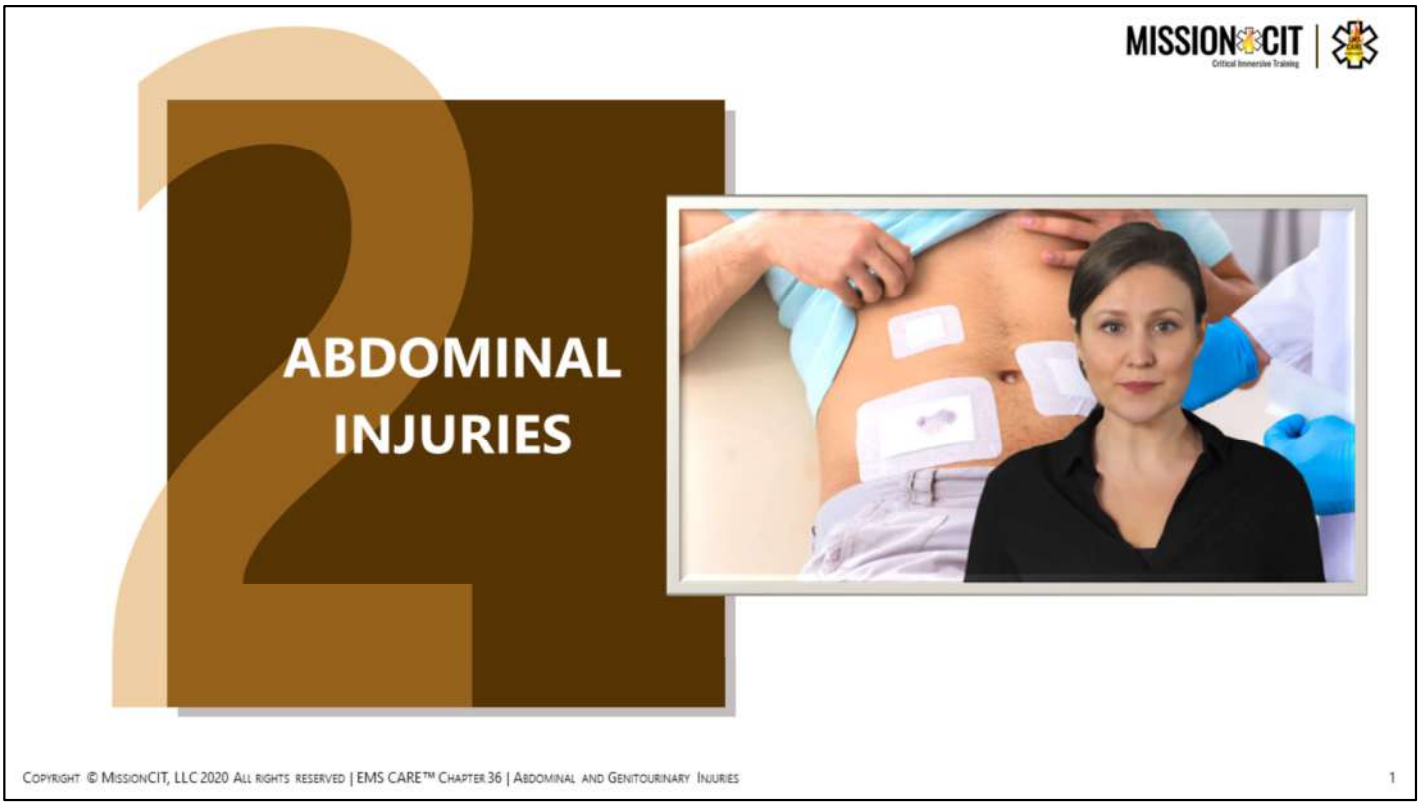
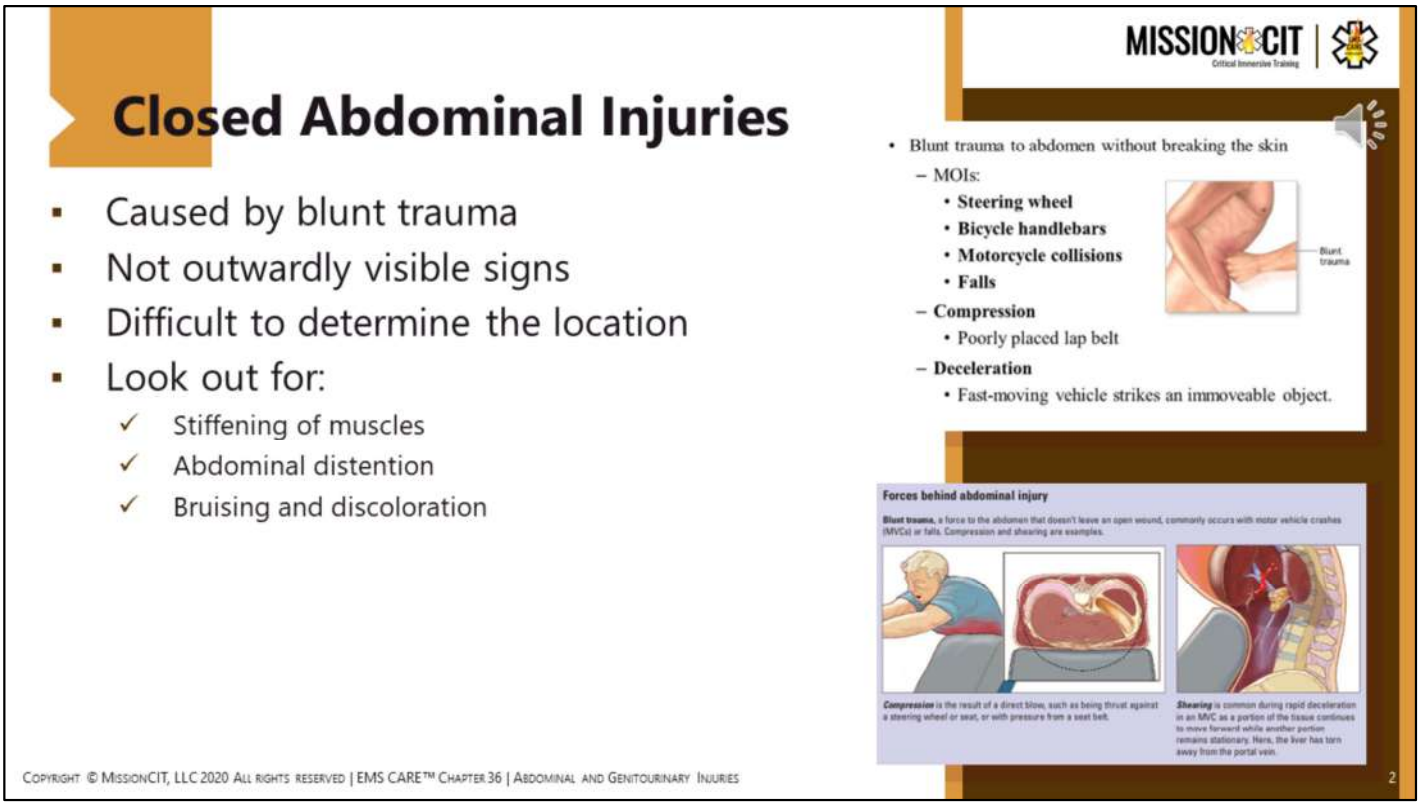


Thank you, Justin for that simple introduction into the anatomy and physiology of the abdominal area. In this lesson, let's talk about the possible injuries to this part of the body.

All abdominal injuries can be classified into closed and open injuries. As the name suggests, closed injuries are those where there's no breaking of the skin while in open injuries, you can see visible signs on the skin.

With this introduction, let's get into the details now.



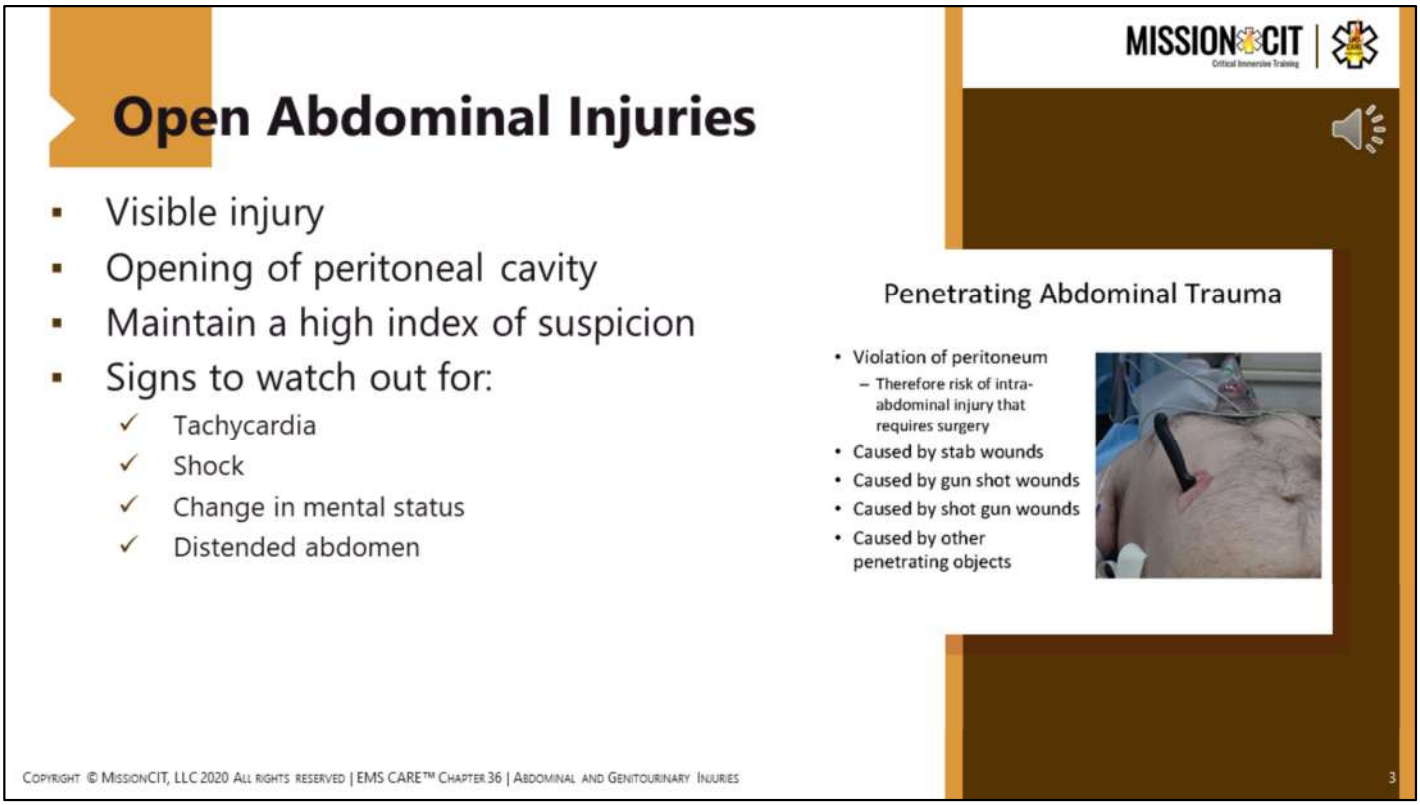
Closed abdominal injuries are caused by blunt trauma that doesn't break the skin. It can be cause due to compression that happens often due to a poorly placed lap belt or when a person has been run over by a vehicle. Closed injuries occur also due to deceleration where a fast-moving vehicle strikes an immoveable object.

The signs and symptoms are not outwardly visible, but a common sign is intense pain. In particular, blood in the peritoneal cavity can cause acute pain in the abdomen. In all other cases, the pain will diffuse, or the patient may find it difficult to pinpoint to the exact pain area.

Due to these reasons, it's difficult to determine the exact pain location. But some of the aspects to look out for are:

- Stiffening of abdominal muscles
- Abdominal distention can indicate the presence of contents in the peritoneal cavity
- Abdominal bruising and discoloration

If you suspect abdominal injuries, check if the patient was wearing seat belt too high, at the time of injury, as this is a common cause of blunt injuries to the abdominal area.



Open abdominal injuries are those where the injury is visible on the outside. It is often caused by the penetration of a foreign object that enters the abdomen and possibly even opens the peritoneal cavity to the outside. That's why these injuries are also called penetrating injuries.

The damage depends on the object's velocity, where low-velocity injuries can be caused by knives and other edged weapons. On the other hand, medium-velocity injuries are caused by small caliber handguns and short guns while high-velocity injuries can be caused by high-powered rifles and handguns.

In low-velocity injuries, the injury may not be apparent and don't pose too much risk. However, injury at or below the xiphoid process may affect the thoracic and peritoneal cavities.

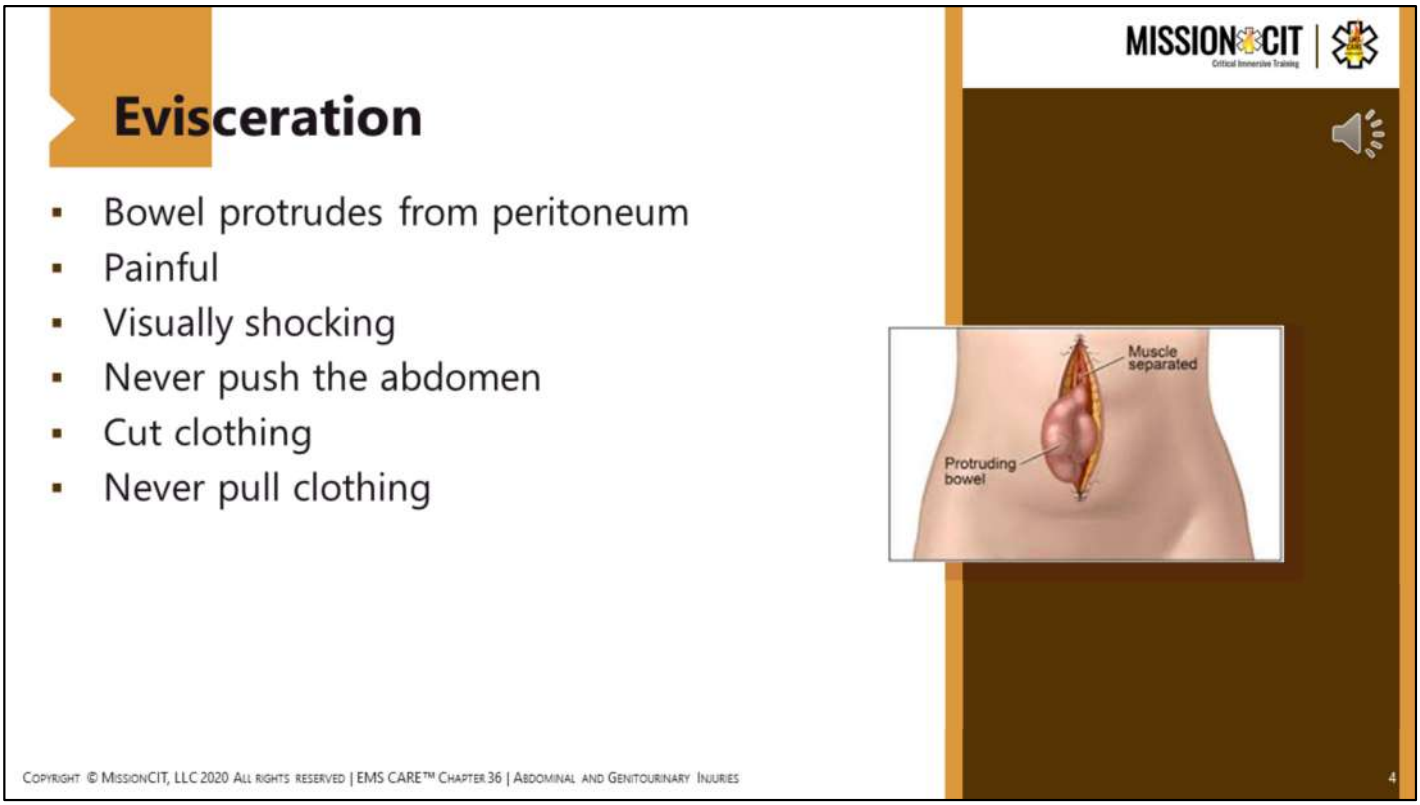
High and medium-velocity injuries, on the other hand, can have temporary wound channels caused by cavitation.

Since the open wounds can be deceiving, maintain a high index of suspicion.

Some signs and symptoms of open abdominal injury are:

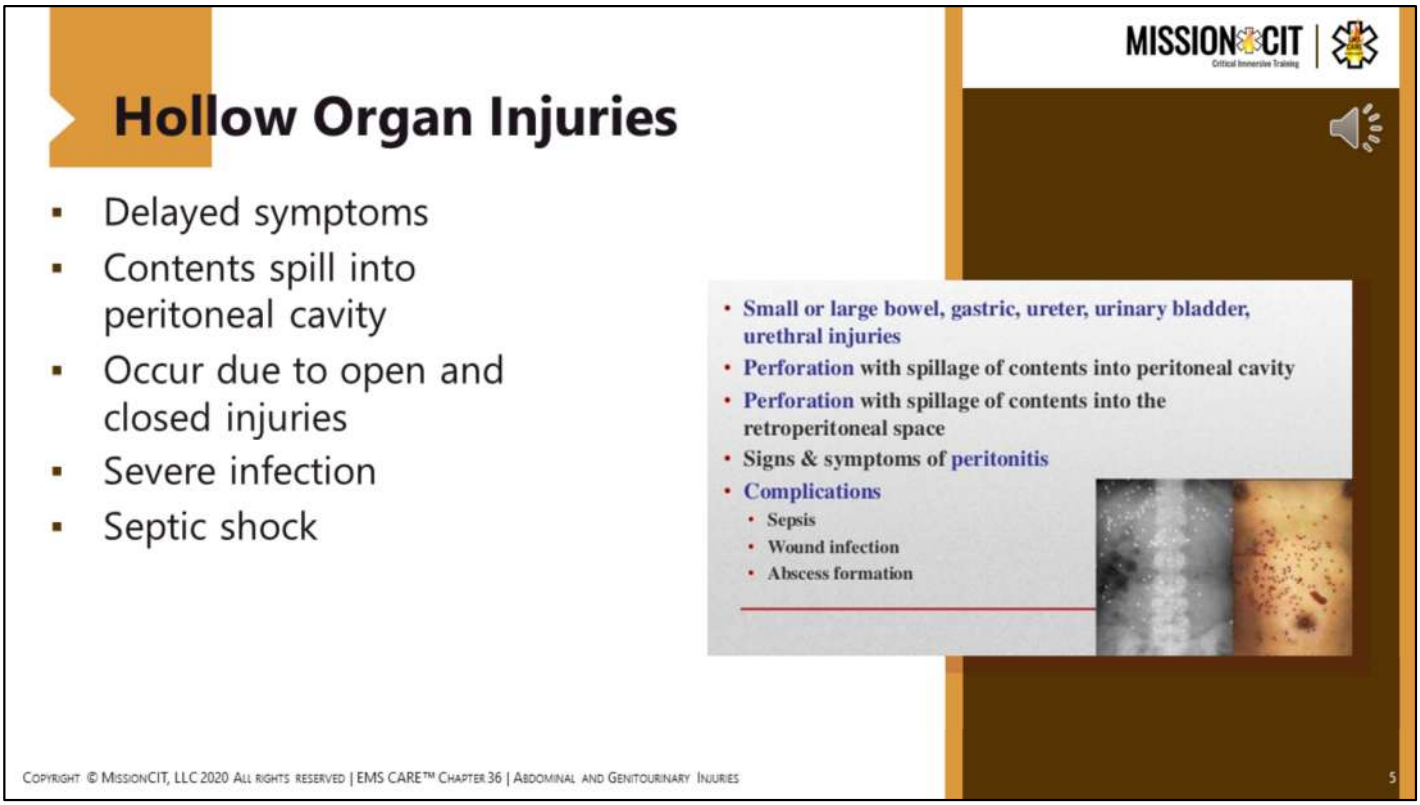
- Tachycardia, where the heart increase pumping to compensate for the blood loss
- Shock
- Change in mental status

- Distended abdomen



A common open abdominal injury is evisceration, where the bowel protrudes from the peritoneum. This condition can be painful and visually shocking.

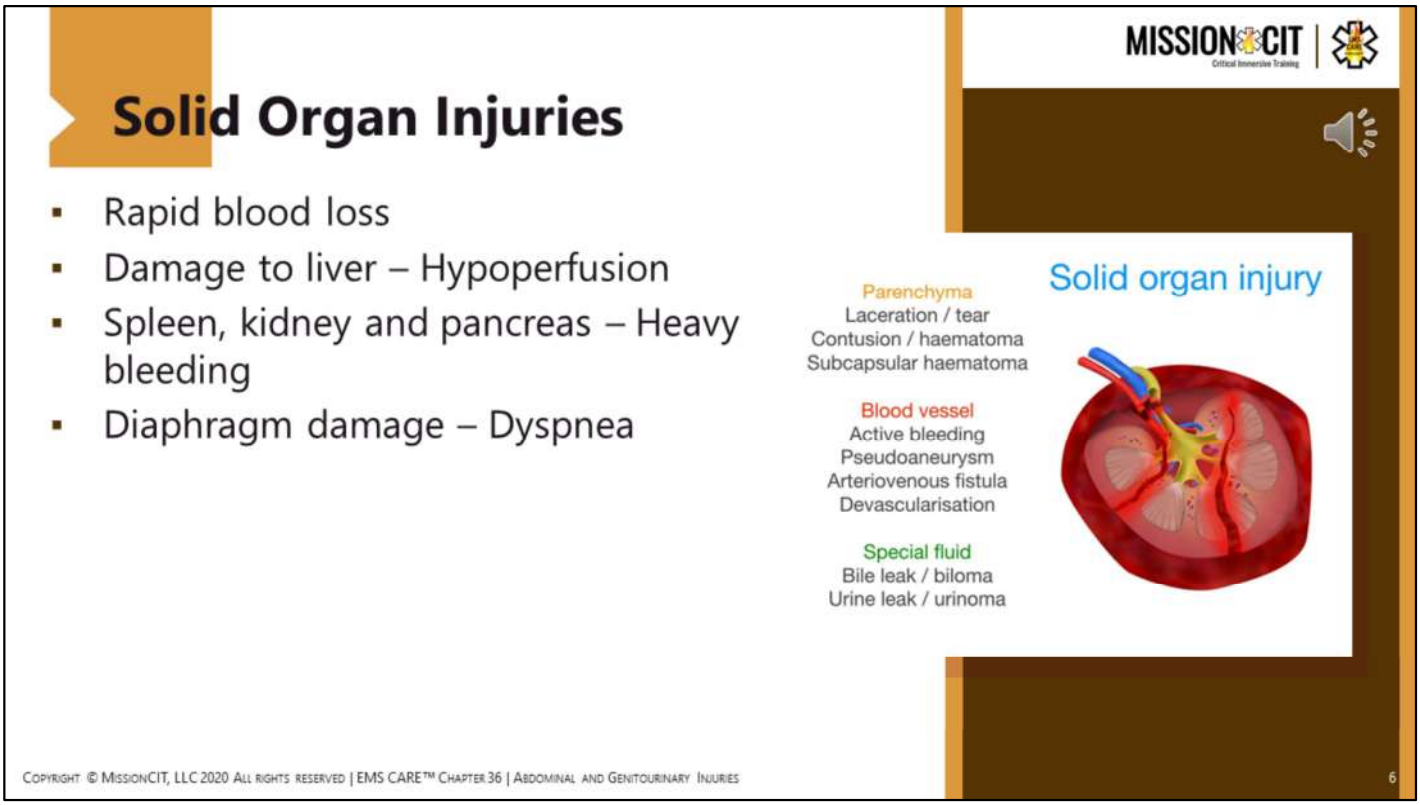
If your patient is suffering from this condition, don't push on the abdomen. Only perform a visual assessment. Cut clothing close to the wound and make sure never to pull on clothing that's stuck to the wound or to the wound channel.



Hollow organ injuries can have delayed symptoms as it could take time for the contents to spill onto the peritoneal cavity. Also, it can take hours or even days for infections to develop. This can be a dangerous condition that may require emergency transport, as the stomach and intestines can leak highly toxic and acidic liquids into the peritoneal cavity.

These hollow organ injuries can be both due to open or closed injury, as blunt trauma causes the organs to pop open while penetrating injury can injure these organs.

Sometimes, air can enter this peritoneal cavity, causing pain. This can also lead to severe infection and septic shock.



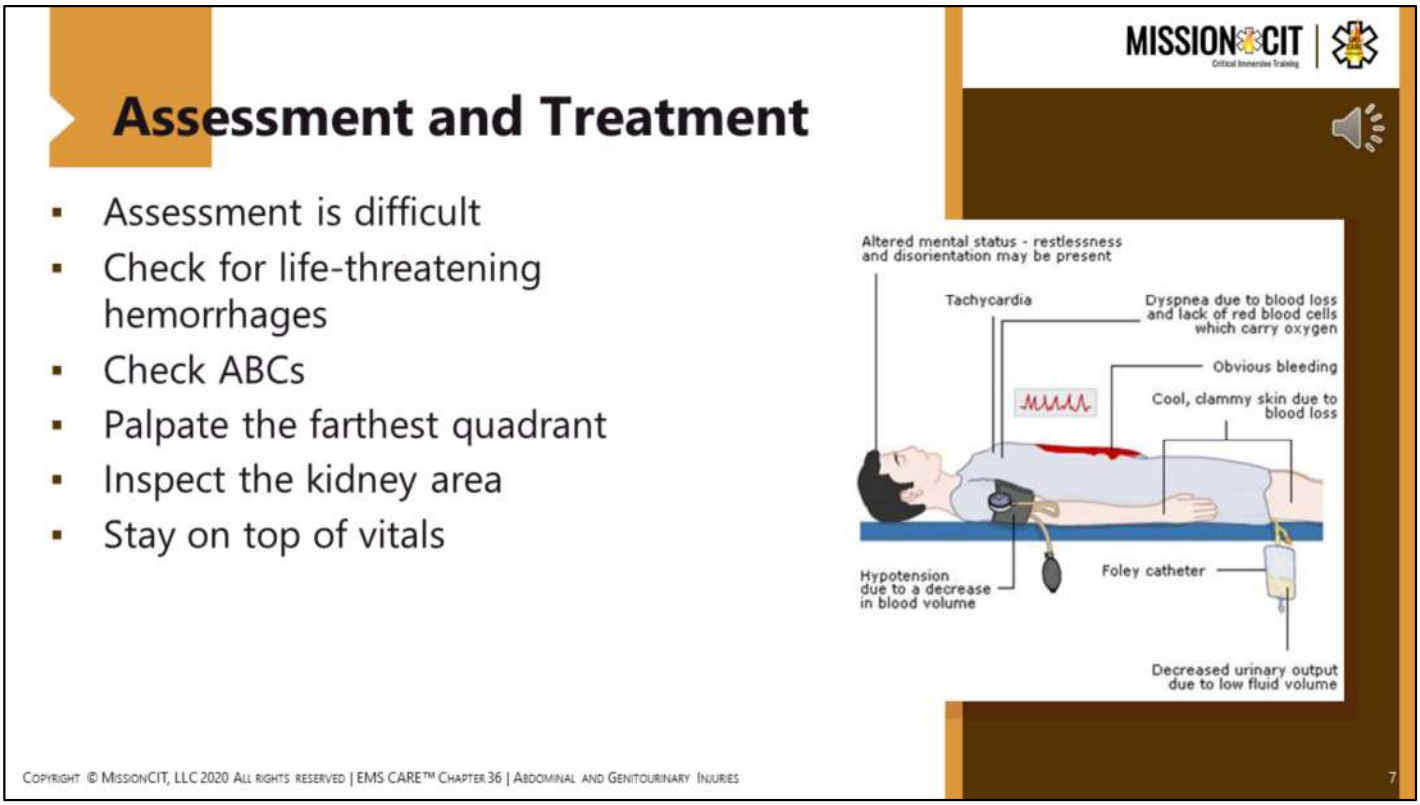
Moving on to solid organ injuries, they can bleed significantly and cause rapid blood loss. Also, these injuries are hard to detect and can slowly ooze blood into the peritoneal cavity.

The liver, which is the largest organ in the abdomen, can get impacted with fractured lower right rib or penetrating trauma. Since it is highly vascular, any damage to the liver can quickly lead to hypoperfusion.

Like the liver, spleen and pancreas are also vascular and hence, prone to heavy bleeding.

The diaphragm is another area where the impact of injuries can be profound. When this is penetrated or ruptured, loops of bowels invade the thoracic cavity, and the patient is likely to face dyspnea.

Another area for solid organ injuries is the kidneys. This can cause significant blood loss, and it's common to find blood in the urine. The visibility of blood on the urinary meatus indicates significant injury to the genitourinary system.



Overall, assessment of abdominal injuries is difficult. Even if the cause of injury is apparent, its impact on the tissue damage may not be evident. Also, the patient can be overwhelmed with other injuries, thereby making it difficult to isolate the pain location. Further, some injuries worsen with time and make require emergency reassessment.

As soon as you enter, look around, and size up the scene. Next, look for obvious injuries, and don't get distracted looking for the hidden ones. Check if there are any life-threatening external hemorrhages before looking for airway and breathing concerns.

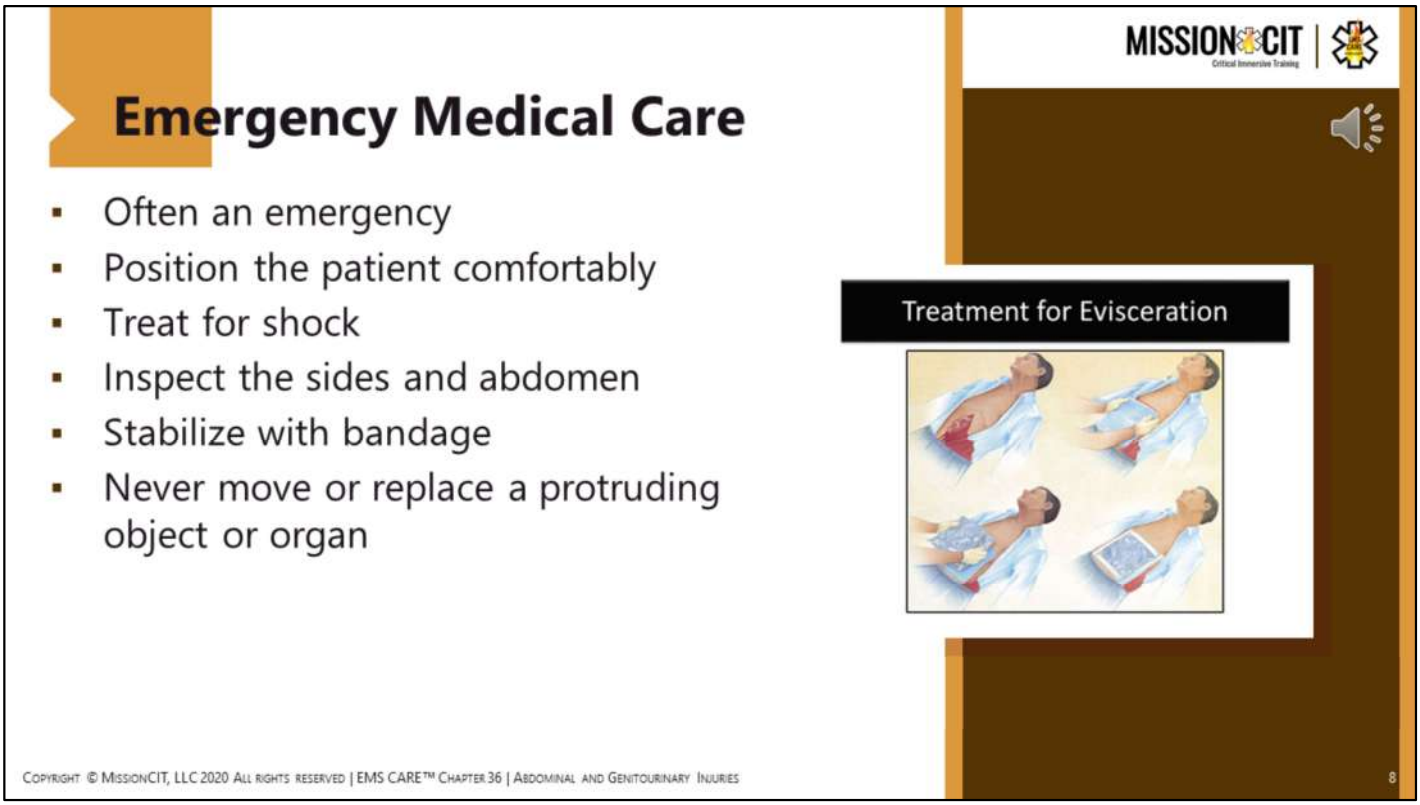
Ensure that the airway is clear and check circulation for any possible bleeding. Treat the patient for shock and decide if emergency transportation is required.

Take the patient's history and continue with the detailed secondary examination where you inspect the entire abdominal area and the possibility of bleeding.

During the physical examination, palpate the quadrant that's farthest away from the quadrant exhibiting signs of injury and pain. Also, inspect and palpate the kidney area for bruises, tenderness, swelling, and pain.

Since abdominal injuries can lead to a quick deterioration of blood pressure and pulse, always stay on top of the vitals. If the mechanism of injury suggests an isolated injury, focus your examination on that area.

Communicate everything to the receiving healthcare facility and document your findings.



Abdominal injuries are often an emergency as it's hard to detect the extent of the injury in a prehospital setting.

In closed abdominal injuries,

- Position the patient in a comfortable position
- Apply high-flow oxygen if there are signs of hypoxia or shock
- Treat for shock
- Check if emergency transportation is needed
- In the case of a blunt abdominal injury, log roll the patient to a supine position on a backboard
- Protect the spine always
- Monitor the vital signs

In open abdominal injuries,

- Maintain a high index of suspicion for unseen injuries
- Inspect the patient's sides and back for injuries
- Apply a dry and sterile dressing to all open wounds
- If the penetrating object is still in place, apply to stabilize bandage around it

In eviscerations,

- You may see fat or organs protruding out of the abdomen due to severe lacerations

- Never try to replace a protruding organ
- Keep the organs moist and warm
- Cover with moistened sterile dressings
- Secure the dressing with a bandage, and the bandage with tape

With this, we come to the end of this lesson, and in the next one, Justin will talk about genitourinary injuries and their treatment.