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Research Article

IMMEDIATE EFFECTS OF ACTIVE RELEASE TECHNIQUE (ART) IN PATIENTS WITH ADHESIVE CAPSULITIS

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A B S T R A C T

Aim: The aim of the study is to analyse the immediate effects of active release technique in patients with adhesive capsulitis.
Background of the Study: Adhesive capsulitis is one of the most common disabling musculoskeletal diseases characterised classically by pain and restriction of range of motion at shoulder joint especially external rotation and abduction. Due to the emerging problem of adhesive capsulitis, there is a need to analyse a technique which gives immediate effect on pain in adhesive capsulitis. Hence Active release technique is used to relieve tissue tension via the removal of adhesion, which developed in tissues as a result of overload and repetitive use.
Methodology: After getting approval from the Institutional review board, 10 out of 15 volunteers both males and females were selected based on the inclusion criteria (age of 40-60, unilateral shoulder pain and adhesive capsulitis [sub-acute stage]. Patients with recent fracture or surgery in and around the shoulder joint, frozen shoulder, shoulder dislocation were excluded in this study. The experimental study was carried out for the duration of 5 days in out-patient department of Physiotherapy in ACS MEDICAL COLLEGE AND HOSPITAL. After getting proper consent from the patient, active release technique (ART) was applied, pain and range of motion assessed using the VAS-Visual Analog Scale and Goniometer before and after the technique to know the immediate effects of active release technique in patients with adhesive capsulitis.
Result: Based on the statistical analysis of the data collected, Active release technique has yielded significant reduction in pain and improvement in range of motion in subjects with adhesive capsulitis.

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INTRODUCTION

Adhesive capsulitis is one of the most common disabling musculoskeletal diseases, affecting the shoulder joint. It is characterised by pain and restriction in the range of motion in all dimensions of shoulder joint, especially the abduction and external rotation is severely affected. [1,2]. In 1945, Nevasier coined the "Adhesive Capsulitis" and described the pathology to be due to adhesions in the joint capsule. However, it's attributed to be due to synovitis and capsular contractures, rather than adhesions [3]. Adhesive Capsulitis can be classified as primary adhesive capsulitis, secondary adhesive capsulitis. The primary idiopathic form is characterised by gradual onset of pain and restriction of shoulder range of movement with no identifiable cause related trauma or prolonged immobilization. There are four stages in adhesive capsulitis, stage: 1 pre-freezing stage [characterised by shoulder ache and mobility limited due to natural tendency to protect the shoulder from pain], stage: 2 freezing stage [characterised by increase in pain, loss of motion, significant stiffness], stage: 3 frozen stage [intensity of pain dissipate], stage: 4 thawing stage [reduction in pain and restoration of overhead motions occurs]. [4] Prevalence of adhesive capsulitis is 2-4% in general population, and 18%-20% in patient suffering from diabetes mellitus and woman's are slightly preponderance to it than males. Due to the emerging problem of adhesive capsulitis, functional activities of daily life were disturbed. [5] Over the years many treatment techniques have emerged to treat adhesive capsulitis [wax therapy, mobilization under anaesthesia]. But in recent years active release technique is found to be effective in relieving the tissue tension via breaking the adhesions formed. According to the Austin sports, ART is designed to eliminate

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tissue tenderness, pain and helps the tissue to return to its normal condition. [6] ART has three objectives-to restore free and unimpeded motion of all soft tissues, to release entrapped nerves, vasculature and lymphatic's, to re-establish optimal texture, resilience and function of soft tissues.

METHODOLOGY

After getting approval from the Institutional review board, 10 out of 15 patients both males and females were selected based on the inclusion criteria (age of 40-60, unilateral shoulder pain and adhesive capsulitis [sub-acute stage]. Patients with recent fracture or surgery in and around the shoulder joint, frozen shoulder, shoulder dislocation were excluded in this study. The experimental study was carried out for the duration of 5 days in out-patient department of Physiotherapy in ACS Medical College and Hospital. After obtaining informed consent from the patient, demographic information of the standardized history include age, gender, duration of symptoms and occupation were collected. Before performing the technique, the procedure was clearly explained to the patient and benefits of participating in the study.Active release technique (ART) applied to the patient for a single session,and then both pain and range of motion were assessed, using the VAS-Visual analogue Scale and Goniometer before and after the technique to know the immediate effects of active release technique in patients with adhesive capsulitis.Adhesive Capsulitis presents with tenderness mainly in the Pectoralis major, Pectoralis minor, Subscapularis, due to their closer attachments to the shoulder joint, so the Active Release Technique is applied to those particular tissue.

ART for Pectoralis major: The patient is in supine lying, asks the patient to abduct the arm and elbow flexed at 90 degree. Then the therapist applies a deep tension at the insertion point of pectoralismajor, then instruct the patient to actively flex the shoulder where the tissue is in its shortest position and then to do cross extension there by the tissue is in lengthened position. ART for Pectoralis minor: the positions are same as above arm abducted and elbow flexed at 90 degree, and the therapist applies a deep tension at the insertion point of pectoralis minor, and instruct the patient to actively move the shoulder to external rotation which is the shortest position and to move towards the overhead of the patient in lengthened position. ART for Subscapularis: the positions are same arm abducted and elbow flexed at 90 degree, and the therapist applies a deep tension at the insertion point subscapularis and instruct the patient to do internal rotation shortest position and then to do external rotation lengthened position and to move towards the overhead. The subjects were asked to mark the VAS before and after performing the technique, to measure the pain intensity. Using the universal goniometer the subject's ROM at shoulder joint were noted before and after performing the technique.

RESULTS

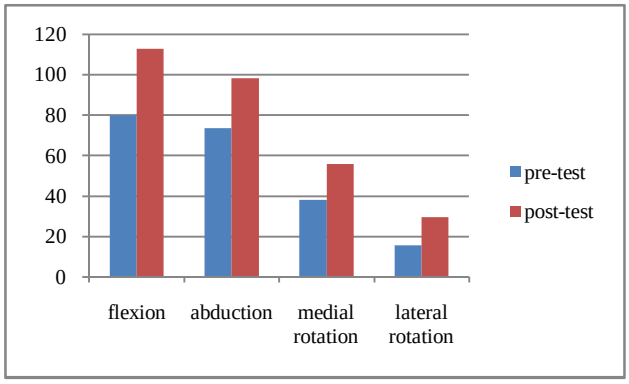
Statistical analysis is done on comparing the mean values of pre and post to the test shows highly significant increase in the range of motion at the shoulder joint and reduction in the pain intensity. Hence the Active Release Technique is effective in patients with adhesive capsulitis [sub-acute stage].

Data Analysis

Comparision of Shoulder Range of Motion Pre and Post to the Test

Period of Evaluation	Mean Shoulder Range of Motion			
	Anterior Elevation	Abduction	External Rotation	Internal Rotation
PRE-TEST	80	73.5	15.5	38
POST-TEST	113	98.5	29.5	56
P-VALUE[using student t-test]	<.00001	<.00001	<.00001	<.00001

Mean Shoulder Range of Motion (Pre and Post Test)



Mean values of VAS PRE and POST to the test

Period of Evaluation	Mean values
PRE-TEST	7.5
POST-TEST	4.5

DISCUSSION

The present study was conducted to analyse the immediate effects of active release technique in patients with adhesive capsulitis. It was noticed that active release technique has showed a highly significant result in subjects with adhesive capsulitis in sub-acute stage. All the subjects who have undergone Active Release Technique (ART) for shoulder joint has showed highly significant increase in the shoulder range of motion in all dimensions and an decrease in the Visual Analogue Scale (VAS). When the mean values of both post and pre-test was analysed. The mean value of range of motion of the subjects in the pre-test in flexion is 80 degree, in abduction 73.5 degree, in external rotation 15.5 degree and in internal rotation 38 degree. The mean value of range of motion of the subjects in the post-test is flexion 113 degree, in abduction 98.5 degree, in external rotation 29.5 degree and in internal rotation 56 degree; from the data analyses it showed that there was statistically significant reduction in pain and significant improvement in the range of motions in all the dimensions. Rajalaxmi *et al* concluded that a short term intervention of kinesio-taping yielded significant reduction of pain and improvement in functional abilities and also the shoulder range of motion in subjects with shoulder impingement syndrome this results suggested that the short term intervention of immediate kinesio-taping showed greater improvement thanthe shoulder exercises alone. The study reveals that there is a significant difference in kinesio-taping with that of exercisesalone in the treatment of subjects with the shoulder impingement syndrome [7]

CONCLUSION

The result of this study reveals that there is highly significant difference in the post-test values in all range of motions of shoulder joint. The study concluded that shoulder motions are gained by active release technique, though it is only a immediate effect of ART in patients with adhesive capsulitis.

Ethical Considerations: The manuscript is approved by the Institutional Review board of faculty of physiotherapy. All the procedures were performed in accordance with the ethical standards of the responsible ethics committee both (Institutional and national) on human experimentation and the Helsinki Declaration of 1964 (as revised in 2008).

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