

Complex Rehabilitation Treatment of Patients with Intra-Articular Fractures of the Knee Joint Area.

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Fractures of the knee joint occupy a special place in the series of peri-and intra-articular fractures of the limb bones and are one of the most severe injuries of the musculoskeletal system. Most authors note a significantly higher incidence of fractures of the proximal articular end of the tibia compared with fractures of the distal end of the femur. (2) The treatment of such fractures is difficult. The frequency of such fractures is from 4.0 to 6.1% of all fractures of the bones of the lower extremities and from 4.0 to 12.0% of all intra-articular fractures (1,2,3,5,6). Various complications and unsatisfactory outcomes of treatment of fractures of the knee joint area reach 50% and more. Disability, according to various authors, is over 34.8% (1.5.6).

The most frequent complications of such fractures are the development of contractures and deforming arthrosis of the joints of the damaged segments of the extremities, 57.0% of fractures of the femoral and tibial condyles are complicated by the development of deforming arthrosis of the knee joint. (1,6)

The aim of the study was to analyze the results of surgical treatment and to assess the quality of restorative treatment of patients with peri-and intraarticular fractures of the knee joint.

Material and methods.

The study was carried out in the period 2016-2019 in the traumatology department of the center-base of the department of traumatology and orthopedics.

There were 52 patients under observation, there were 31 men (60.0%), 21 women (40.0%). The ages of the patients ranged from 21 to 76 years, the median age was 48.5 years. Persons of working age predominated.

For X-ray, typical anteroposterior and lateral external projections were used. In some cases, anteroposterior radiography was performed with the knee flexed at 100 degrees. Additional X-ray examination was necessary to diagnose the nature of the displacement of the anterior and posterior edges of the tibia and to obtain more accurate data on the relative position of the fragments.

All patients in the emergency department underwent a puncture of the knee joint, after evacuating the blood, a local anesthetic was injected into the joint cavity. Skeletal damping traction was applied to the limbs in order to reposition the fracture.

By the type of fractures in accordance with the classification of AO patients were distributed as follows: intra-articular fractures of the distal segment of the femur incomplete intra-articular fracture of the medial condyle (33B2) –3 (5.7%); incomplete intra-articular fracture of the anterior and external part of the condyle - (33B3) -4 (7.6%); complete intra-articular Y-shaped

fracture with slight displacement 1 (33C1) - 1 (1.9%), incomplete intra-articular fracture of the lateral condyle of the tibia (41B1) - 23 (44.3%), incomplete intra-articular fracture of the medial condyle of the tibia (41B1) - 13 (25.0%), incomplete intra-articular depressed fracture of the lateral condyle (41B2) - 3 (5.8%), complete intra-articular fracture with mixing (41C1) - 5 (9.6%). When treating patients with fractures of the distal end of the femur, open reduction of internal fixation with extra-bone metal structures was used. For osteosynthesis of the femoral condyles, a condylar support plate with limited contact and a distal condylar support plate with angular stability were used - 8 patients (15.4%). When treating patients with intra-articular fractures of the proximal tibia, we aimed for accurate repositioning of the articular surface, using extra-bone supporting condylar plates in 15 patients (29.0%). T- and L-shaped support plates, plates with angular stability were used in 29 patients (55.6%).

After discharge from the hospital, all patients were recommended to practice remedial physical culture on an outpatient basis. The first 2-3 days performed ideomotor exercises, for the next 2 weeks the patients performed movements in the joints of a healthy limb. Classes include flexion and extension in the ankle joint, toes of the injured limb, isometric tension of the muscles of the thigh and lower leg (10-15 sessions), which patients must perform independently. The duration of the sessions was 30 minutes in a course of 10-12 sessions, the massage was performed by the patient (8-10 sessions), the effect on the reflexogenic zones above and below the fracture site was performed. The massage was performed in combination with passive and active movements. The duration of the session is 12-15 minutes daily, the course of treatment is 10 procedures. In order to prevent post-traumatic contractures and arthrosis of the knee joint, intra-articular oxygen therapy is also used, which was performed according to the method of P.Z. The veil. (2) 5-10 oxygen injections were made in the amount of 80 to 100 cm³, with an interval of 3-4 days. In the intervals between the procedures, the patients were engaged in dosed exercise therapy and self-massage of the extremities. Oxygen administration depended on the severity of the pain syndrome and the severity of contracture. Patients who had a history of deforming arthrosis simultaneously with oxygen in the joint cavity were injected chondroprotectors: Alflutop (9 patients), Noltrex (7 patients).

Local oxygen therapy has a normalizing effect on the violation of local tissue hypoxia. After oxygen therapy, the mechanisms of reparative regeneration are optimized, pain syndrome is eliminated, muscle tone is increased and reactive effusion in the joint is absorbed.

Treatment results and their discussion:

We analyzed the treatment of 52 patients with fractures of the knee joint, including 8 patients with intra-articular fractures of the femoral condyles, 44 with fractures of the tibial condyles. The observation period ranged from 12 months to 5 years from the date of surgery.

We used a clinical and radiological assessment of the results of treatment proposed by E.R. Matthies (4). Evaluation of treatment outcomes included the following parameters: absence or presence of pain (degree of intensity), patient activity with restoration of the usual rhythm of life, possibility of limb loading, restoration of working capacity and performing active and passive movements in the knee joint, presence of deformity, restoration of the limb axis, presence or absence of atrophy muscles of the thigh and lower leg, the results of measuring the range of motion in the knee joint (in degrees), the degree of fusion of fragments, the state of the joint space of the knee joint and their congruence according to radiographs, the presence or absence of osteoporosis (4).

Treatment results for knee fractures

Table 1..

	The nature of the fracture	Evaluation of treatment results								Total	
		excellent		good		satisfy		dissatisfied			
		abc	%	abc	%	abc	%	abc	%	abc	%
	Fractures of the femoral condyles	1	1,9	4	7,7	2	3,8	1	1,9	8	15,4
	Fractures of the tibial condyles	9	17,3	27	52,0	5	9,6	3	5,7	44	84,6
	Total	10	19,2	31	59,7	7	13,4	4	7,6	52	100

Conclusions:

1. Analysis of the results of treatment of patients with intra-articular fractures of the knee joint area showed that the outcomes depend on the type and severity of the injury, the quality and accuracy of reduction with the restoration of congruence in the knee joint. The greatest number of satisfactory and unsatisfactory results was obtained with impression-compression fractures of the condyles of the femur and tibia, which was determined by the severity of injuries with destruction of the articular surfaces.
2. The use of plates with angular stability allows to achieve anatomical congruence in intra-articular fractures, provides strong fixation of fragments, patients without external immobilization while maintaining active movements in the knee joint.
3. The complex of measures for outpatient rehabilitation treatment can increase the rehabilitation potential of patients, ensure early recovery of the function of the operated lower limb and improve the favorable results of treatment.
4. The use of local intra-articular oxygen therapy can significantly improve the quality of care for patients and lead to long-term remission of the pathological process, improves the quality of life of patients.

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