IMPROVEMENT OF THE SURGICAL METHOD OF TREATMENT OF LIGAMENT RUPTURES OF DISTAL TIBIAL SYNDESMOSIS.

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Damage to the distal tibial syndesmosis is one of the urgent problems of modern traumatology and orthopedics, especially sports injury. It should be noted the importance and significance of damage to the distal tibial syndesmosis in people with increased physical activity (soldiers, athletes, etc.), since damage to the ankle joint is a very frequent injury from 10% – 30% of all injuries and sprains account for the bulk of them. The relative weight of unsatisfactory results of treatment of patients with these injuries remains quite high and ranges from 3 to 22%. The article presents and substantiates the problem of treatment of untreated ruptures of distal tibial syndesmosis. The features of transosseous osteosynthesis by external fixation spokes and rods in the treatment of patients are shown. The analysis of the treatment outcomes of 44 patients with this type of injury was carried out.

Keywords: tibial syndesmosis, trauma, surgical treatment, ankle joint, osteosynthesis.

УСОВЕРШЕНСТВОВАНИЕ ХИРУРГИЧЕСКОГО МЕТОДА ЛЕЧЕНИЯ РАЗРЫВОВ СВЯЗОК ДИСТАЛЬНОГО МЕЖБЕРЦОВОГО СИНДЕСМОЗА.

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Повреждение дистального межберцового синдесмоза является одной из актуальных проблем современной травматологии и ортопедии, особенно спортивной травмы. Надо отметить всю важность и значимость повреждения дистального межберцового синдесмоза у людей с повышенной физической активностью (солдаты ,спортсмены и.т.д.), так повреждение голеностопного сустава это очень частая травма от 10% – 30% всех травм и на долю растяжения связок приходится их основная масса. Относительный вес неудовлетворительных результатов лечения пациентов с данными повреждениями остается достаточно высоким и составляет от 3 до 22%. В статье представлена и обоснована проблема лечения неустраненных разрывов дистального межберцового синдесмоза. Показаны особенности чрескостного остеосинтеза спице-стержневыми аппаратами внешней фиксации при лечении пациентов. Проведен анализ исходов лечения 44 пациентов с указанным видом повреждений.

Ключевые слова: межберцовый синдесмоз, травма, хирургическое лечение, голеностопный сустав, остеосинтез.

Introduction.Treatment of the consequences of severe fractures of the distal articular part of the shin bones is one of the most urgent problems of modern traumatology. Various complications and unsatisfactory outcomes of treatment of such fractures reach 20% or more. The most frequent complication, which significantly

disrupts the function of the lower limb and is often the cause of disability, is the development of severe deforming arthrosis and persistent contractures of the ankle joint. Complications are usually associated with errors in diagnosis and treatment fractures. At the same time, in most cases, damage to the distal tibial syndesmosis is not detected, and due attention is not paid to the features of fractures of the outer ankle (fibula) in pronation-eversion fractures. Errors in the diagnosis of distal tibial syndesmosis injuries, relapses of excessive diastasis in the tibial joint during treatment, as a rule, lead to one of the most frequent and serious complications — long-standing untreated ruptures of the inter-tibial syndesmosis, significantly disrupting the function of both the ankle joint and the entire lower limb, including and subject to consolidation of ankle fractures. All of the above determines the relevance of the research problem.

Material and methods of research.

In the clinic of Traumatology and Orthopedics of the Regional Clinical Hospital in 2020-2033, 44 patients with untreated ligament ruptures of the distal tibial joint, fused and fused pronation-inversion fractures of the distal articular part of the lower leg bones were treated, in most cases with the achieved reposition of ankle fractures. The diagnosis of injuries was based on anamnesis data, as well as clinical and radiological (including data from X-ray computer and magnetic resonance imaging) examination of patients. The main complaints of the patients were varying intensity of pain when walking and exertion in the area of injury, restriction of movement in the ankle joint, determining significant impairment of the function of the lower limb. During the clinical examination, as a rule, minor swelling in the ankle joint area, soreness during palpation in the distal inter-tibial joint area were determined. It should be noted that in most cases, an X-ray examination of the ankle joint in two standard projections does not give a clear picture of the damage syndesmosis. In such cases, it is necessary to make an additional study of both joints in comparison with the reversal of both feet inside by the amount of torsion of the distal parts of the lower leg (25-30); radiographs in this projection, in the presence of clinical manifestations, show a clear picture of the damage.

The purpose of surgical treatment is to eliminate excessive diastasis in the tibial joint with the restoration of the anatomy of the damaged ankle joint. At the same time, transosseous osteosynthesis according to G.A. Ilizarov is the most optimal and a gentle method of surgical treatment for long-standing ruptures of the ligaments of distal tibial syndesmosis. The methods of transosseous osteosynthesis ensure the restoration of the congruence of the articular surfaces of bones, correction (if necessary) of the position of fragments during treatment, stable fixation for the period of consolidation of bone fragments and fusion of the capsular ligamentous apparatus of the ankle joint.

The Center's Traumatology and Orthopedics clinic has developed and successfully applied original arrangements of rod and spoke-rod external fixation devices based on the method of G.A. Ilizarov for long-standing injuries of interbertial syndesmosis, as well as a technique for eliminating articulation ruptures that ensure the restoration of the anatomy of the ankle joint.

The technique of transosseous osteosynthesis in case of non-repaired ruptures of the distal tibial joint. The technique of transosseous osteosynthesis consists in the imposition of a rod or spoke-rod apparatus of external fixation, closed (bloodless) elimination of excessive diastasis in the tibial joint by mutual convergence of the tibia in the supports of the apparatus. The layout of the external fixation device is similar to

that of pronation-eversion fractures of the distal articular part of the shin bones. Features the layout of the external fixation device is the installation of the support of the movable repositional node from the side of the fibula on the annular support of the device by means of threaded rods with brackets with the possibility of movement in three planes, as well as the possibility of a closed gentle elimination of excessive diastasis in the tibial joint.

For this purpose, two screws-rods of the Trench are inserted into the tibia at the border of the metadiaphyseal part from the medial side in the frontal and oblique planes, and a similar one is inserted into the calcaneus from the outside the screw-rod of the Trench, which are fixed in brackets on the ring and semi-ring supports of the external fixation device. By moving along the screw-rods, the elimination of the residual displacement of the foot to the outside is achieved, and conditions are also created to eliminate excessive diastasis in the inter-tibial joint. For this purpose, a spoke with an emphasis from the back to the front is carried out through the outer ankle at the level of the upper border of the syndesmosis, or a screw-rod of the Trench is inserted, which are fixed in the support of the movable repositional node. Movements of the support of the movable unit along the rods in the distal direction, the elimination of the residual displacement of the fibula in some cases along the length is achieved, while the fibula is installed coaxially with the tibia, and thus conditions are created to eliminate the rupture of the tibial syndesmosis. By moving along the spoke or the screw of the Trench in the support of the repositional node, excessive diastasis in the inter-tibial joint is eliminated. Operation it is completed with control radiographs of the ankle joints of the operated and contralateral limbs in direct and lateral projections. The total duration of treatment in the device is 8 weeks. At the same time, taking into account the achieved reposition and stable fixation of the injury area, 2-3 weeks after the operation, it is possible to remove the screw-shaft of the Trench inserted into the calcaneus with partial dismantling of the apparatus in order to start early active movements in the ankle joint, which is prevention of the development of stiffness and possible deforming arthrosis of the joint.

Treatment results and their discussion.

The results of the treatment of 44 patients with untreated ligament ruptures of the distal tibial joint, fused and fused pronation-eversion fractures of the distal articular part of the lower leg bones treated in the traumatology clinic in 2020-2023 were studied; the observation periods ranged from 1 year to 14 years. The results were evaluated based on the data of clinical and radiological examination of patients. The comprehensive system of evaluation of treatment outcomes used by us included the following parameters: pain (absence, presence, degree of intensity), the ability to walk, limb loads, patient activity with the restoration of a habitual lifestyle, recovery or disability (which was revealed on the basis of anamnesis data); pain during palpation and performing active and passive movements in the ankle joint, deformation, condition thigh and lower leg muscles (presence or absence of atrophy), restoration of the limb axis, local vascular disorders (absence or presence edema), the results of measuring movement in the ankle joint in degrees, restoration of the arches of the foot. During the X-ray examination of the damaged ankle joint in comparison with the intact joint, the quality of the reposition with the restoration of the anatomy of the distal tibial joint, the condition of

the X-ray articular gap of the ankle joint, the absence or presence of osteoporosis were evaluated. The results of treatment are shown in the table.

As follows from the table data, with long-standing injuries of distal interbertial syndesmosis after surgical treatment, out of 44 cases damage results are rated as excellent in 10 (22.7%), good in 26 (59.1%), satisfactory also in 8 (18.2%) cases; unsatisfactory outcomes were not noted. The satisfactory treatment results obtained in 8 cases were associated with the development of movement restriction and deforming arthrosis of the ankle joint without a significant decrease in the quality of life of the victims. In all cases, persistent disability was not observed. Thus, the analysis of treatment results 44 patients with long-standing lesions of distal tibial syndesmosis showed good repositional possibilities of the applied technique of transosseous osteosynthesis by external fixation devices. Excellent and good outcomes were noted in 36 (81.8%) of 44 cases of injuries. The positive results obtained in most cases allow us to consider this method of treatment as the method of choice for long-standing injuries of distal tibial syndesmosis.

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