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Pelvis Fractures

Anatomy

The pelvis is a ring-like structure of bones at the lower end of the trunk. The two sides of the pelvis are actually three bones (ilium, ischium, and pubis) that grow together as people age. Strong connective tissues (ligaments) join the pelvis to the large triangular bone (sacrum) at the base of the spine. This creates a bowl-like cavity below the rib cage. On each side, there is a hollow cup (acetabulum) that serves as the socket for the hip joint.

Many digestive and reproductive organs are located within the pelvic ring. Large nerves and blood vessels that go to the legs pass through it. The pelvis serves as an attachment point for muscles that reach down into the legs and up into the trunk of the body. With all of these vital structures running through the pelvis, a pelvic fracture can be associated with substantial bleeding, nerve injury, and internal organ damage.

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Cause

Growing teens, especially those involved in sports, are one group of people at risk for a particular type of pelvic fracture. Many "pulled muscles" may actually be undetected avulsion fractures of the pelvis. These fractures usually occur with sudden muscle contractions. A small piece of bone from the ischium where the hamstring muscles attach is torn away by these muscles. This type of fracture does not make the pelvis unstable or injure internal organs.

Also at risk for pelvic fractures are elderly people with osteoporosis. An individual may fracture the pelvis during a fall from standing, such as when getting out of the bathtub or descending stairs. These injuries usually do not damage the structural integrity of the pelvic ring, but may fracture an individual bone.

However, most pelvic fractures involve high-energy forces, such as those generated in a motor vehicle accident, crush accident or fall. Depending on the direction and degree of the force, these injuries can be life-threatening and require surgical treatment.

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Symptoms

A broken pelvis is painful, often swollen and bruised. The individual may try to keep the hip or knee bent in a specific position to avoid aggravating the pain. If the fracture is due to a high-energy injury, there may also be injuries to the head, chest, abdomen, or legs. There is usually considerable bleeding, which can lead to shock. Emergency services should be called. These injuries must be stabilized and the individual taken to a trauma center for definitive care.

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Diagnosis

All pelvic fractures require X-rays, usually from different angles, to show how out of place the bones are. A computed tomography (CT) scan may be ordered to define the extent of the pelvis injury and other associated injuries. The physician will also examine the blood vessels and nerves to the legs to see if they have been injured.

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Treatment

Nonsurgical Treatment

Stable fractures, such as the avulsion fracture experienced by an athlete, will normally heal without surgery. The patient will have to use crutches or a walker, and will not be able to put all of his or her weight on one or both legs for up to three months, or when the bones are healed. The doctor may prescribe medication to lessen pain. Because mobility may be limited for several months, the physician may also prescribe a blood-thinner to reduce the risk of blood clots

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forming in the veins of the legs.

Surgical Treatment

Pelvic fractures that result from high-energy trauma are often life-threatening injuries because of the extensive bleeding. In these cases, doctors may use an external fixator to stabilize the pelvic area. This device has long screws that are inserted into the bones on each side and connected to a frame outside the body. The external fixator allows surgeons to address the internal injuries to organs, blood vessels and nerves.

What happens next depends on the type of fracture and the patient's condition. Each case must be assessed individually, particularly with unstable fractures. Some pelvic fractures may require traction. In other cases, an external fixator may be sufficient. Unstable fractures may require surgical insertion of plates or screws.

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Outcome

Stable pelvic fractures heal well. Pelvic fractures sustained during a high-energy incident, such as an automobile accident, may have significant complications, including severe bleeding, internal organ damage, and infection. However, these are due more to the associated injuries than to the fracture.

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If these injuries are addressed, the fracture usually heals well. People may walk with a limp for several months because of damage to the muscles around the pelvis. These muscles take a long time to become strong again. Subsequent problems, such as pain, impaired mobility, and sexual dysfunction, are usually the result of damage to nerves and organs that is associated with the pelvic fracture.

Last reviewed: September 2007

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