



## CASE OF THE MONTH

# Uncover Hidden Trauma

By Bryan Bledsoe, DO, FACEP, EMT-P

ONE WARM SPRING, LESS THAN A MONTH AFTER A HAILSTORM damaged virtually every roof in town, roofing crews from all over the country descend on Fort Worth, Texas. On one particular roof, a worker using a 6' scraper to remove old shingles and tar paper loses his footing. He slides down the pitched roof and falls 15 feet into a row of bushes and then to the ground. He lands feet first, initially in a standing position, but he immediately falls to the ground and begins screaming in pain.

### Prehospital care

Witnesses immediately summon help. Fort Worth Fire Department Rescue Squad 2 and Truck 17 arrive on scene and approach the patient after surveying for hazards. The patient is pale, diaphoretic and demonstrates marked difficulty breathing.

Initial assessment reveals a patent airway and labored respirations of approximately 40 breaths per minute. His pulse rate is 130, and the blood pressure is 128/54. Truck 17's EMT removes all the patient's clothing, except his underwear, while paramedics begin the physical exam.

The roofer is dazed and confused and unable to provide rescuers with any information. His back and cervical spine are non-tender. Paramedics feel some crepitus when they palpate the posterior aspect of his neck. The chest shows no sign of trauma or discoloration. Chest palpation fails to elicit any tenderness, although the crew again notes a faint crepitus similar to subcutaneous emphysema. Chest auscultation reveals equal but diminished breath sounds. The abdomen is soft and diffusely tender. The extremity exam proves unremarkable, revealing no tenderness. Despite the roofer's condition, responders can find no apparent trauma signs.

Paramedics administer oxygen, immobilize the patient on a long spine board and move him into the ambulance. They start an IV of normal saline en route to a Level II trauma center. During transport, the patient's apparent subcutaneous emphysema becomes more pronounced.

### Hospital care

The trauma team meets the EMS crew in the trauma bay. Physicians find the patient significantly dyspneic. His respirations are now 50 with an oxygen saturation dipping below 90%. Because of impending respiratory failure, the team places an ET tube.

The trauma team starts mechanical ventilations. The physicians also fail to find any chest wall tenderness, deformity, bruising or splinting. There is, however, widespread subcutaneous emphysema. A stat portable chest X-ray reveals bilateral pneumothoraces,

with the right lung approximately 60% collapsed and the left lung approximately 40% collapsed.

The trauma team places bilateral chest tubes. A nurse cuts off the patient's underwear to place a Foley catheter. To the right of and adjacent to the patient's scrotum sits a large wound exhibiting air flow—much like a sucking chest wound.

The patient is taken to surgery, where an exploratory laparotomy reveals a penetrating injury caused by an object that entered adjacent to the scrotum, extended through the abdomen and lacerated the diaphragm. The diaphragm is repaired, as are small lacerations of the small intestine and a large bladder laceration.

The patient is discharged 12 days later. He is able to recall the injury and reports that when he slipped, his scraper fell to the ground first and stuck upright in the wet soil in a row of bushes. When he fell into the shrubbery, he impaled himself on the scraper's long handle. It dislodged when he fell to the ground and landed between the hedges and the house wall, out of view.

### Discussion

Although trauma care is often fairly straightforward, some cases aren't. Certain findings suggest certain things. Subcutaneous emphysema is almost always associated with pneumothorax. Although the crew suspected chest trauma, they couldn't find any evidence of injury. If the ribs are intact, another cause should be sought out.

The crew erred in not completely disrobing the patient for a complete head-to-toe physical examination. If they had removed his underwear, they would have seen the sucking wound and applied an occlusive dressing. Although social concerns should be considered when exposing patients in the field, it can be done while preserving the patient's dignity. When examining the external genitalia, keep the area covered until the last minute. Have fellow rescuers shield the patient from bystanders' prying eyes, perform the necessary examination, and re-cover the area immediately upon completion.

Don't get tricked into a false sense of security by a confusing physical and scene examination. Always look a little harder for the less obvious. With the roofer, telltale signs could have been found during the scene survey and physical exam. ■

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