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CAUSES OF IMPAIRED CONSOLIDATION OF A TIBIAL BONE FRACTURE USING EXTRAFOCAL COMPRESSION-DISTRACTION OSTEOSYNTHESIS AND WAYS TO PREVENT THEM

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Abstract:

The article presents the results of treatment of 540 patients with fractures of the tibia bones using compression-distraction osteosynthesis according to Ilizarov. Patients are divided into two groups. The first group included 486 patients, they underwent simultaneous manual reduction of fragments and fixation with the Ilizarov apparatus of 4 rings. The fragments remaining after displacement were gradually compared in the device. 80% of cases of fracture fusion occurred at term, and 20% of patients had weak consolidation, fracture nonunion and false joints. The second group consisted of 54 patients. He performed a complete reposition of the fragments under the control of the image intensifier tube and fixed in the Ilizarov apparatus of 4 rings. In the treatment of the second group of patients, special attention is paid to the complete comparison of bone fragments and their rigid fixation in the device. In all patients of the second group, the fracture healed on time, except for one, who had concomitant diseases - obesity of the III degree and diabetes mellitus. Positive results were obtained in patients of the second group, where complete reduction and rigid fixation of fragments were immediately performed until the fracture healed.

Keywords: Fracture of the tibia bones, compression-distraction osteosynthesis, weak consolidation, nonunion of the false joint.

Introduction

Topicality. At present, among the compression-distraction devices, the most widespread is the G.A. Ilizarov apparatus, with the help of which stable fixation of fragments and their gradual dosed reposition are achieved without exposing the fracture zone. A significant number of scientific publications and clinical practice testify to the wide possibilities of transosseous compression-distraction osteosynthesis with the Ilizarov apparatus [1,2]. At the same time, this method of osteosynthesis is widely used revealed a number of complications (from 7 to 56.4%) in the form of suppuration of the spokes, weak consolidation of the fracture site, nonunion of the fracture, and even the formation of a false joint [3,4]. The process of bone restoration

depends on a number of general and local factors. In the vast majority of patients, nonunion of fractures mainly depends on local factors. Some authors associate these complications with medical errors, others with violations of tactics and patient management, and still others with the poor quality of devices produced by the medical industry [5].

The results of many years of use of transosseous extrafocal compression-distraction osteosynthesis for fractures of the lower leg bones in the traumatology department of the Samarkand branch of the RSNPMCTO indicate the presence of patients with impaired consolidation of fractures of the lower leg bones.

Objective

To study the causes of impaired consolidation of fractures of the tibia bones when using transosseous compression-distraction osteosynthesis with the Ilizarov apparatus.

Materials and methods of research

A comparative study of the results of 540 patients with diaphyseal fractures of the tibia bones treated with the Ilizarov apparatus was carried out.

The patients were divided into 2 groups. The first group consisted of 486 patients treated in 2022-2025, including 286 (59%) men and 200 (41%) women. Among these victims, 152 (31%) were under the age of 25, 213 (43%) were under 40 years old, and 121 (25%) were over 40 years old. 330 (68%) had closed fractures, 156 (32%) had open fractures. Displacement of bone fragments was noted in 480 (98%) victims. In 95 (20%) patients, various concomitant diseases were observed. Fresh fractures were observed in 380 patients, and stare, in 106 patients. In the first days of admission after anesthesia, manual reposition of the fragments was performed and fixed in the Ilizarov apparatus, consisting of 4 rings. The remaining fragments of displacement, if any, were gradually eliminated in the apparatus. The average time of fixation with the device was 3.5 months.

The second group included 54 patients with various diaphyseal fractures of the tibia bones treated in the period 2019-1020, the age of the patients ranged from 20 to 52 years. There were 39 men (72%), 15 women (28%). Open fractures were observed in 21 (39%) patients, closed fractures in 33 (61%). Displacement of bone fragments was noted in 49 (90.7%). 46 (84.7%) patients had fresh fractures, and 8 (15.3%) had fresh fractures. In 14 (25.9%) patients, various concomitant diseases were observed. When providing assistance to this group of patients, the shortcomings in the attraction of patients of the first group were taken into account.

In fractures without a bone defect, the main cause of nonunion is poor alignment of fragments, inappropriate and too short-term immobilization. In the treatment of this group of patients, special attention was paid to sufficient comparison of fragments under the control of image intensifier tubes and their rigid fixation. For this purpose, the two rings of the apparatus closer to the fracture line are fixed with three wires through the central and peripheral fragments.

Results of the study

Results of treatment of the first group of patients: 79 (16%) patients had delayed fracture healing (treatment period of more than 5 months), and 18 (4%) had non-union fractures and false joints. These complications were mainly observed in those patients in whom complete comparison of fragments was not achieved, their immobility, there were errors in the technique of applying the apparatus (applying the rings of the apparatus at different distances from the fracture line) and in those patients who did not have complete matching of the fragments, their immobility, there were errors in the technique of applying the apparatus (applying the rings of the apparatus at different distances from the fracture line) and in those patients who were not able to do so. who had concomitant diseases (anemia, diabetes mellitus). In addition, the overwhelming majority of these patients had high-energy injuries, where soft tissues and paraossal structures are significantly damaged. In addition to the above, non-standard Ilizarov devices were used in 18 patients. Of the complications of hardware treatment, inflammation of the soft tissues around the wires of the device should also be mentioned. Among our patients, they were observed in 25 (5%), These complications occurred mainly in those patients where the wires of the device were not sufficiently taut and there were violations of the care of the device.

Results of treatment of the second group of patients. The average time of fixation with the device was 2.5 months. In 2 patients, inflammation was observed around the wires, which were eliminated by conservative methods of treatment and they did not affect the results of fracture treatment. One patient who suffered from obesity of the III degree and diabetes mellitus had weak consolidation of the fracture. His fracture healed within 9 months. The short-term and long-term results of treatment in all patients in this group are good.

Conclusions

Thus, the comparative analysis showed that the fulfillment of the basic requirements for hardware treatment - one-stage complete reduction of fragments and their rigid fixation to fusion, makes the method effective, as evidenced by the positive results of treatment of patients of the second group.

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