

Chapter 11

The Head and Neck



This chapter and the chapter on Internal Injuries are the most important in this text. Several of the injuries discussed here can produce paralysis or death.

Student athletic trainers are not responsible for stabilizing or transporting severely injured athletes. The student trainer's responsibilities in emergency situations include: becoming aware of the causes of serious injuries; making sure equipment and the playing area are safe; recognizing signs of serious injury and alerting the coach and team physician of these dangers; and making sure the school has a detailed plan to handle emergency transport.

contact is made, either with another player, with equipment or with the ground.

Even though a single blow can cause a concussion, the accumulated effects of numerous minor blows can also cause a concussion.

When the brain is traumatized, as in a concussion, the body's response will be the same as with other tissue injuries: there will be internal hemorrhage. Unlike other areas of the body, though, the brain has very little room to swell because of the encasing skull. Also, this internal hemorrhage is one type of bleeding that can't be controlled with cold, compression and elevation.

Besides the original tissue damage from the concussion, additional damage is possible from the internal hemorrhage, which has no outlet or area in which to expand. This pressure on the brain will affect the central nervous system, causing various reactions of the body.

Concussions are classified as mild, moderate or severe, depending on the amount of damage done to the brain. Each classification of injury may produce any or all of the following signs.

1. Mild concussion symptoms: No loss of consciousness, possible loss of memory (temporary), some mental confusion, unsteadiness, ringing in the ears, minor dizziness, dull headache, rapid recovery from all symptoms.

The team physician will make the decision whether an athlete who has suffered any concussion, even a mild one, can return to play. Before getting that permission, the athlete must be completely aware of his or her surroundings.

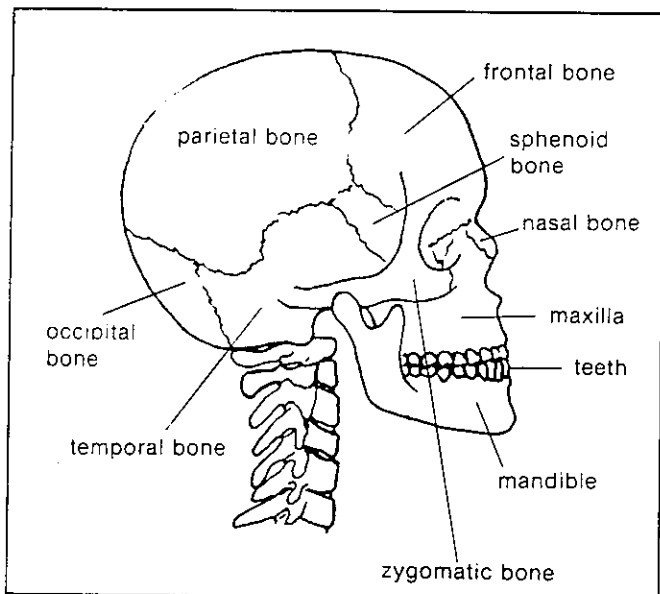
Even with a suspected mild concussion, the athlete must be observed for worsening symptoms.

It is recommended that no athlete be permitted to participate as long as he or she has a headache or any other symptoms caused by a blow to the head.

2. Moderate concussion symptoms: Loss of consciousness for up to two or three minutes, inability to remember events that occurred before losing consciousness, nausea, dizziness, ringing in the ears, disturbance of balance, frequent headaches after other symptoms have subsided.

The athlete should not be permitted to re-enter practice or competition. Immediate physician referral is required. Continuous observation for 24 hours to be aware of worsening symptoms is essential.

3. Severe concussion symptoms: Loss of consciousness for more than two or three minutes (which may result in a coma), lack of response to painful stimuli in the extremities, possible wandering eye movements, severe



The bones of the skull protect the brain from trauma. However, a forceful blow to the head can cause a concussion, or shaking of the brain within the skull.

The Head

For our purposes, we will consider the head in two parts: the cranium, which encases the brain, and the face.

The brain is protected from trauma by the bones of the skull. Other bones of the head include the mandible, or jaw, and the bones of the face. The head has the best blood supply of the body.

Head Injuries

Concussion. A concussion is defined as a shaking of the brain. Forceful blows to the head, or even to other parts of the body, can cause this shaking. A player does not have to suffer a loss of consciousness to have suffered a concussion. Concussions can occur in football, wrestling, gymnastics, basketball or any sport where hard

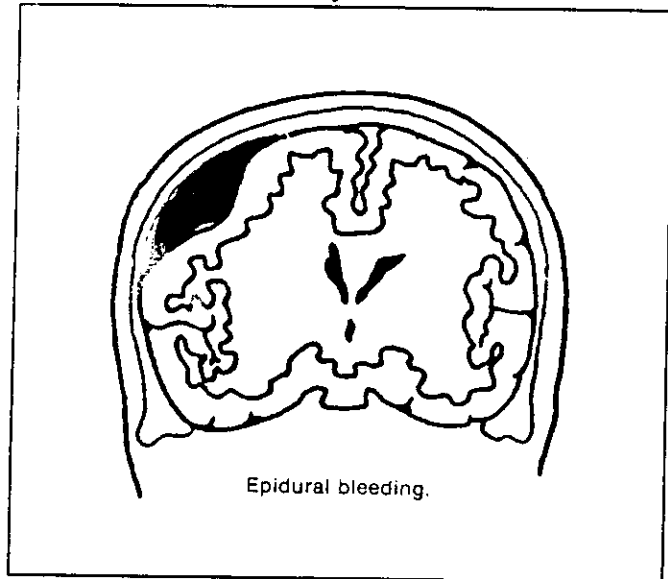
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retrograde amnesia, inequality of pupil size, possible convulsions.

An athlete with a severe concussion should be transported to the hospital by emergency personnel. As with all head injuries, the ambulance crew will also assume there is a neck injury.

In caring for an athlete who has suffered a concussion, quick action is mandatory. It must be stressed again that the trainer or coach should always suspect that the athlete has suffered a neck injury in addition to the concussion. The athlete should not be moved unless it is necessary to provide an airway while medical help is being summoned.

Regardless of the severity of the concussion, a physician must examine the athlete to determine when activity may be resumed. The coach should obtain a signed statement from the physician before the athlete is allowed to return to activity.



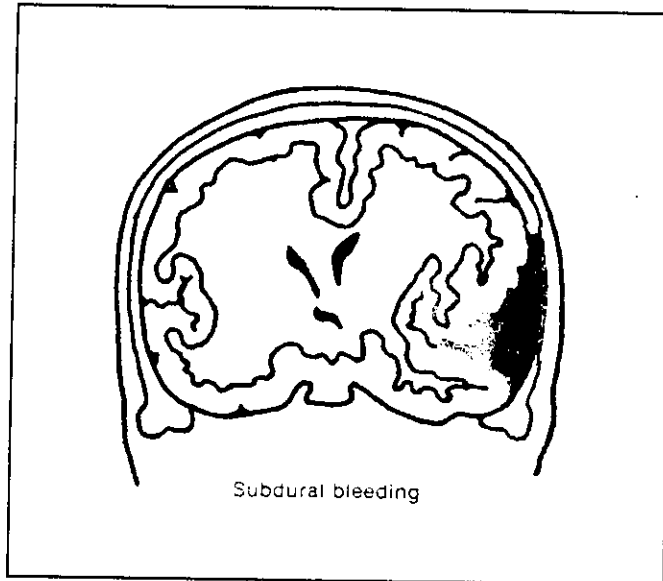
Facial Injuries

Nosebleed

Usually the result of a direct blow, a nosebleed is a common, minor injury in athletics. There are many first aid methods that have proved successful in stopping the bleeding quickly.

One method is to have the athlete sit up, pinching the affected nostril(s) closed. A cold pack should be held over the nose. The athlete's head should be tilted forward; tilting the head back will cause the blood to drip into the throat. Bleeding should stop within five minutes.

If the bleeding does not stop after using this method, the student trainer can apply an astringent to a cotton-tipped applicator; the astringent is then dabbed onto the site of hemorrhage. Then, a rolled-up sterile gauze pad can be used to plug the nose. The use of a cold pack should be continued.



When the brain is traumatized, there is internal bleeding. However, unlike other areas of the body, the brain has very little room to swell. This results in pressure on the brain, which causes various reactions in the body.

Vocabulary

bronchi — the main divisions from the trachea, leading to the lungs

cervical spine — the first seven vertebrae making up the bones of the neck

concussion — a shaking of the brain caused by a forceful blow to the head or other parts of the body or by numerous minor blows

cranium — the part of the head that encases the brain

hematoma auris — "cauliflower ear;" injury in which the tissue of the outer ear pulls away from the underlying cartilage, allowing blood and fluid to accumulate in the area; caused by repeated rubbing or contusion of

the ear

hemorrhage — bleeding; the escape of blood from a ruptured blood vessel, externally or internally

larynx — organ that produces vocal sounds and that serves as an air passage between the pharynx and the trachea

mandible — lower jawbone

pharynx — muscular tube that extends from the base of the skull to the esophagus

trachea — the "windpipe;" air passage between the larynx and the main bronchi

vertebrae — 33 irregularly shaped bones that extend from the neck to the pelvic region

Head Injury Information Sheet

If any of the following symptoms are present 24-48 hours after a head injury, the athlete should be taken immediately to your family physician or to an emergency room.

1. Severe headache (deep throbbing)
2. Dizziness or loss of coordination
3. Temporary loss of memory, mental confusion
4. Ringing in the ears (tinnitus)
5. Blurred or double vision
6. Unequal pupil size
7. No pupil reaction to light
8. Nausea and/or vomiting
9. Sturred speech
10. Convulsions or tremors
11. Sleepiness or grogginess
12. Clear fluid from nose and/or ears
13. Numbness or paralysis (partial or complete)
14. Difficulty in being aroused

Other Instructions:

- A) Check breathing rate, heart rate and color (as well as other symptoms) every two hours.
- B) Awaken every two hours at night and check condition.
- C) Allow athlete to consume only clear liquids for eight hours.
- D) Do not have athlete take any medications in the initial 24 hours unless directed to do so by a physician.
- E) If at any time there is a question of the well-being of the athlete, seek medical aid immediately.

When the bleeding has stopped, the athlete can return to activity with the gauze pad still in place. If possible, leave the gauze in the nose for at least 15 minutes. Of course, if the athlete has trouble breathing, the gauze can be removed sooner. By keeping the gauze in place, there should be no disruption of the blood vessels. Blowing the nose within 2-3 hours of a nosebleed could start the hemorrhage again.

If the blow to the nose is severe, or if the blood is thin or will not clot, the student trainer and coach must look for signs of a fracture, or even a concussion.

Contusion to the Eye

All injuries to the eyes must be taken seriously. If the contusion is severe enough, vision could be affected permanently. Concussions are also a consideration when there is a sharp blow to the eye area.

Fortunately, most eye contusions are minor. Capillary bleeding can produce discoloration, or the familiar "black eye." Despite swelling of tissue, the vision remains normal in minor contusions.

Signs of more serious contusions include blurred, double or spotty vision and pain. Blood in the eye is also an indication of serious injury. In such cases, *both* eyes should be patched to reduce movement, a cold pack should be applied, and the athlete should be taken to a physician for diagnosis.

Note: chemical cold packs should never be used around the eyes because of the danger of the packs leaking.

Object in the Eye

When an object gets into a person's eye, the natural response is to rub the eye. However, rubbing the eye can cause two problems. First, the object may scratch the eye, creating greater discomfort and damage. Second, the object may become embedded in the tissue of the eye, making it more difficult to remove.

In removing a foreign body from the surface of the eye:

1) Pull down the lower lid to see if that will uncover the object. If so, use the corner of a clean, folded handkerchief or tissue to attract the object. Do not use cotton around the eye as the fibers will come off into the eye and be a further source of aggravation.

2) If the object is under the upper lid, have the athlete look down, grasp the eyelashes of the upper lid and pull the upper lid forward and down over the lower lid. It is possible that this may dislodge the object.

3) If these measures do not dislodge the object, then take a wooden match stick or applicator and horizontally depress the upper lid by pulling up on the eyelashes against the applicator. Then lift the object off with the corner of a handkerchief or tissue and gently replace the lid in its natural position.

4) There is one final measure to be taken if you are still having problems removing the object. Try to flush the eye with water by using an eye dropper or a small bulb syringe.

5) If none of the measures above work to dislodge the object, then place a protective dressing over both eyes and have a specialist examine the athlete.

Hematoma Auris (Cauliflower Ear)

Hematoma auris is an injury most often seen in wrestling. It is caused by rubbing or a contusion of the ear. The tissue of the outer ear pulls away from the underlying cartilage, allowing blood and fluid to accumulate in the area. If the hematoma that is formed goes untreated, it tends to solidify and can be removed only by surgery.

If the athlete complains of a wrenching or twisting of the ear, or if he notices heat from friction, immediate application of an elastic wrap and cold pack can help reduce the amount of hemorrhage. If swelling is present or continues after this treatment, the athlete should be taken to a physician.

This disfiguring injury can be prevented if wrestlers wear ear guards during practice and competition.

Dental Injuries

A mouthpiece will reduce the incidence of dental injuries by cushioning the teeth from the shock of blows to the jaw. These devices are so effective that their use has all but eliminated dental injuries in football. Athletes in other contact sports, such as basketball and field

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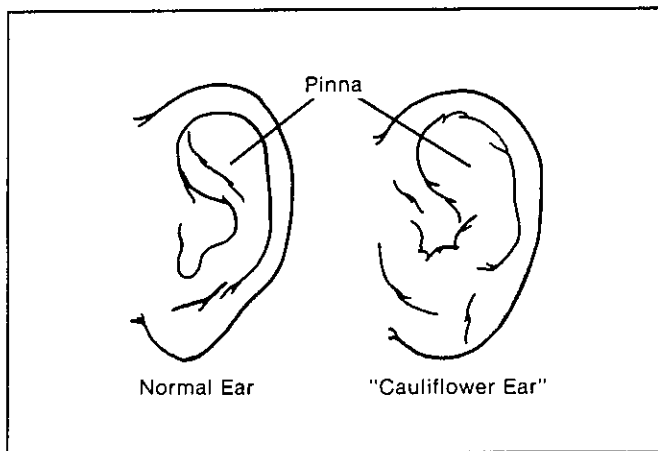
hockey, could also benefit from wearing protective mouthguards.

Most dental injuries and conditions, such as a lost filling, can be painful or distracting, but do not require emergency treatment. Simple first aid measures should be adequate until the athlete can see a dentist.

An interested dentist should be part of each athletic department's sports medicine team. Reviewing first aid and emergency treatment procedures with the dentist in the off-season will help the athletic trainer and coach be prepared for common dental problems.

Mouthpieces should be comfortable so athletes will wear them, and the coach or student trainer should inspect them regularly for wear. Worn mouthpieces must be replaced immediately to help prevent dental injuries.

In addition to protecting the teeth, mouthpieces can also prevent some concussion injuries.



Most often seen in wrestling, hematoma auris (cauliflower ear) is caused by repeated rubbing or contusion of the ear and results in swelling of the outer ear tissue.

Facial Cuts

Often, a blow to the face will cut or tear the skin. For large cuts, the student trainer should transport the athlete to a physician for suturing. The sooner a cut is sutured, the less likely that it will scar.

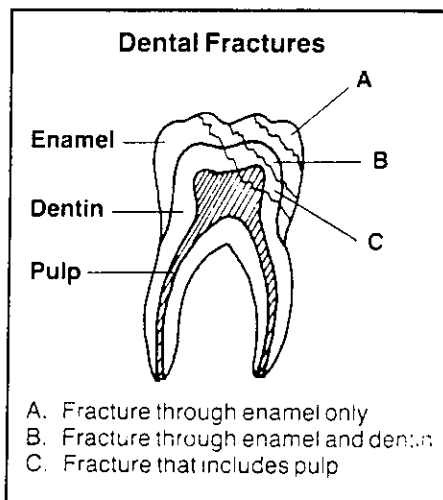
With smaller cuts, the physician may simply use a butterfly bandage or steri-strip to pull the edges of the skin together.

Because of the good blood supply to the face, even minor cuts can bleed profusely. This good blood supply also means that most cuts heal quickly.

As with any open wound, the student trainer can help by cleaning the area to help prevent infection. Also, the athlete can hold a towel containing crushed ice against the bandaged cut to reduce swelling and pain.

Cut over the Eye

A cut over the eye from being struck by an elbow or other object is one of those injuries that looks worse than



it usually is. The good blood supply to the head can produce a lot of bleeding from any cut on the nose, scalp or face.

Cuts over the eye are usually clean and heal quickly. They heal even faster with immediate stitching by the physician. For minor cuts, the physician may simply recommend cleaning the wound and bandaging it.

In cases of extreme swelling, or when the blow is especially severe, a concussion should be suspected.

The Neck

The bones of the neck are the first seven vertebrae, known as the cervical spine. The cervical spine, with its attached ligaments and muscles, is adequate to support the head, which weighs about fourteen pounds.

Other structures in the neck are the larynx, trachea, muscles, nerves and blood vessels.

Neck Injuries

The neck is a very fragile part of the body that houses the seven vertebrae of the cervical spine. The cervical section of the spine is by far the most flexible, allowing flexion, extension and rotation of the neck and head. The neck is seldom injured in daily activities, including sports.

However, those injuries that do occur to the neck have the potential to cause paralysis and even death. This is because the vertebrae, like other bones, can be fractured or sprained; sprains can result in dislocation of the vertebrae. Without protection of the vertebrae in their correct alignment, permanent spinal cord damage can occur. The spinal cord transmits impulses that control all voluntary and involuntary movements of the body. (See Chapter 8 for a further discussion of spinal injuries.)

The mechanism of injury is any force that flexes, extends or rotates the neck beyond its normal range of motion. These movements can occur in any sport, but most neck damage is the result of diving or football injuries. Neck injuries are also possible in gymnastics, wrestling, basketball and other contact sports.

Symptoms of cervical fracture or dislocation include:

- 1) Pain in the cervical region or back
- 2) Muscle spasm
- 3) Swelling
- 4) Inability to move the neck (Don't move the neck to test for pain.)
- 5) Numbness, tingling or burning sensation in the limbs
- 6) Decreased limb strength
- 7) Paralysis below the site of the fracture
- 8) Deformity in the cervical area
- 9) History of the injury

Any history of forced flexion or hyperextension, whiplash, forced rotation or a hard head-on blow should alert the trainer or coach to the possibility of a fracture or dislocation of the cervical vertebrae.

Prevention of neck injuries depends a great deal on the athlete using safe and proper techniques. Neck strength and flexibility, as well as proper protective equipment, can also help prevent neck injuries.

If a cervical injury is suspected, emergency medical help should be summoned. The athlete should be left lying in the same position; sandbags to limit any movement should be placed at strategic locations until qualified medical help arrives.

Never, never, never allow removal of a football helmet from a player with a possible neck injury! Also, remember that it is not necessary for the athlete to have neck pain with a neck injury.

Cardiopulmonary resuscitation (CPR) classes are available to provide instruction on maintaining an open airway in emergency situations such as this.

Cervical Nerve Stretch Syndrome

A cervical injury often seen in football is the stretching of one or more of the brachial plexus nerves. This nerve group begins in the neck and innervates the upper extremities. A common name for this injury is a "burner" or "stinger."

When the brachial plexus becomes stretched or contused, a burning sensation is produced that extends from the point of injury into the arm. A temporary loss of function and some numbness of the arm may also result. The mechanism of injury is usually forced lateral movement of the head.

An athlete who has suffered from cervical nerve stretch syndrome must be removed from competition and checked by a physician. Even though symptoms may disappear rapidly, an examination is needed to rule out a more serious injury. Written clearance by the physician

should be obtained by the coach before further athletic participation is permitted.

Throat Contusions

Another rare sports injury to the neck area is the throat contusion. The mechanism of injury can be a kick or blow to the throat, or an object such as a baseball could strike the athlete on the front of the neck.

In most severe cases, the cartilage that forms the larynx may fracture or collapse, possibly blocking the airway. In these instances, mouth-to-mouth breathing may be impossible. This would be a medical emergency, and the student trainer should summon medical personnel immediately.

More often the throat contusion will be much less serious. However, because of the pain, coughing and inability to swallow, the athlete may become frightened. Cold is an effective first aid treatment to help prevent swelling and blockage of the airway as the athlete is being transported to the hospital.

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Review Questions — Part One

1. A concussion is defined as a _____ of the _____.
2. The head has the best _____ supply of the body.
3. A person does not have to suffer a loss of _____ to have suffered a concussion.
4. Pressure on the brain will affect the _____ system, causing various reactions of the body.
5. Even with a suspected mild concussion, the athlete must be observed for symptoms that become _____.
6. With severe concussions, the ambulance crew must also assume there is a _____ injury.
7. Besides preventing dental injuries, mouthpieces can also prevent some _____.
8. The first seven vertebrae are known as the _____.
9. When an athlete has a nosebleed, the head should be tilted _____.
10. Chemical or instant cold packs should _____ be used for eye injuries.
11. Hematoma auris is an injury to the _____, and is most often seen in the sport of _____.
12. An injury to the neck could cause _____, or even _____.
13. A cervical neck injury involving a stretching of the brachial plexus nerves is commonly called a _____, or _____.

Review Questions — Part Two

1. What can cause a concussion?
2. Why is internal hemorrhage especially dangerous to the brain?
3. Describe how to stop a nosebleed.
4. What are the signs of severe eye injury?
5. What is hematoma auris, and what is its cause?
6. What is cervical nerve stretch syndrome, and what are the symptoms?
7. Why shouldn't a football helmet be removed from a player with a possible neck injury?
8. Name the part of the body with the best blood supply. Name at least two parts of the body with poor blood supply.
9. What are the symptoms of a cervical fracture or dislocation?
10. What are the symptoms of mild, moderate and severe concussions?