



Case Study

Impact of combination of therapeutic exercise and psychological intervention for a patient with first-time traumatic shoulder dislocation

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Abstract. [Purpose] A young female with first-time traumatic shoulder dislocation showed a good outcome at the 1 year follow-up in returning to work and sports after undergoing a combination of exercise therapy and psychological intervention. [Participant and Methods] A 24-year-old female who worked as an occupational therapist and played badminton for recreation had dislocated her shoulder in a fall. We evaluated her compliance with home-exercise, range of motion, return to work, fear of movement, sports activity level, and instability of shoulder joint using the modified Rowe score at each timepoint necessary. During early sessions of the physical therapy, the range of motion and instability score for the shoulder joint were poor. We treated her using a phase-based approach, and subsequently, added the Watson program to restore normal kinematics. Because of a psychological problem during middle sessions of the physical therapy, we provided psychological education and support. [Results] At the final session of the therapy, her compliance with home-exercise was good. She had achieved almost a full range of motion. The fear of movement decreased, and she could play sports again. The modified Rowe score improved from 5 to 85. [Conclusion] As a conservative treatment for patients with first-time traumatic shoulder instability, a combination of therapeutic exercise and psychological intervention may be useful.

Key words: Shoulder instability, Watson program, Conservative treatment

(This article was submitted May 22, 2019, and was accepted Jul. 4, 2019)

INTRODUCTION

Shoulder dislocation is a common traumatic injury in young athletes, particularly in people who play contact sports¹⁾. It is usually treated operatively because first-time traumatic shoulder dislocation sometimes develops into recurrent dislocation with conservative treatment²⁻⁴⁾. There are few reports that evaluate the outcome treated conservatively, while there are many studies that investigate the outcome for patients after operative treatment⁵⁻⁷⁾. Although some patients are prescribed conservative treatment due to this not being indicated, there will be high risk of recurrent dislocation, particularly in the acute phase, and it sometimes affects activities of daily life and sports participation. The risk factors of recurrent instability include professions that need overhead movement, psychological weakness (e.g. fear of reinjury), and timepoints to return to play sports³⁾. In the case of conservative treatment, contracture and restriction of range of motion (ROM) may not be caused. However, patients sometimes experience weakness of muscles and pain during activities of daily living. Clinically, physical therapy is usually prescribed as a part of conservative treatment. However, there is still insufficient evidence about it for patients after traumatic shoulder instability.

On the other hand, previous studies have described conservative treatment for patients with non-traumatic multidirectional

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shoulder instability^{8, 9}).

Although patients with multidirectional shoulder instability have usually had a poor course of treatment in past traditional treatments, recent studies have demonstrated better outcomes with the Watson program that consist from six stage therapeutic exercise^{10–12}). Though the etiology and cause of traumatic shoulder instability and non-traumatic multidirectional instability are quite different from each other, the concept of functional recovery is similar with regard to the dynamic centralization of the humeral head in its proper position during shoulder movement.

In this case report, we present a good outcome with returning to work and sports by a combination of exercise therapy and psychological intervention for a young female who suffered a first-time traumatic shoulder dislocation due to a fall, with 1 year follow-up.

PARTICIPANT AND METHODS

The participant was a 24-year-old female who has no family or past history. Her profession was occupational therapist. She played badminton at a recreational level before the injury. She injured her left shoulder when she fell. After examination by an orthopedic doctor, she was diagnosed with traumatic shoulder instability. Although her condition was an operative indication, she was treated conservatively after providing informed consent to the doctor. She was also recommended operative treatment if she had a recurrent dislocation of her shoulder joint. During the first 3 weeks after injury, the patient's shoulder was protected with a sling and bust-band. The doctor prescribed physical therapy as a conservative therapy. The participant received an explanation about this study and provided informed consent, according to the ethical principles of the Declaration of Helsinki.

For the early sessions of physical therapy, a phase-based approach was executed¹³). The approach consists of 5 phases, and usually requires 3 months to restore shoulder function after traumatic shoulder instability. Removing the sling and bust-band was allowed during physical therapy in phase 1. Since the participant felt moderate pain and there was a risk of recurrent dislocation, the range of motion was not measured. Soft-tissue massage and muscle strength exercises using muscles other than shoulder muscles (elbow and wrist joints) were performed.

Passive ROM exercises were performed with due consideration not to increase pain in phase 2. The participant was also instructed in pendulum exercises. Soft-tissue massage and muscle strengthening exercises were continued in this phase. Cryotherapy was not administered because the participant was rejected due to the cold season at the time. She returned to work gradually, confined to desk work. The modified Rowe score as an evaluation for shoulder instability was measured at each month¹⁴). It varies between 0 to 100, where 100 represents no instability in the shoulder joint. The score was only 5 at 1 month after injury (Table 1).

The ROM of the shoulder joint was restored gradually. The passive ROM of shoulder flexion improved from 85° to 130°, and shoulder abduction from 80° to 115° in phase 3. The participant complained of shoulder pain, which indicated shoulder impingement during activities of daily life. Active ROM exercises were also performed mildly, with attention not to over-contract outer muscles around the shoulder joint and not to cause pain. In the early stages, the participant was instructed in active ROM exercises below 90° and was checked to see whether she used trick motion or not. After her shoulder achieved good kinematics of the shoulder joint below 90°, she was allowed to perform overhead motion and exercises. The scapula-thoracic muscle exercise was also performed to achieve stability and coordination. An inner muscle exercise was recommended to restore the normal kinematics of the shoulder to around 90° flexion or abduction. In this phase, the Watson program was also prescribed to regain better function of the shoulder joint^{10–12}). The Watson program is an exercise program for multi directional shoulder instability that focus on the motor control of scapula. The control is emphasized during the exercises. Duration of the program is usually 3–6 month. The frequency of physical therapy was about 4 sessions a week because compliance of exercises is essential in this phase. The participant could make progress in the Watson program from stage 1 to 3 during this time. She returned to work to provide occupational therapy for patients who needed little physical assistance during therapy.

The passive ROM of the shoulder joint improved additionally. The passive ROM of shoulder flexion improved from 130° to 140°, and shoulder abduction from 115° to 135° in phase 4. The complaints about shoulder pain during movement

Table 1. The Rowe scores on each timepoint

Timepoints after injury	1 month	3 months	6 months	9 months	12 months
Function score	0	20	35	35	35
Pain score	5	5	5	5	10
Stability score	0	15	15	30	30
Motion score	0	0	10	10	10
Total score	5	40	65	80	85
Riccio et al. ¹³)	45	55	65	N/A	75

The Rowe total score varies between 0 to 100, where 100 represents no instability in the shoulder joint.

decreased during this phase, restoring the normal kinematics of the shoulder joint. Isometric or dynamic muscle exercises around the shoulder joint were performed. The participant was also instructed in plyometric exercises with low load. The cross body stretch and the sleeper stretch, known as stretch methods for posterior shoulder tightness, were also instructed, with due consideration to avoid pain. The frequency of physical therapy was almost 3 sessions a week during this phase. She made progress in the Watson program from stage 4 to 5 during this month. Inner muscle exercises at the 2nd or 3rd position on the shoulder joint were instructed to regain the dynamic stability of the shoulder over 90° flexion or abduction. The participant felt little discomfort or fear of dislocation when she was examined with the apprehension test. Physical therapy sessions were provided about 3 times a week. This phase continued for almost 4 weeks. She could return to work to administer occupational therapy to patients who needed a little assistance during therapy. The modified Rowe score was lower than average at 3 months after injury (Table 1).

Four months post-injury, she had progressed into the early part of phase 5. The active and passive ROM had improved with time (Table 2). Rhythmic stabilization of muscles around the shoulder was added to the physical therapy program. Self-stretching for latissimus dorsi and teres minor muscles was taught because she complained of a feeling of stretch at the site at the end of ROM during flexion of the shoulder joint. She made progress in the Watson program from stage 6 in this phase. She was instructed in the proper movement for transferring inpatients who need heavy assistance. Outer muscles and scapula-thoracic muscles were also recommended to reinforce performance for working. She received physical therapy sessions about 2 times a week. At the beginning of this phase, compliance with self-exercise at home was poor. She was educated again about the importance of self-exercise using the ARCS model to activate motivation¹⁵). In summary, the model consists of attention, relevance, confidence, and satisfaction strategies. The compliance of self-exercise improved uneventfully. The modified Rowe score improved at about the standard level at 6 months after injury (Table 1).

After confirming negative signs on the apprehension test, the participant made progress in the latter part of phase 5 (9 months after injury). At the beginning of this term, her hope was to return to playing badminton. Unless her injured shoulder was contralateral to the side for smashing, she complained of fear of movement and reinjury (kinesiophobia). The modified Rowe score was good at 9 months after injury (Table 1). To access the kinesiophobia, the Tampa Scale for kinesiophobia-11 (TSK-11) was utilized. The TSK-11 consists of an 11-item questionnaire to evaluate kinesiophobia. This questionnaire has good reliability and internal consistency¹⁶). Responses are summed to provide an overall score between 11 and 44, where 11 represents no fear of movement and reinjury. The TSK-11 score was 36 at this timepoint. She was treated with functional exercise therapy in addition to psychological intervention¹⁷). In summary, this included pain education, social support, and training skills for coping with pain. She was also recommended to continue with stretching and muscle strengthening exercises. The frequency of physical therapy was about 1 session a month.

RESULTS

The course of treatment was summarized in Table 3. At the final session of physical therapy (12 months post-injury), self-reported compliance with home-exercises ranged from 3–4 times a week. Almost full ROM was achieved (Table 2). The TSK-11 score was 16 at this session and the participant had started to return to playing badminton at recreational level. The modified Rowe score was improved at 12 months after injury (Table 1).

Table 2. Range of motion of shoulder joint on each timepoint

Timepoints after injury	4 months	6 months	9 months	12 months
Flexion (passive)	140°	155°	170°	175°
Abduction (passive)	135°	150°	160°	175°
Flexion (active)	135°	150°	160°	170°
Abduction (active)	125°	145°	155°	170°

Table 3. The course of treatment

The phase suggested by Riccio et al. ¹³	Timepoints after injury	The stage of the Watson program	Psychological intervention
1	1–3 weeks	N/A	N/A
2	4–7 weeks	N/A	N/A
3	8–10 weeks	1–3	N/A
4	11–14 weeks	4–5	N/A
5 (early part)	15 weeks–8 months	6	Education using ARCS model
5 (latter part)	9 months–	6	Pain education, social support, and training skills for coping with pain

DISCUSSION

The results of this course indicated two findings. Shoulder dynamic stability prescribed as conservative treatment after traumatic shoulder dislocation can improve by adding the Watson program to the usual physical therapy. Furthermore, psychological intervention also might be efficient for recovering shoulder function and returning to sports.

The most important finding from this participant was that adding in the Watson program at the proper time with the usual exercises might be effective for patients after traumatic shoulder instability. Recent reviews showed there was not enough evidence about conservative treatment for the condition¹⁸⁾. In general, the outcome of conservative treatment is worse than operative treatment, so that later one is usually selected for an operation, particularly a patient who is young and/or who plays some sports⁴⁾. However, some patients cannot be treated operatively for a range of reasons and they will be treated conservatively. In this case study, shoulder function and stability were quite poor at 1 month after injury, compared with previous cases¹³⁾. Recovery was still bad at 3 months after injury, so the participant was provided with elaborate stretching for improvement of ROM, and exercises for improvement of dynamic stability (e.g. rhythmic stabilization) to enforce the shoulder function. The participant was also instructed in the best home-exercises for her at each session. With progressing to the Watson program stage, the Rowe score improved remarkably when she reached the final stage (stage 6). At the final session of physical therapy, shoulder stability had recovered to almost normal function. This is the first report as regards applying the Watson program to a patient after traumatic shoulder instability.

Psychological intervention was useful to increase compliance with self-exercise in the recovery phase and to overcome the fear of movement during sports. As therapists commonly experience, compliance with a home program decreases over time, though it is important to achieve a better outcome. The compliance with home-exercise in this participant also decreased over time. To deal with the issue, patient education for activation of motivation based on the ARCS model was employed. Using this approach, the function of the shoulder was improved accompanying the increase of the compliance rate within 5 months. Although restoring enough function and stability of the shoulder joint, the participant still had fear of movement at 9 months after injury and this was considered an inhibitory factor for returning to sports activity. To address this factor, psychological supports were provided. After 3 months, kinesiophobia was decreased and she could return to play sports again.

When a therapist provides therapeutic exercises to patients after first-time traumatic shoulder dislocation, he/she must pay attention to second-time dislocation because it typically develops into recurrent instability¹⁹⁾. Recent case studies showed that conservative treatment, including a phase-based rehabilitative approach, will be effective for shoulder instability in adults with first-time traumatic anterior dislocation¹³⁾. Our findings supported that adding the Watson program at the proper time (e.g. after phase 3) might be efficient for recovering shoulder function and returning to sports, particularly in patients with a severe condition. Compliance with self-exercise becomes important after phase 3 to restore the dynamic centralization of the humeral head in shoulder movement. However, the frequency of rehabilitation sessions generally tends to decrease in this phase. It will be one option to maintain patients' motivation for self-exercise using psychological supports. Similar to other injuries, patients who suffer shoulder trauma or injury usually hope to return to previous sports participation. Many previous studies have reported that kinesiophobia affects return to sports after anterior cruciate ligament injury²⁰⁻²²⁾. Although kinesiophobia might affect returning to play sports after traumatic shoulder dislocation in this case, psychological intervention will help to relieve the fear of movement²³⁾.

In conclusion, as conservative treatment for a patient after first-time traumatic shoulder instability, a combination of therapeutic exercises and psychological intervention may be useful. As exercise therapy, adding the Watson program to usual exercises would be effective. To maintain motivation or decrease fear of movement in the patient, psychological supports and education will help. Some patients after traumatic shoulder instability sometimes are not provided enough rehabilitation during conservative treatment. These interventions should be considered by physicians. Longitudinal observation of psychological states and investigations about psychological interventions will be needed in further research.

Funding

This work was supported by JSPS Grant-in-Aid for Research Activity Start-up Number 19K24282.

Conflict of interest

None.

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