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# ASSESSMENT OF THE CLINICAL COURSE AND FORENSICALLY SIGNIFICANT CONSEQUENCES OF HIP JOINT INJURIES UNDER VARIOUS MECHANISMS OF TRAUMA

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## ABSTRACT

Hip joint injuries remain a pressing issue in orthopedics and forensic medicine due to severe functional outcomes and the high incidence of post-traumatic complications. Despite established clinical treatment standards, the forensic assessment of health damage severity in such injuries often presents difficulties, especially in cases of delayed medical consultation or complicated clinical courses. Forensic practice indicates that the issues of objective evaluation of the severity of harm in hip joint injuries remain insufficiently resolved. **Aim:** To identify the clinical features and assess the forensic significance of the consequences of hip joint injuries depending on the mechanism of trauma. **Materials and methods:** Medical records and additional diagnostic data of 85 patients with hip joint injuries treated in the outpatient and inpatient settings of the Samarkand Regional Branch of the Republican Scientific-Practical Center of Traumatology and Orthopedics of the Ministry of Health of Uzbekistan in 2024 were analyzed. Among the cases, 39 were dislocations and 46 were fracture-dislocations. **Results:** Among the total of 85 observations, 39 patients (45.9%) had dislocations (complete and incomplete), and 46 (54.1%) had fracture-dislocations. In most cases, isolated injury to the joint structures was observed – 29 out of 39 dislocation cases and 36 out of 46 fracture-dislocation cases. Combined injuries involving other body regions were identified in 10 patients with dislocations and 10 with fracture-dislocations. **Conclusion.** The analysis showed that the main causes of hip joint trauma were falls on a flat surface, blunt-force impacts, and other indirect injury mechanisms. The clinical course of dislocations typically results in temporary disability lasting 3–6 weeks. However, in cases with complications such as contracture, osteoarthritis, avascular necrosis, or nerve injury, the rehabilitation period extends to 3–6 months.

**KEYWORDS:** Hip Joint, Fracture-Dislocation, Dislocation, Complications, Disability, Forensic Medical Examination.

## INTRODUCTION

Hip joint injuries remain a pressing issue in orthopedics and forensic medicine due to severe functional outcomes and a high incidence of post-traumatic complications. Despite the clinical treatment standards that have been developed, expert assessment of the severity of harm to health in cases of these injuries is often difficult, especially in cases of late treatment and complicated progression. The insufficient understanding of the relationship between the mechanism of injury and prognosis necessitates further research.

One of the relevant medical and social problems of our time is injuries to the musculoskeletal system, the number of which has been on the rise in developed countries in recent years. Damage to joint structures is characterised by significant polymorphism of tissue lesions in areas of trauma. This is due to the anatomical and functional characteristics of these structures and combinations of damage to bone and cartilage tissues, tendons, and neurovascular structures [1-5,15,19]. Currently, in the

process of forensic medical examination, the severity of joint damage is determined based on the criteria of the duration of the health disorder, the extent (%) of permanent loss of general working capacity, and the danger to life. However, the duration of health impairment varies significantly depending on the nature and location of intra-articular fractures, as well as damage to other joint structures and long-term consequences of injuries. In addition, it significantly affects the extent of permanent loss of general working capacity in victims. Despite this, research in this area has not been sufficiently conducted [6-9,12].

To date, issues remain unresolved regarding the differential diagnosis of joint structure damage caused by different types of mechanical trauma. The criteria for assessing the severity of injuries in relation to complicated and uncomplicated joint injuries have not been specified. There is no information in forensic medical literature about the specifics of conducting forensic medical examinations of victims with injuries to the



hip joint region, since the principles for conducting such examinations do not differ from generally accepted ones [9-11]. However, expert practice shows that issues of objective expert assessment of the severity of harm to health in cases of injury to the hip joint area are not fully resolved [13,14,15]. The assessment of the mechanism and duration of hip joint injuries in victims is often carried out by experts acting alone, without taking full account of medical documentation and modern clinical and instrumental research methods, which not only reduces the objectivity of expert conclusions, but also often leads to expert errors, including in determining the severity of harm to health [6,16]. The investigation of this issue is characterised by a special procedure for conducting such examinations, which is not always taken into account by forensic medical experts in the field. An analysis of the functioning of the forensic medical assessment system for the severity of harm to health caused by traumatic brain injuries indicates an ambiguous assessment of injuries that are similar in clinical course and morphology in different age groups of victims. [17,18,20].

### THE AIM OF THE RESEARCH

The aim of the research is to determine the characteristics of the course and assess the forensic significance of the consequences of hip joint injuries depending on the mechanisms of trauma.

### MATERIALS AND METHODS

The data from medical records and the results of additional studies were analyzed for 85 patients with joint injuries who were treated as outpatients and inpatients at the Samarkand regional branch of the Republican Scientific and Practical Center for Orthopedics and Traumatology of the Ministry of Health of Uzbekistan for the period of 2024. In the observations, 39 cases of dislocations and 46 cases of fracture-dislocations were observed. Diagnosis and treatment of joint injuries were performed in accordance with standards (Clinical guideline, Tashkent, 2018). Information on the circumstances of joint injuries is provided in Table No. 1

Table 1.

Circumstances of origin of joint injuries in patients

No	Circumstances of origin of joint injuries	Abs.	%
1	Collisions between pedestrians and moving vehicles	1	1,2
2	Intra-vehicle injury (driver)	5±0,003	5,9
3	In-vehicle injury (passenger)	7±0,005	8,2
4	Motorcycle injury	2±0,001	2,4
5	Falls from heights	11±0,005	12,9
6	Falls on a plane	24±0,05	28,2
7	Blows with blunt objects (weapons), stretching and twisting of limbs	19±0,03	22,4
8	Compression of body parts by heavy objects	7±0,005	8,2
9	Sports injury	9±0,005	10,6
	Total	85±0,05	100,0

From Table No. 1 it follows that the most common causes of joint injuries were falls of victims onto a flat surface (28.2%), followed by impacts from blunt objects, sprains and twists of the limbs (22.4%), as well as falls from a height (12.9%) and sports injuries (10.6%). Other circumstances of injury accounted for 1.2 to 8.2% of the total number of observations.

The studies used clinical, radiographic, (MSCT), descriptive and comparative research methods. Within the framework of variation statistics, the reliability criterion of the indicators of damage to structures (t), the minimum error (m) and the reliability of the difference (p) of the indicators were determined.

### RESULTS AND DISCUSSION

It was established that, out of the total number of observations (85), 39 patients (45.9%) had dislocations (complete and incomplete), and 46 had fracture-dislocations (54.1%).

It should be noted that in most cases, patients had isolated trauma to the joint structures, which was observed with dislocation in 29 out of 39 patients and in 36 out of 46 patients with fracture dislocations. Combined joint injuries with damage to other parts of the body were dislocations in 10 patients, and fracture-dislocations in 10 patients.

For the forensic medical qualification of the severity of joint injuries, it is important to clarify the duration of the health disorder for the restoration of the working capacity of the victims, as well as the volume (in %) of persistent loss of general working capacity associated with the long-term consequences of joint injuries.

The time to recovery for patients with uncomplicated traumatic dislocations of large joints varies considerably. According to the literature, for hip dislocations, the recovery time is 14-15 weeks [19].

Forensic criteria for determining the severity of injuries are: life-threatening injury; duration of health disorder; volume (in



% of permanent loss of general working capacity; loss of an organ or its function; development of mental illness; termination of pregnancy; presence of signs of indelibility of the face [19]. Based on this, taking into account the long-term complications of injuries to joint structures, all types of dislocations and uncomplicated fractures and dislocations were classified as moderate, and complicated fractures and dislocations were classified as serious bodily injuries, based on the duration of the health disorder and the volume (in %) of permanent loss of general working capacity ( $P \leq 0,003$ ).

## CONCLUSION

The analysis showed that the main causes of hip joint injuries are falls on a flat surface, impacts from blunt objects and other indirect mechanisms of injury. The clinical course of dislocations is usually accompanied by a temporary loss of ability to work for a period of 3-6 weeks, however, with the development of complications (contracture, osteoarthritis, aseptic necrosis, nerve damage), the recovery period increases to 3-6 months. Fractures and dislocations are characterized by a higher frequency of late consequences and greater loss of working capacity - up to 60%. The data obtained confirm that the severity of such injuries often reaches the level of moderate or severe harm to health, which requires mandatory consideration of the nature and severity of long-term complications. The established features of the injury mechanism and clinical course represent a significant basis for forensic medical examination and objective classification of offenses.

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