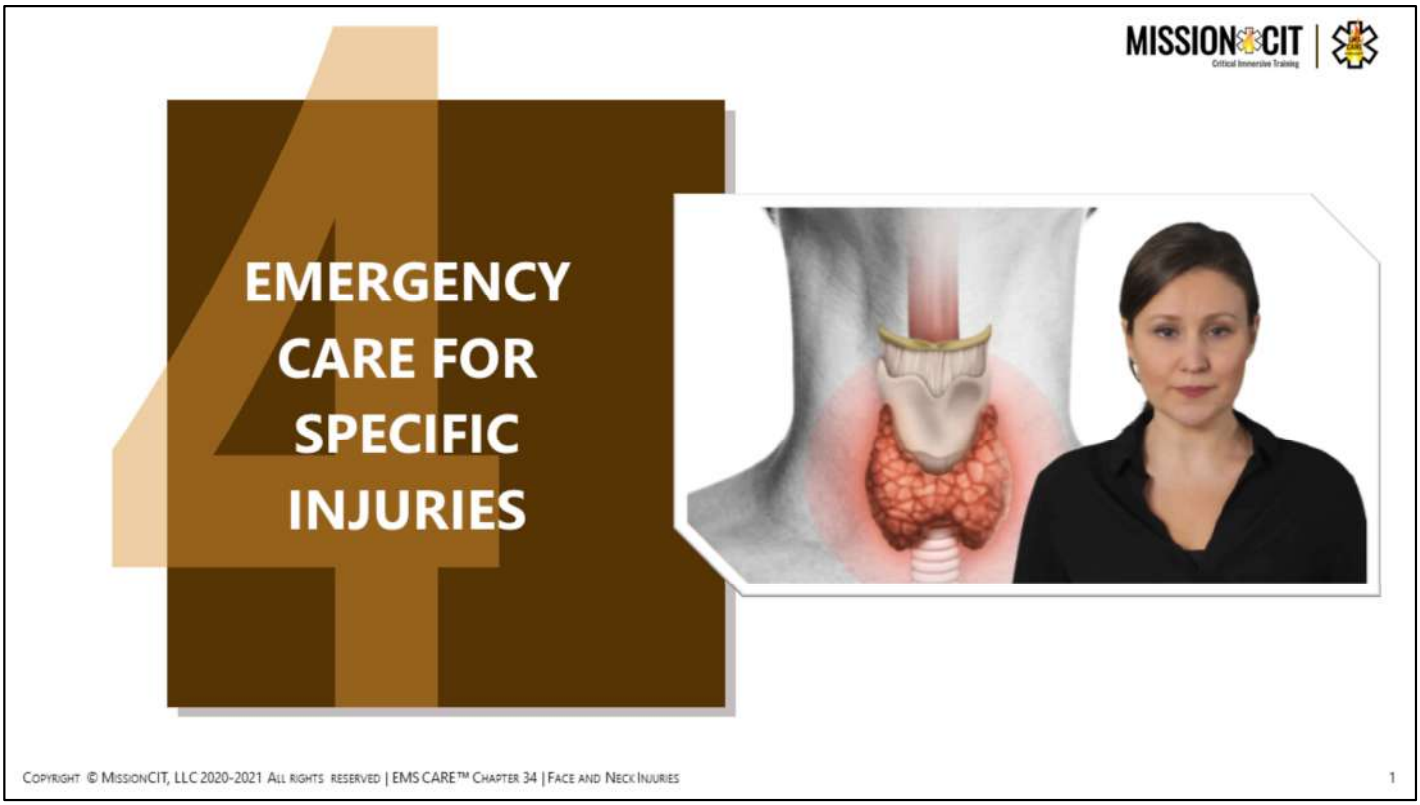
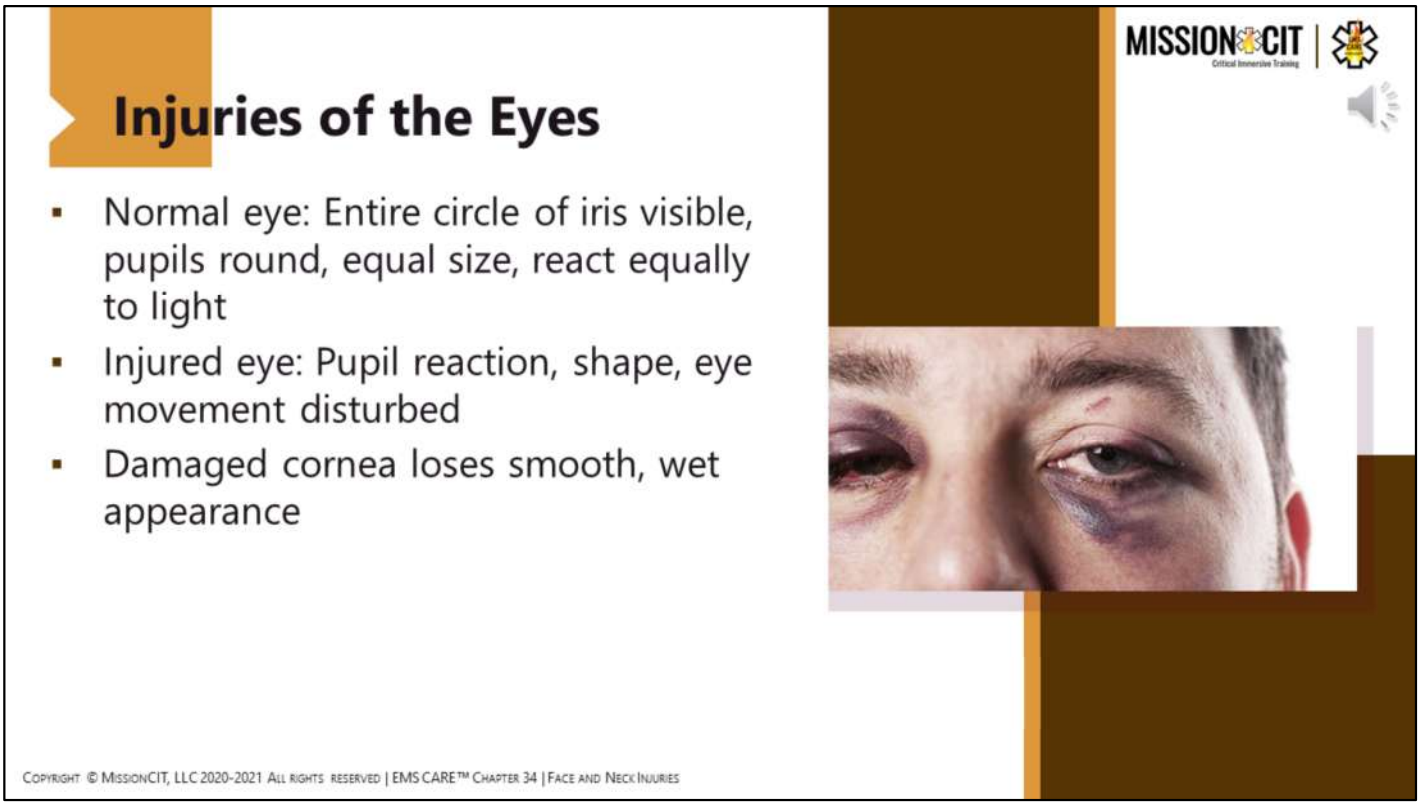


Thank you, Justin!

Welcome to the fourth lesson where we cover emergency care for specific injuries to the face and neck.



Eye trauma refers to damage caused by a direct blow to the eye. The trauma may affect not only the eye, but the surrounding area, including adjacent tissue and bone structure.

There are many different forms of trauma, varying in severity from minor injury to medical emergencies. Even in cases where trauma seems minor, every eye injury should be given medical attention. Eye injuries are common, particularly in sports. This can produce lifelong complications, including blindness. Proper emergency treatment will minimize pain and may prevent a permanent loss of vision.

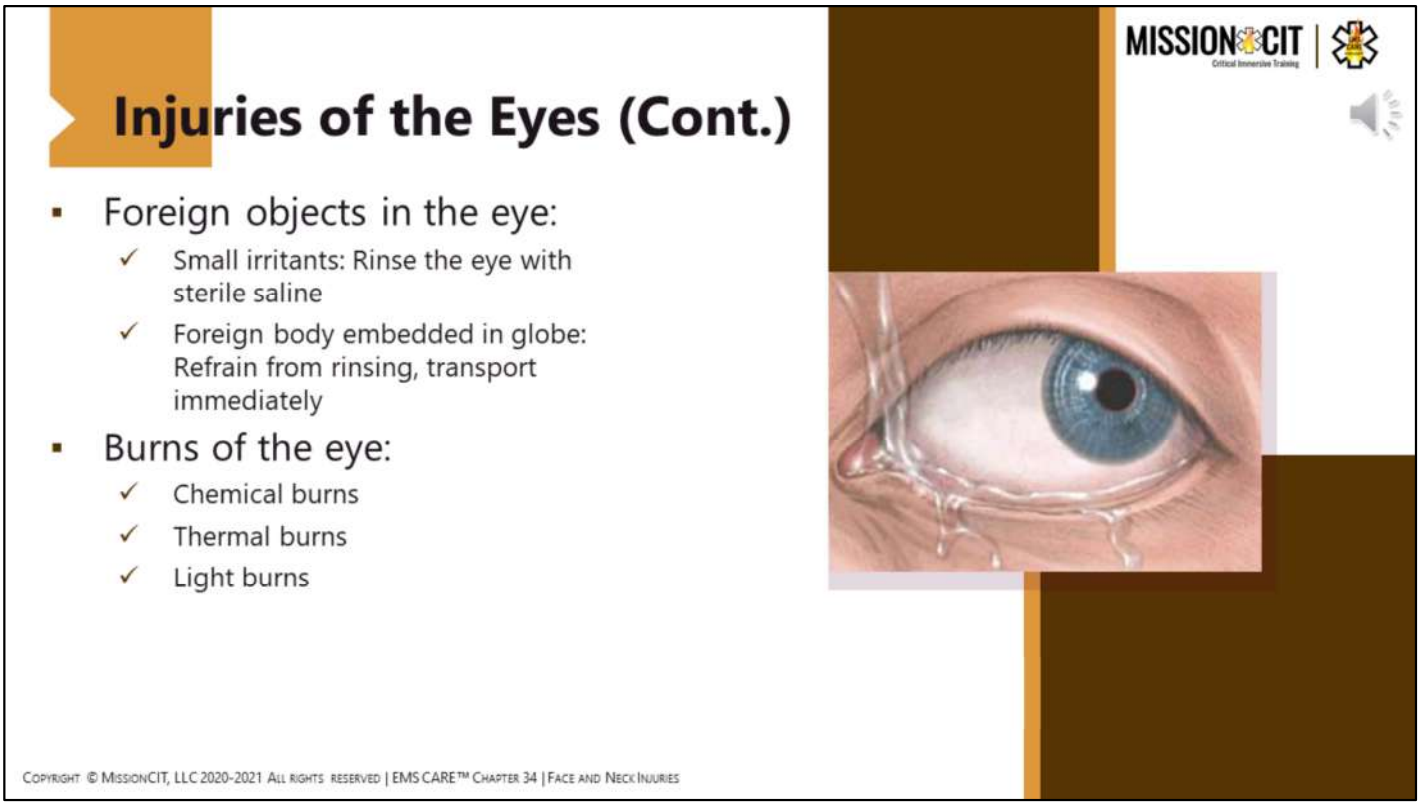
In a normal, uninjured eye, the entire circle of the iris is visible. The pupils are round, usually equal in size, and react equally when exposed to light. Both eyes move together in the same direction when following your moving finger.

After an injury, pupil reaction or shape and eye movement are often disturbed. Abnormal pupil reactions sometimes are a sign of brain injury rather than an eye injury.

Treatment starts with a thorough examination.

Always use standard precautions. Take care not to aggravate any problems.

Look for specific abnormalities or conditions that may suggest the nature of the injury. A damaged cornea quickly loses its smooth, wet appearance.



Foreign objects in the eye:

In order to determine the proper treatment for a patient with a foreign body in the eye, the extent of involvement must first be assessed. Visualize the globe of the eye for obvious trauma to develop a treatment plan. For patients suffering from specks of dust or other small irritants, simply rinsing the eye with sterile saline may be enough to flush the particles out. If a patient appears to have a foreign body embedded in the globe, however, you should refrain from flushing the eye and transport the patient to the nearest, appropriate facility for additional evaluation and treatment.

Burns of the eye:

Your role is to stop the burn and prevent further damage.

Chemical burns of the eye:

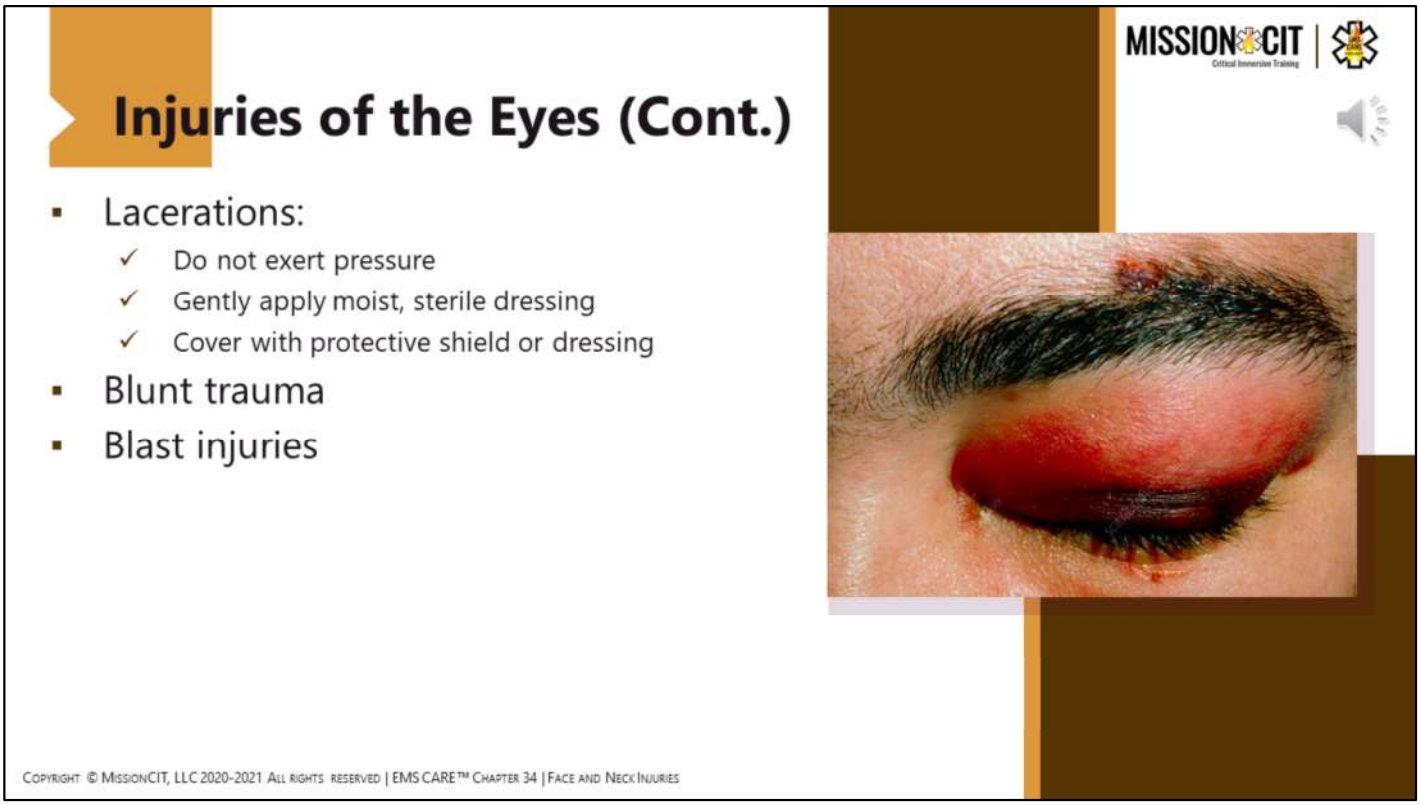
Chemical burns are usually caused by acid or alkaline solutions. Hold the patient's eyelid open. If only one eye is affected, take care to avoid contaminating the unaffected eye. Flush from the inner corner of the affected eye toward the outside corner. Irrigate the eye for 5 to 20 minutes. Apply a clean, dry dressing to cover the eye after irrigation. Transport the patient promptly to the hospital for further care. The four different ways to irrigate the eye are nasal cannula, shower, bottle and basin.

Thermal burns to the eye:

During a fire, the eyes will close to protect from heat causing the eyelids to burn. This will require special care. Cover both eyes with a sterile dressing moistened with sterile saline. Apply an eye shield over the dressing. Provide prompt transport.

Light burns to the eye:

Cover each eye with a sterile, moist pad and an eye shield. Have the patient lie down during transport to the hospital. Protect the patient from further exposure to bright light.



Lacerations to the eye:

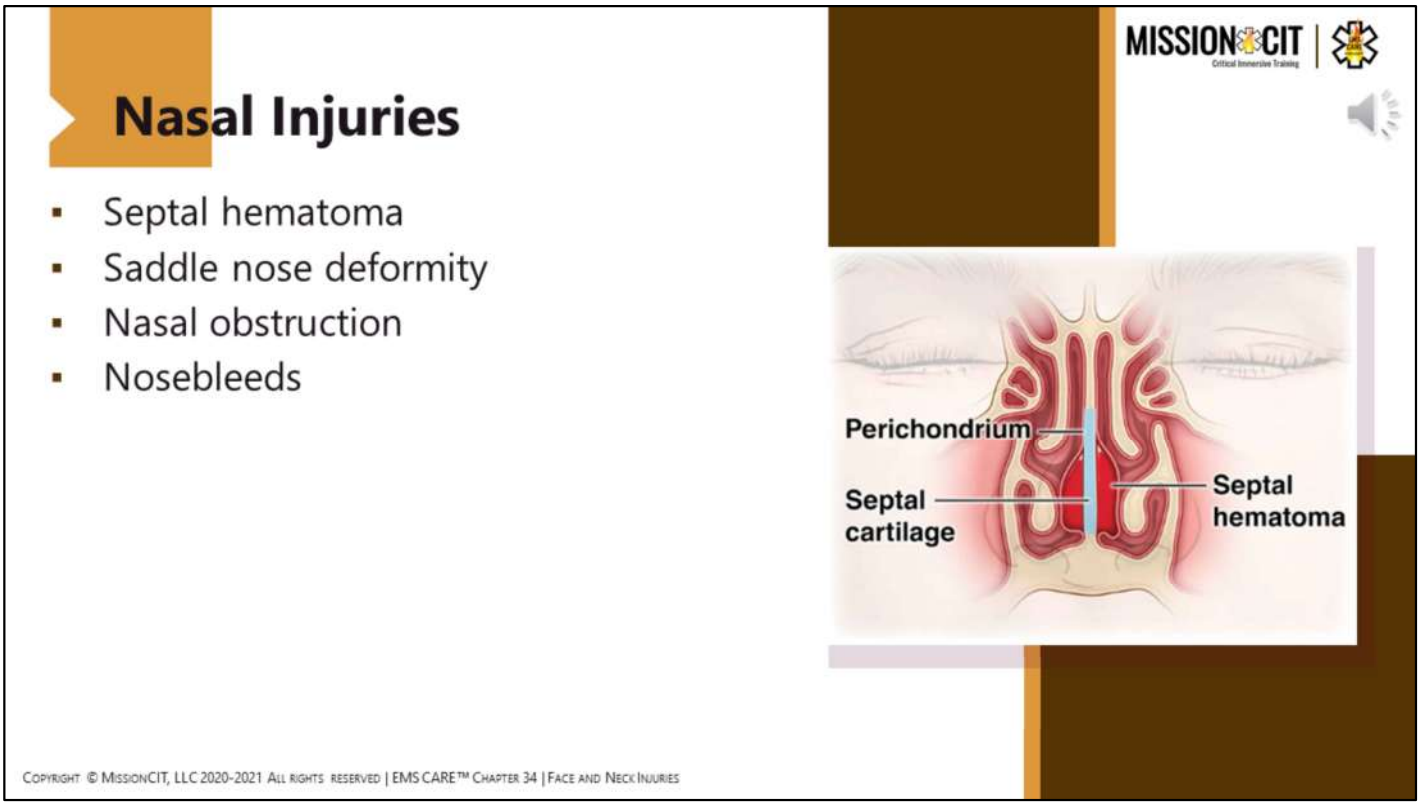
- Never exert pressure on or manipulate the injured eye (globe) in any way.
- If part of the eyeball is exposed, gently apply a moist, sterile dressing to prevent drying.
- Cover the injured eye with a protective metal eye shield, cup, or sterile dressing. Apply soft dressings to both eyes, and provide prompt transport to the hospital.

Blunt trauma to the eye:

Place the patient on a stretcher and transport promptly. Protect the eye from further injury with a metal shield. Cover the other eye to minimize movement on the injured side.

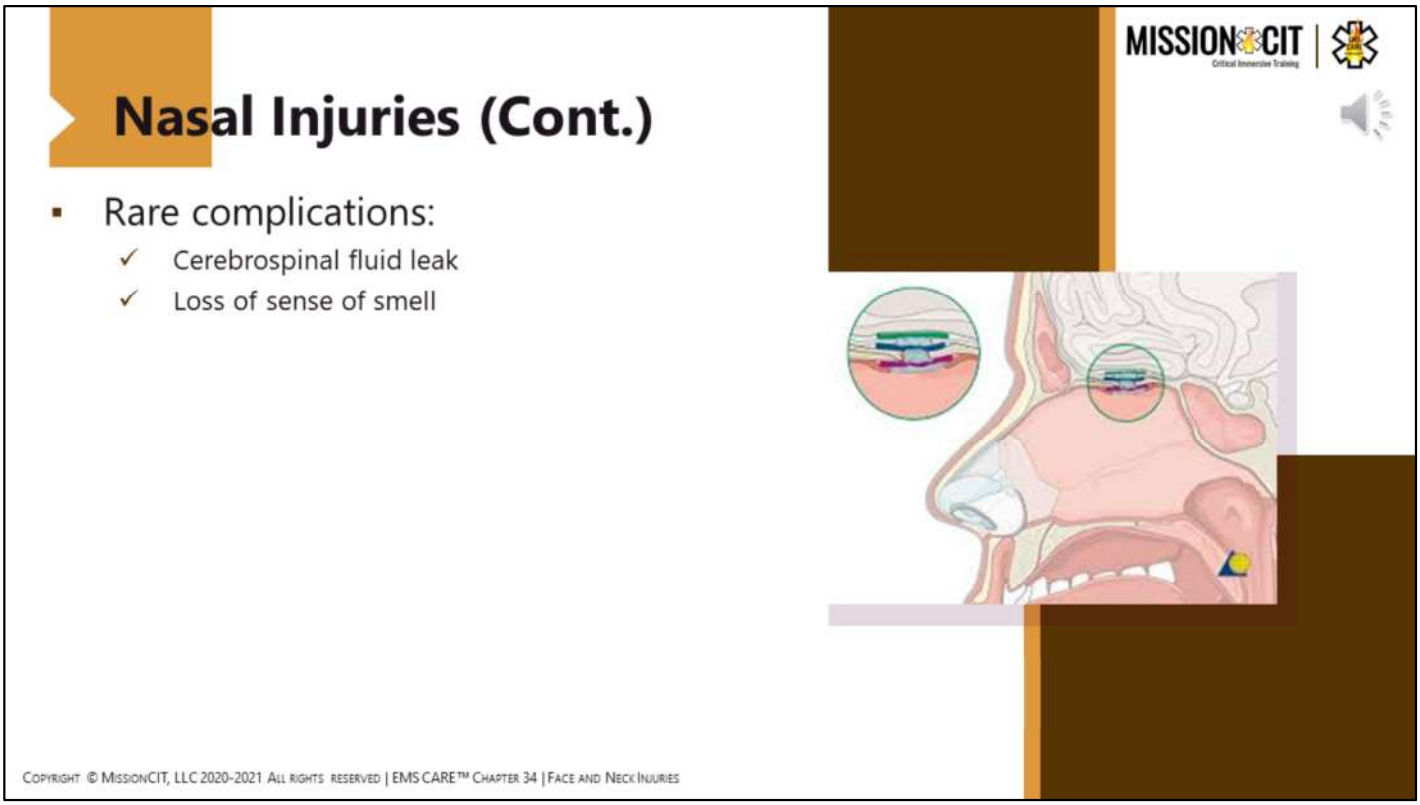
Blast injuries to the eye:

First, ensure that the scene is safe. Management depends on the severity of the injury. Do not attempt to remove a foreign body within the globe. Use a clean cup or similar item to protect the area. If only one eye is injured, follow local protocol, which may include covering the other eye to eliminate sympathetic motion. Patients with a sudden loss or decrease of vision will need to be verbally instructed on what actions are taking place around them. If the patient has severe swelling or a hematoma to the eyelid, do not attempt to force the eyelid open to examine the eye.



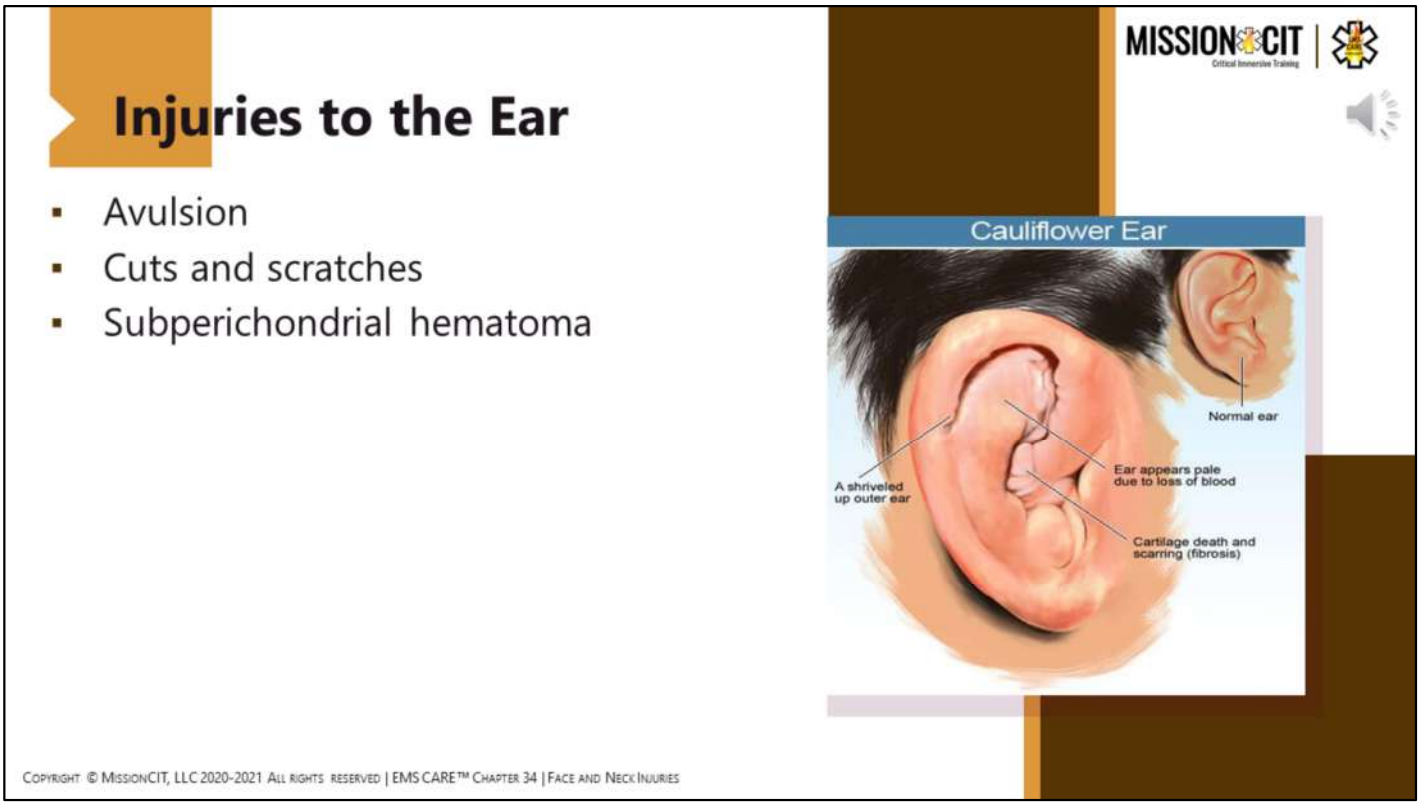
Nasal injuries can result in damage to the skin, bone, cartilage or any combination. Bony fractures of the nose account for nearly 50% of all facial fractures. Here are some possible complications from nasal injuries:

- Septal hematoma: Blood collecting (hematoma) under the lining (mucosa) of the central partition wall of the nose (septum) is stripped off either side causing a purple swelling inside the nose. If this occurs it will give you nasal obstruction and pain and need treating by draining the blood away soon after it happened.
- If the blood is left and not drained it can become infected or cause damage to the underlying support destroying cartilage and then leave a ‘saddle nose' deformity.
- Nasal obstruction: Nasal blockage usually occurs after the injury due to swelling inside the nose and this may take a few days to settle. If the nose is still blocked after three weeks it may be due to the septum being deviated and buckled which blocks the nasal passage.
- Nosebleeds (epistaxis): Nosebleeds are common and usually settle on their own with simple first aid by gently pinching the lower half of the nose for 15 minutes. Nasal packing or cautery in the hospital is reserved for nosebleeds that do not stop of their own accord.



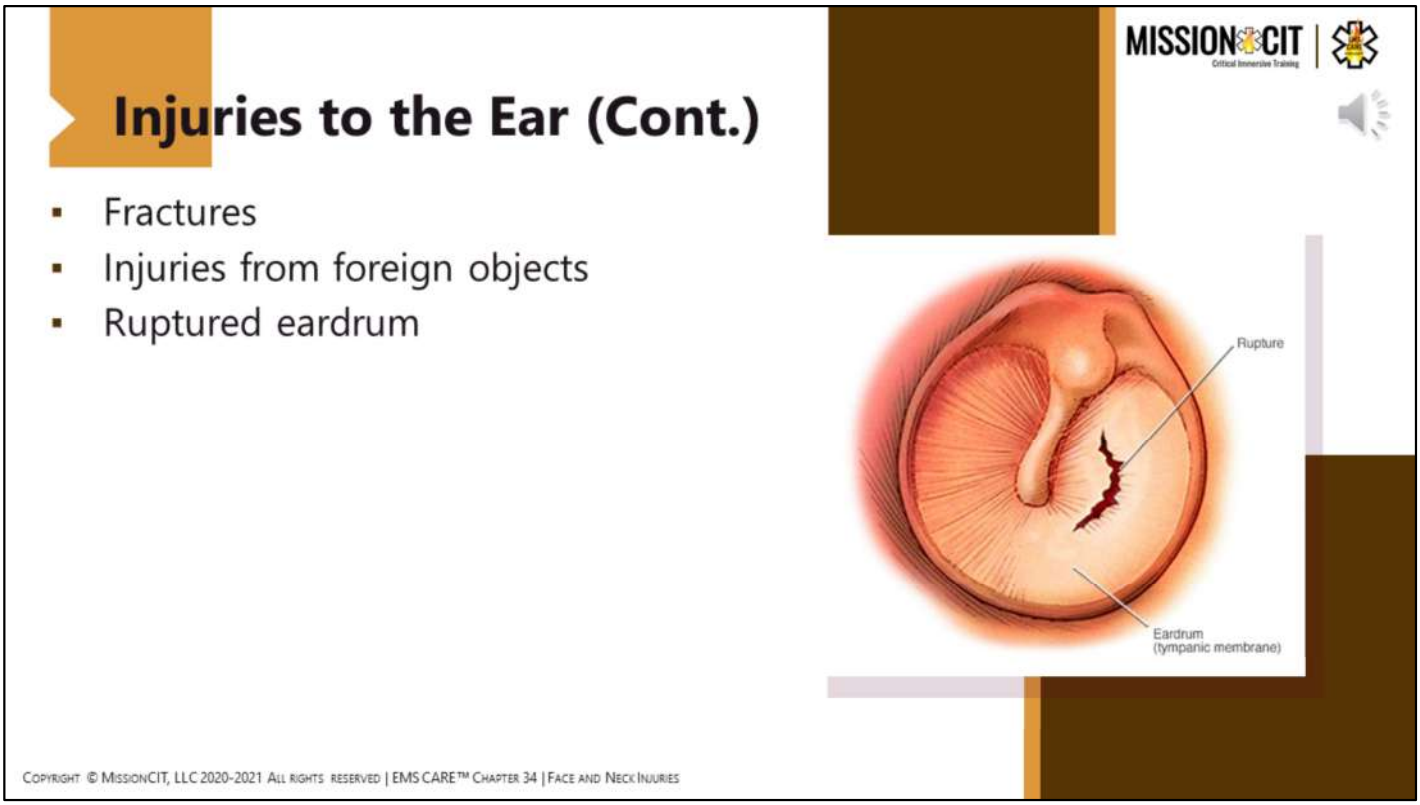
Here are some rare complications:

- Cerebrospinal fluid leak: Severe nasal trauma can push the nasal bones into the face, giving the face a pug-like appearance. The thin cribriform plate at the roof of the nose may fracture causing the cerebrospinal fluid that bathes the brain to leak out.
- Loss of sense of smell (anosmia): The smell organ in the roof of the nose can also be damaged. Loss of sense of smell very rarely returns.



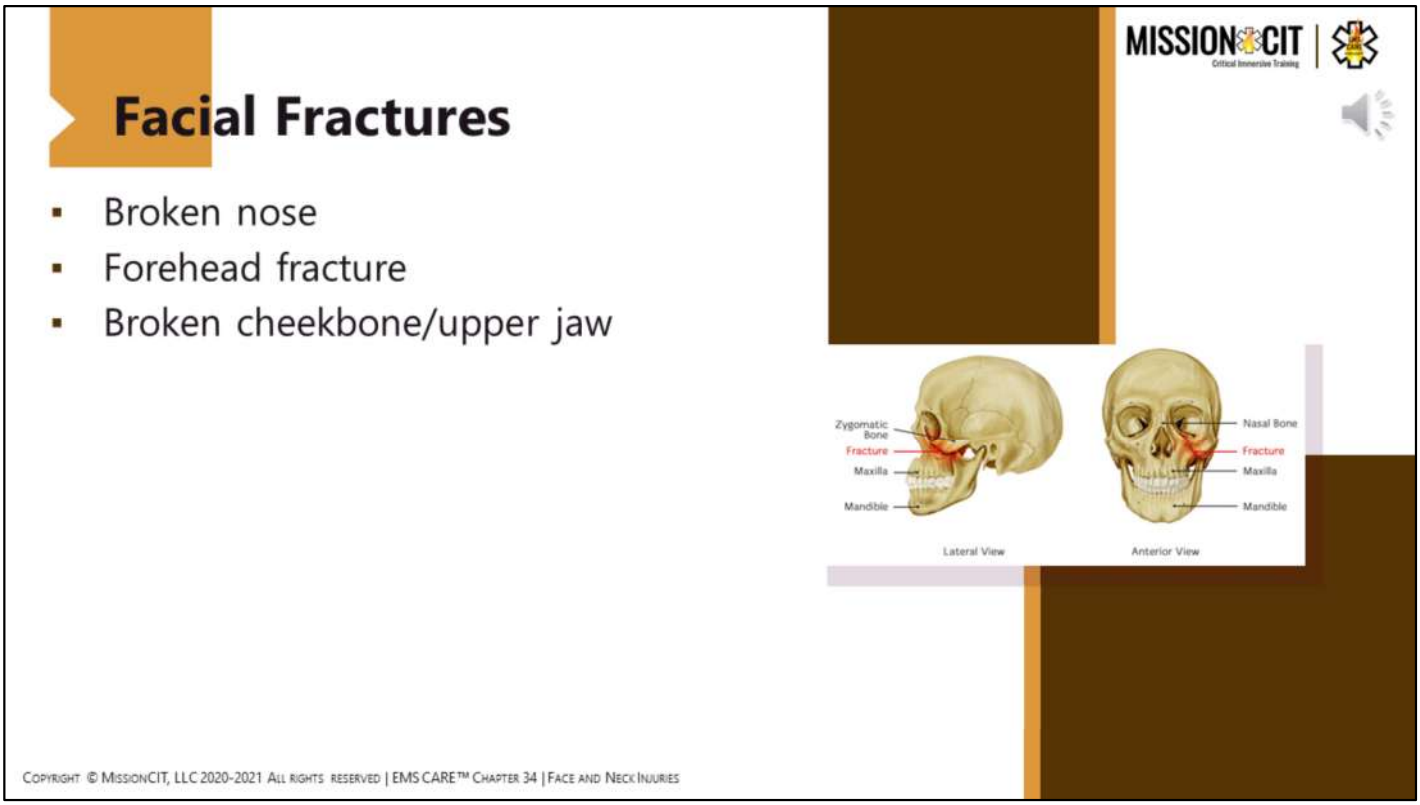
Trauma to the ear and temporal bone (ear canal, ear drum, middle ear bones, inner ear) can result in different types of injury. Injuries can happen to the outer ear or any part of the middle and inner ear. Severe trauma can cause injuries to all parts of the ear. The most common types of injuries to the outer ear include:

- Avulsion: During an accident or trauma, part of the ear can tear off. The ear can pull away from the head, either partially or completely. Place a soft, padded dressing between the ear and the scalp. If the ear is avulsed, wrap it in a moist, sterile dressing and place it in a plastic bag. Keep the avulsed tissue cool and transport it to the hospital with the patient. Leave any foreign object within the ear for the physician to remove. Note any clear fluid coming from the ear.
- Cuts and scratches: These injuries are usually minor. They can happen if you insert your fingernail too far or too forcefully into your ear. They can also result from an accident.
- Subperichondrial hematoma (cauliflower ear): This injury results from trauma to the exterior ear, often from contact sports such as rugby and wrestling. Blood pools under the skin in the outer ear and cuts off the blood supply to the cartilage, which causes the cartilage to die. The pooling blood is a type of bruise called a hematoma. If the blood does not get drained, over time, the ear cartilage will look rippled, lumpy and swollen (kind of like a cauliflower).



Injuries to the middle ear and inner ear can cause severe damage and can affect hearing. The most common injuries to the inside of the ear include:

- Fractures: In a serious accident, bones in the middle ear can fracture (break) or become dislocated. This injury usually happens along with fractures in the jaw and face. These bones are called ossicles or “hearing bones.”
- Injuries from foreign objects: More common in children, these injuries happen when someone inserts a pencil, toy, cotton swab or another object too far into the ear. These injuries can break small bones in the ear or split or tear (rupture) the eardrum.
- Ruptured eardrum (perforated eardrum): Trauma, loud noises, severe ear infections and foreign objects can cause a ruptured eardrum. Immediate medical care should be provided if clear fluid leaks from the ear and the patient feels dizzy.



Facial fractures are broken bones anywhere on the face. This includes the nose, cheekbones, the area around the eyes, and the upper and lower jaw. Most of the time, they're due to some kind of trauma to the face, like motor vehicle crashes, sporting injuries, falls, or fights. Here's what the patient will experience with the main types of facial fractures:

Broken nose (nasal fracture):

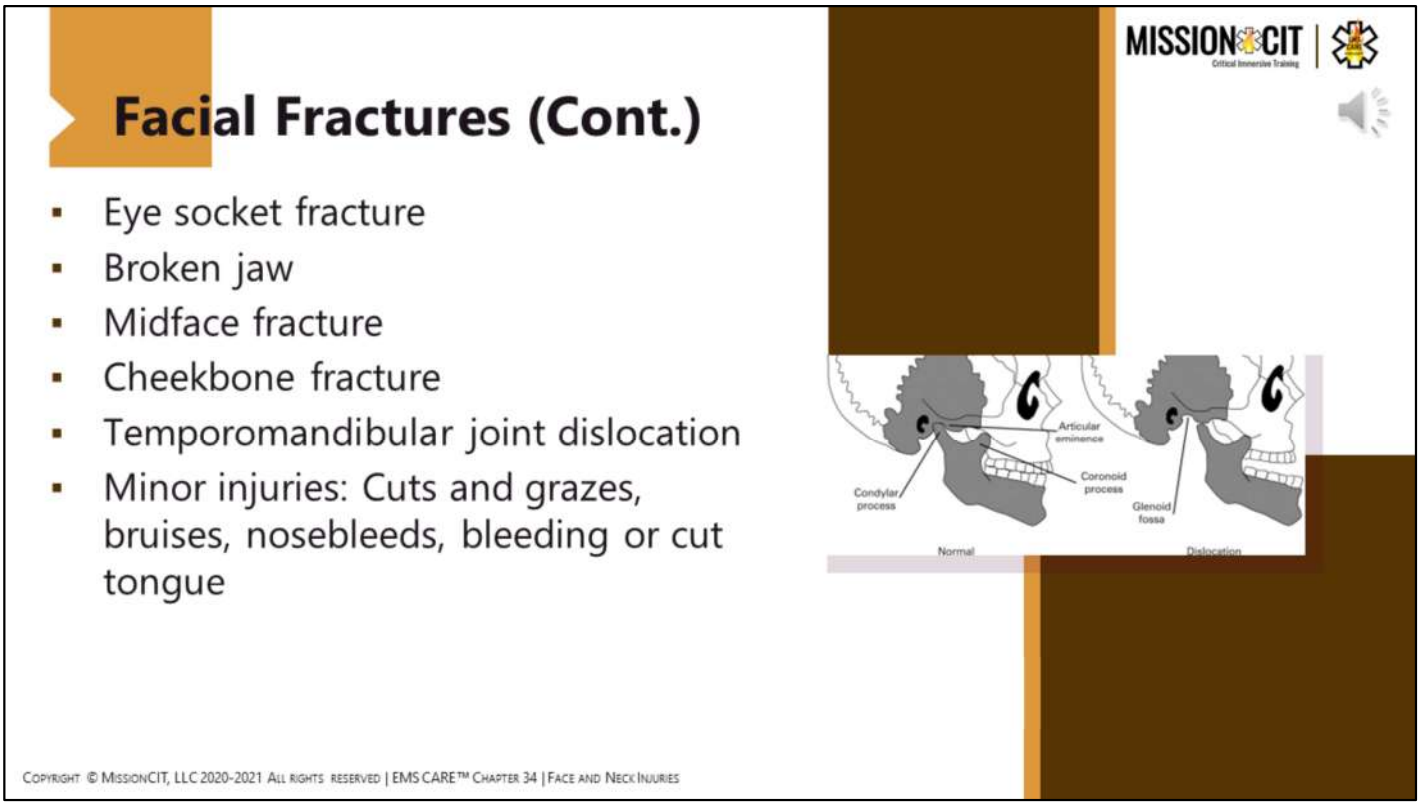
- Pain
- Swelling
- Nosebleeds
- Bruising around the nose
- Difficulty breathing

Forehead fracture (frontal bone):

- The forehead may appear inverted (pushed inward)
- Pain around the sinuses
- Injuries to the eyes

Broken cheekbone/upper jaw (zygomatic maxillary fracture):

- Flatness of the cheek
- Altered sensation underneath the eye on the affected side
- Problems with eyesight
- Pain with jaw movement



Eye socket (orbital) fracture:

This involves the bones of the eye socket. It usually happens when a blunt object such as a fist or a ball hits the eye. Symptoms include:

- A black eye
- Redness or bleeding in the white of the eye
- Blurry or decreased vision
- Numbness in the forehead, eyelids, cheek, or upper lip/teeth
- Swelling of the cheek or forehead

Broken jaw:

- Pain
- Bruising, swelling, or tenderness along the jaw or below the ear
- Inability to bring the teeth together properly (malocclusion)
- Bruising under the tongue (almost always indicates a jaw fracture)
- Missing or loose teeth

- Numbness in the lower lip or chin

Midface (maxillary) fracture:

The main symptom is swelling or deformity on the face.

Cheekbone (zygomatic) fracture symptoms:

- Flatness of the cheek
- Altered sensation underneath the eye on the affected side
- Visual complaints
- Pain with jaw movement
- Blood in the side of the eye on the affected side sometimes is present

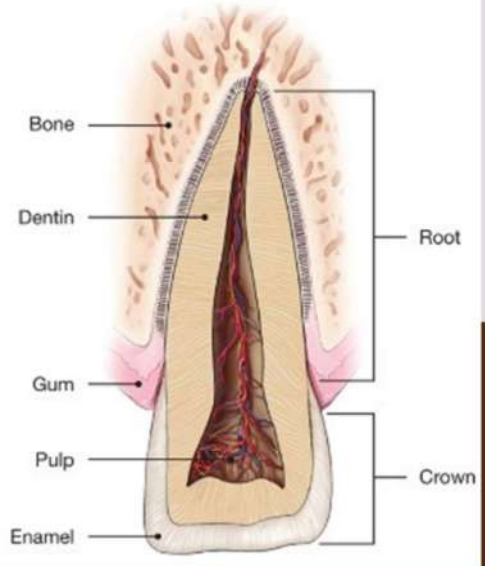
Temporomandibular joint (TMJ) dislocation symptoms:

- Jaw deviation
- Inability to close the mouth
- Dislocation of the TMJ can occur with blunt trauma, seizures, or excessive mouth opening. TMJ is the joint where your jaw meets with the temporal bone, in front of the ear

Other minor facial injuries include cuts and grazes, bruises, nosebleeds, bleeding or cut tongue.

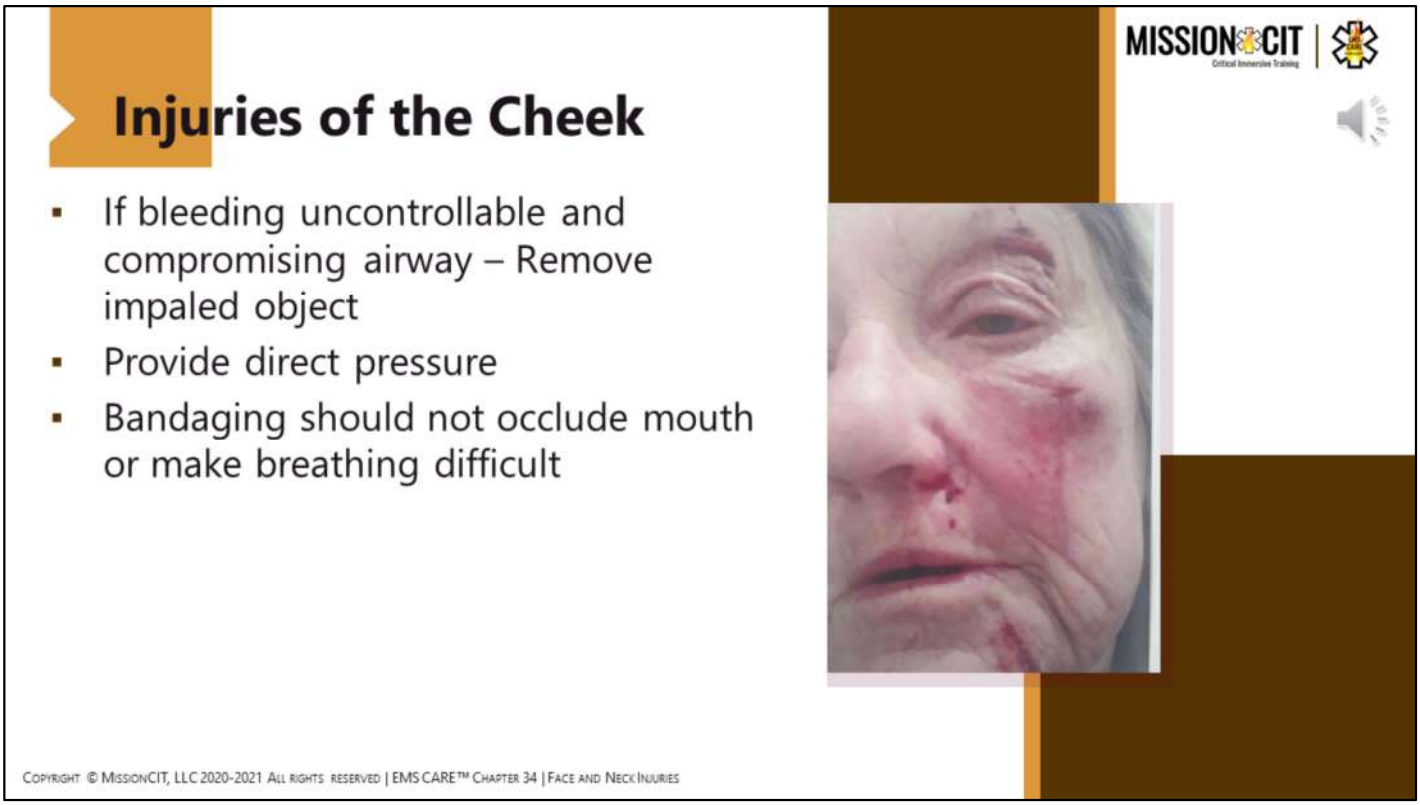
Dental Injuries

- Apply direct pressure to stop bleeding
- Keep airway open
- Perform suctioning if needed
- Transport patient
- Cracked or loose teeth – Possible airway obstructions

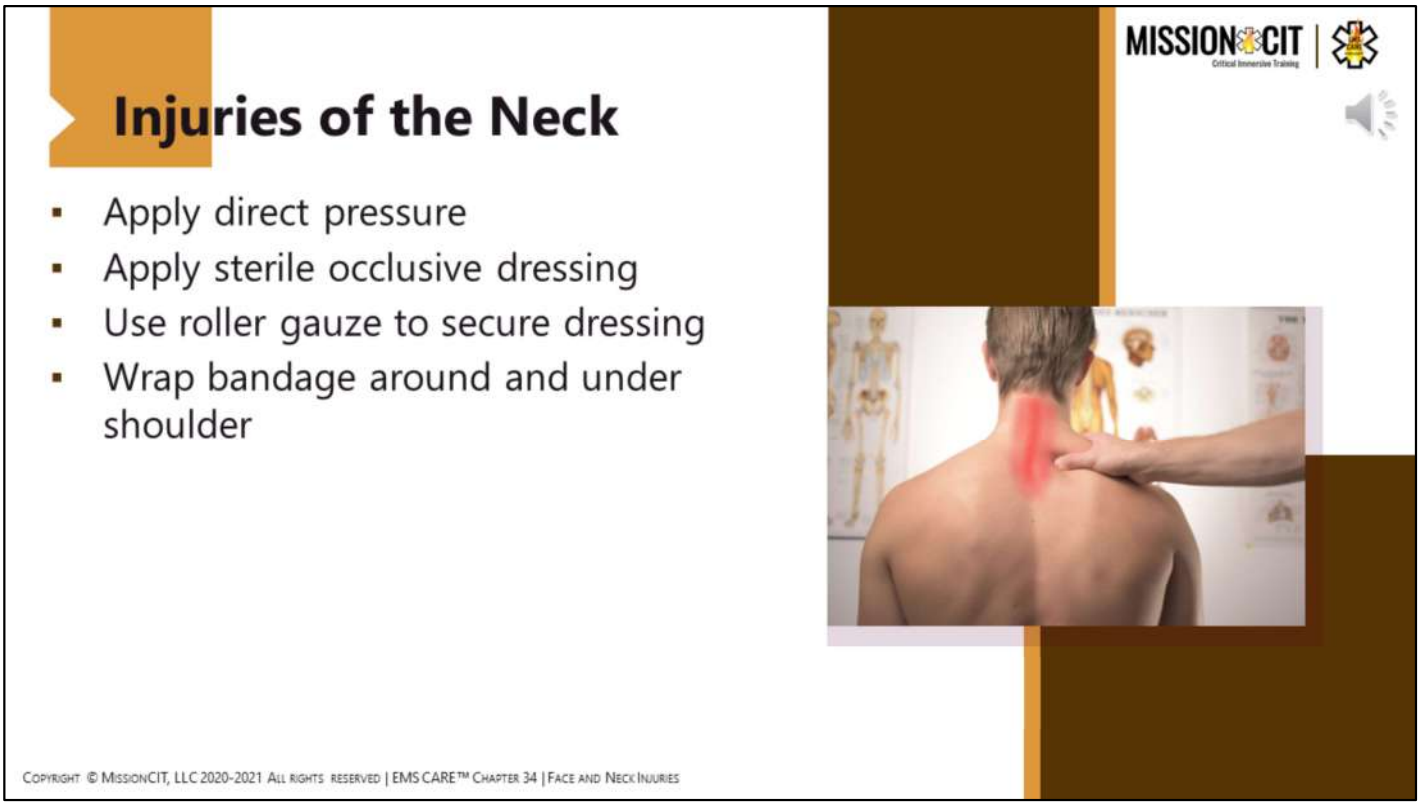


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Dental injuries can be traumatic to the patient. The injury may be traumatic and the patient's permanent teeth may be lost. Bleeding will occur whenever a tooth is violently displaced from its socket. You need to apply direct pressure to stop the bleeding. Keep the airway open. Perform suctioning if needed. Handle the tooth by its crown and not by the root. Transport the patient. Bring along the tooth, placing it in either cold milk or sterile saline. Notify the receiving facility about the avulsed tooth. Cracked or loose teeth are possible airway obstructions.



If bleeding is uncontrollable and compromising the patient's airway, consider removing the impaled object if possible from the injured cheek. Provide direct pressure on the inside and outside of the cheek. Bandaging should not occlude the mouth or make it difficult for the patient to breathe.



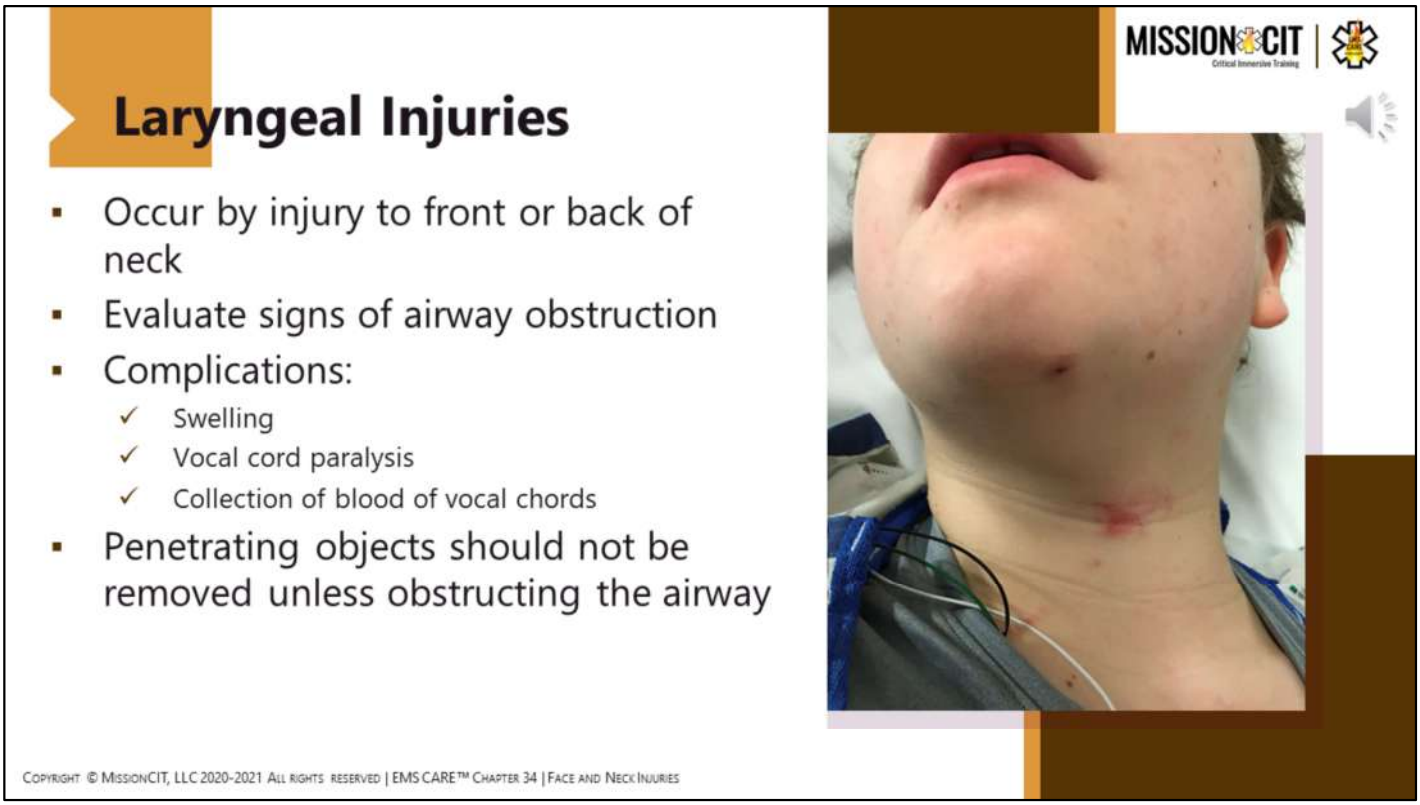
Are neck injuries very dangerous? Yes, they are. There are major structures located in the neck that can be easily damaged by a blunt or penetrating injury.

The larynx (voice box) and the trachea (wind pipe) are important parts of the airway. Any crushing or penetrating injury can compromise breathing. Major blood vessels, such as the carotid arteries and jugular veins, will bleed profusely if cut. This can rapidly become a life-threatening situation. The vertebral spine, if damaged, may need immobilization because of the risks of paralysis.

After an initial evaluation to rule out spinal injury, the neck will be inspected for any latent conditions.

Here are the steps you need to follow in case of a neck injury:

- Apply direct pressure to the bleeding site using a gloved fingertip if necessary to control bleeding.
- Apply a sterile occlusive dressing to ensure that air does not enter a vein or artery.
- Use roller gauze to secure a dressing in place.
- Wrap the bandage around and under the patient's shoulder.



Trauma to the larynx (voice box) can occur by an injury to the front of the neck, as well as a significant hit to the back of the neck (upper spine). The biggest immediate concern with this type of injury is to evaluate for signs of airway obstruction. Complications of injury that can result in airway obstruction include cuts in the airway with swelling, vocal cord paralysis, and collection of blood (hematoma) of the vocal cords. Immediate treatment for this type of airway obstruction is a tracheotomy; an endotracheal tube is not usually placed, as it can cause further damage to the airway.

Penetrating or impaled objects in the larynx should not be removed unless they are obstructing the airway or interfere with cardiopulmonary resuscitation. That's it for this lesson. Next, Justin will discuss the last topic, special considerations.