OPTIMIZED TREATMENT OF ACETABULAR INJURIES

Article is devoted to solve actual problems of surgical treatment of acetabular fractures using an innovative method of treatment. Offered unloading device allows early weight bearing of the operated limb that makes us to activate patients on the second day after surgical operation and increases life quality level of the patient.

**Keywords:** Acetabular injuries, surgery

**UDC:** 616.718.16

In recent years treatment results of acetabular injuries are not satisfying the majority of orthopedic surgeons. Despite significant advances over the past decade in hip joint surgery, treatment of patients with acetabular injuries is still remaining an actual problem of modern traumatology and orthopedics. The frequency of these injuries is low - 0.05-0.32%, however associated nature and severity of injuries are significant causes of high mortality on an acute and early period of traumatic disease among patients. Most of the survivors become disabled for a long period of time, sometimes for life (Kutepov and Runkov, 1995; Milyukov and Pronskikh, 2006; Giannoudis et al., 2005, Kumar et al., 2005; Gruson et al., 2003; Heeg et al., 1990).

Under modern conditions, in our country the majority of patients, despite the fact that a significant portion (62%) of acetabular injuries is accompanied by displacement of bone fragments, are treated by conservative treatment methods (Milyukov and Pronskikh, 2006; Tikhilov et al., 2011; Giannoudis et al., 2005; Kumar et al., 2005; Gorczyca et al., 1995; Goulet and Bray, 1989; Goulet et al., 1994). At the same time surgical fixation of acetabular fractures with displacement of bone fragments at leading international specialized traumatological institutions are performed in 70% of cases (Kutepov and Runkov, 1995; Milyukov and Pronskikh, 2006; Giannoudis et al., 2005; Gorczyca, et al., 1995; Goulet and Bray, 1989; Goulet et al., 1994; Hak et al., 1997; Hardingee, 1982; Harris et al., 2004).

Among different methods of surgical treatment open reduction and internal stable-functional osteosynthesis with screws and plates is dominated, that is determined not only by severity of injuries but also by various injuries of bones which form the hip joint (Harris, 1969; Heeg et al., 1987; 1990; 2000). According to Gorczyca et al. (1995), Tikhilov (2011) and other scientists, positive results can be obtained only by anatomical repositioning of bone fragments, especially loadable arch of acetabulum. Therewith open reduction and internal fixation of acetabular fragments are often accompanied by aseptic necrosis of the femoral head or acetabulum, post-traumatic osteoarthritis, heterotopic ossification, metal structures breakage, iatrogenic injury of the sciatic nerve and blood vessels, high risk of thromboembolic complications. In addition, there is a significant reduction of patients’ life quality during treatment and considerable increasing of hospitalization length (Giannoudis et al., 2005; Kumar et al., Clayson, 2005; Gorczyca et al., 1995).

Purpose of the article is to study approaches to optimize the treatment of acetabular injuries.

Since 1997 surgical treatment of acetabular injuries is preferred in the Republican specialized center of joints and hand surgery and in the 2nd clinic of Tashkent Medical Academy. During this period clinical and radiological data of 180 patients’ medical histories with acetabular fractures have been analyzed, among them 147 were men and 33 women aged from 16 to 78 years old. Most common mechanisms of acetabular injury are:
direction of impact to the greater trochanter - at 87, to the knee joint - at 77, to foot - 11 patients and at 6 patients fractures occurred for unknown reasons. Objective diagnosis is usually difficult in optimizing the treatment of acetabular injuries, because acetabulum is located in an inaccessible area for examination and clinical symptoms of this area (pain, difficulty of hip movement, shortening and forced position of extremities) are not pathognomonic, these symptoms can also be found in other fractures of pelvis. In addition, due to severity of patient's status such as impairment of consciousness and shock meticulous clinical examination is not always possible. Final concluding diagnosis can be formed by multiplanar radiography and multislice imaging.

Optimized surgical treatment of acetabular edge and roof injuries in 46 cases was fixing the bone fragments with screws and in 22 cases was imposition of additional dynamic joint unloading device. All this allowed loading the extremity on the second day after surgery with preservation of joint motions in three planes: flexion - extension, adduction - abduction and rotational movement.

**Figure 1. Scheme of Hip Joint Dynamic Unloading Device (1 - Bar, 2 - Ball Mechanism with Two Internal Springs, 3 - Fixators, 4 - Rod, 4c - Rod with Sharpening, 5 - Clutch, 6 - Acetabular Rod Fixator)**

Dynamic unloading device (Figure 1) applying consists in the following: two rods - 4a, 4b - was inserted into the periacetabular area parallel to each other, then 4c rod was inserted to greater trochanter area towards femoral head and two rods (4d, 4e) into the femur. 4c rod that was inserted into greater trochanter had sharpening in the middle part, which prevented the reverse migration of the rod and made possible dosing the joint dynamic unloading (for this invention received a positive solution of the Agency for Intellectual Property of the Republic of Uzbekistan). The rods that were inserted into the femoral bone fixed with clamps on the bar with a swiveling device that enables biplanar movement and rods that was inserted into periacetabular area fixed to the acetabular rod fixator, which is connected to the femoral component. Rotational motion is generated within the bar. Our dynamic unloading device allowed reducing length of stay in hospital.
significantly. If skeletal traction was applied through femoral epicondyles for 4-6 weeks after osteosynthesis operation to patients with acetabular injuries, then we activated patients by using our dynamic unloading device on the second day after surgery, which allowed them to load injured extremity and make functional movements of the joint. As a result 22 patients whom had been imposed dynamic unloading device activated early, and their length of stay in hospital shortened. As a consequence, early static load on an injured extremity have prevented osteoporosis and increased life quality level.

References


Hak, D., Olson, S., Matta, J. 1997. “Diagnosis and management of closed internal degloving injuries associated with pelvic and acetabular fractures: the Morel-Lavalle lesion,” J Trauma, Vol.42(6), 1046-1051


