

## Case Report

**J Chin Med Assoc**

2004;67:637-639

# Extraperitoneal Rectal Perforation without Perineal Wound or Pelvic Fracture

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### Key Words

blunt trauma;  
perforation;  
rectum

The present report describes an unusual case of rectal perforation. An 81-year-old female was struck by a truck while walking in the street, and she was sent to a local hospital where fracture of the right subtrochanteric femur was diagnosed. She was admitted, in stable condition, for planned orthopedic operation. Consciousness change and respiratory distress developed 6 hours later. She was then transferred to a trauma center where extraperitoneal rectal perforation was diagnosed. Despite empirical antibiotics and surgical intervention, the patient unfortunately expired 3 days later. Unusual mechanism and incomplete physical examination were the major causes of delayed diagnosis. This case report also discusses the mechanism, classification and management of rectal perforation.

**E**xtraperitoneal rectal injury secondary to blunt abdominal trauma is very rare in civilian practice and is usually seen in association with comminuted fractures of the pelvis or sacrum, and evidence of peritoneal injury.<sup>1</sup> A review of the literature yielded little information regarding blunt rectal injuries in the absence of perineal open wound and pelvic fracture. Herein we present a mortality case due to delayed diagnosis of extraperitoneal rectal injury in a traumatized patient without perineal open wound or pelvic fracture. The causes of delayed diagnosis were unusual mechanism and incomplete physical examination.

### CASE REPORT

An 81-year-old female was struck and injured by a truck while walking in the street on Jan 6, 2001. She was sent to a local hospital, where stable vital signs were noted and fracture of the right subtrochanteric femur was diagnosed. She was admitted for planned operation. Unfortunately, consciousness change and respiratory distress developed 6 hours later. After endotracheal intubation and resuscitation, brain CT showed negative find-

ings. Under the impression of fat embolism, the patient was transferred to our hospital, a Level I trauma center.

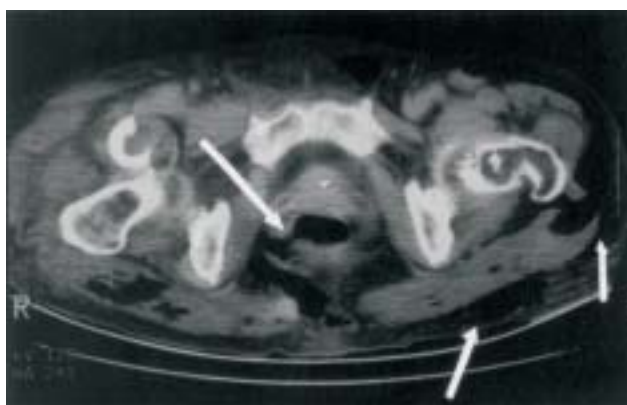
On arrival to our emergency department, she was awake with mild respiratory distress, with blood pressure 144/79 mmHg, heart rate 67/min and oxygen saturation 98 percent. Breathing sound was clear and not diminished. Sonography performed by trauma surgeon showed no fluid accumulation in the peritoneal or pleural cavities. On secondary survey, pelvis was stable. The right hip was swollen. Ecchymosis and crepitus were noted over the lower buttocks and posterior thighs, more significant over the left side. Digital rectal examination revealed a huge perforation of rectum over the right posterior wall, 5 cm above the anal verge. Laboratory data included white blood cell count 22500/cumm, and hemoglobin level 8.1 g/dL. Computed tomography (CT) scan showed large amount of air in bilateral buttocks, but no pelvic fracture (Fig. 1). Urgent operation was performed, with diverting colostomy and distal washout. The fracture was also reduced and fixed. However, in spite of urgent surgical intervention and intravenous antibiotics, the patient expired 3 days later due to persistent sepsis. The wound culture and blood culture yielded no bacteria in 7 days.

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Received: November 24, 2003.  
Accepted: August 19, 2004.

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**Fig. 1.** Pelvic CT showing rectal perforation (long arrow) and diffuse subcutaneous emphysema (short arrow).

## DISCUSSION

Rectal injuries comprise about 11% of blunt colorectal trauma.<sup>1,2</sup> About 95% of rectal injuries are caused by penetrating injuries. Rectal injuries following blunt trauma are much more rare and more difficult to diagnose, and therefore have a potentially more disastrous outcome.<sup>3</sup> This is especially true in accidents when a pedestrian has been struck by an auto and suffered a crushed pelvis. Because of the greater number and severity of associated injuries, morbidity and mortality are higher in blunt rectal trauma than in penetrating rectal trauma.<sup>4,5</sup>

Rectal injuries were classified by Haas and Fox into 3 types according to anatomy and pathology: intraperitoneal, retroperitoneal and subperitoneal.<sup>6</sup> Intraperitoneal perforation has the same characteristics as perforation of any portion of the gastrointestinal tract. Retroperitoneal perforation involves the spreading of gas or infection into the presacral space, then into the retroperitoneal space. Subperitoneal injuries of the posterior wall are characterized by infection that spreads caudally. When there is injury to the lateral wall, ischiorectal or pelvirectal abscess may develop. Injury to the anterior wall usually involves the adjacent organs.

Retroperitoneal and subperitoneal rectal injuries are extraperitoneal in anatomy. Extraperitoneal rectal injury secondary to blunt abdominal trauma is usually seen in association with comminuted fractures of the pelvis or sacrum, and evidence of peritoneal injury.<sup>1</sup> Extraperitoneal rectal injury continues to be a source of significant mor-

bidity and mortality, primarily because of life-threatening infectious complications. Reported mortality rates exceeding 20% and complication rates of 20-70% attest to the severity of extraperitoneal rectal injuries.<sup>7-10</sup>

Rectal damage can usually be identified with a minimal number of diagnostic procedures, such as thorough physical examination, anoscopy and sigmoidoscopy.<sup>4</sup> According to guidelines of Advanced Trauma Life Support (ATLS), rectal examination is an essential part of the secondary survey. Specifically, physicians should check for the presence of blood within the bowel lumen, a high-riding prostate, the presence of pelvic fractures, the integrity of the rectal wall, and the quality of sphincter tone. In a study by Brunner and Shantney, rectal injury was detected by physical examination in 100% of patients with blunt trauma and in 92% of patients with penetrating injury.<sup>4</sup>

Extraperitoneal rectal tears as a result of blunt injury are most likely to occur just proximal to the anus, because the bowel is most fixed and least distensible at this point.<sup>11</sup> Trauma mechanism in our patient may relate to shearing due to the torsional forces exerted at the junction. Extraperitoneal injuries may be painless due to the lack of nerve endings above the dentate line.<sup>12</sup> Lower injuries may be palpable per rectum. The presence of blood on the examining finger mandates sigmoidoscopy, although up to 30% of tears may not be visible.<sup>13</sup>

Rectal injury should be suspected when there is blunt pelvic injury causing hematuria or penetrating trauma crossing the midline of the pelvis.<sup>2</sup> Nevertheless, in the absence of pelvic injury and perineal wounds, rectal injuries are easily missed. In this case, rectal perforation was missed at a local hospital because of self-evident lesion of right femoral fracture. In addition, the patient did not complain of discomfort over the buttocks. Thus, digital rectal examination was not performed. Abrasion and ecchymosis over the left lower buttock did not arouse attention by the first aid physicians because the pelvis was physically stable on palpation and there were no perineal open wounds.

In conclusion, rectal perforation may exist in traumatized patients without open perineal wounds or pelvis fracture. Lower rectal injury can be easily detected by digital rectal examination. To avoid missing unusual rectal perforation, complete physical examination should be

performed in every patient with blunt trauma.

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