



Comparison of the functional outcome following hydrodilatation with manipulation and manipulation alone for idiopathic frozen shoulder

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ARTICLE HISTORY

Received: 20.11.2013

Accepted: 26.12.2013

Available online: 10.02.2014

Keywords:

Cardiovascular disease, Prevalence; Diabetes Mellitus; Risk factor; Smoking

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ABSTRACT

Idiopathic adhesive capsulitis is a common but poorly understood cause of a dysfunctional painful shoulder affecting daily routine. A prospective study comparing the functional outcome following hydrodilatation with manipulation and manipulation alone for idiopathic frozen Shoulder was undertaken. 158 patients (168 shoulders) with idiopathic adhesive capsulitis were treated with manipulation alone and hydrodilatation with manipulation. 88 shoulders underwent hydrodilatation with manipulation and 80 shoulders with manipulation alone. The initial evaluation included the recording of a detailed history and assessment of pain, range of motion, and function. The outcome evaluation included assessment of pain, range of motion, and function; Oxford Shoulder Scoring and completion of the Disabilities of the Arm, Shoulder, and Hand (DASH) Questionnaire. The mean duration of follow-up was twelve months. With Hydrodilatation plus manipulation 77% patients had a satisfactory outcome, 20 % had fair outcome, and 3 % were not satisfied with the treatment. With manipulation alone 52% patients had a satisfactory outcome, 45% reported a fair outcome, and 3% were not satisfied with the treatment. Hydrodilatation is a simple and effective add on to the routinely done manipulation procedures to obtain better results.

INTRODUCTION

Idiopathic adhesive capsulitis is a common but poorly understood cause of a dysfunctional painful shoulder affecting daily routine. Despite many advances in research and treatment modalities, morbidity among the patients remains high. The disease has been described by various authors proposing certain key points e.g. association with diabetes mellitus. It has also been divided in phases namely painful phase, frozen phase and thawing phase and is believed to be self-limiting. However the total period of resolution remains a matter of debate and the patients usually require treatment. Most orthopaedic literature supports treatment with conservative therapy and stretching exercises [1-4]. Various treatment options of physiotherapy after manipulation alone or with hydrodilatation have also been tried. Hydrodilatation proved to be a simple and inexpensive primer to the standard shoulder manipulation [5-7].

Treatment of frozen shoulders by physiotherapy alone is time consuming and the rate of recovery is slow [7,8]. Certain refractory cases have been treated via open & arthroscopic

methods [9,10]. All proposed treatment modalities are fraught with lengthy treatment protocols, recurrences and Incomplete cure. The objective of this study was to compare the outcome of patients with idiopathic adhesive capsulitis who were treated with combining hydrodilatation and manipulation and manipulation alone under general anaesthesia.

MATERIALS AND METHODS

One Hundred fifty eight patients (168 shoulders) with idiopathic adhesive capsulitis were treated with manipulation alone and hydrodilatation with manipulation under general anaesthesia alternately and evaluated prospectively. Eighty Eight shoulders treated with hydrodilatation (Priming the capsule with 20ml normal saline) plus manipulation and eighty with manipulation alone. Inclusion Criteria included shoulder discomfort for at least one month and limited range of motion of the glenohumeral joint in at least two directions. Exclusion Criteria were systemic inflammatory joint disease, radiological evidence of bony abnormality of the shoulder, full-thickness rotator cuff tear, acute systemic medical illness, history of major

trauma or surgery involving the shoulder, contraindication to intra-articular, local anesthetic injection. The initial evaluation included the recording of a detailed medical and orthopaedic history and assessment of pain, range of motion, and function. The outcome evaluation included assessment of pain, range of motion, and function; Oxford Shoulder Scoring and completion of the Disabilities of the Arm, Shoulder, and Hand (DASH) Questionnaire. The mean duration of follow-up was twelve months (range, six to eighteen months). Patients which were lost to follow-up were excluded from the study.

Patients were alternately taken up for manipulation after hydrodilatation and manipulation alone. 20 ml saline injected using a syringe and manipulation performed. Manipulation technique in both groups was standard [14]. Palpable crepitus due to breaking of adhesions was observed in almost all cases[8].

Both groups received similar protocol based post procedure exercises for six weeks. Post operatively both groups received similar physiotherapy protocols essentially comprising of wall climbing and pendular type shoulder exercises for four to six weeks. Rehabilitation was initiated by therapists and was continued at home.

Patients were regularly followed up at 2 weeks and then monthly for a period of six months postoperatively. The data was analyzed using SPSS package (SPSS Inc., Chicago, IL, USA). Chi square test of significance were carried out and $p < 0.05$ were considered significant.

RESULTS

Ten patients (11.4 percent) with hydrodilatation plus manipulation had excellent outcome, Fifty-eight (65.8 percent) of the patients had a good outcome, Eighteen (20.5 percent) reported a fair outcome, and two (2.3 percent) were not satisfied with the treatment (graph 1). There were significant improvements in the scores for pain at rest (from a mean of 1.57 points before treatment to a mean of 1.16 points at the final evaluation; $p < 0.001$) and pain with activity (from a mean of 4.12 points before treatment to a mean of 1.33 points at the final

evaluation; $p < 0.0001$). On the average, active forward elevation increased 43 degrees, active external rotation increased 25 degrees, passive internal rotation increased eight vertebral levels, and the glenohumeral rotation arc at 90 degrees of abduction increased 72 degrees ($p < 0.00001$). Two patients (2.5 percent) with manipulation alone had excellent outcome, Forty (50 percent) of the patients had a good outcome, Thirty six (45 percent) reported a fair outcome, and two (3 percent) were not satisfied with the treatment(Fig:1). There were improvements in the scores for pain at rest (from a mean 1.62 points before to a mean of 1.3 points at the final evaluation).

On the average, active forward elevation increased 40 degrees, active external rotation increased 10 degrees, passive internal rotation increased five vertebral levels, and the glenohumeral rotation arc at 90 degrees of abduction increased 60 degrees.

Male gender, bilateral disease and diabetes mellitus were associated with worse motion at the final evaluation.

DISCUSSION

Most orthopaedic literature supports treatment with conservative therapy and stretching Exercises[1-4]. Various combinations with steroid, normal saline and just manipulation followed by physiotherapy have also been tried. Treatment of periarthritis shoulders by physiotherapy alone is time consuming and the rate of recovery is slow[7,8]. Harmon and Quigley in their study reported results for manipulation, about the same with 75% maintaining full motion on a two-month for year follow-up, with the remainder improving in varying degrees^{8,11}. All proposed treatment modalities are fraught with lengthy treatment protocols, recurrences and incomplete cure. Certain refractory cases have been treated via open & arthroscopic Methods[9,10].

Studies suggest hydrodilatation primes the capsule and the ligaments making them more amenable to manipulation. Better results obtained when a dilated joint was manipulated. Hydrodilatation proved to be a simple and inexpensive primer to the standard shoulder Manipulation[1-3].

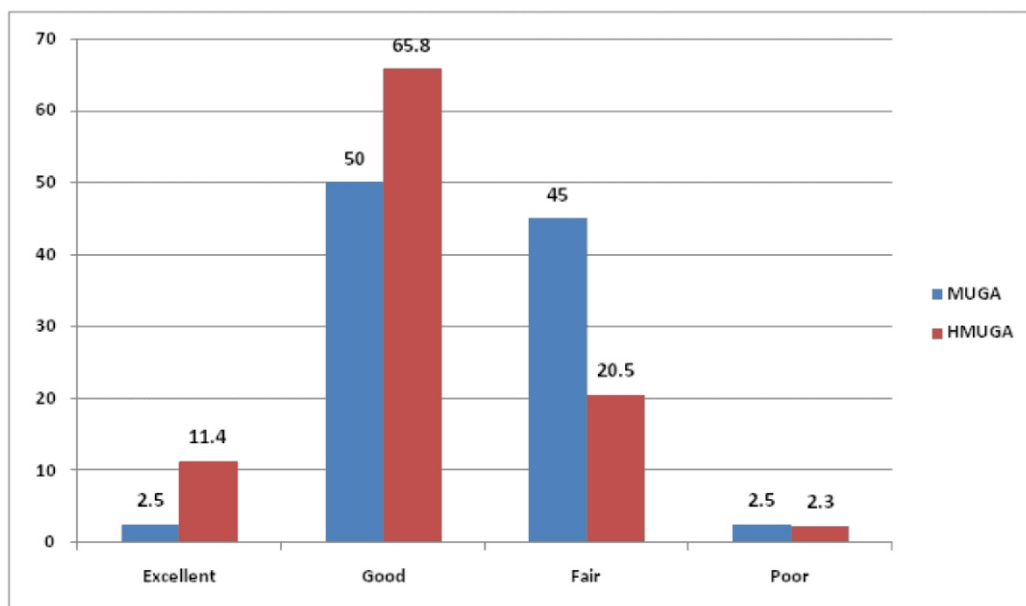


Fig. 1. Showing the results with Manipulation alone and with Hydrodilatation

In this study about 77% of the patients in the hydrodilatation had excellent and good results. Whereas in the manipulation alone group only 52.5% had excellent and good results.

Hydrodilatation may have an advantage in improving the results in these patients undergoing manipulation under general anaesthesia. Encouraging results indicate that operative treatment in the form of arthroscopic or open capsular release is seldom necessary in idiopathic frozen shoulders[6,8]. Association with diabetes mellitus was proven again and also poorer functional outcomes noted in these cases.

Comprehensive physiotherapy rehabilitation program is as essential as manipulation to ensure good functional outcome. The common denominator in recovery from the frozen shoulder is motivation and physical capability to stretch, actively exercise and withstand a certain amount of physical discomfort [9-13].

ACKNOWLEDGEMENTS

We thank KMC Mangalore and Manipal University for their support in conducting this study

CONCLUSION

From this study we conclude that hydrodilatation is a simple and effective add on to the routinely done manipulation procedures to obtain better results. Also from the study it appears that male gender, bilateral disease and diabetes mellitus were associated with worse motion at the final evaluation.

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