

Evaluation of Clinical Effect of Orthopedic Rehabilitation for Traumatic Hand Joint Stiffness

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Abstract

Objective: To study the clinical effect of orthopedic rehabilitation in the treatment of traumatic hand joint stiffness. **Methods:** 60 patients with traumatic joint stiffness admitted to our department from March 2018 to March 2019 were selected and randomly divided into the control group and the observation group, and the various treatment effects of patients in the two groups were compared. **Results:** The various treatment effects of patients in the observation group were better than those in the control group ($P < 0.05$). **Conclusion:** Traumatic hand joint stiffness patients can effectively improve the clinical effect through orthopedic rehabilitation treatment, which is worth promoting.

Keywords

Rehabilitation treatment in various departments; Traumatic hand joint stiffness; Clinical effect.

1. INTRODUCTION

Fingers are one of the most delicate organs of the human body, and people's daily life and work are inseparable from the activities of the fingers, especially in production work and sports such as ball games, where the probability of injury to the hand joints is relatively high[1]. When an injury to the hand joint occurs, the hand joint needs to be braked for a long time, during which the patient's hand joint will become stiff and still affect the patient's daily life and work. Effective clinical treatment of patients with traumatic hand injuries is of great importance[2-3]. One study found[4]: Good clinical results can be obtained by treating patients with traumatic hand joint stiffness through orthopedic rehabilitation therapy techniques. In this paper, the authors selected 60 cases of traumatic joint stiffness patients admitted to our department from March 2018 to March 2019, aiming to analyze the effect of the application of orthopedic rehabilitation therapy, and the following description is made.

2. MATERIALS AND METHODS

2.1. General Information

Sixty patients with traumatic joint stiffness admitted to our department from March 2018 to March 2019 were selected and randomly divided into a control group and an observation group, and the general data are shown in Table 1.

Table 1. Comparison of general information between the two groups of patients ($\bar{x} \pm s$) [n (%)]

Group	Number of cases	Age group (years)	Average age (years)	Male Patients	Female patients
Observation group	30	19-58	32.56±6.16	16	14
Control group	30	18-60	33.81±6.38	15	15
X ² /t	-		0.772		0.067
P	-		0.443		0.796

2.2. Methods

Control group: conventional rehabilitation treatment techniques: treatment included rehabilitation instruction, daily life training, and extension movement parade that.

Observation group: orthopedic rehabilitation treatment techniques: ① Active functional as well as passive functional training: if the patient needs to do flexion as well as extension finger joint activities, this training measure can combine active flexion extension and assisted passive flexion extension for the activities. When the patient's active flexion of the finger joints reaches its maximum tolerance, the patient needs to switch to passive flexion and extension, which will help the patient to reach the maximum tolerance limit during the training process. Each course of passive functional training as well as active functional training of the finger joints is ten days, done two to three times a day, and requires twenty rounds of training each time. ② Treatment with progressive finger flexion brace: 3.2mm low temperature thermoplastic sheet was chosen as the main material for the finger flexion brace, and Velcro and ordinary cotton cloth were used as auxiliary materials. The low-temperature thermoplastic sheet was cut and softened, and then placed next to the affected palm to facilitate shaping and create a palmar support splint. A three-centimeter high brace was riveted to hold the splint in place, and the cotton was cut to multiple strips of appropriate size, then made into a looped traction strap and finally sewn with Velcro. After the patient is fitted with the palmar splint, the loop traction band is applied to the proximal segment and is then pulled with a controlled amount of force until the patient feels slight pain. The duration of treatment should be based on the patient's tolerance level. When the patient feels numbness or pain during the treatment, the strength of the pulling should be adjusted according to the actual situation, and at the same time, the treatment should be combined with massage. Mainly through kneading, three to five times a day, each time lasting five minutes, if the texture of the massage area is relatively hard and the scar is too deep, then the combined treatment through walking jar and massage is needed. Traction therapy: If the patient has joint extension disorder, the patient's hand joints should be tractioned with sandbags, and the weight of the sandbags should be controlled at 0.25 kg in the early stage, and then the weight of the sandbags should be gradually increased according to the patient's actual condition until the patient feels swelling and tightness; if the patient has joint flexion disorder, the patient's hand joints should be tractioned with elastic gauze, using Elastic gauze is used to wrap the metacarpophalangeal joint and the proximal interphalangeal joint, which can be flexed at the same time under its traction effect. Each traction treatment time is 10-30min, twice a day, and each course of treatment is ten days; ④ Chinese medicine fumigation treatment: the Chinese medicine prescription is 30g of Xanthophora, 30g of Chickweed, 30g of Mulberry, 30g of Wujia Pi, 30g of Turbinate, 15g of Sichuan pepper, 15g of Papaya, 15g of Safflower, 15g of Salvia, 15g of Niubizi, place the above drugs in 1L of water and soak for half an hour, then Add 100ml of edible vinegar to it, after boiling for two to three minutes, use steam to fumigate the joint area for ten minutes, wait until it cools down to the appropriate temperature, use gauze or towels to warm the joint, and finally immerse the hand in the pharmaceutical, if the water temperature is

low, it needs to be heated again. When the patient's stitches are removed three to five days later, fumigation is started. Each dose of medicine can be fumigated twice a day, and the duration of each fumigation is half an hour, and each course of treatment is ten days; ⑤ Daily life work therapy: during daily life, the patient needs to use elastic balls as well as playdough to train the degree of finger flexion and extension, and after the patient's joint function has significantly improved, the patient can be instructed to tap on the keyboard, put together Patients can be instructed to tap on the keyboard, put together blocks, load and unload screws and other hand refinement training to promote rehabilitation, at least three times a day, and patients can increase the training intensity and frequency appropriately according to their own conditions; (6) Physical therapy: If patients with special partial traumatic hand joint stiffness are encountered, such as adhesion stiffness, scar stiffness, etc., they can use manual joint release techniques combined with radiofrequency therapy and ultrasonic therapy to enhance the rehabilitation effect. Each physical therapy session lasts for half an hour, once a day, and each session lasts for ten days.

2.3. Observation indicators

- ① Total treatment efficiency.
- ② hand function score, daily living ability score, active joint mobility.
- (iii) Quality of life score.

2.4. Statistical treatment

SPSS 20.0 statistical software was used for analysis, mean + standard deviation ($\bar{x} \pm s$) for measurement data, t-value test, and rate (%) for count data, X2 test, and when $P < 0.05$, the difference between the two data groups was statistically significant.

3. RESULTS

3.1. Comparison of total treatment efficiency

See Table 2.

Table 2. Comparison of total treatment effectiveness [n (%)]

Group	Number of cases	Show effect	Effective	Invalid	Total efficiency
Observation group	30	21	8	1	29 (96.7)
Control group	30	14	7	9	21 (70.0)
X ²	-	-	-	-	7.680
P	-	-	-	-	0.006

3.2. Comparison of hand function scores, daily living ability scores, and active joint mobility

See Table 3.

Table 3. Comparison of hand function scores, daily living ability scores, and active joint mobility ($\bar{x} \pm s$)

Group	Number of cases	Hand function score (points)				Active Joint Mobility (°)	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Observation group	30	36.29±4.5	76.82±3.1	35.51±4.2	68.59±2.6	173.65±7.8	226.35±4.1
Control group	30	36.36±4.6	64.16±4.5	35.56±4.3	52.03±3.1	174.06±8.3	190.06±5.3
t	-	0.059	12.405	0.045	22.131	0.196	29.288
P	-	0.953	0.000	0.965	0.000	0.846	0.000

3.3. Comparison of quality-of-life scores

See Table 4.

Table 4. Comparison of quality of life scores ($\bar{x} \pm s$) (points)

Group	Number of cases	Life Vitality		Emotional functions		Social Functions		Physiological functions	
		Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Control group	30	58.46±3.4	78.46±5.0	60.35±3.5	81.45±4.2	62.58±4.2	83.57±2.6	58.32±3.6	79.46±5.0
Observation group	30	58.91±3.5	89.46±5.2	60.79±3.5	93.46±5.1	62.98±4.3	94.52±3.4	58.49±3.7	90.65±5.2
t	-	0.499	8.303	0.482	9.829	0.361	13.864	0.178	8.421
P	-	0.619	0.000	0.632	0.000	0.719	0.000	0.859	0.000

4. DISCUSSION

Traumatic hand injury is one of the most common hand trauma diseases in clinical practice, which can lead to fracture of the hand, nerve and blood vessel damage, resulting in stiffness of the small joints and other relatively serious adverse effects, which can seriously affect the patient's daily life and normal work[5]. Generally speaking, treatment by conventional rehabilitation techniques can improve the condition of patients with traumatic hand stiffness to some extent, but the actual effect is still poor[6]. During the clinical treatment of orthopedic traumatic hand stiffness patients, the conventional treatment measures include[7]: rehabilitation therapy, daily life training and active flexion and extension training, but the above methods have limitations, resulting in the lack of systematic treatment measures and other characteristics, which cannot effectively promote the recovery rate of hand joint function[8]. Systematic rehabilitation treatment can be based on medication, physical and functional training, which can promote the rehabilitation effect of patients with traumatic hand and joint stiffness[9].

The Chinese herbal fumigation formula used in this study includes a variety of drugs, for example, Xanthopanax can exert the effect of relaxing the tendons and removing wind and dampness, Chicken Blood Vine can activate the blood and tonify the blood, Mulberry and Wujia Pi can exert the effect of tonifying the liver and kidney and strengthening the tendons and bones, and Boneset can eliminate swelling, activate the blood and relax the tendons.[10] By gradually increasing the strength of joint traction and passively stretching the patient's joints through hand joint traction treatment, the patient can avoid joint contracture and thus greatly reduce the magnitude of traumatic hand joint stiffness[11]. A combination of active and passive joint function training measures can significantly promote stiff joints and early recovery. The probability of hand joint contracture can be significantly controlled by finger flexion and extension exercises[12]. During the functional training period, the functional training effect can be significantly improved by combining the work training with professional equipment. The

goal of treatment for patients with traumatic hand stiffness is to restore all functions of the hand joints[13] . In addition to in-hospital rehabilitation, patients also need to focus on the rehabilitation and treatment of their daily life, to guide patients to train and promote the restoration of their hand function, to reduce the degree of injury by external forces during daily work and life, to prevent the hand from being in a fixed posture and state for a long time[14] , for elderly patients, they also need to avoid the hand and joint being exposed to wind, cold, moisture and other adverse environments. For elderly patients, it is also necessary to avoid the attack of wind, cold, moisture and other adverse environment, which makes it difficult to recover from the disease, and help patients to properly regulate hand function, which can reasonably avoid the occurrence of adverse events in hand and joint function, and through active functional training, adopt the principle of gradual training, which can significantly improve the speed of recovery of hand function[15] .

The results of this study showed that the various treatment effects of patients in the observation group were significantly improved. It can be seen that the systematic treatment of patients with traumatic hand joint stiffness through herbal fumigation, traction intervention, active-passive combined training, occupational therapy and physiotherapy can significantly improve the clinical effect of patients and improve their hand function and quality of life, which is of great significance.

In conclusion, systematic rehabilitation treatment measures for patients with traumatic hand stiffness can speed up the inflammation absorption rate of hand joints, significantly improve the diastolic and contraction ability of hand muscles, avoid muscle atrophy and reduce the degree of local stiffness, with ideal effect and higher application value, which is worth promoting.

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