Analysis of Clinical Effect of Arthroscopic Minimally Invasive Surgery on Patients with Knee Joint Bone Trauma

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Objective: To study and analyze the clinical effect of arthroscopic minimally invasive surgery in the treatment of knee joint trauma. Methods: A total of 80 patients with knee joint bone trauma who were treated in our hospital from July 2018 to July 2019 were selected as the research objects, and randomly divided into observation group and control group. Patients in the control group were treated in the conventional way, patients in the observation group were treated with arthroscopic minimally invasive surgery, and the treatment effect, neer score and complications of the two groups were compared. Result: The treatment efficiency of the observation group was significantly higher than that of the control group (P < 0.05); the neer score of the observation group was significantly higher than that of the control group (P < 0.05); the number of complications in the observation group was significantly lower than that of the control group (P < 0.05), the difference was statistically significant. Conclusion: The application of arthroscopic minimally invasive surgery in the treatment of knee joint trauma patients has significant effect, improve the treatment effect, the number of patients with complications is lower, with higher safety, which is worth promoting in clinical treatment.

Key words: Arthroscopic minimally invasive surgery; Knee joint bone trauma; Safety
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The knee joint of human body is composed of patella, lateral condyle, tibia and femur. It is the most complex and most structured joint in human body. The knee joint bone trauma is a very common orthopedic disease in clinic. It is often caused by improper movement, traffic accident or other accidental injuries. Because of the complex structure of the joint, it is very difficult to treat. At the same time, it is caused by the recovery of knee joint function is relatively slow, if not treated thoroughly, it will lead to lower limb dysfunction [1, 2]. In recent years, with the gradual development of minimally invasive surgery, minimally invasive surgery is often used in the treatment of knee joint bone trauma. In this study, the actual clinical effect of arthroscopic minimally invasive surgery for knee joint bone trauma patients is analyzed. The report is as follows.

MATERIALS AND METHODS

General information

A total of 80 patients with knee joint bone trauma who were treated in our hospital from July

2018 to July 2019 were selected as the study objects. Using the random number method, they were divided into observation group and control group. 40 patients in the observation group, 23 males and 17 females, aged (22-54) years old, with an average age of (42.36 ± 5.57) years, including 25 patients with right knee trauma, 15 patients with left knee trauma, 11 patients with femoral condyle fracture, 13 patients with patella fracture, and 15 patients with left knee fracture, were divided into two groups 16 cases of tibial plateau fracture; 40 cases of the control group, 24 men, 16 women, age (23-54) years old, average age (42.41 ± 5.59) years old, including 24 cases of right knee trauma, 16 cases of left knee trauma, 10 cases of femoral

condyle fracture, 12 cases of patella fracture, 18 cases of tibial plateau fracture, compared with the basic information of the two groups, the difference was slight ($P > 0.05$), no statistical significance, comparable.

Inclusion exclusion criteria

Inclusion criteria: (1) All patients were between 18 and 60 years old; (2) All patients met the diagnostic criteria of knee joint bone injury through MRI diagnosis; (3) All patients and their families had the right to know about the study and signed the informed consent.

Exclusion criteria: (1) The patients were old fractures, and their joints were stiff; (2) The patients suffered from medial tibial cartilage injury, medial meniscus injury and loss of posterior crisscross ductile band; (3) The patients had heart, liver, kidney and other important organ diseases; (4) The patients had mental diseases, and could not communicate normally.

Method

The patients in the control group were treated with conventional methods in the past, and the patients in the observation group were treated with arthroscopic minimally invasive surgery in the following ways: (1) The injured parts of the knee joint were fixed with brackets or plaster brackets, and anaesthetized with epidural anesthesia, lumbar anesthesia or sciatic nerve block; (2) The patients were treated with standard anterior external and internal approaches, and irrigated with normal saline, The arthroscopic lens was used to explore and treat the meniscus injury, adjacent tissue injury and dislocation of the joint; (3) The fat pad, transverse ligament, periosteal fold, synovial frenum, intercondylar fossa and small free body were completely removed, and the bone bed was dug deep to recover the toughness After the tension is applied, the meniscus will be fixed, and the capstan will be compressed. After the reduction is successful, Kirschner will be used for temporary fixation. For the old fracture, the fiber adhesive band of the internal and external groove of the joint and the suprapatellar capsule will be cleaned. The bone debris and blood scab attached to the wound site will be cleaned with a planer to ensure that the wound is in a fresh state. Ligament and bone will be fixed with a holding forceps Initial reduction of the block; (4) Enter the hollow screw special guide pin through the upper and inner incision, fix the block, slightly move the stomach part of the Kirschner wire, make sure that the block is not loose, and perspective through the c-wall machine to check whether the block is well reset, and determine the fixation depth, angle and direction; (5) For patients with type II and III platform fractures, in addition, under the platform Open the incision, compress and pull out the separated bone block and collapsed cartilage, fix the joint temporarily with Kirschner wire after reduction, implant the bone through small incision, support the collapsed part, and then fix it with tension screw; for the patients with type I and IV tibial plateau fractures, carry out direct compression and reduction, and then use tension screw for acute fixation; for the femur For single ankle fracture, the Kirschner wire is inserted into the fracture block for reduction. According to the size of the patient's bone block, the hollow rotating head is inserted into the guide needle for drilling, and screws of different specifications are screwed in. (6) After the operation, the patient's joint cavity is closed for 48 hours with negative pressure drainage, the external part is ice coated, and antibiotics are used for anti-infection treatment. One week after the operation, the patient is instructed to carry out phase treatment Rehabilitation exercise [3, 4,16].

Observation indicators

The therapeutic effect, neer score and complications of the two groups were compared. The X-ray film shows that the patient's joint is in a good position, without loose or transparent area, and the patient's knee joint is free of any pain and mobility is more than 70%, indicating that the treatment is effective; the X-ray film shows that the patient's joint is in a good position, without loose or transparent area, and the patient's knee joint is slightly swollen and painful when moving, and the joint mobility is between 50% and 70%, indicating that the treatment is effective; the X-ray film The film shows that the patient's joint position is poor,

there are loose and transparent areas, the patient's knee joint still feels strong pain, the mobility is less than 50%, indicating that the treatment is invalid, the total effective = significant + effective. Neer score is above 90, indicating excellent; score is between 80-90, indicating good; score is between 70-80, indicating medium; score is below 70, indicating poor.

Statistical analysis

The data were included in spss22.0 software analysis, and the measurement data were ($\bar{x} \pm s$), t-test; the count data were (%), chi square test, P < 0.05.

RESULTS

Treatment effect of the two groups

In the observation group, 21 (52.50), 13 (32.50), 4 (10.00) and 36 (90.00) cases were effective; in the control group, 9 (22.50), 12 (30.00), 19 (47.50) and 21 (52.50) cases were effective. The treatment efficiency of the observation group was significantly higher than that of the control group (P < 0.05), as shown in Table 1.

Table 1.
Comparison of treatment efficiency between the two groups [n (%)]

Group	n	Markedly effective	Effective	Invalid	Total effective
Observation group	40	21（52.50）	13（32.50）	4（10.00）	36（90.00）
Control group	40	9（22.50）	12（30.00）	19（47.50）	21（52.50）
x^2	-	7.680	0.058	13.730	13.730
P	-	0.006	0.809	0.000	0.000

Neer score of two groups

In the observation group, there were 20 excellent (50.00), 14 good (35.00), 4 medium (10.00), 2 poor (5.00) and 34 excellent (85.00) cases in neer score; in the control group, there were 5 excellent (12.50), 6 good (15.00), 24 medium (60.00), 5 poor (12.50) and 11 excellent (27.50) cases in neer score. The excellent rate of the observation group was significantly higher than that of the control group (P < 0.05), as shown in Table 2.

Table 2.
Comparison of neer score excellent and good rate between the two groups [n (%)]

Group	n	Excellent	Good	In	Difference	Excellent and good rate
Observation group	40	20（50.00）	14（35.00）	4（10.00）	2（5.00）	34（85.00）
Control group	40	5（12.50）	6（15.00）	24（60.00）	5（12.50）	11（27.50）
x^2	-	13.091	4.267	21.978	1.409	26.870
P	-	0.000	0.039	0.000	0.235	0.000

Complications of the two groups

In the observation group, there were 0 (0.00) head necrosis, 2 (5.00) heterotopic ossification, 1 (2.50) joint infection, 1 (2.50) dislocation and 4 (10) complications; in the control group, there were 6 (15.00) head necrosis, 5 (12.50) heterotopic ossification, 4 (10.00) joint infection, 3 (7.50) dislocation and 18 (45.00) complications The number of people in the present group was significantly lower than that in the control group (P < 0.05), as shown in Table 3.

Table 3.
Comparison of the number of complications between the two groups [n (%)]

Group	n	Head necrosis	Heterotopic ossification	Joint infection	Dislocation	Occurrence rate
Observation group	40	0（0.00	2（5.00）	1（2.50）	1（2.50）	4（10.00）
Control group	40	6（15.00）	5（12.50）	4（10.00）	3（7.50）	18（45.00）
x^2	-	6.487	1.409	1.920	1.053	12.288
P	-	0.011	0.235	0.166	0.305	0.000

DISCUSSION

Knee joint is an important body structure in human body, and it is also the most easily injured joint in daily life. Knee joint is composed of lateral condyle, femur, tibia and patella. It is composed of outward and inward, first of all, joint capsule. It

has the characteristics of relaxation and thinness. It is attached to the edge of articular cartilage and fixed by ligament. Patellar ligament is in front of joint capsule and connected with four ends of femur Muscular construction, extending to tibial tuberosity, the internal and external patellar retinaculum is on both sides of patellar ligament, which is the lower edge of the medial and lateral femoral aponeurosis, the popliteal oblique ligament is behind the joint capsule, which is formed by partial Semimembranous muscle fibers, the tibial collateral ligament is on the medial side of the joint capsule, which is a flat strip, which is formed by the adductor node, the fibular collateral ligament is a round fiber bundle, which is connected with the lateral side of the joint capsule, and it is in Guan Synovium was covered in the middle structure of the ganglion [5]. Because of the complex structure of the knee joint, once there is fracture damage, the patient will suffer severe pain, and the fracture will involve dislocation, displacement of various tissues, collapse of tibial plateau, ligament damage, etc., seriously affecting the knee joint function of the patient [6, 7].

In the treatment of knee fracture and trauma, the most important thing is the diagnosis of the disease and the accurate reduction of the fracture block. The usual way of treatment is open surgery. This kind of surgical treatment causes a large wound to the patient, which has the disadvantages of large amount of bleeding and low healing rate. At the same time, it is easy to cause damage to the articular cartilage and adjacent soft tissue of the knee joint, leading to infection and trigger Complications [8, 9]. In the minimally invasive surgery, the wound of the patient is relatively small. At the same time, we can better observe the position of the fracture of the patient and better treat the fracture damage. Under the arthroscope, we can more intuitively observe the cartilage repair, meniscus, fracture fixation, reduction and other situations. At the same time, we can more effectively clean all kinds of inflammatory substances in the joint and promote the joint cavity ring the recovery of environment, reduce the impact of surgery on the fracture block, and promote the patients' surgical faster healing [10, 11]. Arthroscopy is an endoscope for the treatment of joint diseases. In addition to being able to diagnose the disease, it can also be used in the treatment of joint diseases. At the same time, the arthroscopy can be placed in the affected area, which can more clearly observe all parts of the joint, effectively reduce the meniscus jammed by the noose, remove the free body, correct the cartilage surface and remove the broken meniscus [12, 13]. Compared with the traditional surgery, the minimally invasive surgery has the following advantages: (1) through arthroscopic surgery, in addition to being able to treat fractures, other combined injuries in the knee joint can also be treated, such as meniscus injury, tibial plateau fracture and cartilage injury, so as to improve the quality of treatment; (2) can use physiological saline to irrigate and wash the joint to eliminate the existence of them In the arthroscopic environment, the operation is more reliable, causing less interference to the bone mass, and effectively speeding up the recovery of patients in the later stage; (4) patients are not easy to appear adhesion, can be cleaned up, and the patients are less injured; (5) the surgical field of vision is more clear, and the structure of the joint and the injury situation are more intuitive observation, so that the wound can be observed during the operation More detailed clearance and more accurate reduction of broken bones; (6) patients can carry out rehabilitation activities earlier after the operation to promote the recovery of knee joint; (7) during the operation, there is no need to expose the joint cavity, reduce the probability of infection, use normal saline for cleaning and anti-inflammatory, and effectively reduce the incidence of complications in the later period of patients [14, 15]. In this study, the treatment efficiency of the observation group was significantly higher than that of the control group ($P < 0.05$); the excellent and good rate of neer score was significantly higher than that of the control group ($P < 0.05$); the incidence of complications was significantly lower than that of the control group ($P < 0.05$).

CONCLUSION

To sum up, in the treatment of knee joint trauma patients with arthroscopic minimally

invasive surgery, it has significant effect, improve the treatment effect, the number of patients with complications is lower, with higher safety, it is worth promoting in clinical treatment.

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