

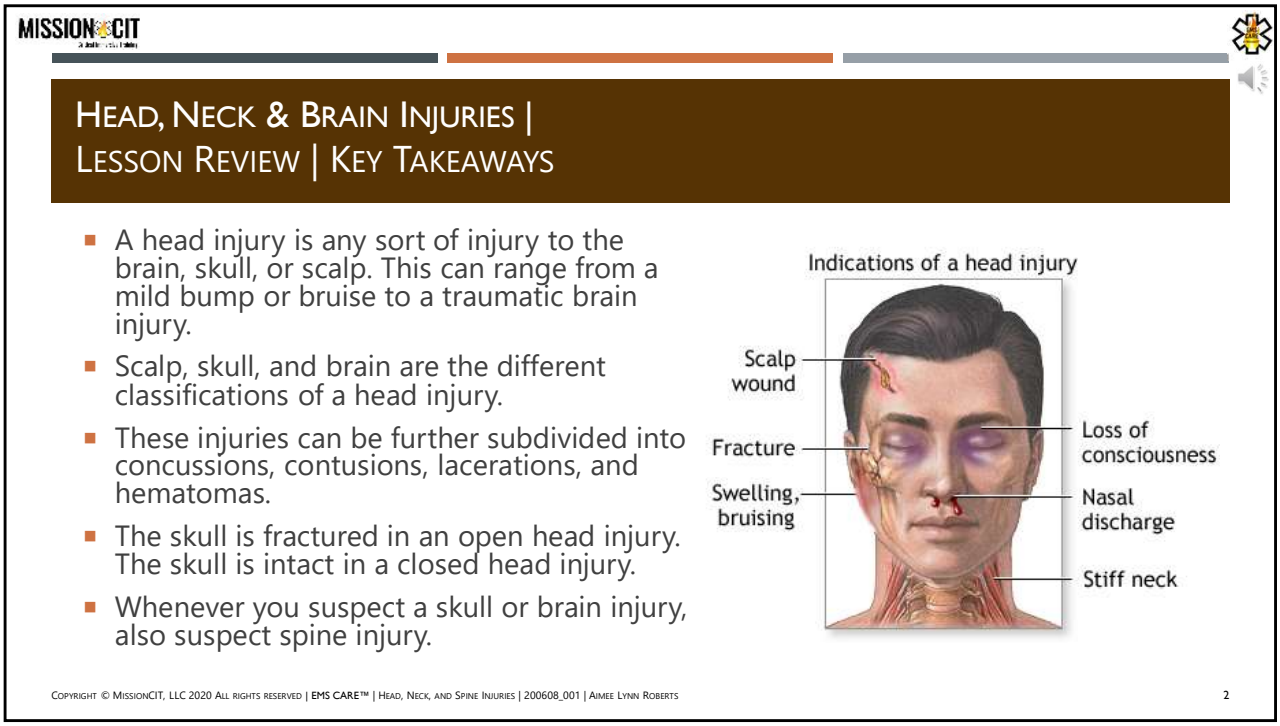
Good to see you again. We now review the lesson on Head, Neck & Brain Injuries. During the lesson, we covered

- Traumatic Brain and Skull Injuries
- Intracranial Pressure
- Intracerebral hemorrhage
- Concussions
- Contusions, and
- Wounds to the Neck

Over the next few slides, we will discuss the key takeaways from these subjects. You then can test your

knowledge with some interactive questions. All helping you to prepare for the final quiz on Head and Spine Injuries.

Good studying

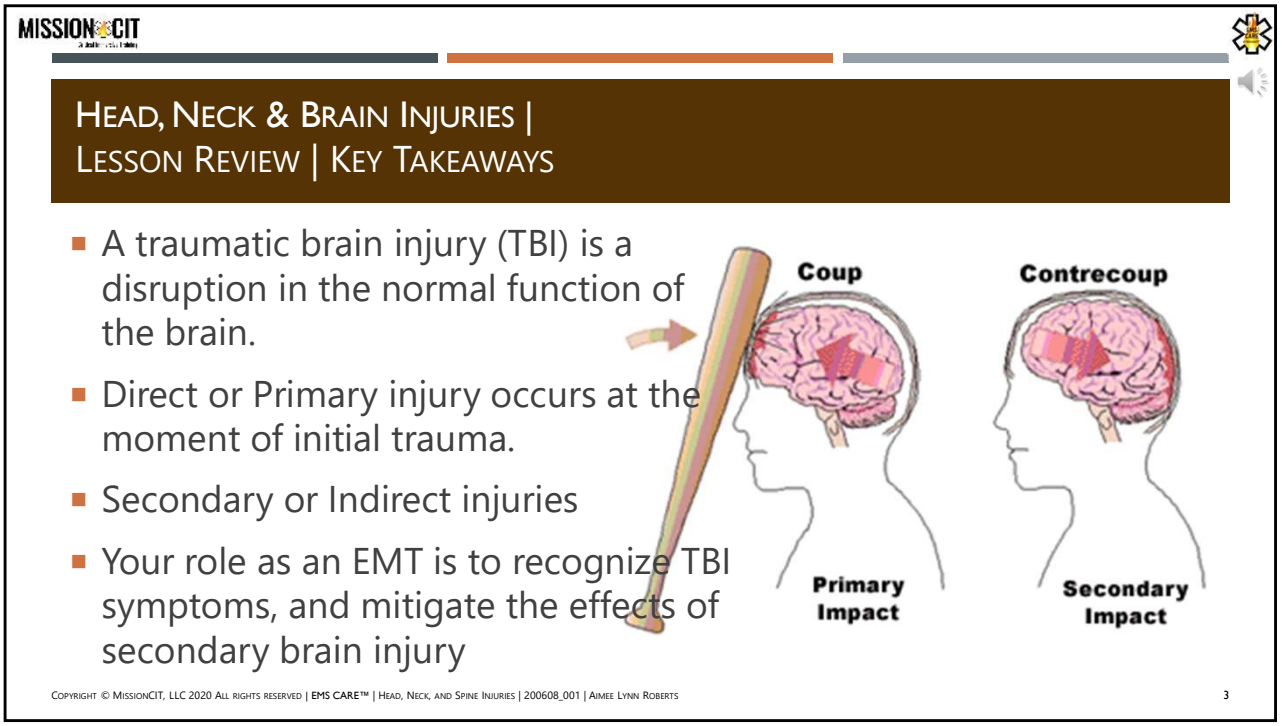


The first set of takeaways regarding Head, Neck & Brain Injuries is an overview as follows:

- A head injury is any sort of injury to the brain, skull, or scalp. This can range from a mild bump or bruise to a traumatic brain injury.
- Scalp, skull, and brain are the different classifications of a head injury.
- These injuries can be further subdivided into concussions, contusions, lacerations, and hematomas.
- The skull is fractured in an open, and intact in a

closed head injury.

- Whenever you suspect a skull or brain injury, also suspect a spine injury.



The next set of takeaways is about traumatic brain injury.

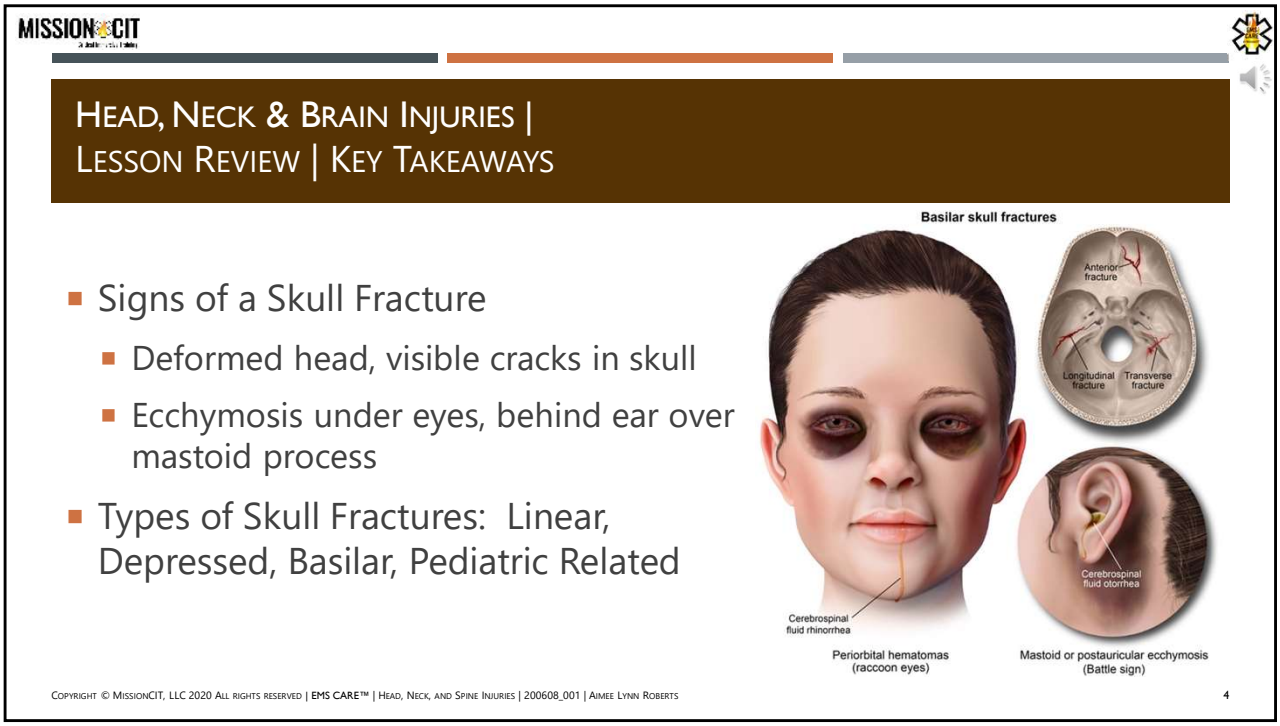
Traumatic brain injury is a disruption in the normal function of the brain that can be caused by a bump, blow, or jolt to the head, or penetrating head injury. Motor vehicle crashes are the most common Method of Injury (MOI). Other common M O eyes include assault, falls, and sports-related injuries.

Direct or Primary injury occurs at the moment of the initial trauma. It may occur when the brain is lacerated, punctured, or bruised by broken bones or by

a foreign object.

Secondary or Indirect brain injuries occur when the shock of impact on the skull, is transferred to the brain, and include concussions and contusions.

Secondary brain injury increases the severity of the primary injury, and may be caused by: Hypoxia, Hypotension, Cerebral edema, Intracranial hemorrhage, Increased intracranial pressure, Cerebral ischemia, or Infection.



The next set of takeaways relates to skull fractures.

Signs of a skull fracture include:

- The Patient's head appears deformed
- Visible cracks in the skull
- Ecchymosis or bruising under the eyes – often called raccoon eyes.
- Ecchymosis behind one ear over the mastoid process, also called Battle's sign.

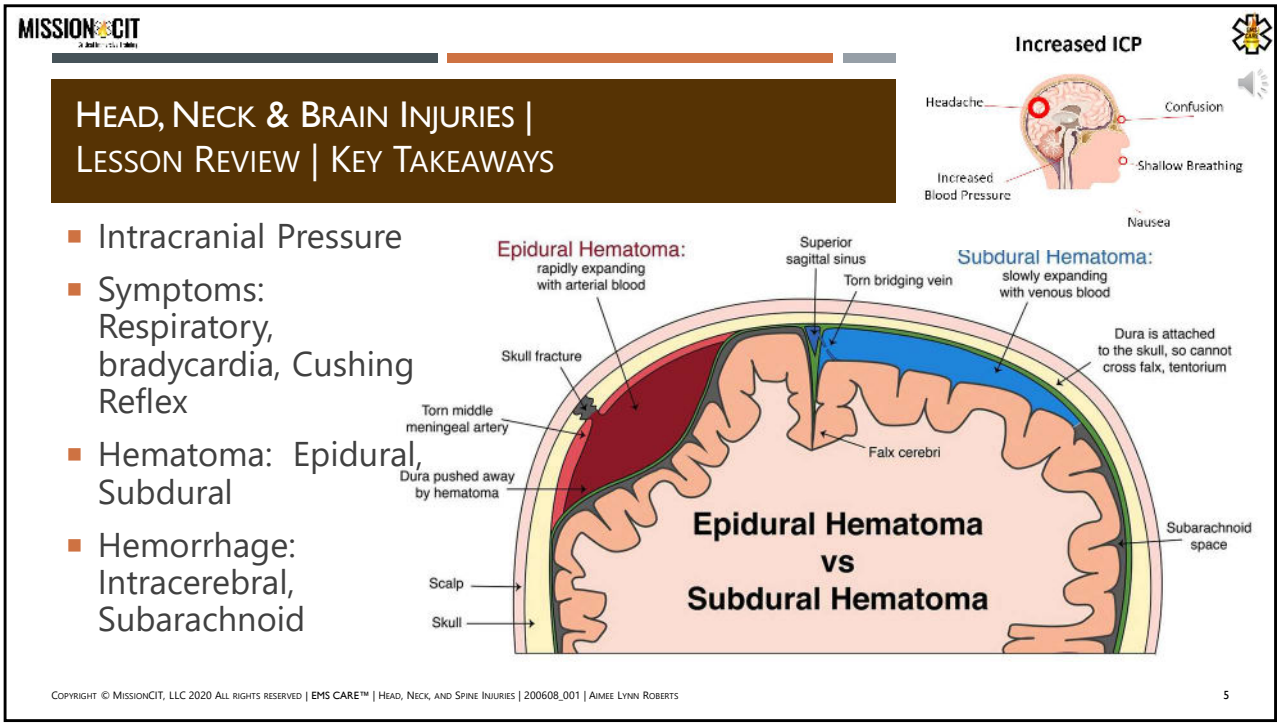
The Types of Skull Fractures are described as:

- A linear skull fracture is a break in a cranial bone

resembling a thin line, without splintering, depression, or distortion of bone.

- In a depressed skull fracture, part of the skull is actually sunken in from the trauma. The injury occurs when the skull is penetrated,
- Basilar skull fractures are linear fractures that occur in the floor of the cranial vault or skull base, and

Pediatric related fractures include Diastatic skull fractures which occur along the suture lines in the skull. Young children may also experience Cranial burst, and Growing Skull Fractures.

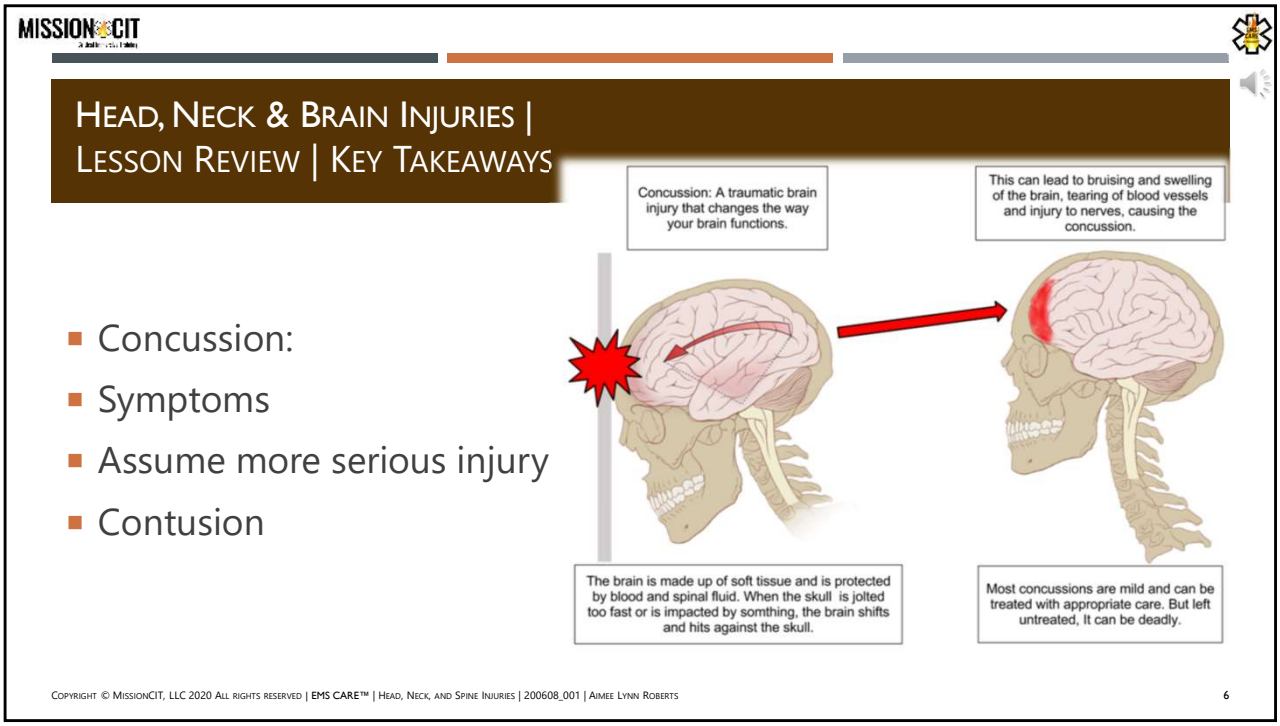


The next set of takeaways discuss intracranial pressure (ICP), hematomas and hemorrhage.

- An accumulation of blood within the skull or swelling of the brain can rapidly lead to an increase in ICP. Increased ICP can be the result, as well as the cause of a brain injury.
- An epidural hematoma occurs when blood accumulates between the skull and the dura mater
- A Subdural hematoma is an accumulation of blood beneath the dura mater but outside the brain.
- Intracerebral hemorrhage occurs when a blood

vessel within the brain bursts, allowing blood to leak inside the brain.

- A subarachnoid hemorrhage is bleeding in the space between the brain and the surrounding membrane

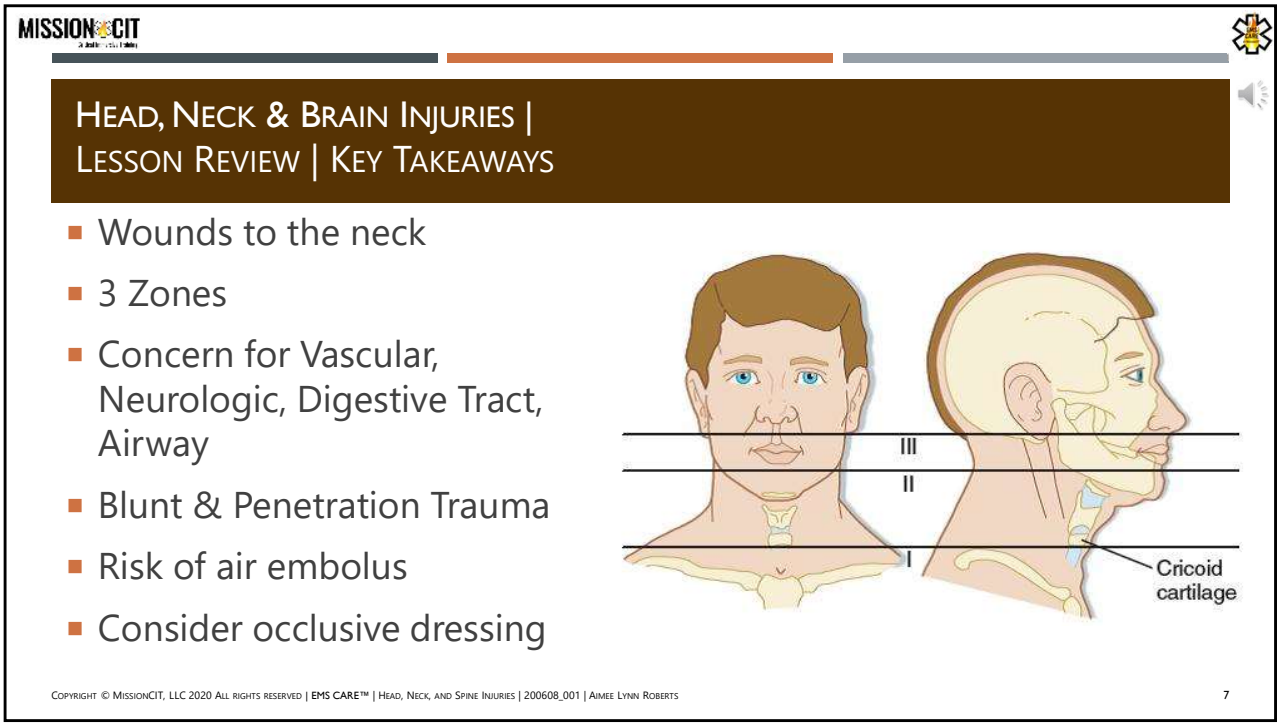


The next set of takeaways reviews concussion and contusion.

- A concussion is a type of traumatic brain injury, caused by a bump, blow, or jolt to the head or by a hit to the body that causes the head and brain to move rapidly back and forth. A concussion is a closed injury, with a temporary loss or alteration of part or all of the brain's abilities to function, without demonstrable physical damage to the brain.
- Common symptoms after a concussive traumatic

brain injury are headache, loss of memory and confusion.

- Physical symptoms may include Headache, Ringing in the ears, Nausea, Vomiting, Fatigue, drowsiness, or Blurry vision.
- Assume that a patient with signs or symptoms of concussion has a more serious injury, until proven otherwise by a CT scan at the hospital, or by evaluation by a physician.
- Cerebral contusions and lacerations involve structural brain damage, and thus are more serious than concussions. These are an alteration in mental function or level of awareness caused by an injury, that does not cause visible damage to brain structures.

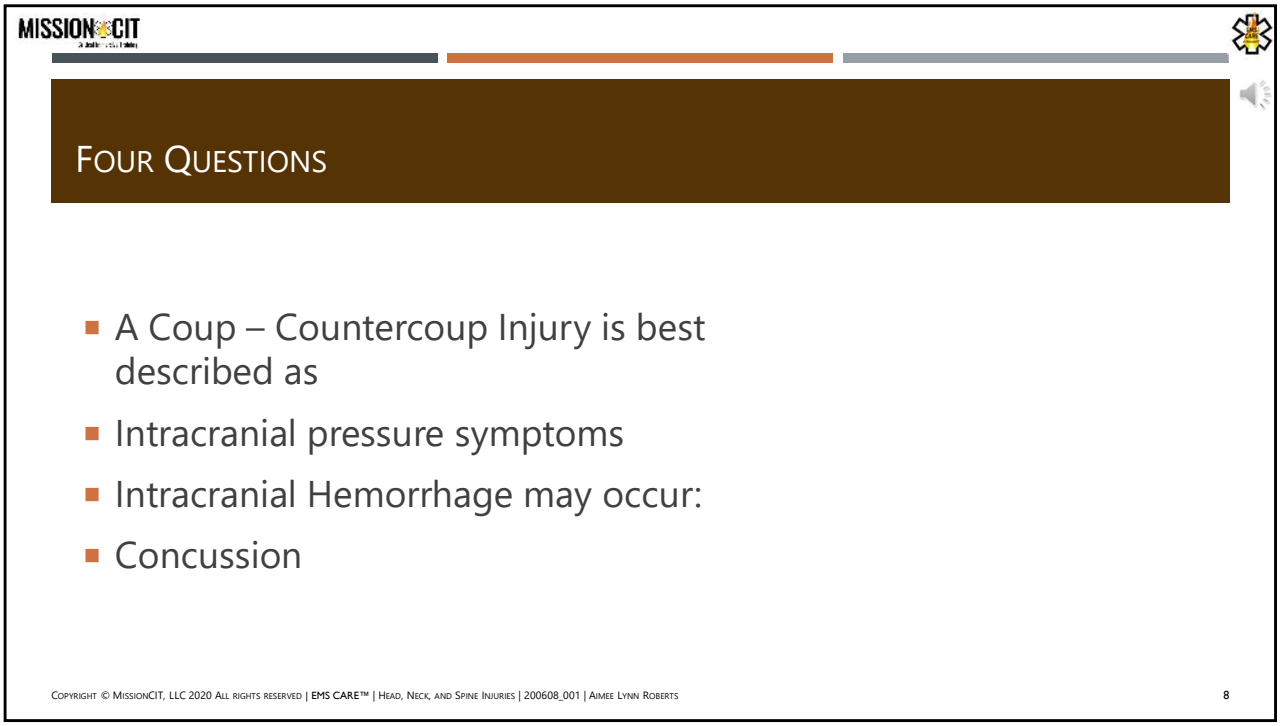


The last set of takeaways reviews neck wounds.

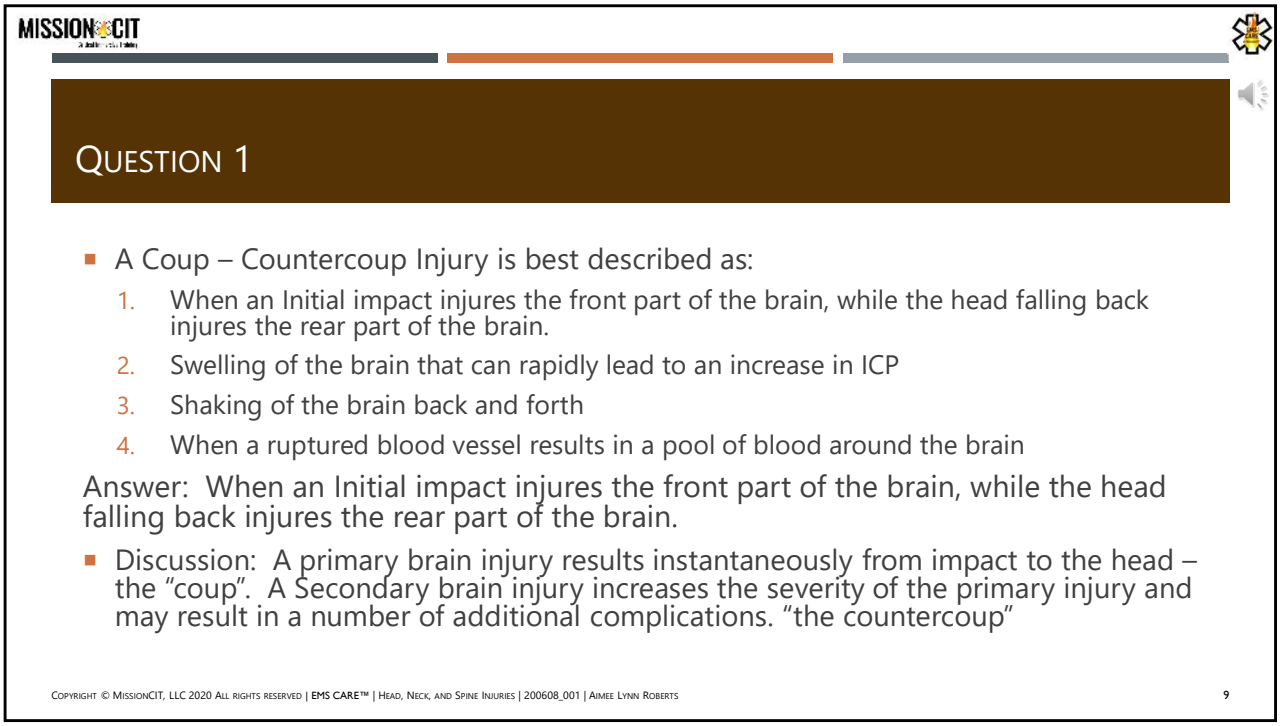
- The neck is divided into 3 Zones, which become important in evaluating and managing these patients, especially with regard to the structures lying within each division.
- Oftentimes, the neck trauma patient may appear stable, only to have delayed injury found later, causing increased morbidity and mortality.
- Penetrating neck injury describes trauma to the neck that has breached the platysma muscle
- Blunt Trauma-may result in a crushed larynx,

tracheal disruption, expanding hematoma, and esophageal leak

- Since the pressure in a large vein is likely to be lower than atmospheric pressure, the risk of an air embolus is great. And finally,
- Consider the use of an occlusive dressing for neck wounds.



And here are 3 questions to test your knowledge on Spine Injuries:



So, how did you do. Here are the answers to each question.

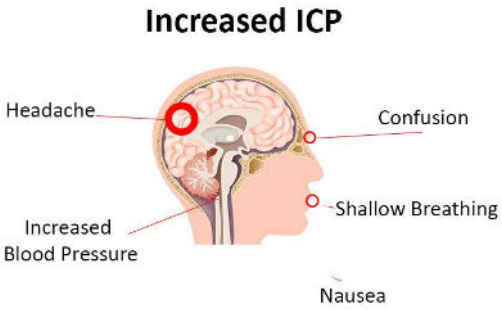
For the first question, the answer is When an Initial impact injures the front part of the brain, while the head falling back injures the rear part of the brain.

As we discussed, a primary brain injury results instantaneously from impact to the head – called the "coup". A Secondary brain injury increases the severity of the primary injury and may result in a number of additional complications. This is called "the

countercoup” – think of whiplash as an example.

QUESTION 2

- Intracranial pressure symptoms
  1. Cushing Reflex
  2. Decreased Alertness
  3. Vomiting
  4. All are correct
- Answer: All are correct
- Discussion: Signs of increased intracranial pressure may include
  - Abnormal respiratory patterns
  - Decreased pulse rate, headache, nausea, vomiting, decreased alertness, bradycardia, sluggish or nonreactive pupils, decerebrate posturing, and increased or widened blood pressure, and
  - Cushing reflex: the symptom triad of increased systolic blood pressure, decreased pulse rate, and irregular respirations.



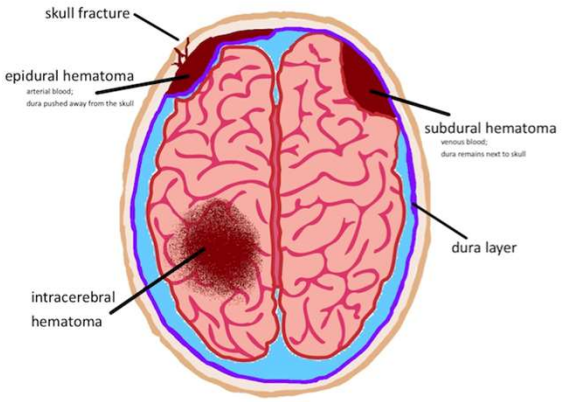
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For the second question, the answer is that all are correct. Recall that Signs of increased intracranial pressure may include

- Abnormal respiratory patterns
- Decreased pulse rate, headache, nausea, vomiting, decreased alertness, bradycardia, sluggish or nonreactive pupils, decerebrate posturing, and increased or widened blood pressure, and
- Cushing reflex: the symptom triad of increased systolic blood pressure, decreased pulse rate, and irregular respirations.

QUESTION 3

- Intracranial Hemorrhage may occur:
  1. Between the skull and dura mater
  2. Beneath the dura mater but outside the brain
  3. Within the tissue of the brain itself
  4. All are correct
- Answer: All are correct
- Discussion: Bleeding can occur between the skull and dura mater, beneath the dura mater but outside the brain, or within the tissue of the brain itself.

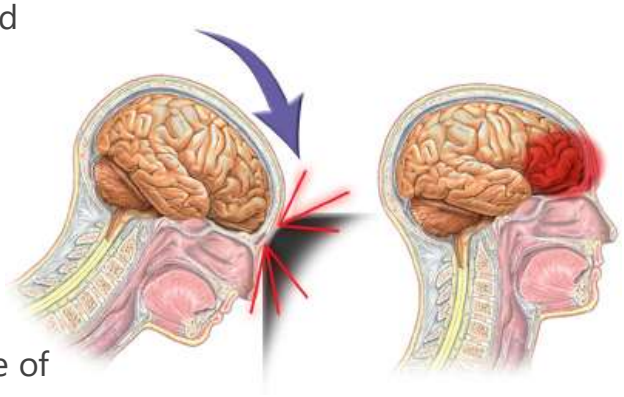


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For the third question, the answer is all are correct. As we learned, Bleeding can occur between the skull and dura mater, beneath the dura mater but outside the brain, or within the tissue of the brain itself.

QUESTION 4

- A concussion may be characterized as:
  1. A mild Traumatic Brain Injury
  2. A temporary loss of the brain's ability to function
  3. A closed brain injury
  4. All are correct
- Answer: All are correct
- Discussion: A concussion is a type of traumatic brain injury…



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For the last question, the answer is all are correct. As we learned, A concussion is a type of traumatic brain injury—or TBI—caused by a bump, blow, or jolt to the head or by a hit to the body that causes the head and brain to move rapidly back and forth. Concussion is a closed injury with a temporary loss or alteration of part or all of the brain's abilities to function without demonstrable physical damage to the brain.