


Rib fractures – Patient education series: understanding trauma and emergency surgery conditions

Joshua Dilday ,¹ Elliott R Haut  ^{2,3,4}

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¹Trauma and Acute Care Surgery, Medical College of Wisconsin, Milwaukee, Wisconsin, USA

²Division of Acute Care Surgery, Department of Surgery; Department of Anesthesiology and Critical Care Medicine; Department of Emergency Medicine, The Johns Hopkins University School of Medicine, Baltimore, Maryland, USA

³The Armstrong Institute for Patient Safety and Quality, Johns Hopkins Medicine, Baltimore, Maryland, USA

⁴Department of Health Policy and Management, The Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, USA

Correspondence to

Dr Joshua Dilday; jdilday@mcw.edu

BACKGROUND**Location**

The ribs are bones that help make up our chest. They provide bony support and protection for important organs like our lungs, heart, liver, and spleen. They provide support to the muscles that help us breathe.

Function

A rib fracture is the medical term for a broken rib bone. Just like any other bone, ribs can break when enough force is applied to them. Rib fractures can be a common painful ailment after any trauma. Although they are more likely to occur from blunt trauma (eg, falls or motor vehicle crashes), they can also be caused by penetrating traumatic injuries (eg, gunshots or stabbings), sports injuries, and even coughing. The severity of rib fractures spans a large spectrum. Some rib fractures will cause very few symptoms, while more severe fractures may require hospital admission.

Symptoms

Rib fractures can be very painful. The pain is usually worse with movement, coughing, and deep breathing. Sometimes the pain can be severe to affect even normal breathing. Because the force required to break a rib can also cause injuries to the organs in the chest or abdomen (eg, blood vessels, lungs, heart, diaphragm, etc), symptoms associated with those injuries could also be present.

WHAT HAPPENS IN THE HOSPITAL?**Diagnosis**

Rib fractures are usually diagnosed with a chest X-ray (figure 1). However, some fractures are small and are only found on a CT scan or MRI. Chest X-rays, CT scans, MRIs, and even ultrasounds can also help show if other internal injuries are present.

Medical (non-surgical) options

The initial goal of treating rib fractures is symptom relief and is usually focused on making sure the pain is managed well so that breathing is not hindered. Multiple different types of medications might be used to treat the pain (eg, acetaminophen, non-steroidal anti-inflammatory drugs, narcotics, muscle relaxants, etc). Because rib fractures can affect breathing, it is also important to check the blood oxygen levels. Low levels of oxygen in the blood (hypoxia) can be from inadequate breathing due to pain, from an underlying injury to the lungs, or from a collapsed lung (pneumothorax). The initial treatment for hypoxia is breathing supplemental oxygen from a nasal cannula or a face mask.

However, if the hypoxia is not corrected with this type of supplemental oxygen, more invasive means of oxygen therapy may be needed. In extreme cases, breathing assistance through intubation and mechanically assisted ventilation is required.

Some rib fractures and associated injuries will require admission to the hospital. Sometimes the injuries may require treatment in an intensive care unit (ICU). While not every rib fracture is the same, there are certain scenarios that make it more likely that hospital and/or ICU admission will be needed. Advanced patient age, multiple rib fractures, and locations, underlying medical conditions affecting the heart or lungs, difficulty maintaining normal blood pressure or blood oxygen levels, and/or the presence of other associated injuries can all be factors in the decision on when and where to admit a patient with rib fractures. While in the hospital, patients will be instructed on breathing exercises to keep the lungs well expanded.

Surgical options

Most rib fractures will heal on their own without the need for surgery. However, there are some specific indications where rib fractures might be repaired or stabilized with surgery. If the injuries to the ribs are significant enough that they continue to cause hypoxia or prevent the removal of mechanical ventilator support, surgical options might be considered. Additionally, surgery may be offered if multiple rib fractures cause the chest wall to be unstable (flail chest). Multiple surgical options are available, but the most common include stabilization across the fractures using metal plates and screws.

Care after treatment

Patients can usually be discharged from the emergency room or hospital once the pain is controlled and the blood oxygen levels are normal. Rib fractures can remain painful for a long time (weeks to months), and patients are often prescribed a pain medication regimen. The goal is to return to baseline activity and function as soon as possible; however, the pain may linger for months if the injuries are severe.

Possible complications

The majority of complications from rib fractures occur when there are injuries to other body parts. The following are possible complications that can occur if the injuries are more severe, and may require additional treatment:

- ▶ Pain.
- ▶ Pneumothorax (collapsed lung).
- ▶ Hemothorax.
- ▶ Respiratory failure.
- ▶ Pneumonia.

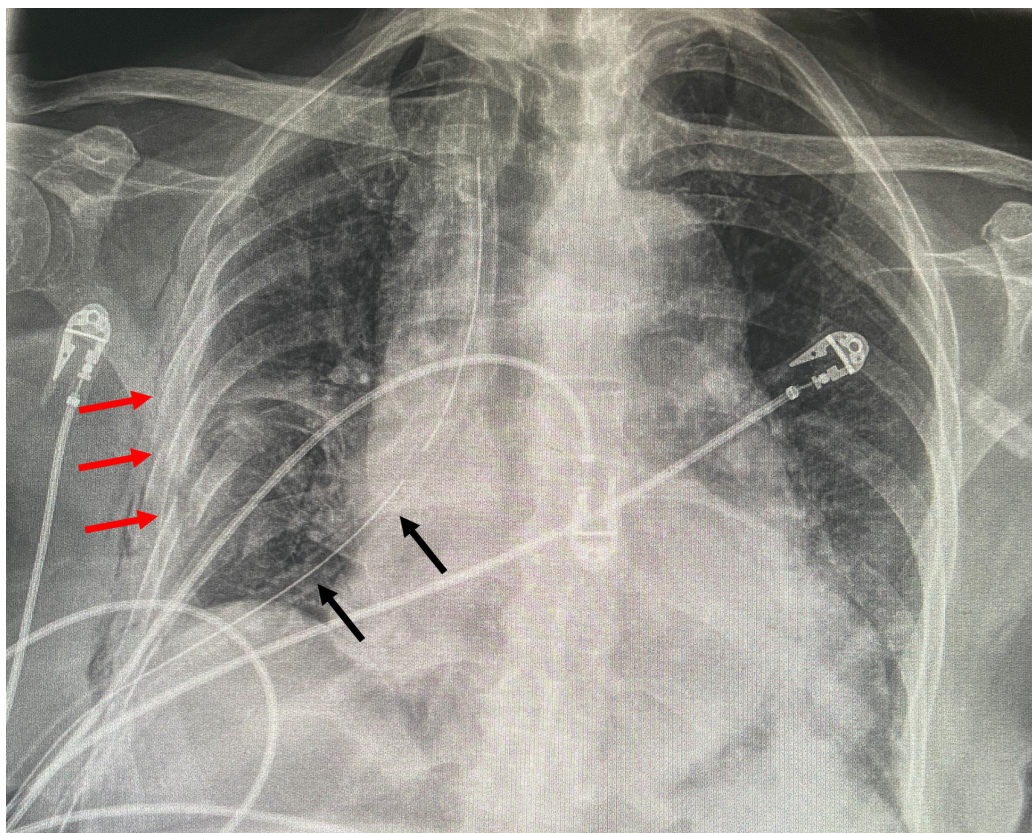


Figure 1 Chest x-ray demonstrating multiple rib fractures (red arrows) and a chest tube in place (black arrows)

- ▶ Abdominal organ injuries.
- ▶ Diaphragm injury.
- ▶ Malunion.
- ▶ Nonunion.
- ▶ Infection.

WHAT HAPPENS NEXT?

Discharge location

Many patients will be able to go home after hospital admission. Certain therapies (eg, physical therapy, occupational therapy, home nursing care) might be part of the at-home discharge plan. However, severe fractures or fractures with other injuries might require additional inpatient care. Transfer to skilled nursing facilities, long-term acute care facilities, or inpatient rehabilitation facilities might be considered if care is needed beyond the scope of what can be performed in a home setting.

Wound care

If surgery is performed, the wounds will need to be kept clean and dry. Most surgical incisions will be closed with either sutures, skin glue, staples, or a combination.

Diet

Rib fractures, on their own, should not require any change in diet. The pain medications, especially opioids, might cause constipation. It is important to maintain adequate hydration to help maintain normal bowel movements. A laxative, stool softener, or fiber supplement might also be prescribed or recommended by your healthcare provider.

Activity

Rib fractures can be very painful and may cause a delay in the return to a normal work, school, or activity schedule. Depending on the nature of the work or activity, a significant recovery time could be expected. If multiple ribs are fractured, or if there is a significant amount of other injuries, it might be months before there is a full recovery.

RESOURCES

- ▶ <https://www.caregiver.org/>
- ▶ <https://www.traumasurvivorsnetwork.org/>
- ▶ <https://cwisociety.org>

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ORCID iDs

Joshua Dilday <http://orcid.org/0000-0001-6747-0478>

Elliott R Haut <http://orcid.org/0000-0001-7075-771X>