physical examination and close follow-up on treatment management. When evaluated from this point of view, the decision to quickly determine the source of peritonitis in patients who developed peritonitis was effective in reducing mortality rates (8,9).

In a study by Chandler et al, abdominal wall ecchymosis was related to abdominal injury in up to 65% of cases, compared to 8% in the absence of ecchymosis (12). Common signs of peritonitis may not be present at the beginning. Recurrent abdominal examinations are necessary because peritoneal symptoms may be concealed, especially in children (13). In cases under scrutiny, CT scan repetitions are recommended at an 8 hour interval. This procedure may facilitate the diagnose early intestinal injuries (14).

CONCLUSION

In patients with seat belt-related abdominal ecchymosis, although negative abdominal CT scans may be present in the acute phase, high intra-abdominal organ damage should be kept in mind in high-energy collision-related vehicle accidents, and seat belt syndrome should be kept in mind in the presence of Persistent pain and tenderness. We also believe that using appropriate boosters in young children may reduce the potential risk of trauma.

ETHICAL DECLARATIONS

Informed Consent: Written informed consent was obtained from all participants who participated in this study.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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