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Article

Early Rehabilitation of Orthopedic Internal Fixation Removal in Daytime Ward

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Abstract: Children's fractures are very common, and many children's fractures need internal fixation. When the children are treated and recovered, it needs to be internally fixed and then taken out. With the development of internal fixation materials, the research of surgical methods and the improvement of surgical skills, postoperative removal of orthopedic surgery patients has gradually been included in daytime surgery. While ensuring the safety of children's surgery, it is necessary to shorten the postoperative limb and joint function recovery time, promote the recovery of limb and joint function, the healing of wounds and bones, and reduce the occurrence of these complications. In order to reduce the occurrence of these complications, carry out early rehabilitation education and development early rehabilitation training is very necessary. This paper puts forward the concept of early rehabilitation based on shared decision model, in which doctors, nurses, children and family members participate in the treatment of children before, during and after operation. The effect of early rehabilitation education in the daytime ward after removal of internal fixation was examined. Moreover, through the analysis of the control trial also confirmed that the clinical effect of early rehabilitation in improving and optimizing the rehabilitation of fracture in children is significant.

Keywords: Fractures; internal fixation; daytime surgery; rehabilitation

1 Introduction

Children's fracture is a very common phenomenon, if the child's fracture is not treated in time, it is very serious [1,2]. Children's fractures include transverse fracture, oblique fracture, spiral fracture, comminuted fracture, avulsion fracture, compression fracture, multi-segmental fracture and so on [3,4]. Many children's fractures need internal fixation, and when the child is treated and recovered, the internal fixation needs to be removed. Usually, the internal fixation extraction requires the child to be re-admitted to the hospital. The fracture processing flow is shown in Fig. 1.

In 2003, the International Association for daytime surgery defined daytime surgery as therapeutic surgery in which patients were hospitalized and discharged on the same working day, excluding outpatient operations performed in medical clinics or hospitals [5]. The development of daytime surgery

in developed countries in Europe and the United States has a history of only more than 10 years. According to statistics, about 40% and 60% of surgeries end in daytime operating rooms.

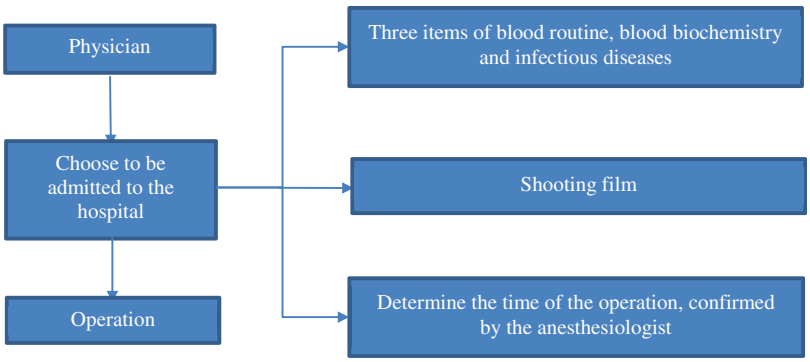

Figure 1: Processing flow

Daytime operation management mode refers to a kind of operation management mode in which patients complete preoperative examination and anesthesia evaluation before admission, then make an appointment for operation time, stay in hospital and operate on the same day, and leave hospital within 24 hours [6]. The management mode of daytime operation integrates the management and control method of daytime operation, the mode of surgical diagnosis and treatment of pre-hospital examination and the characteristics of daytime operation. The pre-hospital examination is carried out on patients who participate in daytime operation in turn, the satisfaction rate of operation is investigated and analyzed [7], and the investigation phase is actively adjusted. When conflicts arise, the content involving nursing work is included in the scope of reform, and medical personnel with sufficient experience are selected to implement professional training for nurses [8]. The flow of pre-hospital detection and management of patients undergoing daytime surgery was combined with the mode of nursing management and control, so as to evaluate the management and control mode of nursing care of patients undergoing daytime surgery in hospital [9–11].

With the development of internal fixation materials and the improvement of surgical skills, postoperative extraction of orthopedic patients has been gradually incorporated into daytime surgery [12]. Children with orthopaedic surgery [13], especially after orthopedic surgery, are often prone to joint stiffness, muscle tendon adhesion, urinary tract infection, and even lower limb deep venous thrombosis after orthopedic surgery, especially after orthopedic surgery. How to shorten the recovery time of limb and joint function, promote the recovery of limb and joint function, and heal the wound and bone while ensuring the safety of operation. To reduce the occurrence of these complications, early rehabilitation is essential [14,15]. Therefore, it is very necessary to carry out the early rehabilitation of children with orthopedic internal fixation in the daytime ward. In this paper, 43 children who were admitted to the daytime ward for orthopaedic internal fixation from August 2020 to July 2021 were studied.

The rest of this paper is organized as follows. The second section introduces the common diseases and causes of fracture in children. In the third section, the early rehabilitation based on shared decision model is introduced. The fourth section introduces the early rehabilitation measures and effects of internal fixation. The fifth section gives a summary.

2 Related Research

The green branch fracture is more common in children under 10 years old, one side of the bone cortex and periosteum is broken, but the contralateral side is still intact, this kind of fracture is relatively stable, there is no obvious displacement of the fracture end, the reduction is relatively easy, and the prognosis is good [16].

If the bamboo fracture is a longitudinal external force, especially in the metaphysis, it is shown as a compression compression fracture, and the beak-mouth-like changes can be seen in the bilateral bone cortex on the *X*-ray film, if the external force has a certain angle, then this beak-mouth-like appearance appears in one side of the bone cortex, and the periosteum is generally not broken [17]. This kind of fracture needs to be examined very carefully to prevent missed diagnosis. Fracture treatment is relatively easy, many only need simple external fixation, the prognosis is good.

Bending fracture is actually another kind of green branch fracture, which often occurs in younger infants. The fracture line cannot be seen on the ordinary *X*-ray film, which only shows the bending and deformation of the long bone, which is easy to be missed if you don't pay attention to it. Its biggest feature is that there is no callus formation all the time [18]. On the contrary, the self-healing and shaping ability of this kind of bending fracture is not as good as that of other fractures, and even leaves behind long-term bending deformation. For more obvious curved fractures, the curved part should be squeezed three points in the opposite direction with a light technique to restore its normal appearance. However, we should pay attention not to rushing for quick success and quick profit, but cause obvious fracture, which is more difficult to deal with.

Epiphyseal plate injury, which is unique to children, accounts for 15% to 30% of bone injuries in children [19]. The epiphysis can be separated from the epiphyseal plate, and the fracture can also be crushed by longitudinal violence through the epiphyseal plate.

A wide range of birth injury fractures, such as intracranial hemorrhage, skull depression fracture, abdominal parenchyma organ rupture, nerve injury and limb fracture [20]. Birth injury fracture is a kind of fracture that requires little operation and has the best prognosis. Femoral shaft fracture, humeral shaft fracture, epiphyseal spondylolisthesis near joint and clavicle fracture were common. Other fractures are rare. It is mostly caused by excessive traction and improper operation during delivery. The shaping ability is very strong and has compensatory growth. It is easy to be misdiagnosed as pseudo-paralysis, infection or dislocation.

Pathological fracture caused by bone abnormalities caused by a variety of reasons, can be called pathological fracture. Children are more common [21]. Such as developmental disease osteogenesis insufficiency, such as brittle bone disease, endocrine diseases and vitamin deficiency, such as scurvy, rickets, primary or secondary hyperparathyroidism, pituitary hyperfunction, disuse muscle atrophy, such as neuromuscular diseases-poliomyelitis, cerebral palsy, multiple joint contractures and so on. In addition, inflammation, tumors and congenital diseases are easy to be complicated with fractures.

Most of the abusive fractures are young children, and about 66% are under 3 years old. The general health status of the children is very poor, the body is thin and small, and the nutrition and development are poor. The parents complained that the medical history was obviously unreasonable or did not accord with the examination results. At the same time, the children had multiple fractures, subcutaneous congestion in different periods, skin burns or lacerations, and common fresh and old fractures coexisted. It can be seen that the repair process in different periods proves the characteristics of repeated injuries. It is common in humerus, tibia and femur, and more common in the junction of diaphysis and metaphysis [22].

The affiliated Children's Hospital of Nanjing Medical University (Nanjing Children's Hospital and Jiangsu Red Cross Children's Hospital) is a large-scale comprehensive Grade 3A children's hospital integrating medical treatment, scientific research, teaching, rehabilitation and health care. Since the

implementation of daytime surgery in our hospital in October 2016, the number of daytime operations has developed by leaps and bounds. Since the complete relocation and stable operation of the two hospitals of Nanjing Children's Hospital in April 2017, the development of daytime surgery has tended to increase steadily. Daytime surgery has been widely concerned and developed in China in recent years because of its fast, convenient, efficient and safe medical service. In order to ensure the medical quality and safety of daytime surgery, the management system and process of daytime surgery in our hospital have been established since August 2019. Since August 2019, the mode of daytime surgery in our hospital has gradually changed from decentralized treatment and decentralized management to decentralized treatment and unified management [23–25]. An independent and unified daytime operation ward has been set up in Hexi Hospital of our hospital. The preoperative and postoperative nursing of the patients is carried out in the daytime operation department, the operation is carried out in the operating room of the inpatient department, and the patients are uniformly managed by the daytime operation department. The operation appointment, admission evaluation, discharge evaluation and discharge follow-up of patients undergoing daytime surgery are also managed by the daytime operation department, and the operation and postoperative awakening are carried out in the operating room [26–29].

3 Early Rehabilitation Based on Shared Decision Model

The traditional nail removal after fracture surgery is related to examination and examination after hospitalization, selected for nail removal, discharged from the hospital from the second day to the third day after operation, and health education to the parents of the children on the day of discharge. However, the degree of acceptance of parents and the effect of rehabilitation guidance for children are not known. In recent years, with the continuous development of medical technology, the daytime operation ward has been accepted by the parents of the children in order to save hospitalization time and medical expenses, but it is restricted by the children's short time in hospital, and the parents focus on the operation status of the children when they are in hospital. The effect of health education and rehabilitation guidance to the children's parents on the day of hospitalization is obviously not ideal, how to ensure the safety of the operation at the same time. It can also ensure that the parents of the children can master the knowledge of postoperative rehabilitation nursing, carry out the health education of internal fixation removal scientifically, and get good positive feedback from the parents of the children [30–32].

Based on this situation, we designed a shared decision-making model to detect the effect of early rehabilitation education in orthopedic internal fixation and extraction in daytime wards [33–35]. In the shared decision model, the decision is made in two stages. In the first stage, medical staff confirm the level of participation, that is, the participation rate of medical staff. In the second stage, children and their families determine their participation rate as feedback on the rehabilitation education of medical staff [36,37].

First of all, examine the performance function.

According to the hypothesis of formula (1), the performance function is constructed.

$$P(a) = \beta - a^{-\gamma} \tag{1}$$

Among them, $P(a)$ represents the cooperative performance of the medical side and the child side, and a represents the various inputs of the medical side and the patient side. β represents the theoretical maximum of performance. γ indicates the investment flexibility of cooperation. Here, β and γ are constants.

As a result, the performance function is as follows.

$$P(a) = \beta - a^{-\gamma} + \varepsilon \tag{2}$$

where ε represents uncertainty and its expected value is 0.

The expected performance of medical staff can be expressed as follows.

$$\hat{\pi}_y = \rho_y(\beta - a^{-\gamma}) - at_1,\ 0 \le t_1 \le 1 \tag{3}$$

where ρ_y represents the marginal income of the health care side, it is constant. t_1 represents the participation rate of doctors and nurses.

Similarly, the expected return $\hat{\pi}_H$ of the child's side is expressed as the following formula.

$$\hat{\pi}_H = \rho_H(\beta - a^{-\gamma}) - at_2,\ 0 \le t_2 \le 1 \tag{4}$$

Among them, ρ_H represents the marginal income of the child, which is constant. t_2 indicates the participation rate of the child.

$$t_1 + t_2 = 1 \tag{5}$$

As a result, the overall expected benefits of the cooperation between the medical care side and the child side are as follows.

$$\hat{\pi} = (\rho_y + \rho_H)(\beta - a^{-\gamma}) - a \tag{6}$$

Under the condition that the participation rate t is given by the doctors and nurses, the total investment of the patient side in the cooperative decision is a, and the participation rate is $t^{'}$. There is $t + t^{'} = 1$. As a result, the objective function of the affected side and the corresponding optimization are established as follows.

$$\max \hat{\pi}_H = \rho_H(\beta - a^{-\gamma}) - at' \tag{7}$$

The Lagrangian function is constructed as follows.

$$L = \rho_H(\beta - a^{-\gamma}) - at' + \lambda(t - 1) \tag{8}$$

The first-order conditions for optimization are as follows.

$$\frac{\partial L}{\partial a} = \rho_H \gamma a^{-1-\gamma} - t' = 0 \tag{9}$$

$$\frac{\partial L}{\partial t'} = -a + \lambda = 0 \tag{10}$$

The optimal value of the total input can be obtained by solving the problem as follows.

$$a* = (\frac{1 - t}{\rho_H \gamma})^{\frac{-1}{\gamma+1}} \tag{11}$$

$$t* = \frac{(1 - t)\rho_H}{\rho_H \gamma} \tag{12}$$

It can be seen that the optimal value of the corresponding total input has the following formula.

$$\frac{\partial a*}{\partial a} = \frac{1}{(\gamma + 1)\rho_H \gamma}(\frac{1 - t}{\rho_H \gamma})^{-(\gamma+2)/(\gamma+1)} \tag{13}$$

Based on the response of the patient side, the medical care side optimizes t to maximize its benefits. For this reason, the expected income of the medical care side can be maximized.

$$\max \hat{\pi}_y = \rho_y(\beta - (\frac{1-t}{\rho_H \gamma})^{-1/(\gamma+1)})^{-\gamma} - (\frac{1-t}{\rho_H \gamma})^{-1/(\gamma+1)} \tag{14}$$

By solving the maximum value, the equilibrium value of the optimal participation rate of the medical care side is obtained. If you bring it in, you will eventually get the equilibrium value of the overall expected return. As a result, the following formula is obtained.

$$a* = (\gamma(\rho_y - \rho_H \gamma))^{1/(\gamma+1)} \tag{15}$$

$$\hat{\pi}* = (\rho_y + \rho_H)(\beta - (\gamma(\rho_y - \rho_H \gamma))^{-1/(\gamma+1)}) - (\gamma - (\rho_y - \rho_H \gamma))^{1/(\gamma+1)} \tag{16}$$

4 Early Rehabilitation Measures of Internal Fixation and Its Effect

4.1 Rehabilitation Process

4.1.1 Health Education Before Admission

Before making an appointment for surgery, by paying attention to the daytime bulletin number, in the form of PPT and brochures, the admission process, postoperative matters needing attention, discharge procedures and how to carry out correct early rehabilitation training, propaganda and education on various matters were carried out to the parents of the children, and the important items were printed into a propaganda list and brought to the parents to check and study at home [38,39].

After the successful appointment operation, the parents and children were treated with psychotherapy before operation. Because of the children's poor self-control ability and poor matching, there was widespread fear of treatment in the early stage of children's fracture. Therefore, the pain caused by early training should be strictly controlled, especially the pain of elbow flexion should be explained to children in advance, strive for the cooperation of family members and children, and ask special counselors and psychiatrists to communicate if necessary. Therefore, nurses should take the initiative to communicate with children's parents to appease their anxiety and nervousness and cooperate with doctors to explain the reliability of elastic intramedullary needle removal to children's parents, so that they can know the process and curative effect of the operation. The introduction of successful cases can be used to enhance their confidence in the operation, so that the nursing of psychological support to parents runs through the nursing process of children. The language should be easy to understand and close to the receptive ability of the children of this age, encourage and appease the children, eliminate their fear and gain the trust of the children, so that the children can adapt to the new environment and cooperate with the treatment as soon as possible.

Admission for observation

A comprehensive physical examination and evaluation of the patient's condition were carried out when admitted to the hospital. To observe whether the movement and sensation of the affected limb are normal, we should pay attention to observe the peripheral circulation of the affected limb and the condition of the whole body. Inform the parents of the patients about the matters needing attention in the hospital, and introduce the patient's condition and follow-up treatment to them in an easy-to-understand language, so that they can have a preliminary understanding of it. Children with limb braking on the affected side are told to observe the blood circulation, skin temperature and skin protection of the distal limbs, while patients with obvious swelling maintain the elevation of the affected limbs and reduce their activities.

4.1.2 Rehabilitation Guidance After Internal Fixation of All Kinds of Fractures

Fracture of humerus

The exercise therapy before fracture internal fixation is mainly muscle isometric contraction and wrist and hand function training.

Muscle isometric contraction: during the period of plaster fixation, isometric contraction training of biceps and triceps brachii was performed with 10–15 in each group, 5 groups each time, 4–5 times a day. The total isometric contraction training of finger extension and flexion was carried out with 20–30 in each group, 5 groups each time, 4–5 times a day. Isometric contraction training of radial and ulnar extensor and flexor wrist muscles was performed, 20–30 in each group, 5 in each group, twice a day. Wrist and hand function training: maximum active activity in four directions of the wrist each time, 20 wrist each time, 2–3 times a day. Strengthen the interosseous muscle and internal muscle of the hand, using finger clamping resistance, skin band resistance, clenching fist resistance and other methods, 5–6 times a day, 20 each time.

The exercise therapy before fracture internal fixation mainly focused on elbow joint/gived priority to helping activities.

Elbow flexion exercise (active training): put the affected elbow on the OT table, take the end sitting position, shoulder as high as the OT table, and tell them to flexion the elbow to the maximum, 20 in each group, 2–3 in each group, twice a day. Among them, the proportion of elbow flexion was 1: 2.

Assist training: the patient's posture was the same as active training, holding a stick with both hands flat, using the healthy upper limb to drive the affected limb to stretch and bend the elbow joint, trying to achieve the maximum range each time, and staying in 1 min, 20 in each group, 2–3 in each group, 3–4 times a day.

CPM training: using Kinetec 6080 elbow CPM machine, the circulation speed was 3 min and 10 s, and the angle was 0°–120°. The patients passively trained the elbow joint twice a day, the angle of flexion and extension of the elbow joint was 2°–3°every day, and the training time was 30 min.

Fracture of ulna and radius

It starts after reduction and fixation. The muscles of forearm and upper arm were contracted within 2 weeks. Day 1: clench fist, bend and extend thumb, opposite palm, shoulder swinging left and right, horizontal circle movement. Day 4: with the help of healthy limbs, the affected limbs were raised in front of the shoulders, raised laterally and extended backward. Day 7: active shoulder flexion, extension, adduction, abduction, finger resistance exercise. Day 15: isometric contraction of biceps brachii. Forearm rotation is prohibited within 3 weeks. Day 30: increase triceps isometric contraction exercise and push the wall by hand.

The fracture basically healed and began after the removal of internal fixation. Day 1: active movement of shoulder, elbow, wrist and finger joint. Day 4: increase the resistance of biceps brachii and isometric, isotonic and isokinetic contraction exercises. Day 8: increase the active exercise of forearm rotation, assist exercise, triceps and wrist flexion and extensor muscle resistance exercises. Day 12: increase the muscle strength of forearm rotation. It can also increase the homework exercises and the flexibility and coordination of the trainers.

Fracture of lower limb: fracture of femur and tibia and fibula

Before operation, most of the fractures healed, and the exercise was aimed at strengthening muscle strength and joint stability, and gradually and comprehensively restoring various activities of daily life.

1. Static squatting exercise: with the increase of strength, the squatting angle gradually increased (less than 90°), 2 min/time, 5 s interval, 5–10 groups of continuous practice, 2–3 groups/day.

2. Cross-step exercises: including forward and backward, lateral stride exercises, 20 times per group, 45 s rest between groups, 4–6 continuous exercises, 2–4 times a day.
3. One-leg squatting exercises on the affected side: require slow, hard and controlled (do not shake). 20–30 times per group, interval between groups 30 s, 2–4 times per day.

After the internal fixation of the fracture is removed, the patient can do the active extension, flexion and rotation of the toe and ankle joint after the anesthesia is awake: the patient supine position, the toe is lifted up, the dorsum of the foot is close to the front of the calf, and the popular word is that the toe is hooked up forcefully, after reaching the maximum, it lasts for 3–5 s. The opposite of dorsal extension is metatarsal flexion, which refers to the forced drooping of the toes, reaching the maximum, lasting 3–5 s. 3–4 times a day, 10 times a time.

Postoperative pain is a process that every child must go through. We score the five items of facial expression, lower limb movement, movement, crying and comfort. The score of each item is 0–2, and the total score is 0–10. 0 point: no pain, relaxation, comfort. 1–3 points: mild discomfort. 4–6 points: moderate pain. 7–10 points: severe discomfort or pain. According to the score, the child was given corresponding pain care, such as diverting attention by telling stories, listening to children's songs and listening to music, avoiding overstimulation, comforting touching the child's body, and oral sucrose water. Children with severe pain were given sedatives as directed by the doctor.

4.1.3 Health Education Again Before Discharge

Real-time feedback on the effect of propaganda and education

Inform the parents of the children that they can do functional exercise after operation. Functional exercise is particularly important in the process of fracture healing. Early functional exercise can promote the reflux of blood and lymph and relieve the swelling of the affected limb. To do a good job in the ideological work of children before exercise, step by step, rehabilitation intervention as soon as possible is conducive to the recovery of joint function and reduce the occurrence of deformities. At the same time, the functional exercise video is played on the mobile nursing car, and the nurses take parents and children to do functional exercise exercises together to guide children and parents to correct rehabilitation training, so that parents should master the knowledge of functional exercise and tell patients and parents to pay attention to adjust their diet and give priority to a diet rich in protein, high nutrition and digestibility, ensure adequate sleep, smooth defecation, and avoid strenuous activities for a certain period of time after discharge. Ask him to ask about the content in the next review. The rehabilitation training plan from the first day to three weeks after operation was formed into a booklet for parents to take home to watch again.

It can begin 1 day after operation.

Methods: patients with supine position, lower limbs stretched out and flat on the bed, soft pillows under the knee joint, actively pressing the knee joint, tightening the muscles as much as possible, keeping the thigh muscles contracted for 10 s, relaxing, repeating 20 times per group, 3–4 groups a day . Because you don't move your lower limbs, you don't have to move your joints, so it's a very safe exercise. Strength self-regulation, reduce strength or even stop when you are tired or in pain.

From the second week after operation, active flexion and extension of hip and knee joint were performed without rotation and adduction of femur.

Methods: in the supine position, the heel slid slowly toward the buttocks on the bed, and then straightened slowly, 3–4 times a day, 10 times each time.

You can take the initiative to do flexion and extension exercises after three weeks.

Methods: sit by the bed, lower legs drooping, feet or feet on the ground, practice using both arms to support the upper body and lift the buttocks, to achieve the purpose of strengthening the hip and knee joint exercise.

In the fracture recovery period, the muscle strength of hip, knee and ankle was strengthened one month after operation, in order to restore the walking ability and strengthen the stability of lower limbs. The main method was to practice the conversion between sitting position and standing position. Exercise the hip joint, active flexion and extension of the ankle, rotation, and squat and stand up.

Methods: the weight of the healthy side of the bed was held first, the affected limb went up first when going to bed, the hip joint was kept at 90° when squatting, and the healthy side of the limb was kept heavy when standing.

4.1.4 Regular Follow-up After Discharge

To understand the recovery status of patients after discharge and whether they have complied with the health instructions at the time of discharge. The nurses followed up the discharged patients by telephone according to the different conditions of each patient, and the number of visits was 5 times in 2 weeks, 4 weeks, 3 months, 6 months and 12 months after discharge. After follow-up, a questionnaire survey was conducted to actively ask patients for their opinions and suggestions on nursing services. The questionnaire mainly investigated three aspects: (1) whether the patients were satisfied with the role and function of nurses in the follow-up. (2) whether the health guidance was achieved at discharge and during follow-up. (3) whether they are satisfied with the content and form of the follow-up. Regularly invite orthopaedic specialists to broadcast live, in order to reverse the classroom-style teaching mode to let parents watch video self-learning before or after operation, and answer questions for parents in class, so as to better collaborative nursing treatment.

4.2 Result

Forty-three children who underwent orthopedic internal fixation in the daytime ward were classified, including 1 case of clavicle fracture, 13 cases of ulnar and radial fracture, 6 cases of humerus fracture, 3 cases of iliac fracture, 12 cases of tibia and fibula fracture and 8 cases of femur fracture. As shown in Fig. 2.

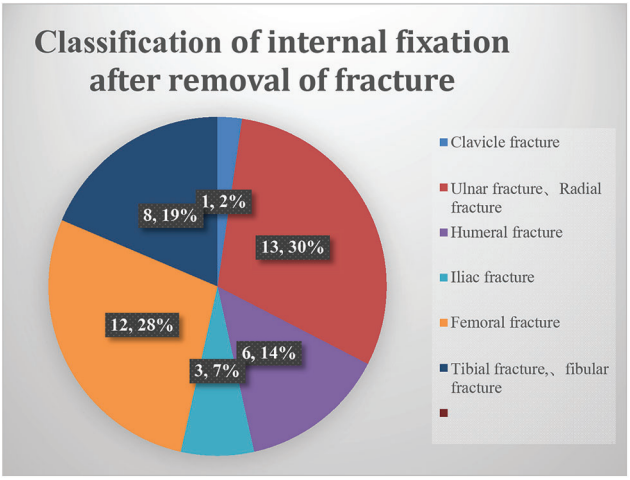

Figure 2: Classification of internal fixation after removal of fracture

According to the corresponding data of the experimental group and the control group, we can see that the hospitalization time of the children decreased significantly. The average number of hours decreased from 108.97 to 8.56 h. As shown in Fig. 3. It can be seen that through our optimization and improvement. On the one hand, we can greatly reduce the economic burden of children, on the other hand, we can greatly release high-quality medical resources to other children.

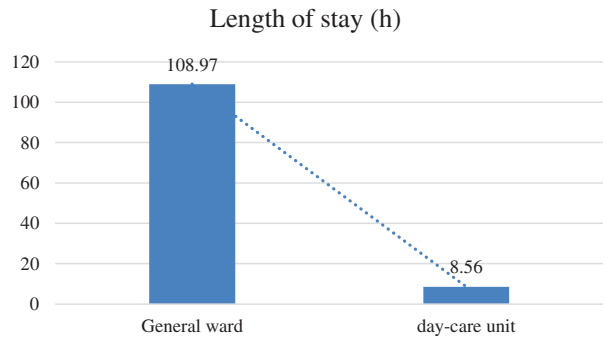

Figure 3: Stay time of fracture removal and internal fixation

According to the corresponding data of the experimental group and the control group, we can see that after taking various rehabilitation measures, the internal fixation was removed after the fracture, and the recovery time of the children decreased from 0.55 to 0.49 h. As shown in Fig. 4.

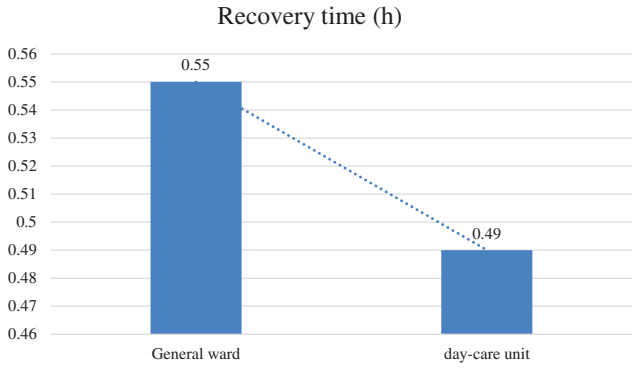

Figure 4: Recovery time

According to the corresponding data of the experimental group and the control group, we can see that after adopting the corresponding rehabilitation and various measures, the total cost of removing fracture internal fixation in the daytime ward has decreased significantly, from an average of 6231.01 RMB to 4420.17. As shown in Fig. 5.

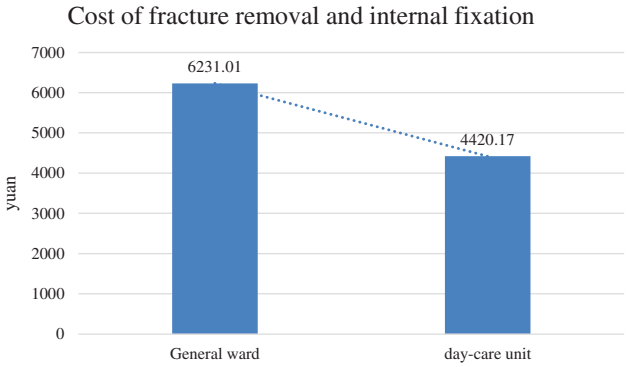

Figure 5: Cost of fracture removal and internal fixation

5 Conclusion

In this study, the comparison between the observation group and the control group shows that the children in the observation group are significantly better than those in the control group in terms of resuscitation time, length of hospital stay, total cost of hospitalization and parents' satisfaction with the ward. This is due to the health education to the parents before admission, the promotion of the time point in advance, and the establishment of information sharing between doctors and patients, and a very effective communication and late feedback mechanism in a very short hospital stay. It can get a good degree of cooperation from the parents, improve the compliance of the children, and help to reduce the incidence of complications and help the limb function of the children recover as soon as possible. This early rehabilitation model needs to be promoted urgently.

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