Establishing the Degree of Severity and the Mechanism of Fractures of the Metapacherous Bones of the Hand

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ABSTRACT

Clarification of the criteria for establishing the severity of fractures of the metacarpal bones of the hand and determining the mechanism of their formation.

Keywords: metacarpal bones, fractures, bones of the hand, health disorders

Relevance. Determining the degree of severity (severity of health damage) and the mechanism of fractures of the bones of the hand are the main issues in the examination of living persons. The duration of health disorders and the amount of permanent loss of general ability to work, depending on the nature, location and long-term outcomes of fractures of the metacarpal bones of the hand, can vary significantly. Despite the frequency of metacarpal fractures, the mechanism of their formation is not well understood.

The purpose of the study. Clarification of the criteria for establishing the severity of fractures of the metacarpal bones of the hand and determining the mechanism of their formation.

Materials and methods. The study involved 203 persons with hand injuries aged 18 to 74 years. The largest number of injuries was made up of the contingent aged 18 to 44 years (69.5%). Among the examined persons, males - 90.2%, females - 9.8%. All victims had an isolated hand injury.

Results. In most cases, the victims had periarticular fractures in the neck of the metacarpal bones (49.1%), followed by intraarticular fractures at the base (26.6%) and periarticular diaphyseal fractures (20.6%) of the bones. Fractures in the region of the head and combined fractures were detected significantly rarely (2.3 and 1.4%).

In different sections of the metacarpal bones, the following types of fractures were distinguished: oblique (31), transverse (26), comminuted without displacement (34) and - with displacement (24). In other cases (103) there were subcapital fractures of the neck of the bones.

For oblique fractures of the metacarpal bones, the immobilization time ranged from 5-6 to 6-8 weeks, and for transverse fractures, on

average, from 6-8 to 8-10 weeks. With this type of fracture, contractures were most often noted in the II, IV-V fingers. Under these conditions, the volume of permanent loss of general ability to work ranged from 10-15 to 20-25%. Comminuted fractures with displacement in 8 out of 22 patients, after 2 months of immobilization, resulted in a pronounced contracture of the II and V fingers, which caused a permanent loss of general ability to work by 20-25%. Comminuted fractures without displacement are often noted on the III-IV and V-metacarpal bones, the period of immobilization of the hands averaged 4-6 weeks and the loss of permanent loss of general ability to work was not observed.

Subcapital fractures in the late period of injury led to contracture of the fifth finger in 23 cases out of 103 observations (flexion angle was 5%). The terms of immobilization for these fractures ranged from 5-6 to 6-8 weeks. During the rehabilitation period, contractures of the fingers in 19 patients were eliminated, and in 4 patients, after 2 months of rehabilitation, these conditions deteriorated within 1.5 months, which led to a permanent loss of general ability to work by 5-10%.

Discussion of results and conclusion. With oblique fractures of the metacarpal bones, there is a possibility of displacement of the edges of the fractures, and therefore, in this case, surgical treatment is mainly carried out. However, fractures in this case have a large area, so healing in them proceeds relatively quickly, as a rule, without complications. In this regard, the terms of immobilization for these fractures ranged from 5-6 to 6-8 weeks. With transverse fractures, there is often a hit of the affected soft tissues in the fracture zone. In addition, due to the small area of fractures, the healing process in them slows down, and therefore the time for immobilization of the hands averaged from 6-8 to 8-10 weeks. Displaced comminuted fractures required surgical treatment, as bone fragments prevented the closed method of reposition. Despite this, in 8 out of 22 patients after 2 months of immobilization, pronounced contractures of the II and V fingers were noted in the outcome, which usually leads to a permanent loss of general ability to work by 20-25%.

In comminuted fractures without displacements, healing proceeded favorably. In this regard, the terms of immobilization of the hands averaged 4-6 weeks and the loss of permanent loss of general ability to work was not observed. After subcapital fractures, contractures persisted for 1.5 months, which led to a permanent loss of general ability to work by 5-10%.

The analysis showed that the formation of fractures of the metacarpal bones in most cases are associated with the direct mechanism of injury - the impact of a blunt object and the impact of the hand on such, less often fractures of these bones occur due to an indirect mechanism and compression, which affects the nature of bone fractures.

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