



Sprain, strain, contusion and haematoma, Dislocation and fracture

Introduction

Injury is an increasingly significant health problem throughout the world. Physical trauma is a physical injury that is serious and could endanger a patient's life. Common causes of physical trauma include sports injuries, car accidents, burns, drowning, explosions, crush injuries, and severe beatings. There are a number of concerns with physical trauma. Immediate problems can include sprain, strain, contusion, fracture, dislocation, blood loss, brain damage, respiratory impairment, and severe pain. Patients must be quickly assessed to identify their injuries and to determine which injuries are most serious.

Sprain

Definition of Sprain

A sprain, also known as a torn ligament, is damage to one or more ligaments in a joint, often caused by trauma or the joint being taken beyond its functional range of motion. The severity of sprain ranges from a minor injury which resolves in a few days to a major rupture of one or more ligaments requiring surgical fixation and a period of immobilisation. Sprains can occur in any joint but are most common in the ankle and wrist.

Sign and symptom of Sprain

- Pain
- Swelling
- Bruising
- Decreased ability to move the limb
- If a ligament ruptures, one may hear a popping sound
- Difficulty using the affected extremity
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Causes of Sprain

Sprains typically occur when the joint is taken beyond its functional range of motion. There are certain factors which increase risk of sprains. Fatigue of muscles generally leads to sprains. When one suddenly starts to exercise after a sedentary lifestyle, sprains are quite common. Warming-up is thought to loosen the joint, increases blood flow and makes the joint more flexible.

Classification of Sprain

1. First degree sprain – the fibres of the ligament are stretched but intact.
2. Second degree sprain – is a tear of part of a ligament, from a third to almost all its fibres.
3. Third degree sprain – is a complete rupture of the ligament, sometimes avulsing a piece of bone.

Treatment of Sprain

The first modality for a sprain can be remembered using the acronym RICE. The treatment of sprains depends on the extent of injury and the joint involved. Medications like non-steroidal anti-inflammatory drugs can relieve pain. Topical NSAIDs appear to be as good as those taken by mouth.

- **Rest:** The sprain should be rested. No additional force should be applied on site of the sprain.
- **Ice:** Ice should be applied immediately to the sprain to reduce swelling and pain. It can be applied for 10–15 minutes at a time 3-4 times a day. Ice can be combined with a wrapping to minimize swelling and provide support.
- **Compression:** Dressings, bandages, or ace-wraps should be used to immobilize the sprain and provide support. When wrapping the injury, more pressure should be applied at the far end of the injury and decrease in the direction of the heart; the reason for this is that it more easily causes unnecessary fluid to be flushed back up the blood stream in order to be recycled. Compression should not cut off the circulation of the limb.
- **Elevation:** The sprained joint should be kept elevated (in relation to the rest of the body) will also help minimize swelling.

Strain

Definition of Strain

A strain is when a muscle is stretched too much and tears. It is also called a pulled muscle. A strain is a painful injury. It can be caused by an accident, overusing of a muscle or using a muscle in the wrong way.

Causes of Strain

A strain may be caused by:

- Too much physical activity or effort
- Improperly warming up before a physical activity
- Poor flexibility

Symptoms of Strain

Pain and difficulty moving the injured muscle

- Discoloured and bruised skin
- Swelling

Treatment of Strain

1. Apply ice right away to reduce swelling. Wrap the ice in cloth. Do not place ice directly on the skin. Apply ice for 10 to 15 minutes every 1 hour for the first day and every 3 to 4 hours after that.
2. Use ice for the first 3 days. After 3 days, either heat or ice may be helpful if person still have pain.
3. Rest the pulled muscle for at least a day. If possible, keep the pulled muscle raised above heart.
4. Try not to use a strained muscle while it is still painful. When the pain starts to go away, increase activity by gently stretching the injured muscle.

Contusion

A bruise, or contusion, is caused when blood vessels are damaged or broken as the result of a blow to the skin. The raised area of a bump or bruise results from blood leaking from the injured blood vessels into the tissues as well as from the body's response to the injury. A contusion may be painful to the touch because the blood that has pooled under the skin is putting pressure on nearby nerve endings.

Symptoms of Contusion

A contusion changes in appearance over time and may be sensitive or tender to the touch. A contusion is usually reddish in colour, reflecting the colour of the blood through the skin. Over time, contusion will develop a blue or purple tint to it. Finally, the contusion will turn a greenish-hue and then a yellow or brown colour. Typically, the body can heal a contusion within 2-3 weeks after the injury occurs.

Haematoma

A hematoma is an abnormal collection of blood outside of a blood vessel. It occurs because the wall of a blood vessel wall, artery, vein, or capillary, has been damaged and blood has leaked into tissues where it does not belong. The haematoma may be tiny, with just a dot of blood, or it can be large and cause significant swelling

Signs and symptoms of Haematoma

Some haematomas are visible under the surface of the skin (commonly called bruises) or possibly felt as masses/lumps. Lumps may be caused by the limitation of the blood to a sac, subcutaneous or intramuscular tissue space isolated by fascial planes. This is a key anatomical feature that helps prevent injuries from causing massive blood loss. In most cases the hematoma such as a sac of blood eventually dissolves; however, in some cases they may continue to grow such as due to blood seepage or show no change. If the sac of blood does not disappear, then it may need to be surgically cleaned out/repaired.

Types of Haematoma

- ❖ Subdermal haematoma (under the skin)
- ❖ Skull/brain:
- ❖ Epidural haematoma – between the skull and dura mater
- ❖ Subdural haematoma – between the dura mater and arachnoid mater
- ❖ Subarachnoid haematoma – between the arachnoid mater and pia mater (the subarachnoid space)
- ❖ Othematoma – between the skin and the layers of cartilage of the ear
- ❖ Breast haematoma (breast)
- ❖ Perichondral haematoma (ear)
- ❖ Perianal haematoma (anus)
- ❖ Subungual haematoma (nail)
- ❖

Treatment of Haematoma

- treatment of a haematoma depends upon which organ or body tissue is affected.
- Superficial haematomas of the skin and soft tissue, such as muscle, may be treated with rest, ice, compression, and elevation (RICE).
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Dislocation

A dislocation occurs when the bones in a joint separate. Dislocations can only occur to joints. Dislocations can sustain in any joint of the body, but the more common sites of dislocation include the shoulder, hip, patella, ankle, and finger

Causes of Dislocation

Dislocations typically result when a joint experiences an unexpected or unbalanced impact. This might happen if we fall or experience a harsh hit to the affected area.

Signs and symptoms of Dislocation

The area may be swollen or look bruised. The area is red or discoloured. It may also have a strange shape or be deformed as a result of the dislocation.

Some of the other symptoms associated with dislocated joints include:

- loss of motion
- pain during movement
- numbness around the area
- tingling feeling

Treatment of Dislocation

The treatment is under following method:

- manipulation or repositioning
- immobilization
- medication
- Surgery
- rehabilitation

Manipulation

In this method, physician will manipulate or reposition the joint back into place with under a sedative or aesthetic to remain comfortable and also to allow the muscles near joint to relax, which eases the procedure.

Immobilization

After joint returns to its proper place, a sling, splint, or cast is worn for several weeks. This will prevent the joint from moving and allow the area to fully heal. The length of time joint needs to be immobile will vary, depending on the joint and severity of the injury.

Medication

Most of pain should go away after the joint returns to its proper place. However, a pain reliever or a muscle relaxant is prescribed if patient still feels pain.

Surgery

Surgery is needed only when the dislocation damaged nerves or blood vessels, or if non operative method fails.

Rehabilitation

Rehabilitation begins after properly repositions or manipulates the joint into the correct position and removes the sling or splint. The goal of rehabilitation is to gradually increase the joint's strength and restore its range of motion. Remember, it's important to go slowly so, not to reinjure before the recovery is complete

Fractures

Definition of Fractures

A fracture is a complete or incomplete break in a bone resulting from the application of excessive force.

Types of bone fracture

- **Avulsion fracture** - a muscle or ligament pulls on the bone, fracturing it
- **Comminuted fracture** - the bone is shattered into many pieces
- **Compression (crush) fracture** - generally occurs in the spongy bone in the spine. For example, the front portion of a vertebra in the spine may collapse due to osteoporosis.
- **Fracture dislocation** - a joint becomes dislocated, and one of the bones of the joint has a fracture.
- **Greenstick fracture** - the bone partly fractures on one side, but does not break completely because the rest of the bone can bend. More common among children, whose bones are softer and more elastic.
- **Hairline fracture** - a partial fracture of the bone. Often this type of fracture is harder to detect.
- **Longitudinal fracture** - the break is along the length of the bone.
- **Oblique fracture** - A fracture that is diagonal to a bone's long axis.
- **Pathological fracture** - when an underlying disease or condition has already weakened the bone, resulting in a fracture (bone fracture caused by an underlying disease/condition that weakened the bone).

Symptoms of bone fractures

- Pain
- Swelling
- Bruising
- Discoloured skin around the affected area
- Angulation - the affected area may be bent at an unusual angle
- The patient is unable to put weight on the injured area
- The patient cannot move the affected area
- The affected bone or joint may have a grating sensation
- If it is an open fracture there may be bleeding.

Treatment of bone fractures

Bone healing is a natural process which in most cases will occur automatically. Fracture treatment is usually aimed at making sure that this is the best possible function of the injured part after healing.

Treatment also focuses on providing the injured bone with the best circumstances for optimum healing (immobilization).

Immobilization - As soon as the bones are aligned they must stay aligned while they heal. This may include:

- ❖ **Plaster casts or plastic functional braces** - these hold the bone in position until it has healed.
- ❖ **Metal plates and screws**- current procedures use minimally invasive techniques.
- ❖ **Intra-medullary nails** - Internal steel rods are placed down the center of long bones. Flexible wires may be used in children.
- ❖ **External fixators** - these may be made of metal or carbon fibre; they have steel pins that go into the bone directly through the skin. They are a type of scaffolding outside the body.

Conclusion

Traumatic injuries may affect many parts of the body, including the brain, the extremities and internal organs. The severity of injuries can range from minor to life-threatening. Trauma obviously affects the patient physically, but it can have lasting effects on the patient and those close to the patient emotionally. Therefore it is good to be able to receive prompt and thorough care after suffering any type of severe and life threatening injury.