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Treatment of Acute Anterior Dislocation of Shoulder with Simple Fracture of Greater Tubercle of Humerus by Arthroscopy

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Abstract: Anterior dislocation of shoulder is not a rare phenomenon of bone displacement, which is very easy to cause simple fracture of greater tubercle of humerus. Although this situation is very rare, it is mainly due to high-energy sports injury, and its prevalence is also increasing year by year. This paper discusses the clinical effect of arthroscopic treatment of humeral tubercle fracture caused by acute anterior dislocation of shoulder. In order to prove this conclusion, a series of experiments were carried out. A total of 240 patients with fracture of greater tubercle of humerus caused by anterior dislocation of shoulder joint in our hospital were divided into two groups, 120 patients in the experimental group and 120 patients in the comparative group. The patients in the experimental group were treated with shoulder arthroscopy, while the patients in the control group were treated with traditional operation, and then the bone growth, curative effect, incidence of adverse reactions (wound infection, injury of nerve and blood vessel, impact syndrome, joint stiffness, malunion or not, excessive blood loss and necrosis of humeral nerve) and patients' satisfaction were recorded. The results showed that the bone growth of the experimental group was slightly faster than that of the control group, the bone return and bone growth were faster than that of the control group, and the growth of the injured position was also significantly better than that of the control group; the overall effect of the experimental group was much better than that of the control group; the adverse reactions of the patients in the experimental group were generally lower than that of the control group. It can be seen that the clinical effect of arthroscopy in the treatment of acute anterior dislocation of shoulder combined with simple fracture of greater tubercle of humerus is very excellent, which is beyond the traditional operation method and has a greater breakthrough in the future fracture of greater tubercle of humerus caused by anterior dislocation of shoulder.

1. Introduction

Shoulder joint [1] is a pestle and mortar joint composed of humeral head and glenoid of scapular joint. It is also the most flexible joint in human joints. At the same time, shoulder joint is one of the most unstable and often dislocated joints in human body. The instability of shoulder joint is determined by its special anatomical structure. Because of the unique anatomical structure of the shoulder joint, the dislocation of the shoulder joint is the most common dislocation in clinic, accounting for about half of all the dislocation of the joint. In acute dislocation of shoulder joint, the muscles, joint capsule and ligaments that maintain the stability of shoulder joint structure must be destroyed, so that the range of motion of humeral head is not in the center of glenoid scapula. When the shoulder joint is dislocated, the humeral head often protrudes from the lower part, so the dislocation of the shoulder joint is the original dislocation (85% - 95%). The annual incidence rate of soldiers, athletes and other specific groups is as high as 2.8%. It is the most common type of dislocation in clinic. In the past, many scholars believed that the fixation time of the first shoulder dislocation was the main cause of dislocation recurrence, and the fixation time of the first shoulder dislocation should be about 21-28 days. However, through the research of most scholars later, it is found that other more important factors, such as the location and nature of the injury in the first dislocation and the patient's age first dislocation, while the stability of the fixed shoulder joint and the first dislocation after the fixed time.

Shoulder joint is a kind of shoulder joint similar to ball and socket, which has a wide range of human joint activities. It can move three plane motion axes: coronal position can be used for bending and expanding, sagittal position can be used for abduction, adduction, internal and external rotation, rotation and shoulder joint can be used for flexion, extension and rotation in horizontal position. The range of motion of the shoulder joint is so large, which is closely related to its anatomical structure. The tendon sheath consists of round muscle, supraspinatus muscle, infraspinatus muscle and subscapularis muscle. The supraspinatus, infraspinatus and teres of the rotator cuff are attached to the greater tubercle of the humerus, and the subscapularis to the lesser tubercle of the humerus. The shoulder joint capsule is closely connected with its inner surface, and the deltoid descending capsule is adjacent to its outer side. The head of the humerus is located in the glenoid of the scapula. The rotator cuff attached to the large and small tubercles of the humerus surrounds the humeral head and compresses it tightly into the glenoid scapula. This shoulder joint function not only ensures a stronger bone, but also helps the upper, lower, left and right movements of the shoulder joint, assists the abduction of the shoulder joint, and makes the shoulder joint the most flexible joint in the whole body. The circumflex effect of the rotator cuff attached to the large and small tubercles of the humerus provides a great role for the movement of the shoulder joint. As the main attachment point of the rotator cuff, the greater tubercle of the humerus plays a very important role, especially the rotator cuff as the starting muscle of the shoulder abduction. (1) After the fracture of the greater tubercle of humerus, the tendon attached to its surface is also damaged, especially the comminuted fracture, which destroys the "footprints" of the rotator cuff tendon and the destructive force of the arm, especially when the shoulder joint is kidnapped, which will greatly affect the function of the shoulder joint. (2) At the same time, the fracture of the greater tubercle reduces the space under the acromion, so that the shoulder joint is impacted during abduction, which has a great influence on the function and range of motion of the shoulder joint.

At present, the traditional surgical treatment and fixation methods for the comminution and small fracture of the greater tubercle of humerus are unreliable, with high failure rate and unsatisfactory treatment effect. With the development of shoulder arthroscopy, arthroscopic treatment of combined fracture has been more and more widely used. Arthroscopic treatment can further treat the shoulder joint injury caused by anterior dislocation of shoulder joint. Arthroscopic treatment [2]

of the fracture of the greater tubercle of the humerus was performed with suture bridge technique. The suture bridge [3] can completely cover the broken end of the large tubercle fracture of the fracture block, which not only reduces the tension, but also completely resets the broken fracture, keeps the distance between the spaces under the peak unchanged, promotes the fracture healing and strengthens the strength of the supraspinatus muscle tendon. The suture bridge technique can not only treat the rotator cuff injury at the same time, but also obviously disperse the shearing force of suture, reduce the torsion force and achieve satisfactory fixation effect. The fracture of the proximal part of the greater tubercle of the humerus after suturing and anchoring, the high-strength tail line spreads the tendon and the joint bone, enters the network, the avulsed bone block and the tendon sheath tissue are firmly fixed on the "footprints" of the supraspinatus muscle in the greater tubercle of the humerus. The fixation method has the advantages of satisfactory reduction, firm fixation and satisfactory postoperative effect.

However, there are few studies on the possible mechanism of acute anterior dislocation of shoulder combined with simple fracture of greater tubercle of humerus. Similarly, there is no effective method to help clinicians evaluate the risk of anterior dislocation of shoulder with simple fracture of greater tubercle of humerus. The purpose of this study is to investigate the clinical effect of arthroscopic treatment of acute anterior dislocation of shoulder with simple fracture of greater tubercle of humerus. First of all, we made a deep analysis of the condition of the patients with acute anterior dislocation of shoulder and simple fracture of greater tubercle of humerus. We analyzed the internal factors from the composition, characteristics and causes of the injury, and adopted appropriate treatment methods. Secondly, we compared the advantages and disadvantages of arthroscopy and traditional surgery. Finally, we got the experiment through the experiment Results the recovery, curative effect and the incidence of adverse reactions (nerve injury, infection, fracture difficult to recover, unstable bone fixation) were compared between the two groups. This proves that the clinical effect of arthroscopy in the treatment of acute anterior dislocation of shoulder with simple fracture of greater tubercle of humerus is the most outstanding, and it has a good application prospect.

2. Anterior Dislocation of Shoulder with Simple Fracture of Greater Tubercle of Humerus

2.1. Diagnosis Mode

The diagnosis of acute shoulder dislocation depends on the patient's medical history, physical examination and auxiliary examination. In the process of medical history inquiry and physical examination, the specific situation of dislocation should be inquired in detail, and the active dislocation and passive dislocation should be distinguished. If you only rely on the contraction of the muscles around the shoulder joint, you should consider whether there is any mental illness. After collecting the patient's medical history in detail, a comprehensive physical examination should be carried out. Physical examination should be carried out on both sides of the shoulder joint, with the healthy side as the control. In addition to routine visual examination of shoulder appearance and muscle atrophy, palpation of tenderness, joint activity and muscle strength, special tests are used to assess shoulder stability as follows: for example, using drawer strength tests, fear tests, release tests and displacement tests are used to assess the degree of joint capsule relaxation and to examine the instability of the shoulder. According to the medical history and physical examination provided by the patient, the recurrent anterior shoulder instability can be basically diagnosed, but it is still unclear whether auxiliary examination is needed to guide the treatment. Such as X-ray, general CT, 3D CT reconstruction [4], MRI [5], etc.

2.2. Case Selection Criteria

Inclusion criteria: (1) the shape of the glenoid is inverted pear; (2) 3D reconstruction CT shows that the front bone defect or fracture of the glenoid is greater than 25% of the diameter of the glenoid; (3) the posterior bone or cartilage defect of the humeral head is greater than 30%, that is to say, the huge Hill Sachs injury, which conforms to the above-mentioned are included.

Exclusion criteria: (1) bone and fibrous bone flap injury, bone flap injury with glenoid defect less than 25%; (2) fracture of the articular surface more than 1 / 3 of the anterior glenoid; (3) exclusion of patients with subscapular muscle tear or epilepsy.

2.3. Reduction Technique of Anterior Dislocation of Shoulder

The fixation method of shoulder joint is fixation and rotation of scapula, as the name implies, fixation of shoulder joint [6]. After dislocation of shoulder joint, acromion is completely exposed and easy to locate on the body surface. On the other hand, the upper arm of the proximal end is directly held from the armpit to produce outward tension, so changing the receiving force becomes a direct force through traction, obviously reducing the reducing force. The reduction force acts directly on the shoulder joint, does not need to span two joints, and ingeniously solves the problem to reduce the reduction force, and reduces the minimum level of traction, and the reaction of the natural muscle with the small traction force is very small, so as to further reduce the pain of the patient.

When the shoulder joint is fixed and rotated, the upper arm rotates outward. The main function of the affected limb is to release the joint interlock. The posterolateral sulcus of the humeral head often gets stuck in the front of the glenoid of the scapula after the anterior dislocation of the shoulder joint, forming a bone chain block, which is not conducive to artificial reduction. It is easy to leave the glenoid or coracoid process of the shoulder joint, without pulling or leverage, and without reduction of the back of the humeral head. At the same time of interlocking release of bone block and joint, the proximal end of humerus is slightly pulled out, and the humeral head can be rapidly retracted to the joint cavity [7].

Secondly, the external rotation of the affected limb can reduce the rolling effect. As mentioned before, due to the rolling effect, if the internal rotatory shoulder joint rotates, the original tension tendon will become curly and tenser, the soft tissue channel will be further reduced, the osseous interlocking will be further strict, and the tension between the bones will be closer due to the tension of the soft tissue. The rolling effect is easy to breathe a sigh of relief, which will be part of the upper arm, so the supraspinatus, infraspinatus, small cylindrical muscles, tendon sheath has a relaxed state, and the tendon sheath can relax, and the tension of the rotator cuff and surrounding soft tissue is a sigh of relief.

According to the above, combining all their functions will work better. The first step of this method is to turn out the upper arm, remove the first "rolling effect" obstacle, and then release the osseous occlusion by slightly pushing back the scapula and humeral head to achieve reduction. The principle of shoulder joint fixation and rotation. The two reduction methods not only emphasize the release of bone mass, but also stress the blocking effect of tendon, muscle and joint capsule on humeral head. They are indivisible. as everyone knows

As we all know, the artificial reduction of shoulder joint is the reverse process of dislocation. Because of the influence of various comprehensive factors (such as age, constitution, combined injury or basic diseases), it is difficult to reduce the dislocation of shoulder joint. The operator needs to carefully analyze the injury mechanism and use CT to study the dislocation mechanism and reduction method to achieve a reduction.

Fixed shoulder rotation reduction technology does not need too much traction but choosing

inappropriate reduction technology or not knowing the key points of reduction method will increase the difficulty of reduction and significantly reduce the success rate of reduction. The pain caused by violent traction is more likely to cause patients' psychological fear, even forced to choose the reduction under anesthesia or unnecessary iatrogenic complications, so try to avoid violent manual reduction.

2.4. Clinical Status of Anterior Shoulder Detachment Combined with Simple Fracture of Greater Tubercle of Humerus

The movement of shoulder joint is composed of five parts, which are coordinated and complement each other. They work together in a precise and collaborative way, greatly increasing the range of motion of the shoulder joint. The glenohumeral joint of the humerus is the most active of all joints in the human body, which is achieved by the structural characteristics of bone ligament muscle bone tissue and the mechanical properties of ligament materials [8]. The four muscles of biceps tendon sheath and long head tendon participate in the dynamic stability of the humeral joint. The rotator cuff not only rotates along the force line, but also compresses the humeral head to the glenoid. As the starting muscle of shoulder abduction, supraspinatus muscle has an important role and significance. The position of the humeral head is higher than that of the greater tubercle. The difference between the two is 8 ± 3.2mm. There is a groove between the tubercle and the greater tubercle.

The correct anatomical structure of the proximal humerus plays an important role in the normal range of motion of the shoulder joint. We can only make a deep analysis of the fracture site of the greater tubercle of the humerus and fix the fracture site, so that the functional effect of the shoulder joint can play the most important role. When the fracture of the greater tubercle of the humerus is malunion or nonunion, the normal biomechanical relationship of the shoulder joint can be changed, and the range of motion and function of the shoulder joint can be greatly reduced. Anatomic reduction of fracture should be carried out as much as possible. If the fixation position of the tubercle fracture is low, the tension of tendon sheath on the tubercle will increase. There may be fixation failure, limited shoulder joint function and secondary rotator cuff injury. The position of the greater tubercle may be elevated after the operation, combined with acromion impingement syndrome. The greater tubercle of humerus, as the stop of supraspinatus muscle, had poor reduction. When the shoulder abduction, the abduction force provided by deltoid muscle increased significantly. Therefore, anatomic reduction is very important for the fracture of greater tubercle.

The fracture of the greater tubercle of humerus is small in size and severely comminuted, which is difficult to achieve the expected purpose. When fixed with steel plate and screws, the greater tubercle of humerus is difficult to be anatomically reduced, reducing the space under the acromion, causing impact, and osteoporosis is easy to occur at the distal end of humerus [9]. Because of the high tension of the tension band fixation, complications such as cutting off the rotator cuff may occur, leading to the fracture of the surgical neck of the humerus. Arthroscopic suture bridge technology can effectively achieve the largest possible anatomical reduction, firm fixation, less complications, and achieve satisfactory results.

3. Comparison of Arthroscopic Treatment and Traditional Operation

3.1. Shoulder Arthroscopic Selection

There are two kinds of shoulder arthroscopic operation [10]: side lying position and beach chair position. The advantage of the lateral position is that the operative field of vision is fully exposed, which is convenient for continuous traction during the operation, but the non-anatomic position is

inclined. Improper traction may result in injury of brachial plexus, axillary nerve, common peroneal nerve, prominent osteogenesis of ankle joint, knee joint and femoral trochanter, redness and bruise of skin. The position of the beach chair completely exposes the shoulder joint, the anatomical position is close to the vertical direction, the observation structure is clear, the stability is good, the airway is easy to manage and control, the operation process does not need to pull the affected limb, it can move freely, it is easy to operate and check the impact of the upper limb in different anatomical positions, reduce mechanical damage and bleeding, and provide convenience for the conversion of microarthrotomy. However, the position of beach chair has higher requirements for blood pressure control. Lee et al. Showed that beach chair combined with intraoperative controlled hypotension can significantly reduce the local cerebral oxygen saturation in patients undergoing general anesthesia replacement. Therefore, we should pay special attention to the choice of the zero position of invasive blood pressure measurement when choosing the beach chair position in shoulder arthroscopic surgery. In order to ensure the blood supply and perfusion of the brain, the zero point of blood pressure monitoring is the height of the external auditory canal.

3.2. Advantages of Shoulder Arthroscopy

Arthroscopy is a delicate optical fiber device with a diameter of 4mm. It enters into the joint cavity and the subacromial space through an operation channel of about 2cm. To observe the injury of shoulder joint cavity and subacromial space. It projects the cable to an external display to reflect tissue structure and shoulder joint damage. This processing technology has gradually matured. Compared with the open surgery, shoulder joint functional exercise can be carried out in advance. It can also be observed whether the joint cavity and tendon sheath are damaged. At the same time, the treatment of large tubercle can be carried out. The advantages of arthroscopy are more and more obvious. The specific advantages are as follows:

(1) The double magnifying effect of arthroscopy can fully expose the operation area and damage, and can treat a variety of shoulder diseases, which has a great advantage over the surgical incision [11]. It can expose the injury more clearly, observe whether there is joint injury or not, and can be treated by arthroscopy.

(2) Arthroscopic surgery has fewer traumas and less postoperative infection. Under arthroscopy, the operation channel is small, some patients have high requirements for the wound, and the wound is more acceptable than the open wound. After operation, the soft tissue scar formation was less, the shoulder joint adhesion was less, the function decreased less, the shoulder joint movement was earlier, the recovery was faster, and the effect was satisfied.

(3) Arthroscopic surgery is a minimally invasive operation, which can exercise the affected shoulder joint as soon as possible. Can achieve the best shoulder function in a short time and resume normal life and work.

Under the shoulder arthroscope, different fixation materials (hollow screw, anchor with thread, etc.) and methods (screw fixation, double row, Suture Bridge, etc.) can be used to fix the broken end of fracture. Advantages of suture bridge technology:

(1) It is difficult to fix the fracture of greater tubercle of humerus with cannulated nail. In surgery, the bone mass may be further comminuting and fixation may fail. The tail line from the threaded anchor is a "reticular" structure, which reduces the bone mass of the large tubercle. The fixation method is similar to the repair of rotator cuff, which is firm and can promote fracture healing.

(2) The suture bridge technology disperses the high-strength thread at the tail of the anchor pin on the fracture block, effectively disperses the shear force and torsion force of the suture and achieves the satisfactory suture fixation effect. The mesh structure formed by high-strength thread crossing can firmly fix the avulsed bone and tendon sheath tissue, which has obvious advantages

over hollow nail fixation in biomechanics.

(3) The suture bridge technique can cover 100% of the plantar fracture block, not only reduce the tension of the supraspinatus muscle, but also provide the largest contact area, increase the fixation strength of the fracture block and reduce the gap formation. In this group, the fracture of the greater tubercle of humerus was treated by arthroscopy and fixed by the suture bridge technique with suture anchor.

3.3. Traditional Surgical Treatment

According to different materials, suture anchors [12] can be divided into absorbable bone anchors and non-absorbable bone anchors (most of the anchors are nickel titanium alloy). There are different fixation methods for different shapes of anchors, among which screw type bone anchors have more advantages than bone anchor types, and their fixation force is relatively strong, generally not twice, which is very suitable for soft tissue fixation of bone compactness. According to the characteristics of the injured part, the length and type of the bone anchor were selected, and the depth of the bone anchor was judged again during the pre-drilling. Bone anchors have a wide range of indications. It can not only repair the ligament, but also reconstruct the end of the tendon and repair the dislocation of acromioclavicular joint. The main advantages of suture anchor are as follows: (1) the loss is very small. First of all, the incision is small, generally only about 8 cm; secondly, the soft tissue around the fracture end is less peeling; (2) the volume is small, and the operation is relatively simple. Only the long handle propeller is used to put the anchor into the bone, and then the avulsion fracture block is sutured with its own super strong suture, so the operation time is correspondingly shortened and the injury to human body is reduced; (3) Because the anchor bolt itself has a unique thread design, it can be fixed only by drilling a hole once during the fixation, avoiding the unstable fixation caused by the loosening of the nailway caused by multiple operations of other fixings, and saving the operation time. (4) Recovery is relatively fast. The patients began to exercise the passive function of shoulder joint 2 days after operation. One month after the operation, the patients underwent active shoulder abduction and lifting exercise, the range of activity was0~135 °. The earlier the functional exercise, the better the postoperative functional recovery; (5) the fixation was more reliable, one end of the bone anchor was fixed at the distal end of the bone cortex fracture, the other end of the super strong suture and a part of the tendon sheath was bound to be a large nodule, which was not easy to occur postoperative displacement of the fracture; (6) The curative effect of the comminuted tubercle fracture is significant; (7) the cost is relatively low, which is easy to be accepted by the average economic income of the patients, and it does not need to be taken out again, which can save the cost and pain of the second operation.

With the increasing use of anchors and the deepening understanding of functional recovery in postoperative follow-up, a series of problems caused by the use of anchors have gradually emerged. Because the metal component of the metal anchor cannot be degraded, it will remain in the patient forever. Compared with human body, the anchor pin belongs to foreign body, which may cause bone tissue around the anchor pin to melt, and the anchor pin is exposed outside the bone tissue. Finally, the anchor may slide, causing joint damage. It is not suitable for those who have a history of shoulder surgery or shoulder ankylosis, have severe osteoporosis and have fracture of humeral head or neck.

3.4. Surgical Clinical Intervention

(1) In order to reduce the damage to normal tissue and shorten the operation time, mycorrhizal incision should be used as far as possible; (2) local wound infiltration technology generally uses long-acting local anesthetics (bupivacaine, ropivacaine). Although this method can provide skin

analgesia in the local incision, it is not suitable for the pain caused by the deep tissue of shoulder joint; (3) local injection technology of shoulder joint cavity this method refers to the injection of painkiller into the affected shoulder joint cavity at the end of the operation to achieve the purpose of postoperative pain relief. The advantage of this method is that the local effect is obvious and there is no systematic side effect. The most commonly used drug is morphine, which has a long time of analgesia. Intra-articular injection can maintain 8 hours in 12 hours after operation. Nonsteroidal anti-inflammatory drugs, local anesthetics and other drugs are often used in combination with morphine to prolong the time of postoperative analgesia. Although the local effect of drug injection in the joint is clear, it is easy to form effusion in the joint cavity, leading to local swelling, wound infection, and prolonging the risk of wound healing.

Postoperative analgesia: at present, we advocate a multi-mode, personalized method of postoperative pain management. Multimodal analgesia can not only improve the clinical tolerance of body analgesics, promote the starting time of analgesics, and prolong the clinical analgesia, but also play a synergistic role in various analgesics and analgesic methods, reduce single dose and clinical response, so as to obtain the best clinical analgesic effect and the smallest dose. Because different patients have different reactions to analgesic drugs and pain, the clinical analgesic methods should also be different from person to person.

(1) Application of analgesics: at present, there are mainly non opioids (paracetamol, non-steroidal anti-inflammatory drugs) and opioids.

(2) On the basis of routine brachial plexus block, catheter was placed around the brachial plexus. Finally, connect the catheter with the pumping device, inject low concentration local anesthetics (the most commonly used is long-term local anesthetics) at a constant speed, so as to keep the drug concentration around the brachial plexus constant. Although this method has been widely used in clinical practice, it is not easy to be accepted by patients for a long time because of the shortcomings of catheter position, easy to fall off, pull out, pollution, bacterial infection, affecting the movement of neck and affected limbs.

(3) Intravenous analgesia pump: it is the main method of surgical analgesia in recent years, which can be used in various operations.

(4) Hypothermia treatment: at present, the principle of hypothermia treatment is not clear. Tissues that may reduce bleeding, swelling, and inflammatory reactions promote reflexive contractions of capillaries by reducing local temperature, while it can raise the pain threshold of nerve fibers at low temperatures to relieve pain, swelling, and muscle spasms.

(5) Electrical stimulation therapy: it mainly includes transcutaneous nerve stimulation and transcutaneous acupoint stimulation (TENS), which is a non-invasive surgical method. Although it can't alleviate the most severe pain, it can be used as an important auxiliary analgesic method.

4. Results and discussion

240 cases of anterior dislocation of shoulder with fracture of greater tubercle of humerus were studied. The proportion of men and women is the same, basically 28-76 years old. The average time from injury to operation was 4.65 days. The average follow-up time was 18 months.

4.1. Comparison of Recovery Time between the Two Groups

Shown as Figure 1, we followed up the interview between the two groups of patients to verify the accuracy of the test. All fractures healed, no complications, no operative death. We can see that the bone growth time of the patients in the experimental group is mainly at the 8th week, which is lower than that of the patients in the control group at the 10th week. By the 10th and 12th week, all the patients in the experimental group had returned to normal. In comparison, the patients in the

experimental group got out of pain faster.

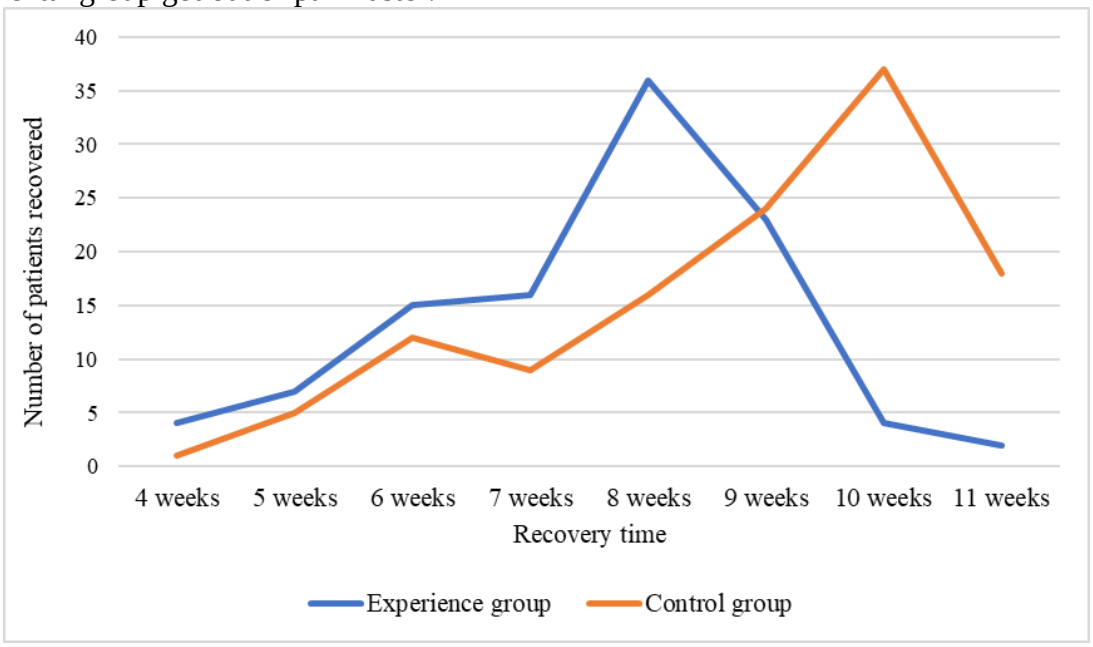

Figure 1. Comparison of postoperative recovery time between the two groups ($\bar{x} \pm S$)

4.2. Comparison of Clinical Effects between the Two Groups

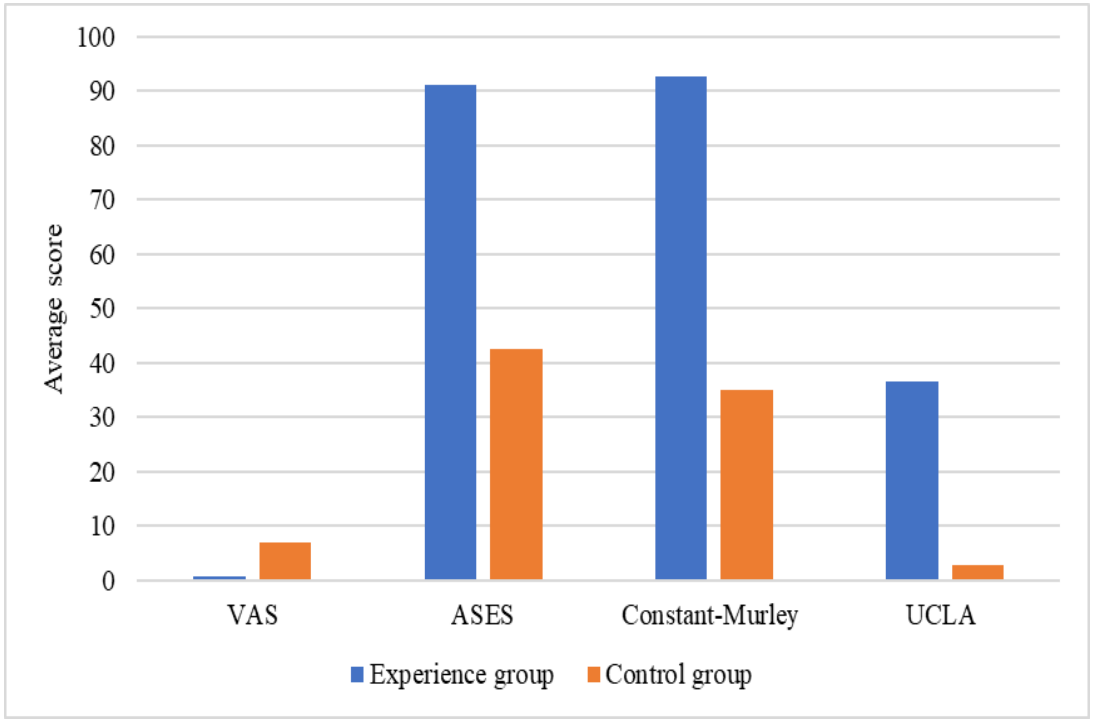

Figure 2. Comparison of curative effect between the two groups

Shown as Figure 2, the test group's constant Murley score is 0.54 higher than that of the control group and the test group's ases score is 91.23 higher than that of the control group's 43.47. The VAS pain score of the test group is 93.29 lower than that of the control group, and the UCLA score of the test group is also much higher than that of the control group. The height difference in the figure is

large, and the test results are very significant.

Table 1. Comparison of shoulder joint mobility between the affected side and the healthy side

Group	N	Forward bend and lift (Degrees)	External rotation (degree)	Internal rotation (T)
Affected side	120	179 ± 8.65	76.6 ± 7.72	7.71 ± 2.77
Contralateral	120	182 ± 7.51	77.5 ± 5.56	7.90 ± 0.91
T		-2.46	2.79	1.34
P		>0.05	>0.05	>0.05

Show as Table 1, in the last interview, we recorded the movement state of the front end of the shoulder joint. From the movement state, although the movement of the injured side has a small part of influence than that of the non-operated side, there is no difference according to other test results. The activity of both sides is basically the same, which shows that the treatment method proposed in this paper has a very important role.

4.3. Comparison of the Number of Adverse Reactions Between the two Groups

Improper operation or fixation of fracture often leads to a large number of complications after treatment. The incidence of shoulder infection is very low. Although the incidence of neurovascular disease is relatively low, it may be caused by the characteristics of shoulder joint vascular nerve, trauma, improper operation and other factors. If the nodule moves backward, it will affect the lateral rotation of the shoulder joint, and the upward displacement may lead to the impact under the acromion. Ankylosis is the most important and common complication of shoulder injury. When nonunion or nonunion occurs, it is often due to the separation and displacement of the fracture block, osteoporosis, failure of internal fixation or immature surgical technology, resulting in the impact under the acromion and the loss of rotator cuff function. Ischemic necrosis of the humeral head is a rare complication of simple nodular fracture.

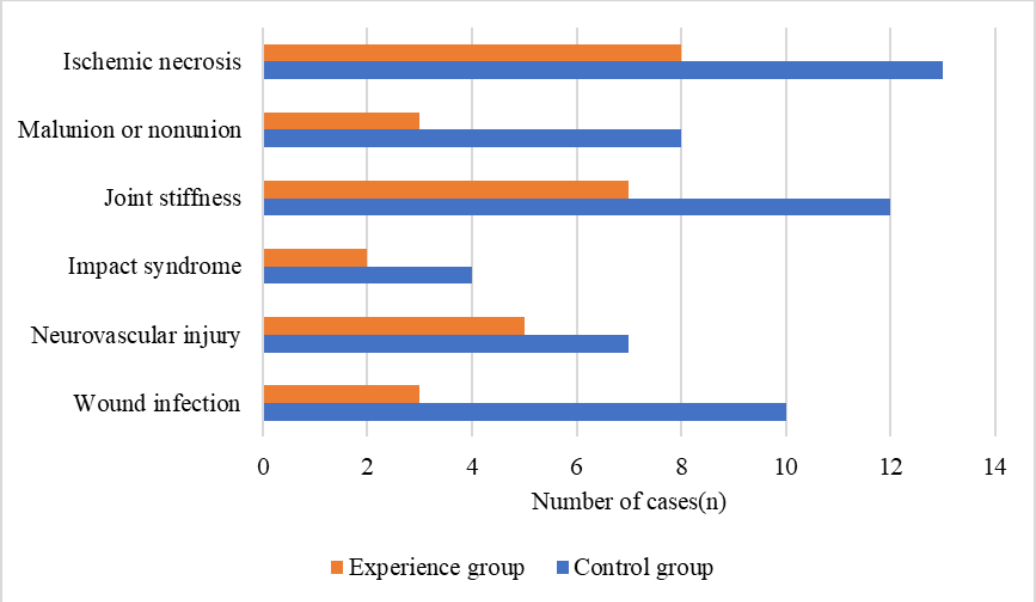

Figure 3. Comparison of the incidence of complications between the two groups

Shown as Figure 3, the number of cases of ischemic necrosis of the humeral head in the control group was up to 13 and significantly higher than that in the test group, and the number of cases of joint dyskinesia in the two groups was relatively small, and there were only 2 cases in the test group.

The incidence of postoperative complications in the two groups was analyzed. 23.3% in the experimental group was much lower than 38.3% in the control group.

4.4. Comparison of Patients' Satisfaction in the Two Groups

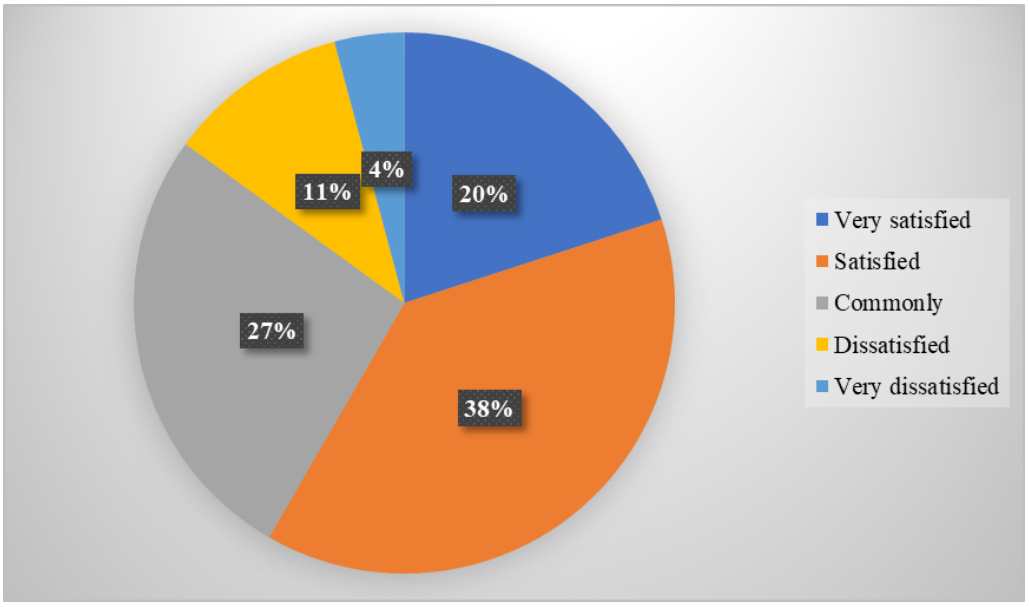

Figure 4. Satisfaction survey of patients in experimental group

Shown as Figure 4, 20% of the patients in the experimental group are very supportive of the operation, 38% of them are in favor of the operation, and 58% of them are already in favor of the operation. Only 4% of the patients disagreed with the operation.

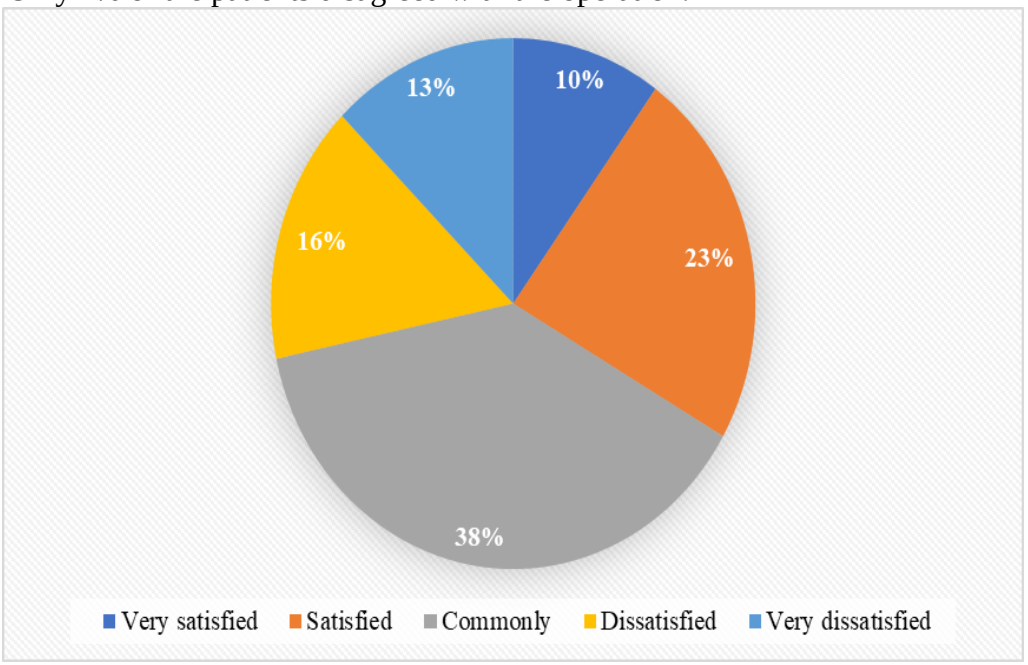

Figure 5. Satisfaction survey of patients in control group

Shown as Figure 5, most of the patients in the control group were neutral, and they were not very satisfied with the general effect of the traditional operation. Moreover, the number of people who

questioned the traditional operation has reached 13%, the number of people who disapproved has also reached 16%, and the number of people who approved or above accounted for 33%.

5. Conclusion

Dislocation of the shoulder is very common in clinical practice, and it often occurs with deterioration of fracture of the greater tubercle of the humerus, which accounts for 15% - 30% of the deterioration of dislocation of the shoulder with fracture of the greater tubercle of the humerus. With the motor vehicle as a common way of travel for residents, the incidence of accidents is also increasing year by year. Coupled with the serious aging, most of the elderly have more and more bone problems. The number of patients with fractures of the greater tubercle of the humerus due to dislocation of the shoulder also increased in a straight line. In view of the deterioration of the above situation, this paper presents the clinical analysis of the fracture of the greater tubercle of humerus caused by anterior dislocation of the shoulder. In this paper, 240 patients were divided into the experimental group and the control group. From the experiment, the stage of bone growth in the experimental group was concentrated in the 8th week, which was lower than the recovery time in the 10th week. It can be seen that with the help of arthroscopy, the success rate was higher, and the bone growth time of the patients was faster. The constant Murley of the experimental group and the control group were compared respectively The scores of ases, vas and UCLA in the experimental group were 93.29 lower than those in the control group, and the other scores were much higher than those in the control group; the postoperative complications in the control group were also smaller than those in the experimental group. According to the above test results, we can see that shoulder arthroscopy has a very good therapeutic effect in the treatment of humeral tubercle fracture caused by anterior dislocation of shoulder bone. It not only shortens the hospitalization time, but also reduces the incidence of wound infection and other adverse events, increases the discharge rate, relieves the pressure of the hospital, and has a broad application prospect.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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