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ORIGINAL ARTICLE

Comparison of efficacy of intra articular steroid injection versus manipulation under anesthesia (MUA) in idiopathic frozen Shoulder.

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ABSTRACT… Objective: To compare efficacy of intra-articular steroid (IAS) injection with manipulation under anesthesia (MUA) in idiopathic FS. **Study Design:** Randomized Control Trail. **Setting:** Department of Orthopedic, Independent University Hospital, (IMC) Faisalabad. **Period:** 1st January 2021 to 30th June 2021. **Material & Methods:** Diagnosis of FS was based upon detailed history and proper physical. Group A (n=50) included intra-articular injection patients and Group B (n=50) was patients receiving MUA. Pain was measured by VAS and disability was measured by Disability Index (SPADI) scale. **Results:** Mean age of sample was 37 ± 10.52 in group A and 39.14± 9.48 in group B. Age of patients ranges from 35 to 50 years. Female patients were greater in both the groups. Most of the patients have duration of disease for more than 1 month. The ratio of patients with right side disease was more than 50% in both the groups as compared to left side. In group A. there was a significant decrease in mean pain from 3.45 ± 1.12 to 2.16 ± 0.8 In group B, mean pain score decreased from 3.65 ± 0.88 to 2.35 ± 0.68 1. Overall group A was more effective as compared to group B but the results were not significant statistically. **Conclusion:** The intra-articular injection method was superior to MUA because it was easier, safer, and less expensive, and it produced early results.

Key words: Frozen Shoulder, Intra Articular Steroid Injection, Manipulation Under Anesthesia, Outcome.

INTRODUCTION

Adhesive capsulitis also stated as frozen shoulder (FS) is debilitating illness. Shoulder pain and restrictions in active and passive range of motion in all directions are characteristic features of this condition. In general population, prevalence of FS ranges from 2% to 5%, highest after age of 50 and 60. FS is uncommon below age of 40. Females are more vulnerable than males.[1] Many authors have described frozen shoulder in past, and it is identified by a variety of names. Duplay coined the term "peri-artritis" to describe this condition in 1872 Codman coined term "frozen shoulder" in 1934 to describe a disease characterized by a slow onset, inability to sleep on the affected side, serious pain and stiffness in all directions, and no radiologic abnormalities. Neviaser coined the term "adhesive capsulitis" in 1945.[2]

The exact culprit in the pathophysiology of this disorder is unknown. This disease is more prevalent in female population, those having heart diseases and in diabetics. Some authors proposed that FS is a chronic inflammatory condition while others argued that frozen shoulder is due to fibrosis and fibroplasias.[3] Conventionally FS is distributed in three stages. Stage one is called the "freezing stage" characterized by severe pain and growing stiffness. The "frozen stage" is characterized by established stiffness and reduced pain at rest while remaining painful at end of the range of motion. 3rd stage, known as "thawing stage," sees a continuing improvement in motion. Previous research consider it a self-limiting, reversible disorder.[4]

In the literature, individuals with FS are treated with physiotherapy, IAS injection, nonsteroidal

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anti-inflammatory medicines (NSAIDs), HD and MUA with varying results and outcomes. There is no single therapeutic modality that has been recommended as the gold standard; each has drawbacks.[5-7] MUA is a commonly prescribed modality for frozen shoulder syndrome, but it is associated with risk of humeral injury, alienation, cuff injuries, laberal tears, or brachial plexus injury.[8]

Although studies on the effectiveness of IAS injection in idiopathic FS are accessible in the literature, no comparison study on the treatment of idiopathic FS is available locally. This study will examine the effectiveness of these two pain management techniques i.e. IAS and MUA. This research will provide local data on effectiveness of IAS injection and MUA too. If any modality proves to be better technique, results will be disseminated with other local orthopedic surgeons and will be suggested it as a routine procedure for idiopathic FS. The work will also serve as a foundation for future research. Our goal was to assess the efficacy of IAS injection versus MUA in patients with idiopathic FS.

MATERIAL & METHODS

This Randomized Control Trail was conducted at Department of Orthopedic, Independent University Hospital, (IMC) Faisalabad from 1st January 2021 to 30th June 2021.

The Sample size was 100 (50 in each group), 95% confidence level and power of test 80% based on pain relief of 94% in Intra-articular steroid group and 81% pain relief in MUA group.

Inclusion Criteria

All patients' age18-70 years, either gender with idiopathic FS with mild to severe pain and reduced range of motion of shoulder joint at least 20° measured in any direction.

Exclusion Criteria

- Patients with a history of trauma, with or without a shoulder fracture
- • Rotator cuff disease caused by previous surgery
- Patient with DM and hypothyroid
- Patients previously treated with IAS injections or MUA.
- Lost follow-up

The study was started after approval from Ethical committee (IUH/IRB/000037). Those fulfilling inclusion criteria were selected through OPD of orthopedic department. Diagnosis of FS was based upon detailed history and proper physical examination regarding pain and range of motion using goniometer. A computer-generated random number table was used to divide the patients into two groups. The written informed consent was obtained. A standard procedure was adopted for all the patients. Group A (n=50) comprised IAS injection patients whereas Group B (n=50) who received MUA. In group A, patients received a posterior approach IA injection of 5cc of 1% lidocaine HCl and 2cc methylprednisolone acetate with an 18 gauge spinal needle. Every patient received a single injection. Before and after injection, as well as at following visits, active and passive ranges of motion assessments were done. Patients were instructed to undertake ten minutes of range of motion exercises within limitations of their pain on a regular basis. MUA was performed under general anesthesia with a short lever arm and fixed scapula. The audible and palpable loosening of adhesions was a positive prognostic indicator. At rest, pain was quantified by asking the patient to name the worst pain they felt when the shoulder was at rest, using VAS. The Shoulder Pain and SPADI questionnaire was used for score ranging from 0 (best) to 10 (worst).

RESULTS

Mean age of sample was 37 ± 10.52 in group A and 39.14± 9.48 in group B. Age of patients ranges from 35 to 50 years. Ratio of female patients was higher in both the groups. In group A, 22(44%) were males and 28(56%) were females while in group B, 21(42%) were males and 29(58%) were females. Most of the patients have duration of disease for more than 1 month as 34(68%) in group A and 35(70%) of patients of group B have duration of the diseases >1 month. The ratio of patients with right side disease was more than 50% in both the groups as compared

to left side as shown in Table-I.

Mean age (years)	Group A No (%)	Group B No (%)
	37 ± 10.52	39.14± 9.48
Gender		
Male	22(44)	21(42)
Female	28(56)	29(58)
Side of the disease		
Affected shoulder right	27(54)	26(52)
Affected shoulder left	23(46)	24(48)
Duration of the Disease		
Mean duration of ≤1 month	16(32)	15(30)
Mean duration of >1 month	34(68)	35(70)

Table-I. Demographic features of patients in the two study groups

In IA injection group, mean pain decreased significantly from 3.45 ± 1.12 before intervention to 2.16 ± 0.81 with decrease in mean disability score from 5.75±1.36 to 2.37 ± 0.73 and results were statistically significant (Table-II).

Variables	Before Injection	After Injection	P-Value
Pain score	3.45±1.12	2.16±0.81	< 0.001
Disability index score	5.75±1.36	2.37±0.73	<0.001

Table-II. Pre and post-intervention pain and disability score in Group A

In group B, mean pain reduced substantially from 3.65 ± 0.88 to 2.35 ± 0.68 and mean disability index score from 5.75 ± 1.12 to 2.54 ± 0.73 and this difference was found to be statistically significant (Table-III).

Variables	Before MUA	After MUA	P-Value
Pain score	3.65±0.88	2.35 ±0.68	< 0.001
Disability index score	5.75±1.1214	2.54±0.73	<0.001

Table-III. Pre and post-intervention Pain and disability score in Group B

Efficacy was stratified by age, gender, duration of idiopathic FS showed that efficacy was higher in IAS as compared to MUA group. According to age, the efficacy of intra-articular steroid was more 93% in age group 20-40 years. While according to gender intra-articular steroids were effective in 92% females as compared to 90% males. Overall efficacy was higher in group A as compared to group B but the results were not significant statistically. The efficacy of both interventions is given in Table-IV.

	Efficacy	Group-A N (%)	Group-B N (%)	P- Value
Age				
20-30	Effective	5 (83.3)	6(85.7)	0.9371
	Not effective	1(16.7)	1(14.3)	
31-50	Effective	14(93.3)	13(86.7)	0.4321
	Not effective	1(6.7)	2(13.3)	
51-70	Effective	27(90)	24(85.7)	0.3624
	Not effective	3(10)	4(14.3)	
Gender				
Male	Effective	20(90.9)	18(85.7)	0.4410
	Not effective	2(9.1)	3(14.3)	
Female	Effective	26(92.9)	25(86.2)	0.4012
	Not effective	2(7.1)	4(13.8)	
Duration of idiopathic frozen shoulder				
≤1 months	Effective	15(93.8)	12(80)	0.7081
	Not effective	1(6.3)	3(20)	
>1 month	Effective	32(94.1)	30(85.7)	0.4034
	Not effective	2(5.9)	5(14.3)	
Total		50	50	

Table-IV. Efficacy of both the interventions with respect to age, gender, side of the arm and duration of disease

DISCUSSION

Frozen shoulder (FS) is one of commonest conditions encountered in orthopedics OPD. Irrespective of this knowledge of pathology, no agreement has been formed on which approach is preferable for treating FS.

Khan I et al conducted a study to compare outcome of MUA and HD for treatment of FS and concluded that HD show improved results for early pain relief and improved ROM.[9] While Shah et al in their study concluded that both the techniques are equally effective.[10] Sattar et al compared the IAS injection versus hydrostatic shoulder distention in idiopathic FS and concludes that IAS is more effective than HD for idiopathic FS.[11] Therefore we conducted this study two compare the efficacy of IAS and MUA for treatment of frozen shoulder.

Mean age of patients in our study was 37 ± 10.52

in group A and 39.14± 9.48 in group B. Age of the patients ranges from 35 to 50 years. The ratio of female patients was higher in both the groups. In group A, 22(44%) were males and 28(56%) were females while in group B, 21(42%) were males and 29(58%) were females. These results are in accordance with other a study conducted by Sattar et al.[11] Mean pain score in IAS group reduced substantially from 3.45 ± 1.12 to 2.16 ± 0.81 after intervention and mean disability index dropped from 5.75±1.36 before intervention to 2.37 ± 0.73. This difference in mean change was found statistically significant. These results are in accordance with other study conducted by conducted in Orthopedic Department of Benazir Bhutto hospital, Rawalpindi by Butt et al.[12] Our results are accordance with a study carried out by Satpathy et al in India.[13]

Efficacy with respect to age, gender, duration of idiopathic FS showed that efficacy was higher in intra-articular steroid as compared to MUA group. According to age, the efficacy of intra-articular steroid was more 93% in age group 20-40 years. While according to gender intra-articular steroids were effective in 92% females as compared to 90% males. Overall efficacy was higher (more than 90%) in Intra-articular steroid group as compared to group manipulation under general anesthesia. According to Quraishi et al, 94% of patients preferred IAS injections for pain alleviation and mobilization, compared to 81% who received MUA.[14] Sharma et al. observed in another research that IAS injections superior to MUA.[15] In current RCT, IAS injection was perceived as preferable over MUA as easy, safe and display quick response. MUA has disadvantage of being connected with a small percentage of anaesthetic risks as well as danger of proximal humerus fracture. It is critical for treating clinician to be aware of psychological concerns that can arise as a result of this condition's discomfort and impaired functionality. These concerns, accompanied by a poor treatment outcome, might make it even more difficult for treating clinician and the patient to work together to achieve the best treatment strategies and outcomes. In future, routes must be taken. Research evaluating continuing positive results of physiotherapy can be important in optimizing FS management.

CONCLUSION

The IAS injection approach was shown to be preferred to MUA because it was significantly easier, safer, and less expensive, and it produced early results. It is fair to use an IAS injection with the goal of achieving a quick recovery rate with fewer hospital visits, following which a home-based fitness regimen could be prescribed.

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2	Basharat Manzoor	Data collection.	
3	Sumair Qureshi	Data analysis.	
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5	Nusrat Rasheed	Statistics.	
6	Imran Manzoor	IRB approval.	