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EFFICACY OF SELECTED TREATMENT PROTOCOL IN THE MANAGEMENT OF RECURRENT DISLOCATION OF SHOULDER JOINT- A PRE-POST STUDY DESIGN

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ABSTRACT:

Background: Recurrent shoulder dislocation is a prevalent condition in orthopaedic practice, particularly affecting young adults and significantly disrupting their daily activities. Treatment approaches, particularly in the context of *Sandhimoksha* (dislocation), emphasize enhancing joint stability and strengthening the surrounding muscles to prevent further dislocations and improve overall function. **Aim**- To clinically prove the effect of selected treatment protocol in the management of recurrent dislocation of shoulder joint. **Settings and design:** The study was a pre-post clinical trial involving 15 participants from a single group, selected based on specific inclusion and exclusion criteria. **Materials and methods** The participants diagnosed with recurrent dislocation of shoulder joint was subjected to selected treatment protocol which comprises of reduction and bandage with sling , *snehapana*(internal administration of medicated ghee) followed by *abhyanga*(oleation) with *ushma sweda*(sudation) and *virechana*(purgation), *ekanga dhara* and *nasyam*(nasal medication), *ajamamsa samyuktha ekanga shashtikapinda sweda* and *anuvasana vasti*(medicated oil enema) for a maximum period of 51 days. Along with above procedures, internal medications were also administered. Assessment was done on the day of admission, after each procedure and on the day of discharge. Follow up was done once in every month for 3 months after discharge. **Results:** Both subjective and objective parameters were statistically significant with P <0.0001**.** The selected treatment protocol was found to be effective in the management of recurrent dislocation of shoulder joint **Conclusion**: The results demonstrated that the selected treatment protocol effectively reduced pain, minimized muscle wasting, and improved the range of motion in cases of recurrent shoulder joint dislocation.

Keywords: *Amsa sandhi, Sandhimoksham,* Shoulder joint dislocation, Treatment protocol.

INTRODUCTION

Recurrent anterior dislocation of the shoulder is a very common complication of anterior dislocation of shoulder and accounts for greater than 80 percent of dislocations of the upper extremity[1]. This condition is frequently encountered in modern orthopedic practice, particularly among young, active males who are more susceptible to it. The initial dislocation causes disruption of the supporting muscular and soft tissue structures, and this damage is often aggravated by subsequent episodes. Improper immobilization, the extent of the damage, and age are the primary etiological factors. The likelihood of recurrence is higher in the younger population[1]. After an initial traumatic dislocation, individuals may experience episodes of varying severity, ranging from subluxations to full dislocations.

Ayurveda gives a comprehensive understanding of *Sandhimoksha*. Among the 6 varieties of *Sandhimoksha* anterior dislocation can be taken as *thiryakshipta bhagna* [2]. The principle focus of *bhagna chiktsa* are *Bhagna Sthapana* (Reduction), *Bandhana* (Immobilization or Retention) *Sukhchestaprasara* (Physiotherapy)[3].The treatment modalities focuses on *vataharatva(*alleviation of *vata) , bruhmana(*nourishing*)* of the surrounding structures and *sukhchesta* of affected joint . It comprises of reduction (if needed) and bandage with sling , *snehapana* followed by *abhyanga* with *ushma sweda* and *virechana, ekanga dhara* and *nasyam, ajamamsa samyuktha ekanga shashtikapinda sweda* and *anuvasana vasti[4].*

AIM

The aim of this study was to to clinically prove the effect of selected treatment protocol in the management of recurrent dislocation of shoulder joint.

OBJECTIVES

To evaluate the effect of selected treatment protocol in reducing pain, muscle wasting, and improving range of movements in recurrent dislocation of shoulder joint.

MATERIALS AND METHODS

Diagnosis was made on the basis of history and clinical examination . Patients were monitored regularly and observations were recorded at the time of admission , after each treatment and after completion of protocol.

Study Setting

OPD and IPD, Dept. of Salyatantra, Govt. Ayurveda College, Trivandrum

Study Design :

Interventional pre and post study design. The flow diagram of recruitment is provided in chart 1.

Study Population

Participants, between the age group of 30-60 years irrespective of gender, having renal calculi attending the OPD and IPD, Department of shalyatantra, Government ayurveda college, Trivandrum

Sampling method: Consecutive sampling

Sample Size : 15

Inclusion criteria:

• Age group: 20- 40 years

• Participants with history of shoulder joint dislocation more than one time

Exclusion criteria:

• Participants associated with fracture diagnosed by X rays.

• Known cases of bone cancer, Inflammatory diseases (rheumatoid arthritis, SLE).

• Uncontrolled DM, HTN, cardiac diseases, liver diseases Infectious diseases like HIV, Hepatitis

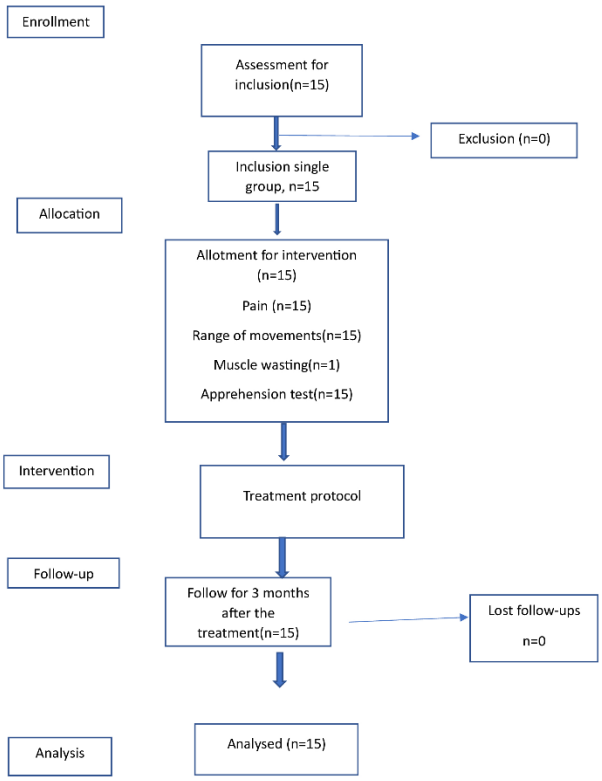


Chart 1: Flow Chart of patient recruitment

Assessment criteria

The following subjective and objective parameters will be considered for assessment. The assessment criteria explained in detail in Table no 1

• Subjective parameters -Pain

• Objective parameters

1. Range of movements
   - Flexion
   - Extension
   - Abduction
   - Internal rotation
   - External rotation
2. Muscle wasting
3. Apprehension test

Table no 1: Assessment criteria

Pain Pain assessed by visual analogue scale	
0	no pain
1-3	mild pain
2-6	moderate pain
>7	severe pain
Range of movements	
Abduction	
Normal abduction 180˚	grade 0
Mild restriction abduction possible 1200	grade 1

Moderate restriction upto 600	grade 2
Severe restriction -abduction below 600	grade 3
Flexion	
Normal flexion 150˚	grade 0
Mild restriction, upto 105˚	grade 1
Moderate restriction, upto 45˚	grade 2
Severe restriction, below 45˚	grade 3
Extension	
Normal extension 45˚	grade 0
Mild restriction, upto 30˚	grade 1
Moderate restriction, upto 15˚	grade 2
Severe restriction, below 15˚	grade 3
Internal rotation	
Normal internal rotation upto 900	grade 0
Mild restriction, upto 500	grade 1
Moderate restriction, upto 30˚	grade 2
Severe restriction, below 30˚	grade 3
External rotation	
Normal external rotation 90˚	grade 0
Mild restriction, upto 700	grade 1
Moderate restriction, upto 40˚	grade 2
Severe restriction, below 40˚	grade 3
MUSCLE WASTING	
Rounded No square look	Normal
acromion process may protrude slightly, Square look	Mild/Moderate
bones prominent	Severe
APPREHENSION TEST	
positive/ negative	

Intervention

The administered treatment protocol is explained in Table no 2

Table no 2:Treatment protocol

Sl no.	Procedure	Medicines	Duration
1	Reduction(if needed) Bandage(*swasthika bandha*) with sling(*utsangi bandha)*	*Murivenna*	21 days
2	*Snehapana*	*Gugguluthikthakam ghrtam* (starting dose 25 ml)	Maximum7 days/*samyak snigdha lakshana*
3	*Abhyanga+Ushma sweda* (whole body)	*Dhanwantharam tailam*	3 days
4	*Virechana*	*Gandharva erandam*- 25ml -40ml (based on *koshta)*	1 day
5	*Peyadi krama*		3-5 days (based on *shudhi)*
6	*Ekanga dhara*(affected shoulder and limb)	*Dhanwantharam tailam*	7 days
	Nasya	*Dhanwantharam41avarthi*(10drops)	

7	*Ajamamsa samyuktha shashtika pinda sweda* (affected shoulder and limb)	*Abhyanga- Shashtika tailam15*	7 days
	Anuvasana vasti	*Dhanwantharam tailam mezhukupakam(*60ml*)*	

Table no 3: Internal medicines

Sl NO	Medicines	Dose and time
1	*Vaiswanara choornam*	1 tsp twice a day, morning and evening, before food ,with warm water
2	*Dhanwantharam Kashaya*	90 ml twice a day morning and evening before food.
3	*Lakshaguggulu* tablet	2 in quantity twice a day with *kashayam*
4	*Gandhatailam*	15 drops with warm milk twice a day after food.

Treatment Period: maximum upto 51 days. Follow up was done in an interval of 30days for 3 months after treatment.

DATA ANALYSIS

The data related to various assessments of both subjective and objective parameters , before and after treatment of 15 participants were taken for statistical analysis.The result of treatment was analysed through Wilcoxon Signed Rank Test for parameters like pain and range of movements, Mc Nemar Test for muscle wasting and apprehension test.

OBSERVATIONS & RESULTS

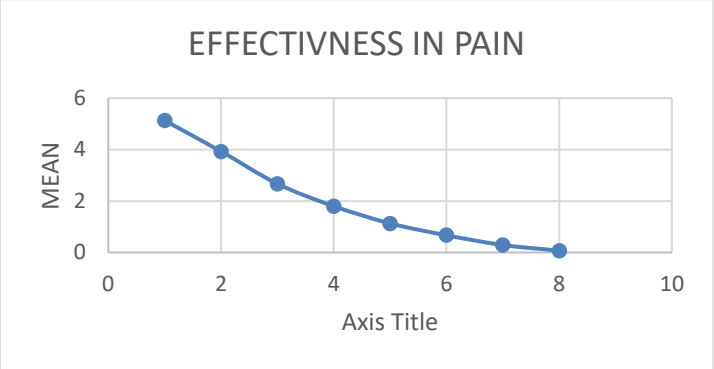
Data on pain

The mean pain score has significantly reduced from5.13 (At the time of admission) to 1.13(after treatment) and0.07 (After 3 months of follow up) with P value being< 0.0001. Table no 4 showcases data on pain at various time point .

Table no 4:Effectivness on pain

Time Point	**Parameters**		
	Pain		
	Mean	**Z-score**	**P-value**
At the time of admission	5.13	-	-

After bandage	3.93	3.19	0.0014
After Sneha Pana	2.67	3.43	0.0006
After local Dhara and Nasya	1.8	3.43	0.0006
After Ajmamasa Yuktha SPS and Anuvasana vasti	1.13	3.43	0.0006
After 1 month	0.67	3.43	0.0006
After 2 months	0.29	3.31	0.0009
After 3 months	0.07	3.42	0.0006



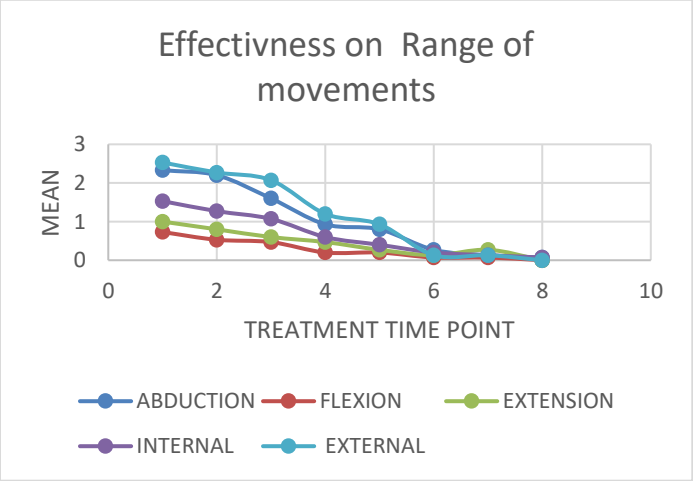
Graph 1: Mean reduction in pain

Data on range of movements: Table no 5 illustrates the change of mean of each range of movements with P value being< 0.0001 at each time point.

Table no 5: Efficacy on Range of movements

Time Point	Parameters														
	Abduction			**Flexion**			**Extension**			**Internal rotation**			**External rotation**		
	Mean	**Z-score**	**P-value**	**Mean**	**Z-score**	**P-value**	**Mean**	**Z-score**	**P-value**	**Mean**	**Z-score**	**P-value**	**Mean**	**Z-score**	**P-value**
At the time of admission	2.33			0.73			1.0			1.53		0.0455	2.53		

After bandage	2.2	1.414	0.1573	0.53	1.732	0.0833	0.8	1.732	0.0833	1.27	2.0	0.0082	2.27	2.0	0.0455
After Sneha Pana	1.6	3.317	0.0009	0.47	2.0	0.0455	0.6	2.449	0.0143	1.07	2.646	0.0007	2.07	2.646	0.0082
After local Dhara and Nasya	0.93	3.52	0.0004	0.2	2.828	0.0047	0.47	2.828	0.0047	0.6	3.372	0.0009	1.2	3.542	0.0004
After Ajmamasa Yuktha SPS and Anuvasana vasti	0.8	3.508	0.0005	0.2	2.828	0.0047	0.27	2.958	0.0031	0.4	3.316	0.001	0.93	3.52	0.0004
After 1 month	0.27	3.531	0.0004	0.07	2.797	0.0052	0.13	2.94	0.0033	0.2	3.293	0.001	0.13	3.52	0.0004
After 2 months	0.13	3.535	0.0004	0.07	2.797	0.0052	0.27	2.193	0.0283	0.13	3.283		0.13	3.52	0.0004
After 3 months	0.07	3.508	0.0005	0.0	2.789	0.0053	0.0	2.933	0.0034	0.07	3.279		0.0	3.508	0.0005

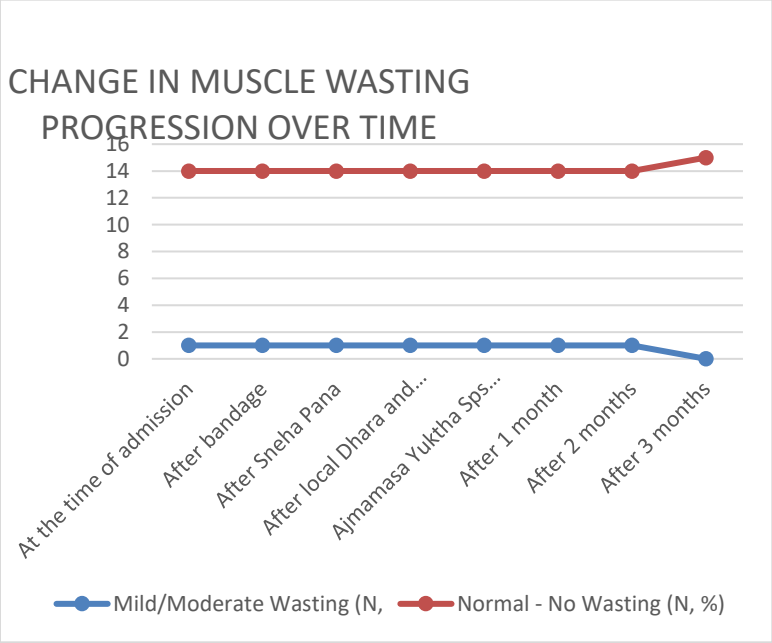


Graph 2: Mean reduction on change in range of movements

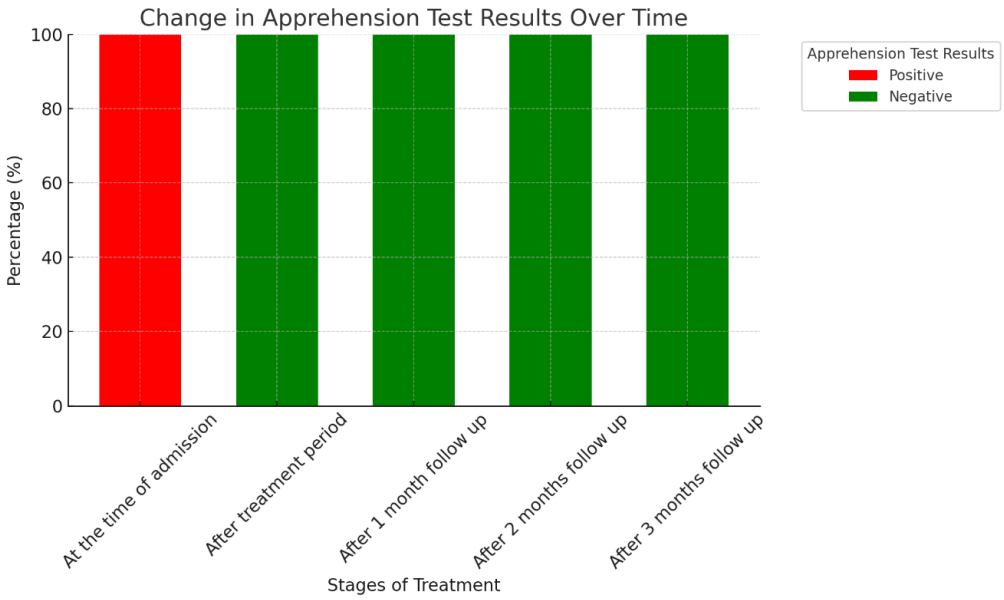
Data on Muscle wasting& Apprehension Test: Table no 6 showcases the p value of change in muscle wasting during each treatment. Changes noticed in apprehension test is shown in figure 4

Table no 6: Effectiveness in reducing muscle wasting and Apprehension test

Muscle wasting	
	P value
At the time of admission	Reference
After bandage	<0.001
After Sneha Pana	<0.001
After local Dhara and Nasya	<0.001
After Ajmamasa Yuktha SPS and Anuvasana vasti	<0.001
After 1 month	<0.001
After 2 months	<0.001
After 3 months	<0.001
Apprehension Test	
At the time of admission	<0.001
After treatment period	<0.001
After one month of follow-up	<0.001
After two months of follow-up	<0.001
After three months of follow-up	<0.001



Graph 3: Change in muscle wasting progression over time



Graph 4: Change in apprehension test results over time

DISCUSSION

Recurrent shoulder dislocation is common among young, active adults, but the high cost of surgical correction makes it less accessible to many people. This treatment protocol offers a comprehensive approach to managing recurrent shoulder dislocations. The extensive treatments for *Sandimuktha* mentioned in Ayurveda are integrated to manage the structural instability caused by multiple dislocations.

Swasthika bandha is done for immobilisation for a period of 21days. It helps in reducing pain and stabilizing the joint and soft tissues. Bandaging improves drug absorption at the target site, stimulates mechanoreceptor[4]. Murivena possses anti-inflammatory and analgesic actions [5].

Bandhana with *Murivenna*, with its stabilizing and Vata-reducing properties, helps restore range of motion and reducing pain.

Bandhana was followed by snehapana with *Guggulutikthaka Ghritha* .Internal administration of Sneha is said for treatment of tendons, joints, and ligaments. Action of Sneha over synthesis of acetylcholine which helps in muscle functioning and tissue repair [6][7]. It also promotes collagen synthesis. *Guggulutikthaka Ghritha* has osteoblastogenic and osteoclastogenic properties , it also imparts kharthwaguna finaly stabilizing bone metabolism[8].

Abyanga with *dhanwantharam taila* followed by *ushma sweda* was carried out *as poorva karma* (pre procedure)bprior to *shodhana(*cleansing therapy*)*. *Virechana* was done with *Gandharvaerandam* . Post *shodhana* participants underwent *peyadi krama* . This customized regimen aimed to revive and strengthen diminished *Agni*, thereby optimizing digestive function and overall health.

Local dhara was performed over affected shoulder joint. this procedure helps in improving the microcirculation thus enhancing absorption of nutrients. *Dhara* has specific action in reducing

vyana vata and *sleshka kapha[9]*.*Dhanwantharam taila dhara* helps in reducing prostaglandin secretions through its action on arachidonic acid production. Stimulation of sympathetic nerves through *dhara* also helps in angiogenis[10]. Thus local *dhara* with *dhanwantharam taila* helps in reducing inflammations pain and improves range of motion.

Nasya is performed with *dhanwantharam taila 41 avarthi*. *Nasya* has specific action on *sringataka marma* through which drug absorption take place. The lipid medium of the drug also facilitates its easy action. Thus *nasya* acts on *amsa, skandha , greeva* etc. [11]. *Nasya* administered with *dhanwantharam taila 41 avarthi* reduces *vata* thus reduces pain and improves range of motion.

Ajamamsa samyuktha shashtika pinda sweda possess *vatahara* and *bruhmana* property. This helps in reducing structural damage occurred in affected shoulder. It helps in muscle strengthening and nourishment of the surrounding structures.

Anuvasana vasti with *dhanwantharam mezhukupaka* acts through it action on enteric nervous system of the GI tract. Thus showing its far reaching effect over *amsa sandhi. Vasthi* is also known to have effect on *Asthi* and *Majja* tissues. The site of action *vasti* ie *pakshwaya* is lined by *pureeshadhara kala*, which bears resemblance to *Asthi Dhara Kala[12]*. Thus proofes its action.

CONCLUSION

The study was conducted among 15 participants with recurrent dislocation of shoulder joint. All the participants had significant relief in pain, improvement in range of motion and muscle wasting. Thus clinically and statistically the above said treatment protocol is found to be effective in the management of recurrent dislocation of shoulder joint.

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CONFLITS OF INTEREST

There are no conflits of interest

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