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IMPROVING THE DIAGNOSIS AND TREATMENT TACTICS OF COMBINED PELVIC INJURIES IN PATIENTS

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Abstract: *The purpose of research is to improve the results of treatment of unstable pelvic fractures in combined trauma based on optimization of the clinical diagnostic algorithm.*

Key words: *period of traumatic disease, combined injury, acetabulum, unstable injury of pelvis, condition severity, external fixation device.*

INTRODUCTION

One of the key tasks in treating a patient is the speed and accuracy of decision-making in the acute period of traumatic disease [9]. To solve this problem, a clear algorithm for the diagnostic and treatment process is needed, including determining the indications for surgical treatment depending on the severity of the patient's condition, the category of combined injury, and the type of pelvic damage. Treatment of combined trauma is a very resource-intensive and lengthy process, requiring equipment, consumables and trained medical personnel. Successful treatment of pelvic bone fractures depends on the correct choice of surgical access, quality of reposition and stability of osteosynthesis [8].

METHODS

Analysis of features of diagnosis and treatment of patients with concomitant pelvic injuries admitted to Andijan branch of the Republican Scientific Center for Emergency Medical Care was conducted.

RESULTS AND DISCUSSION

The bony pelvis can be divided and viewed into 2 parts: anterior and posterior. The anterior part is called the pelvic girdle which is composed of the pubis, the ischium, and the ilium. It is connected posteriorly to the pelvic spine. The pelvic spine consists of the coccyx and sacrum. The hip joint is a ball and socket joint with the round femoral head articulating within the matching acetabular socket. The acetabulum is formed from the confluence of three bones: the ischium, ilium, and pubis. In skeletally immature patients, these three bones are joined in the medial acetabulum by the triradiate cartilage, which is a growth plate for the acetabulum. There is also appositional growth from the edges of the acetabulum and pelvis resulting in increased depth of the acetabulum and size of the pelvis. Normal development of the acetabulum requires the femoral head to articulate with the acetabular cartilage. The acetabular socket will not develop normally if the femoral head is chronically dislocated or subluxed out of the acetabular fossa. This often results in a shallow and malformed acetabulum and is termed developmental dysplasia of the hip (DDH). The severity of this condition is determined by the degree of subluxation of the femoral head. If DDH is identified at birth or soon thereafter, the hip can be reduced with either casting or surgery. This treatment can allow the hip to grow and develop almost normally. If the hip is left subluxed or dislocated, the acetabulum will be shallow and predispose the patient to develop osteoarthritis as an adult. This is reviewed in greater detail in the chapter on pediatric orthopedic conditions. The pubic bone, the ischial bone, and the iliac bone join together on each side and are called the innominate bones. Thus there are 2 innominate bones, one on the right side and the other on the left side.

The two-part of the pelvis is forming a pelvic ring. The pelvic ring structure is made up of the sacrum and two innominate bones, the stability of this is dependent on strong surrounding ligamentous structures, displacement can only occur with disruption of the ring in two places. Most of the neurovascular structures are located posteriorly.

The pelvic bones make 4 pelvic joints. One sacrococcygeal joint posteriorly, 2 sacroiliac joints with the sacrum, and 1 symphysis pubis anteriorly. The sacrococcygeal joint is a hinge joint between the sacrum and the coccyx. The sacroiliac joints are the strongest joints in the body. The symphysis pubis is a cartilaginous joint with cartilage in between. The sacrococcygeal symphysis is a slightly movable joint between the sacrum and the coccyx. This joint tends to break down as individuals age.

There is a line between the 2 ischial tuberosities which divides the space into two triangles. The anterior triangle is termed the urogenital triangle. The posterior triangle is termed the anal triangle. The anterior triangle contains the penis in males, and the posterior contains the anus in both males and females. A pelvic fracture happens when there's a fracture (break) in one or more of your bones that make up your pelvis. Your pelvis is the area of your body below your abdomen that's located between your hip bones. Pelvic fractures can be mild or severe.

Since your pelvis is made of multiple bones, there are many types of pelvic fractures. In general, there are also several kinds of bone fractures depending on the pattern of the break, including:

- Closed or open (compound) fractures: If the fracture doesn't break open your surrounding skin, it's called a closed fracture. If the broken bone pierces through your skin, it's called an open fracture or a compound fracture.
- Complete fractures: A complete fracture happens when your bone breaks into two pieces.
- Displaced fractures: When a gap forms where your bone's fractured, it's called a displaced fracture.
- Partial fractures: A partial fracture happens when the fracture doesn't go all the way through your bone.
- Stress fractures: A stress fracture happens when your bone has a crack in it.

In addition to the specific pattern that the fracture has, a pelvic fracture is also classified as being stable or unstable:

- Stable pelvic fracture: In a stable pelvic fracture, there's usually only one break in your pelvis, and the broken parts of the bones aren't displaced. Pelvic fractures that happen from low-impact events, such as a minor fall or running, are usually stable fractures.
- Unstable pelvic fracture: In an unstable pelvic fracture, there are often two or more breaks, and the ends of broken parts of the bones are displaced. Unstable pelvic fractures are most often caused by high-impact events such as a car crash.

Although it's not as common, there's another type of pelvic fracture called an avulsion fracture. An avulsion fracture happens when a tendon or ligament tears away from the bone it's attached to, taking a small fragment of bone with it.

The symptoms of a pelvic fracture depend on how mild or severe it is. Pelvic fracture signs and symptoms can include:

- Experiencing pain in your groin, hip and/or lower back.
- Experiencing more intense pain when walking or moving your legs.
- Experiencing numbness or tingling in your groin area or legs.
- Experiencing pain in your abdomen.
- Having a difficult time peeing.
- Having a difficult time walking or standing.

few situations and conditions can cause a pelvic fracture, including:

High-impact events: Since your pelvis is a very stable bone structure, most pelvic fractures are caused by high-impact events such as a car accident or falling from a significant height. High-impact events usually cause unstable pelvic fractures.

Bone-weakening diseases: Bone-weakening diseases such as osteoporosis can contribute to pelvic fractures. If you have a bone-weakening disease, you could get a pelvic fracture from doing a routine activity or from a minor fall. Pelvic fractures that are caused by bone-weakening diseases are usually stable fractures.

Athletic activities: Although it's not as common, someone who is playing a sport could get a pelvic fracture known as an avulsion fracture. This happens when a tendon or ligament tears away from the bone to which it's attached. When the tendon or ligament tears away, it takes a small piece of bone with it. A pelvic avulsion fracture is usually a stable fracture. The following imaging tests can be used to diagnose a pelvic fracture:

- X-rays: X-rays use radiation to take images of your bones. All pelvic fractures require X-rays so your healthcare provider can see which part of your pelvis is fractured, how mild or severe the fracture is, and so they can learn how the fracture needs to be treated.
- CT scan: A CT (computed tomography) scan uses multiple X-rays taken from different angles of your body to produce detailed images. A CT scan provides more detailed images than regular X-rays do. Your healthcare provider may have you undergo a CT scan to learn more about your pelvic fracture and to make sure you don't have other related injuries.
- MRI: An MRI (magnetic resonance imaging) uses a large magnet, radio waves and a computer to make detailed images of your organs and bones. Your healthcare provider might have you undergo an MRI if they aren't able to get enough information about your fracture from X-rays and a CT scan.

Treatment for a pelvic fracture depends on certain factors, including:

- How mild or severe your fracture is.
- The pattern and type of fracture.
- Which bones are displaced and how much they are displaced.
- Your overall health and if you have other injuries.

Treatment for mild and stable fractures in which your bones aren't displaced usually doesn't involve surgery. Treatment for a stable fracture can include:

- Rest: Your healthcare provider will most likely recommend that you rest as much as possible so you don't put extra stress and pressure on your pelvic fracture.

- Walking aids: Depending on where your pelvic fracture is, your healthcare provider may have you use a walking aid such as crutches, a walker or a wheelchair to avoid bearing weight on your leg(s). You may have to use the walking aid for up to three months or until your pelvis fully heals.
- Medications: Your healthcare provider may prescribe medication to relieve pain. They may also have you take a blood thinner medication (anticoagulant) to reduce your risk of having blood clots form in the veins of your legs and pelvis.

Treatment for a more severe or unstable pelvic fracture usually requires one or more surgeries. Different types of pelvic fracture surgeries include:

- External fixation: Healthcare providers use external fixation to stabilize your pelvic area after a pelvic fracture. In this surgery, metal pins or screws are inserted into your bones through small incisions (surgical cuts) into your skin and muscle. The pins and screws stick out of your skin on both sides of your pelvis, and are attached to bars outside of your body. The resulting system acts as a stabilizing frame to hold your broken bones in their proper position while your fracture(s) heals.
- Skeletal traction: Skeletal traction is a pulley system outside of your body that helps realign the pieces of broken bone(s). During skeletal traction, a surgeon implants metal pins in your thighbone or shinbone that stick out of your skin to help position your leg. Weights attached to the pins gently pull on your leg, keeping the broken pelvic bone fragments in a more normal position.
- Open reduction and internal fixation: During open reduction and internal fixation surgery, the displaced pelvic bone fragments are first repositioned into their normal alignment. The fragments are then held together with screws or metal plates that are attached to the outer surface of the bone.

People who experience a severe pelvic fracture from a high-impact accident often have other injuries or internal injuries caused by the pelvic fracture that will also

need to be treated. In these cases, the success in treating the pelvic fracture often depends on the success of treating the related injuries.

CONCLUSION

Summarizing the results of open reposition and fixation of pelvic injuries with immersion structures for various pelvic bone fractures, ruptures of joints and acetabulum fractures, when it is not possible to close reduction of fragments and eliminate pelvic displacements, we can conclude that in these cases, open immersion osteosynthesis methods are indicated, which significantly improves treatment results provided that the fragments adapt well. However, the use of wide surgical approaches for complex pelvic injuries in victims with combined trauma significantly limits the capabilities of these methods in the early post-traumatic period.

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