

LETTER TO THE EDITOR

Observation of Curative Adhesion of Hand Flexor Tendon Rupture in Basketball Players based on Ecological Cognition

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One hundred and twenty basketball players with postoperative adhesions of flexor tendon rupture in our hospital were selected and randomly divided into the control group treated with bone setting liquid of Guangxi Yulin Pharmaceutical Co., Ltd. and the study group externally rubbed with self-made Trikeriaia hookeri spray. The treatment efficacy was observed and compared between the two groups. In observation of the comparison of the degree of total active activity in different time periods after operation, the improvement degree of the study group was obviously superior to that of the control group, $P < 0.05$; in addition, the overall treatment efficacy was compared between the two groups, which was higher in study group. There was significant difference between groups, $P < 0.05$.

I Introduction

Wei Zhang, Lei Zhang published “An Exploration of the Attack Technology and Method of Chinese Women’s Basketball Team Based on Target Planning Simulations” on Issue 107, Pages: 2761-2765, Article No: e107307, Year: 2019, in the article, With increase in recent years, the Chinese women’s basketball team to participate in major competitions, to direct the main factors affecting the development of the Chinese women’s basketball team, tactics of the application of research, has become a promote basketball career development the crucial factor. Visiting survey, the author of this paper is analyzed; the result of the finding in this part of the experts, about 50% of associate professor, and through the study of different position player’s mobile number, mobile number of discovery center is the most, therefore, China should develop more excellent center team, to ensure the whole team.

At present, China is paying more attention to the continuous improvement of the sports industry, and the number of basketball players is constantly increasing. Basketball players have special professional characteristics. If they fail to take corrective actions during normal training or competition, they will suffer from various adverse consequences that cause great harm to the athlete’s body (Jin and Jing 2012). Where, one common problem is the flexor tendon injury of the hand, which can affect athletes' normal quality of life and training to different degrees.

II Materials and Methods

The 120 cases of hand flexor tendon injuries treated in our hospital were selected as the study subjects.

All patients were basketball players and the time range was from January 2015 to December 2017. All patients underwent surgical treatment as shown in Figure 1 below. Inclusion and exclusion criteria for patients are: meeting the diagnostic criteria for flexor tendon injuries, having been treated with tendon repair surgery, with the right to know; no combined hand nerves, vascular injury problems, no need for tendon transplantation or tendon reconstruction, no knee joints with poor passive activity (Lin and Zhang 2012).

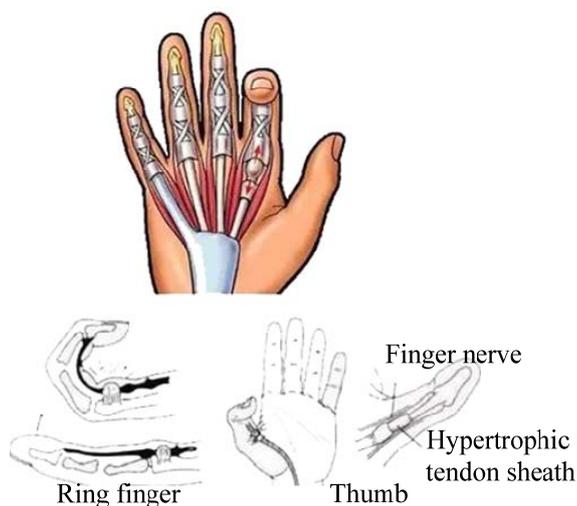


Figure 1. Treatment of 1 patient with flexor tendon injury in the hand

Patients were randomly divided into study group and control group, each with 60 cases. The study group had 50 males and 10 females, ranging in age from 20 to 32 years, with an average of (25.8 ± 3.0) years; the control group had 48 males and 12 females, ranging in age from 22 to 33, with an average of (26.9 ± 3.2) years. Comparing the relevant data of the two groups, the results showed comparability, $P > 0.05$.

Routine conventional treatment measures were performed for both groups, including: strict debridement, and using the same materials to improve kessler suture for repair of flexor tendons. Rubber band was used in suspension and external fixation for three weeks after surgery, antibiotics were used simultaneously, tetanus was injected, and dressing changes were performed. Two weeks after the operation, the stitches were removed. In addition, at 24th hour after the operation, the active straightening and passive buckling exercises were performed for inter phalangeal joints under the guidance of rehabilitation physiotherapist. Two weeks after the operation, the patient underwent active extension and flexion motion in plaster slab. At the third week after surgery, the plaster slab was removed and active flexion and flexion activities were initiated. At eighth week after the surgery, scientific training for muscle force resistance and tendon stretching was performed. In the control group, after the suture removal, the affected area was rubbed with bone setting liquid by Guangxi Yulin Pharmaceutical Co., Ltd., 20 minutes each time and 3 times a day with continuous application for 6 weeks. Based on the treatment for control group, patients in the study group were treated with *Trikeria hookeri* spray (60% alcohol soaked with *Trikeria hookeri*, *evodia lepta*, *speranskia tuberculata*, pseudo-ginseng, dragon's blood) plus moderate rubbing, 20 minutes each time and 3 times a day, with continuous application of six weeks.

The overall treatment efficacy of the study group and the control group was statistically compared. Markedly effective evaluation criterion is: finger activity reaches a normal state; effective evaluation criterion

is: the total active activity score is more than 50% of that of healthy side; invalid evaluation criterion is: the total active activity score is less than 49% and below. In addition, at different postoperative time periods, the Total Active Activity System developed by Tendon Injury Committee, International Federation of Hand Surgery was used to evaluate the finger function. The main measure is to sum up the active flexion of the metacarpophalangeal joints, the proximal interphalangeal joints and the distal interphalangeal joints, minus the sum of the degrees of restriction of the active joint extensions to obtain the total active activity of fingers and compare it with finger function of the healthy side.

The statistical analysis software used was SPSS 21.0. Where, the measurement data was expressed as means \pm average ($\bar{x} \pm s$), and t was used for comparison between groups; the count data was expressed using the natural number (n) and percentage (%), and the chi-square was used for comparison between groups. $P < 0.05$ indicates statistical value.

III Results

As summarized in Table 1 below, after taking different drugs for treatment, compared with the control group, the overall treatment efficacy achieved by the patients is more obvious in the study group, and the differences between the groups are significantly different. $P < 0.05$, with statistical significance.

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

Group	Case number	Markedly	Effective	Invalid	Overall Treatment Efficacy
Study group	60	30	28	2	58(96.67)
Control group	60	26	20	14	46(76.67)
X ²					14.59
P					< 0.05

As shown in Table 2 below, the total active activity of hand function was observed at different time periods (4 weeks, 8 weeks, and 12 weeks after operation). The results show that the scores of the study group are significantly superior to those of the control group. $P < 0.05$, statistically significant. The improvement of total active activity of hand function in the two groups is shown in Figure 2 below.

Table 2. Comparison of hand function scores between the two groups ($\bar{x} \pm s$)

Group	Case number	4 weeks after surgery	8 weeks after surgery	12 weeks after surgery
Study group	60	143.62 \pm 7.68	182.45 \pm 3.55	236.79 \pm 10.91
Control group	60	101.29 \pm 3.50	132.57 \pm 6.80	210.24 \pm 12.45
t		10.67	8.32	11.60
P		< 0.05	< 0.05	< 0.05

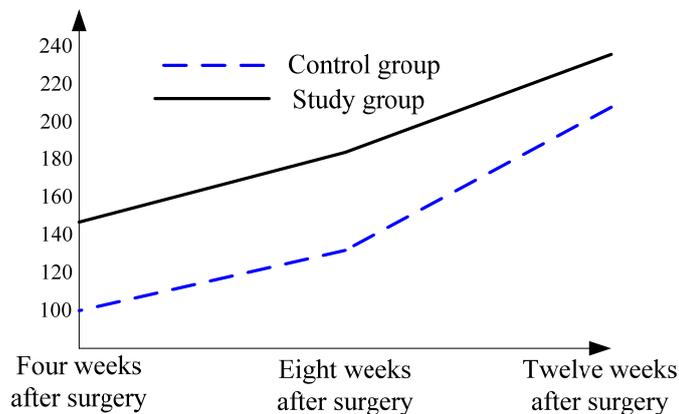


Figure 2. Improvement of total active activity of hand function in the two groups

IV Discussion

One factor that affects hand function is postoperative adhesion problem after the repair of the hand flexor tendon injury. The study shows that the healing of the tendon can be affected by endogenous healing and exogenous healing, and an important reason leading to adhesion is exogenous healing (Chen et al. 2015). Therefore, we should actively and effectively prevent and control the formation of exogenous healing ingredients. In the perspective of Chinese medicine, tendon adhesion belongs to the scope of paralysis and tendon cohesion (Li et al. 2018). As blood disorders are the primary pathogenesis of tendon injuries, blood stasis should be emphasized during the treatment of tendon adhesions. The rubbing of Chinese medicine is a typical TCM therapy. Consistent with internal treatment, it also belongs to composition initiative guided by the overall concept of TCM and the ideas of syndrome differentiation and treatment. There are many advantages of external treatment, such as no harm to stomach qi, no ventricular dysfunction and no impedance, so it well gives play of medicinal properties in the local lesions and gets the healing effect (Zhang et al. 2013).

With the deepening of research, many studies have pointed out that Chinese medicine activating blood and removing stasis has the effects of improving blood circulation, softening scars and restoring limb and joint functions (Ma 2017). Trikeriaia hookeri spray is obtained by soaking in 60% alcohol, which contains ingredients such as Trikeriaia hookeri, evodia lepta, pseudo-ginseng, speranskia tuberculata, dragon's blood, safflower, peach kernel and frankincense, among which the main drug is Trikeriaia hookeri. Trikeriaia hookeri, a kind of Liliaceae plant, has obvious characteristics of slightly cold nature, bitter taste. It has many superiority functions, mainly promoting blood circulation, removing stasis, clearing away heat and toxic materials and relieving swelling and pain, etc. For treatment, it is usually applied to bruise, gall and snake bites (Li et al. 2019). The evodia lepta within the prescription has high medicinal value, which has the effects of clearing away heat and toxic materials, dispelling wind and eliminating dampness and has good application effects in diseases such as rheumatism, eczema and dermatitis. Further application of peach kernel, safflower and frankincense can fully exert the effect of promoting blood circulation and removing stress and promoting qi circulation to relieve pain. The combined use of various drugs for treatment can fully bring out the therapeutic effect of promoting blood circulation and removing stress, relieving swelling and pain, relaxing tendons and activating collaterals. The external application of plaster has unique advantages, that is, it can

make the qi movement smooth, eliminate swelling and soften scar as soon as possible, and effectively reduce the inflammatory reaction between the tendon and the surrounding tissue, thereby avoiding adhesion. In addition, this measure is convenient at a low cost. Moreover, it can safely and reliably relieve patients' pain, so its application has a huge effect.

The results of this study show that in comparison of total active activity at different time periods after the surgery, improvement in the study group is significantly superior to that in the control group, $P < 0.05$; in addition, in comparison of overall treatment efficacy between the two groups, that of the study group is higher, with significant difference in comparison between the groups. $P < 0.05$, statistically significant. It fully demonstrates the effectiveness of Trikeria hookeri spray in preventing and treating postoperative adhesion of hand flexor tendon rupture in basketball players.

V Conclusion

In summary, treatment with Trikeria hookeri spray for basketball players with postoperative adhesion of hand flexor tendon rupture can achieve satisfactory result. Also, it is safer and more economical. Therefore, it is worth promoting in practice.

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